



UNDERSTANDING CULTURAL FACTORS WHICH AFFECT WOMEN SERVING ON BOARDS OF DIRECTORS

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ABSTRACT

This study explores the cultural factors that act as antecedents to women serving on boards of directors all over the world. We extend the theory proposed by several researchers before (e.g., Warner-Soderholm et al., 2016; St Onge & Magnan, 2013). We will explore relationships proffered by various researchers while also using more robust data and a larger sample. We will statistically examine relationships between cultural factors, political empowerment, institutional factors, gender equality scores, paid maternity leave, paid paternity leave, universal suffrage, and women on boards. Our sample of 56 countries was collected Catalyst, the World Economy Forum, and the World Bank in 2015. We use cultural factors score of House et al. (2004). After running regressions, the results of our study indicate that Gender equality positively impacts shares of women on boards, mediated through women's political empowerment and the proportion of seats held by women in parliament. Our findings also suggest high levels of in-group collectivism, future orientation, gender equality, political empowerment, the proportion of seats held by women in parliament, and a low level of uncertainty avoidance will positively impact women on boards.

KEYWORDS: cultural factors, gender equality, political empowerment, the proportion of women in parliament, women on boards.

Introduction

Past researchers have examined the factors which have an impact on the composition of boards of directors and women serving in the boardroom (Dalton, Daily, Ellstrand & Johnson, 1998; Terjesen, Sealy, & Singh, 2009; Schnake, Williams, & Fredenberger, 2011;

Warner-Soderholm, Bertsch, Seierstad, Galbdon, & Huse, 2016). Grosvold, Rayton, and Brammer (2015) found family, education, economy, and government affected the number of women occupying boardroom positions. Other researchers have studied the relationship between cultural variables and board structure (Carrasco, Francoeur, Real, Laffarga, & Ruiz-Barbadillo, 2012). Warner-Soderholm, Bertsch, Seierstad, Galbdon, & Huse (2016) showed there are significant relationships between power distance, assertiveness, uncertainty avoidance, future orientation and subsequent successful levels of implementation of women on board strategies. Those relationships were mediated by gender equality, political empowerment, and the percentage of seats in parliament held by women (Warner-Soderholm et al., 2016). Culture is a popular research topic and it is defined as a collection of humans' shared motives, values and is transmitted across several generations (Birukou, Blanzieri, Giorgini, & Giunchiglia, 2013). We will explore the cultural factors that act as antecedents to women serving on boards of directors. We intend to extend the theory proposed by several researchers before (e.g., Warner-Soderholm et al., 2016; St Onge & Magnan, 2013), we will explore relationships proffered by various researchers while also using more robust data and a larger sample. Warner-Soderholm et al. (2016) used both societal values and societal practices of GLOBE's nine dimensions and they found the same results. The following conceptual model presented by Warner-Soderholm et al. (2016) is presented as an example of the hypothesized relationships between the multiple macro factors impacting the share of women on boards:

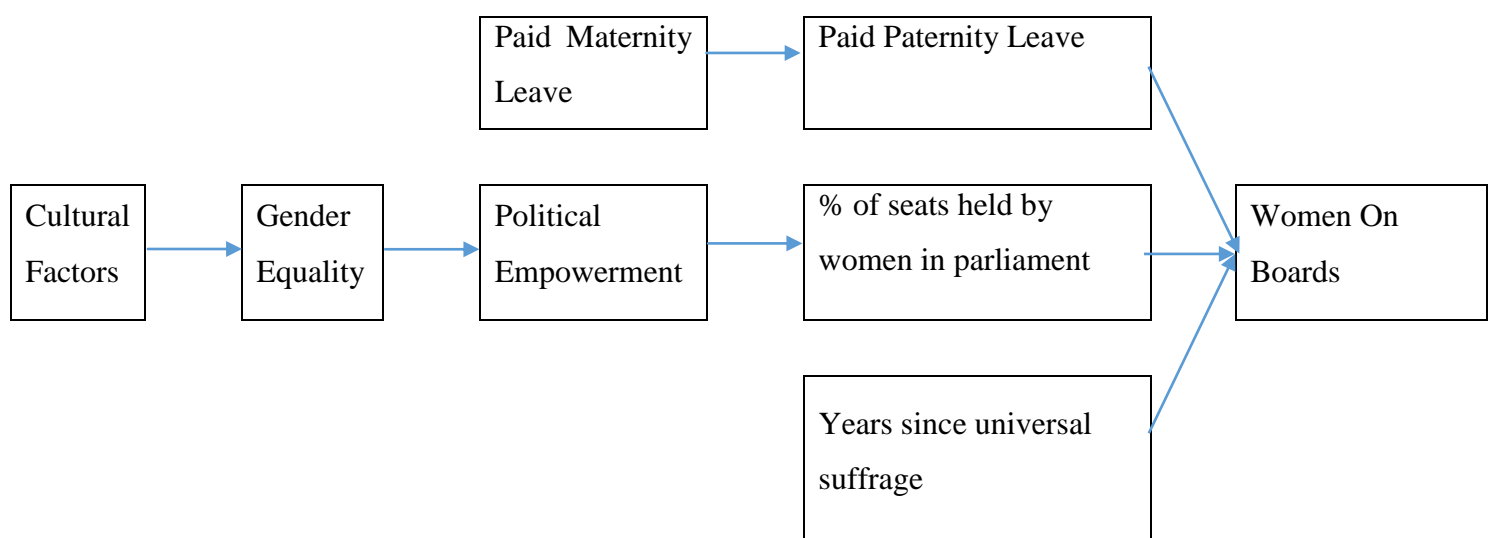


Figure 1. Model As Proffered By Warner-Soderholm et al. (2016)

Warner-Soderholm et al. (2016) focused their study to 24 European countries as they explored macro factors which promote women' participation on boards. We look beyond isolated explanatory factors which current literature (e.g., Luckerath-Rovers, 2013; Nielsen &

Huse, 2010; Hillman, Shropshire, & Cannella, 2007) claims may explain the successful Women on Board interventions, such as social role theory, institutional complementary factors, cultural norms, legislature reaction, and geographic limitations. House et al. (2004) indicated nine cultural variables: performance orientation, future orientation, assertiveness, power distance, humane orientation, institutional collectivism, in-group collectivism, uncertainty avoidance, and gender egalitarianism. We will explore whether these nine cultural dimensions impact successful implementation of women on board strategies.

In order to carry out the study, we analyzed the representation of women on boards of directors in 56 countries all over the world as measured by Catalyst (2014). Each country has its own culture and its own government. Our data exhaustively represents the whole population around the world where data was available. The data for this research was collected from the World Economic Forum (Hausmann, Tyson, & Zahidi, 2012), Catalyst (Current index of formal approaches, 2012), The World Bank, and archive data on national public policies. Data from Project GLOBE (House et al., 2004) and Warner-Soderholm et al. (2016) was used for cultural variables including future orientation, assertiveness, power distance, and uncertainty avoidance. We chose GLOBE data (House et al., 2004) because it is a unique cultural model which includes scores for cultural values scores. A significant fact of GLOBE's nine cultural dimensions is that each one is defined in two ways: practices (or "as is") and values (or "should be") (Hellriegel & Slocum, 2010, p. 336). The values and practices were rarely similar (Grove, 2005). The differences between societal cultural practices scores and values scores reflect the discrepancy between the perceived ("real") societal culture and the desired ("ideal") societal culture (Hellriegel & Slocum, 2010, p. 336). Practices reflect the respondents' day-to-day realities whereas values reflect their aspirations and ideals (Grove, 2005). We chose societal "values" because when individuals think about the share of women on board, they are more influenced by the value ("should be"), they place on the desired future than their perception of current realities ("as is") (Grove, 2005). Hofstede (2001) advises that values are the 'core' of culture. This is represented in Hofstede's onion model (Hofstede, Hofstede, & Minkov, 1991).

Purpose statement

The purpose of this research is to explore the macro-level cultural factors influencing women on boards all over the world. We will examine cultural factors affecting women on boards all over the world and also generate a better understanding of what drives the shares of women on board of directors.

Research questions

This research study will address the following questions:

- i. What are the relationships between macro-level societal variables and the manifestation of women on boards?
 - i(a). Are previous models which may have been limited in scope (e.g., Warner-Soderholm et al., 2016) replicable using a broader sample and more robust variables?
 - i(b). Are there any missing or additional variables that were not presented by earlier models?
- ii. Of the relationships found in (i), what are the relative individual strengths of those relationships?

Structure of the remaining document

The remain of the document is structured as follows: Literature Review, Methodology, Data Analysis, Discussion and Conclusion, References, and Appendices.

Literature review

The concept of women on boards

Women on board of directors are women who hold board seats in companies who assume decision-making authority, influence, and responsibility. According to Post and Byron (2015), people who are on boards of directors have two primary responsibilities: monitoring executives and strategy involvement. Women who are in the workforce and are managers are likely to have more opportunities to sit on boardroom positions compared with women who are out of the workforce (Terjesen, Aguilera, & Lorenz, 2015). Women on boards are a central topic in the literature involving business ethics, corporate governance, and women in leadership (Bear et al., 2010; Burgess & Tharenou, 2002; Burke, 1997); however most research has focused on the differences between men and women directors (as cited in Seierstad, Warner-Soderholm, Torchia, & Huse, 2016). Some studies focused on the introduction of the gender-balance law in Norway (Hei-denreich, 2010; Huse, 2011; Seierstad & Opsahl, 2011; Wang & Kelan, 2013; Teigen, 2015) because Norway is the first country to launch a gender balance law with quota regulation for boards of directors (as cited in Seierstad, Warner-Soderholm, Torchia, & Huse, 2016). Other studies have indicated that women often consider negative stereotypes and cultural factors as barriers to their representation on boards of directors (St Onge & Magnan, 2013). Managers and recruiters are likely still framed by masculine notions of leadership and may think women were not suitable for high-level positions (St Onge & Magnan, 2013). Women, who represent over half of the

world's population, are qualified and get jobs done (Wajcman, 2013). Thousands of reports have concluded that the overall proportion of women on boards has increased very slowly (Carrasco, Francoeur, Labelle, Laffarga, & Ruiz-Barbadillo, 2015). Moreover, the percentage of women on boards is different across countries all over the world (Terjesen, Aguilera, & Lorenz, 2015). We intend to investigate cultural and macro level variables which might act as antecedents and may explain this variance. Women often fail to run for boardroom positions because of cultural and institutional barriers to female success. Across 67 countries, females account for only 10.3% of board of directors as of in 2013, with some of the lowest rates in Morocco (0%), Japan (0.9%), and Chile (2.4%) compared with some of the highest rates in Norway (42%) and Sweden (28%) (as cited in Terjesen, Aguilera, & Lorenz, 2015). Some studies such as Ahern and Dittmar (2012), Carrasco et al. (2015), Chapple and Humphrey (2014), Heidenreich (2010), Joecks et al. (2013), Perrault (2015), and Sun et al. (2014) showed most countries wanted to change national public policy strategies in order to increase the proportion of women on boards (Seier, Warner-Soderholm, Torchia, & Huse, 2016).

Gender diversity and gender equality

Gender diversity and gender equality are very important for any corporation. Many governments seek to improve gender equality as well as the participation of women on firms' boards. Corporations pay more attention to gender diversity and equality because gender diversity and equality are considered to be one of the most critical success factors of business (Institute of Business Ethics, 2011). Dargnies (2012) suggested gender diversity improves boards' operation (Abdullah, Ismail, Izah, & Nachum, 2014). Some benefits for organizations which employ gender diversity and equality practices include better decisions, higher performance, and greater representation of customers' assumption (Thompson, 2016). Women on boards is considered an exciting and obvious fit for organizations, which could not only serve to enhance the promotion and advancement in supporting gender diversity but also promote gender equality (Nekhili & Gatfaoui, 2013). Many companies promote gender diversity at the executive and board level and reap the benefits that a gender-balanced board brings (Terjesen, Couto, & Francisco, 2015). Ben-Amar, Francoeur, Hafsi, and Labelle (2013) showed board gender diversity enhances a board's independence. Byoun, Chang, and Kim (2016) also indicated adding directors who have the same gender might diminish the board's independence and reduces the benefits of gender diversity. Wachudi and Mboya (2012) explained the increase in the number of women on boards might increase the board's independence because women tend to ask questions that men might not ask. Therefore,

organizations need a balance between board gender diversity and the need for cohesion (Ben-Amar, Francoeur, Hafsi, and Labelle, 2013).

The Global Gender Gap Index (GGI), which was published by the World Economic Forum, examines the gap between men and women based on four overall categories: economic participation and opportunity, political empowerment, education attainment, and health and survival. GGI reflects gender equality of over 144 major and over 130 emerging economies around the world. Economic participation and opportunity includes salaries, employment participation levels, and high-skilled employment. Education attainment is calculated based on access to basic and higher level education. Political empowerment is represented in decision-making structures. Health and survival are based on life expectancy and a male-female ratio. Borrell et al. (2014) and Pfau-Effinger (2005) suggested gender inequalities vary among countries due to cultural and social factors, legislative elements, and policy regime (as cited in Aitken, Garrett, Hewitt, Keogh, Hocking, & Kavanagh, 2015). The GGI(2013) reported that Iceland, Finland, Norway, Sweden, Philippines, Ireland, New Zealand, Denmark, Switzerland, and Nicaragua are the top ten most equal countries in the world.

Cultural factors

Carrasco, Laffarga, and Ruiz-Barbadillo (2011) showed cultural factors could explain the varying degree of women on boards in every country. In 2015, Carrasco et al. (2015) emphasized again the proportion of women representation on boards of directors in each country may be affected by prevailing culture. Specifically, they identified a significant relationships between three of four cultural dimensions of Hofstede's framework and the representation of women on boards of directors: power distance, uncertainty avoidance, and masculinity (Carrasco et al., 2015). Warner-Soderholm et al. (2016) limited their dataset to European countries and also found cultural variables that may promote successful women on boards implementation in the European country cluster. They found significant relationships between power distance, uncertainty avoidance, future orientation, assertiveness and higher levels of implementation of women on boards strategies. Culture plays an important role in decision-making when selecting board members. There are few studies investigating the successful implementation of women on board strategies that also include underlying cultural factors. We feel this represents a gap in the literature and, therefore, will be an important element of our exploratory study.

Power distance

Power distance is the level to which a person accepts the unequal distribution of power (Auh, Menguc, Spyropoulou, & Wang, 2015). Hofstede (1984) suggested power distance involves the degree of centralization of authority and the degree of autocratic leadership (as cited in Minichilli, Zattoni, Nielsen, & Huse, 2012). Countries that score high in power distance accept authority and acceptance of an unequal power distribution, whereas those scoring low in power distance expect to participate in all decisions (Sivaji & Ahmad, 2014).

Westpha and Bednar (2005) suggested cultures high in power distance may prevent social distancing among board of directors, especially between inside and outside board members (as cited in Minichilli et al., 2012). Li and Harrison (2008b) found there is a significantly positive relationship between power distance and a consolidated chairman/ CEO leadership structure (as cited in Daniel, Cieslewicz, & Poujalali, 2012). High power distance enlarges the gap between men and women in case of relations and wealth conditions (Hooker, 2012). In contrast, people in low power distance cultures are more sensitive towards any unequal situation (Ghemawat & Reiche, 2011). Warner-Soderholm et al. (2016) suggested low level of power distance will positively impact successful implementation of women on boards strategies.

Uncertainty avoidance

Uncertainty avoidance is a society's tolerance for uncertainty and ambiguity. It is also the extent to which members of a society try to deal with unpredictability of future events (Dorfman, Javidan, Hanges, & House, 2012). Uncertainty avoiding cultures attempt to reduce unpredictability by adopting strict laws, norms, rules, safety, and security measures. Warner-Soderholm et al. (2016) suggested that countries which avoid uncertainty by planning well would also have a lower degree of gender inequality. They also indicated that countries which put high value on uncertainty avoidance will do well in more areas of gender equality. It seems uncertainty avoidance may give more economic opportunities for women. Warner-Soderholm et al. (2016) showed that a low level of uncertainty avoidance will positively impact shares of women on boards.

Humane orientation

Humane orientation is the extent to which countries encourage fair, generous, nice, friendly, and kind behaviors (Dorfman, Javidan, Hanges, & House, 2012). High humane orientation includes putting high value on others' interest and support for partners. Low humane orientation consists of being selfish, always working for the individual's need, and

practicing discrimination. Men and women have different behaviors in ethics under the cultural factor of humane orientation (Elsaid & Elsaid, 2012). Male managers are more likely to justify their business-related unethical behaviors than female managers (Chen, Velasquez Tuliao, Cullen, & Chang, 2016). Warner-Soderholm et al. (2016) found countries which score higher in humane orientation will have higher numbers of women on boards.

Assertiveness

Assertiveness reflects the extent to which individuals are assertive, confrontational and aggressive in social situations and communication (Dorfman, Javidan, Hanges, & House, 2012). Being assertive means stating your opinions clearly and firmly, protecting people's rights in a calm, positive, and confident way without being aggressive or passive (Garner, 2014). Assertiveness is very vital in communication (Samaha, Beck, & Palmatier, 2014). Past research has shown the differences in leadership styles across gender. Basow and Rubenfield (2003) indicated women are generally more expressive, tentative, and polite whereas men are more assertive (as cited in Merchant, 2012). Merchant (2012) suggested men tend to be more self-assertive than women. Men want to obtain power or dominance and value their independence whereas women desire to be at one with others and more social with others (Meyers-Levy & Loken, 2015). Chizema, Kamuriwo, and Shinozawa (2015) suggested the higher score in assertiveness a country has, the greater the probability women reach board positions. Warner-Soderholm et al. (2016) also indicated that higher level of assertiveness will positively impact shares of women on boards.

Collectivism

Collectivism affects not only social institutions but also organizational behavior. Institutional collectivism is the extent to which countries encourage and reward collective action and distribution of benefits (Dorfman, Javidan, Hanges, & House, 2012). High institutional collectivism manifests as members who are highly interdependent with the organization and where the organizational system maximize the interests of group. Low institutional collectivism exists when members are largely independent of the organization and are encouraged to pursue individual goals and maximize the interests of the individual. In-group collectivism, also known as family collectivism (Gupta & Kirwan, 2013) manifests when someone expresses his or her loyalty, pride, and connection with his or her corporation (Dorfman, Javidan, Hanges, & House, 2012). High in-group collectivism societies have characteristics such as the importance of duties, obligations, and the relation between in-group and out-group. Meanwhile, low in-group collectivism societies emphasize the importance of individual needs, attitudes, and rationality in behavior. Bullough, Kroeck,

Newburry, Kundu, and Lowe (2012) found that collectivism is negatively related to the percentages of women in political leadership and individualism is positively related to the same. Bullough, Kroeck, Newburry, Kundu, and Lowe (2012) also mentioned in-group collectivism has a positively significant impact on women who become politicians.

Future orientation

Future orientation is the degree to which collective individuals engage in future-oriented behaviors (e.g., planning) and delay gratification to the future (Dorfman, Javidan, Hanges, & House, 2012). Future orientation plays an important role in an entrepreneurial mindset (Rhodes, 2016). Future orientation means looking ahead and realizing the future. The societies who have high future orientation can orient their thinking and actions in the future (Sokoll, 2011). They tend to be very flexible and adaptive, and they emphasize long-term success. In contrast, the low future orientation societies are wasteful, inflexible, maladaptive, and they prefer gratification as soon as possible (Joireman, Shaffer, Balliet, & Strathman, 2012). Warner-Soderholm et al. (2016) found that lower scores in future orientation will positively impact the number of women on boards.

Gender egalitarianism

Gender egalitarianism is the extent in which a society attempts to maximize gender equality (Dorfman, Javidan, Hanges, & House, 2012). Being egalitarian means women can contribute to the success of societies. McDaniel (2008) found in high gender egalitarianism societies, women's attitudes toward gender equality are significantly stronger than men's attitudes, whereas in low gender egalitarianism societies, women's attitudes in that category are basically the same as men's. There is no known study indicating the relationships between gender egalitarianism and women on boards of directors.

Performance orientation

Sturman, Shao, and Katz (2012) suggested performance orientation is the extent to which a culture encourages and rewards innovation, high standards, and better performance (e.g., salary, performance ratings, and loyalty). Individual rewards often create a competitive environment. Diehl, Terlutter, and Mueller (2008) suggested performance orientation is considered desirable in many countries. There is no known study investigating the relationships between performance orientation and women on boards of directors.

Political empowerment

Women's representation on boards of directors is a way to measure political empowerment (Gilardi, 2015). The Gender Equality Blueprint (2010) found that women in

boardrooms are one of five priority areas in gaining gender equality. If women can hold board positions, they can encourage and support other women (Duflo, 2012). Because of gender behavior bias, women deal with more political challenges and have fewer opportunities than men (Heilman, 2012). In 2010, the European Commission placed an emphasis on gender equality and gender diversity on its political agenda. If women are empowered, they will take on greater leadership roles in government, company strategies, and society. The World Economy Forum Political Empowerment Index measures the gap between men and women at the highest level of political decision-making based on the women in parliament ratio and women in ministerial positions ratio. All data is converted to female/ male ratios. For example, a country with 25% of women in ministerial positions is assigned a ratio of 25 women/ 75 men for a value of 0.33.

The World Bank (2015) measured the proportion of seats held by women in national parliaments as the number of seats held by women members in single or lower chambers of national parliaments. Data is converted into a percentage. Seats are usually won by individuals in general parliamentary elections and do not include the upper chamber of bicameral parliaments who may have appointed members. Seats held by women are won by nomination, appointment, rotation, and election. The World Bank calculated this indicator as the total number of seats occupied by women divided by the total number of seats occupied in parliament and multiplied by 100. There is no weighting or normalizing of the statistic. The index reflects the extent to which women have rights to make decisions in politics. The higher number of women in parliaments, the better the opportunities women have in politics, society, and women's empowerment such as women in leadership and executive decision-making roles (Halder, 2004). If a representative parliament allows gender inequality, women on board strategies initiatives will be affected (Halder, 2004). The increase in the percentage of seats held by women in parliament can empower women (Unicef, 2006). However, there are many barriers to women's political participation such as militarism and cultural bias (Sanauddin, Khan, & Ahmad, 2015). Gender discrimination might affect attitudes of candidates running for parliament positions (Gorecki & Jukolowicz, 2014). Women have less probability in political representation because of cultural barriers (Thames & Williams, 2013). Experience in many countries showed that female candidates have fewer opportunities in an election than male candidates unless women in those countries are exceptionally well organized politically (Meier, Lombardo, Bustelo, & Maloutas, 2016). Terjesen and Singh (2008) suggested political empowerment values (which were measured by the World

Economic Forum political empowerment index and the proportion of women in political empowerment) will impact positively on women on board strategy initiatives.

Paid maternity leave and paid paternity leave

Paid maternity leave is a period when a woman is legally absent from work because of giving birth or taking care of her infant baby while getting paid (Hajizadeh, Heymann, Strumpf, Harper, & Nandi, 2015). Paid paternity leave is a period when a man is legally absent from work after his baby is born (Fisher, Valley, Toppinen-Tanner, & Maltingly, 2016). Maternity leave is for biological mothers only whereas paternity leave is for biological fathers only. Paid maternity leave and paid paternity leave have become employee benefits in several countries all over the world. Paid maternity leave and paid paternity leave are considered as gender welfare policy to support women in the workforce (Bambra, 2004). They also reflect political power and institutional policy legacies of gender equality (Koven & Michel, 2013). Each country has its own welfare for paid leave to assist balance of work and family life. Terjesen, Aguilera, and Lorenz (2015) suggested maternity leave and paternity leave promote greater gender quality. Countries which have better paid leave benefits are likely to score better on the gender equality index, therefore there are more opportunities for women to serve on boards of directors (Terjesen, Aguilera, & Lorenz, 2015). Allen, Lapierre, Spector, Poelmans, O'Driscoll, Sanchez, & Geurts (2014) found that paid maternity leave and paid paternity leave were highly correlated ($r = .91$). A University of Cambridge Judge Business School (2015) study found that if parents receive more paid time off after giving birth, there is an increase in women in the boardroom.

Years since universal suffrage

Universal suffrage, also known as common suffrage, is when all adult citizens can vote in their country and influence the interests served by elected politicians (Aidt & Mooney, 2014). In such cases, the right to vote is not restricted by race, sex, wealth, social status, belief, etc. In the past, only elites such as owners of property, adult male residents, etc. have had the right to vote (Aidt & Mooney, 2014). Although most women all over the world have the right to vote today, there is still a big disparity between the number of women and men who serve on boards of directors. When women have the right to vote, they can promote more women to serve on boards. Warner-Soderholm et al. (2016) found that the length of time since implementation of universal suffrage in a society positively impacts women on boards.

Summary

Based on the literature review we believed the model will be as shown in Figure 2. This model will be tested in the following section (data analysis); we will explore the relationships across various cultural factors (power distance, uncertainty avoidance, humane orientation, assertiveness, in-group collectivism, institutional collectivism, future orientation, gender egalitarianism, performance orientation) and societal level indexes and other measure (gender gap index, political empowerment, universal suffrage, paid paternity leave, paid maternity leave) and also test how they affect women on boards.

Figure 2. Proposed model



Methodology

There are two major categories of research designs: exploratory or conclusive (Hair, Babin, Money, & Samouel, 2003; Malhotra, 2007). In exploratory research, the researchers need to provide insight into a problem (Bertsch, 2009), the primary research question is ambiguous, and the researchers are willing to explore new information (Zikmund & Babin, 2007). To summarize our approach in support of our methods, this article is exploratory in nature. As stated earlier, we set out to explore the cultural factors that act as antecedents to women serving on boards of directors all over the world, we will statistically examine relationships between cultural factors, political empowerment, institutional factors, gender equality scores, paid maternity leave, paid paternity leave, and universal suffrage.

Because our study seeks to explore the relationships between cultural factors and women on board of directors around the world, we use a sample of 56 countries for which secondary data is available for all variables we intent to test. Fifty-six countries is also representative of the five categories of the World Economic Forum's economic (WEF) maturity of the world. The WEF's five categories are not limited to geography, culture, political, economy, etc. Table 1 lists the countries in the study and our appendices list the aggregate scores for all our variables. The data were collected in 2015 by Catalyst, the World

Economy Forum, and the World Bank. The number of countries in each test is different due to the available data.

Table 1. Sample countries

Albania	England	Kazakhstan	Qatar
Argentina	Finland	Korea	Russia
Australia	France	Kuwait	Singapore
Austria	Georgia	Malaysia	Slovenia
Bolivia	Germany	Mexico	South Africa
Brazil	Greece	Morocco	Spain
Canada	Guatemala	Namibia	Sweden
China	Hungary	Netherlands	Switzerland
Colombia	India	New Zealand	Thailand
Costa Rica	Indonesia	Nigeria	Turkey
Denmark	Ireland	Norway	United States
Ecuador	Israel	Philippines	Venezuela
Egypt	Italy	Poland	Zambia
El Salvador	Japan	Portugal	Zimbabwe

Measures

Our dependent variable to measure the success of women on board strategy implementation is the WOB-Catalyst data, which lists the board seats held by women by country in the world. Higher percentages of WOB indicate the success of implementation strategy while lower percentages of WOB indicate the countries with limited success of WOB strategies. For example, Norway claims 40.5% of board seats are held by women whereas Saudi Arabia only has 0.1%.

Variables

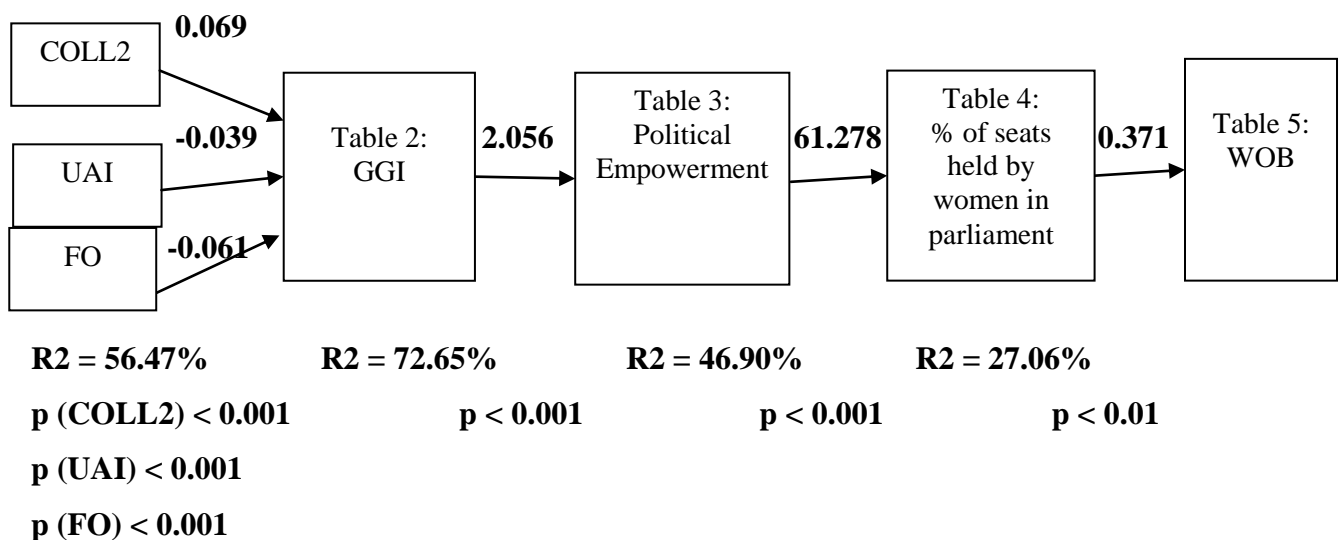
We used the GLOBE (House et al., 2004, Warner-Soderholm, 2010) values scores to measure the impact of cultural factors on gender gap index (GGI). For this portion of our model, the dependent variable is gender gap index (GGI) and the independent variables include uncertainty avoidance (UAI), future orientation (FO), and in-group collectivism (COLL2). Gender gap index (GGI) is an index designed to measure gender equality. GGI is collected from World Economic Forum. The second stage of our model tested the World Economic Forum databases (2014) of aggregate scores for gender gap index (GGI) and political empowerment are used. GGI is an independent variable and political empowerment is the dependent variable. Political empowerment score indicates the proportion of women participation in politics. Thirdly, we use the data of political empowerment from the World

Economic Forum (2014) and the proportion of seats held by women in national parliaments from The World Bank (2016). Political empowerment is an independent variable and the proportion of seats held by women in national parliaments is a dependent variable. Finally, we found the correlation between the proportion of seats held by women in national parliament and future orientation and the share of women on boards (WOB).

We employed regression analyses to explore relationships between the dependent variable and the independent variables (Montgomery, Peck, & Vining, 2015). As a result of our analysis, we found more than half of the confidence intervals of independent variables' slope coefficient straddled zero (Montgomery, Peck, & Vining, 2015). We employed step-wise regression techniques to eliminate independent variables that had poor explanatory power.

Data Analysis

Regression analyses between macro-level societal variables, political and institution women on boards factors that many variables are needed in order to explain and predict the shares of women on boards:



As we can see in the model in Figure 2, the proportion of seats held by women in parliament is a factor which explains a significant level of the variance of women on boards. As the percentage of seats held by women in parliament has a high predictive value in our model, this might suggest that those countries with many women in parliament also have many women on boards. However, the R-square value of 27.06% is low (Bates, Maechler, Bolker, & Walker, 2014), it means it may be due to other variables which can impact women on boards other than the proportion of women in parliament. Our regression analysis model

also indicated that cultural factors are important to predict and understand shares of women on boards of directors, mediated through female political empowerment according to the Global Gender Gap report from 2014, score from 0 to 1 (equality), especially the variable of political empowerment.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
UAI	-0.038754063	0.010857613	-3.569298662	0.00078
FO	-0.061459674	0.017388977	-3.534404337	0.000868
COLL2	0.068560091	0.017683505	3.877064574	0.000298

Dependent variable: GGI

Table 2. (R-squared = 56.47%) with a sample of 56 countries

As shown in Table 2, the cultural factors that we have found to be significant are GLOBE values scores for uncertainty avoidance, future orientation, and in-group collectivism. Six other cultural variables including PDI, HO, ASS, COLL1, GEN, PO did not survive the analysis because their p-value > 0.05. P-value (UAI) < 0.001, P-value (FO) < 0.001, P-value (COLL2) < 0.001, R-square = 56.47%, hence as proposed, gender equality is a dependent construct of uncertainty avoidance, future orientation and in-group collectivism. Low levels of uncertainty avoidance, future orientation and a high level of in-group collectivism will positively impact gender gap index (GGI). For every incremental increase in in-group collectivism score, we expect 0.069 of additional gender gap index. For every incremental increase in uncertainty avoidance, we predict 0.039 of lost gender gap index. For every incremental increase in future orientation score, we predict a 0.061 loss of gender gap index.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
GGI	2.05576	0.199449	10.30717	8.01E-13

Dependent variable: Political empowerment

Table 3. (R-squared = 72.65%) with a sample of 42 countries

Table 3 illustrates the relationship between gender gap index and political empowerment in women which was found to be significant at (p < 0.001, R-square = 72.65%), thus political empowerment in women is dependent on the gender gap index and 72.65 % of the variance in political empowerment in women can be explained by the changes in gender gap index. High gender equality is a predictor of higher political empowerment in women. For every incremental increase in gender equality index, we expect 2.056 of additional political empowerment in women index (the index shows women's influence over and exercise of political authority).

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Political Empowerment	61.27756143	9.130914705	6.710999217	1.55744E-08

Dependent variable: Seats-parliament

Table 4. (R-squared = 46.90%) with a sample of 53 countries

As we see in Table 4, based on the number of seats held by women in parliament as a dependent variable statically indicated significant relationship with political empowerment in women ($p < 0.001$, R-square = 46.90%). Thus, 46.90 % of the variance in number of seats held by women in parliament can be explained by the changes in political empowerment in women. An R-square of 46.90% is slightly low (Bates, Maechler, Bolker, & Walker, 2014), therefore, the relationship may be due to other variables other than women's political empowerment. Nevertheless, high women political empowerment is a predictor of higher number of seats held by women in parliament. For every incremental increase in political empowerment in women, we expect 61 additional seats held by women in parliament.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Parliaments	0.371432	0.109521	3.39142	0.001914

Dependent variable: Women on boards

Table 5. (R-squared = 27.06%) with a sample of 33 countries

As shown as Table 5, the proportion of seats held by women in parliament predicts shares of women on boards of directors. The higher the number of seats held by women in parliament, the higher the share of women on boards. For every incremental increase in the number of seats held by women in parliament, we expect 0.37% of additional shares of women on boards. However, the R-square = 27.06%, it is very low. A R-square of 0.2706 says that only 27.06% of the variation in the dependent variable is explained by the independent variable. A low R-square of 27.07% would indicate some other independent variables which impact shares of women on boards other than the proportion of seats held by women in parliament.

Other findings

We found that there is no significance between the length of time since universal suffrage and the shares of women on boards. There is also no significance between paid paternity leave and paid maternity leave and shares of women on boards.

Discussion and Conclusion

The aim of our study was to explore the multiple macro factors which might promote shares of women on boards of directors all over the world. After testing 56 countries which represent much the world for which full data was available, we found that the gender equality index is predicted through uncertainty avoidance, future orientation, and in-group collectivism. Women on boards is predicted through the proportion of seats held by women in parliament. Our findings offer support for a strong relationship between a small gender gap in the economy (gender equality index) and proportions of women on boards, mediated through political empowerment.

We were able to replicate only one part of Warner-Soderholm et al.'s model (2016). Warner-Soderholm et al. (2016) suggested gender equality positively impacts shares of women on boards, mediated through women's political empowerment and the proportion of seats held by women in parliament. We also found that countries which have a high level of gender equality are more likely to achieve higher shares of women on boards. Warner-Soderholm et al. (2016) found significant relationships between power distance, assertiveness, uncertainty avoidance, future orientation and higher levels of shares of women on boards, mediated through gender equality, women's political empowerment and the percentage of seats in parliaments held by women. Warner-Soderholm et al. (2016) suggested low levels of power distance, uncertainty avoidance, future orientation and high levels of assertiveness positively impact successful implementation of women on boards strategies. We also found that a low level of uncertainty avoidance and future orientation positively impact shares of women on boards. Our findings also agreed with Warner-Soderholm et al. (2016) as we also found that political empowerment and percentage of seats in parliament positively impact shares of women on boards. Although Warner-Soderholm et al. (2016) suggested that paid paternity leave and years since universal suffrage affect women on boards in European countries, we found no statistically significant support for this when testing data used 56 countries from all over the world.

Carrasco, Lafarga, and Ruiz-Barbadillo (2011) indicated culture factors can explain the difference in the number of women on boards across country. Carrasco et al. (2015) suggested cultural factors affect the proportion of women representation on boards of directors. In their study, they identify three cultural dimensions that explain the level of shares of women on boards: power distance, uncertainty avoidance, and masculinity, but Carrasco et al. (2015) used Hofstede's framework. We also found cultural factors that impact shares of women on boards including uncertainty avoidance, but we did not find power

distance affected women on boards. Bullough, Kroeck, Newburry, Kundu, and Lowe (2012) found the same as we did that in-group collectivism positively impacts women on boards of directors.

Of all the relationships we found, the relationship between gender equality and women political empowerment is the strongest as the relative strength of this relationship has an R-square = 72.65%. It means 72.65 % of the variance in political empowerment in women can be explained by the changes in gender equality (Vogt & Johnson, 2011).

Our findings are different to the results of many studies. The reason may come from a larger sample (56 countries representing all over the world) and the more current data. In addition, our study is a more robust analysis with a larger dataset. We suggested the further study should investigate structured equation modeling - following the advise of Bertsch and Pham (2012). SEM can simultaneously test all the relationships in a model which makes it a more appropriate tool for complex models.

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Appendices

Appendix A: Cultural factors

Country	FO	GEN	UAI	HO	COLL1	ASS	PO	COLL2	GGI
Albania	5.17	4.04	5.17	5.16	4.3	4.39	5.47	4.98	0.687
Argentina	5.73	4.89	4.62	5.50	5.29	3.18	6.28	6.07	0.730
Australia	5.21	5.02	3.99	5.60	4.47	3.83	5.99	5.82	0.740
Austria	5.15	4.83	3.65	5.68	4.78	2.85	6.12	5.32	0.727
Bolivia	5.56	4.65	4.64	5.11	5.03	3.68	5.98	5.91	0.710
Brazil	5.60	4.91	5.00	5.52	5.57	3.06	5.98	5.17	0.690
Canada	5.34	5.04	3.73	5.58	4.2	4.15	6.13	5.94	0.750
China	4.70	3.73	5.34	5.34	4.52	5.52	5.72	5.12	0.680
Colombia	5.52	4.85	4.92	5.43	5.27	3.45	6.15	5.99	0.710
Costa Rica	5.10	4.59	4.58	5.08	5.14	4.04	5.78	5.94	0.720
Denmark	4.49	5.20	4.01	5.59	4.41	3.59	5.82	5.71	0.803
Ecuador	5.62	4.42	4.95	5.13	5.19	3.57	5.95	5.81	0.750
Egypt	5.60	3.34	5.24	5.13	4.72	3.22	5.71	5.39	0.610
El Salvador	5.89	4.66	5.27	5.38	5.6	3.67	6.37	6.28	0.690
England	5.15	5.20	4.17	5.52	4.39	3.76	6.03	5.66	0.738
Finland	5.24	4.47	4.04	5.8	4.34	3.91	6.23	5.6	0.845
France	5.35	4.71	4.65	5.91	5.27	3.57	6.1	5.88	0.760
Georgia	5.45	3.83	5.23	5.48	3.79	4.29	5.63	5.58	0.685
Germany	5.36	4.97	4.02	5.56	4.86	3.24	6.24	5.38	0.780
Greece	5.17	4.84	5.16	5.28	5.41	3.05	5.79	5.47	0.678
Guatemala	5.78	4.49	4.85	5.24	5.16	3.65	5.96	5.95	0.680
Hungary	5.74	4.65	4.74	5.48	4.57	3.42	5.97	5.58	0.676
India	5.43	4.40	4.58	5.20	4.59	4.65	5.87	5.22	0.650
Indonesia	5.48	3.71	5.04	5.06	4.96	4.5	5.54	5.46	0.670
Ireland	5.18	5.07	3.94	5.45	4.55	4	5.99	5.72	0.785
Israel	5.17	4.66	4.34	5.51	4.25	3.74	5.71	5.69	0.700
Italy	6.01	4.88	4.52	5.57	5.2	3.87	6.11	5.76	0.730
Japan	5.42	4.41	4.40	5.53	4.01	5.84	5.37	5.44	0.660
Kazakhstan	5.22	4.85	4.52	5.66	4.16	3.88	5.57	5.62	0.720
Korea	5.83	4.23	4.74	5.61	3.84	3.69	5.41	5.50	0.640
Kuwait	5.62	3.50	4.65	5.06	5.04	3.61	5.89	5.32	0.650
Malaysia	5.84	3.72	4.81	5.43	4.78	4.73	5.96	5.77	0.650
Mexico	5.74	4.57	5.18	5.10	4.77	3.67	6	5.78	0.690
Morocco	6.33	4.07	5.77	5.73	5.34	3.68	6.12	6.03	0.600
Namibia	6.30	4.20	5.19	5.47	4.26	3.76	6.52	6.13	0.720

Netherlands	5.24	5.10	3.34	5.41	4.76	3.13	5.71	5.39	0.773
New Zealand	5.90	4.32	4.17	4.85	4.31	3.52	6.24	6.54	0.780
Nigeria	5.80	4.16	5.45	5.71	4.86	3.14	5.99	5.31	0.640
Norway	4.7	4.95	3.84	5.51	4.3	3.37	5.41	5.85	0.850
Philippines	5.66	4.36	4.92	5.19	4.55	4.93	6	5.86	0.780
Poland	5.17	4.53	4.75	5.32	4.24	3.95	6.06	5.69	0.705
Portugal	5.50	5.12	4.5	5.4	5.4	3.61	6.41	5.97	0.724
Qatar	5.92	3.49	4.82	5.31	5.1	3.72	5.94	5.55	0.640
Russia	5.60	4.34	5.26	5.62	4.01	2.9	5.68	5.9	0.693
Singapore	5.46	4.43	4.08	5.66	4.42	4.28	5.7	5.46	0.710
Slovenia	5.43	4.78	5.03	5.31	4.36	4.61	6.41	5.71	0.744
South Africa	5.25	4.43	4.92	5.23	4.46	3.97	5.09	5.14	0.750
Spain	5.66	4.82	4.8	5.63	5.25	4.01	5.85	5.82	0.740
Sweden	4.96	5.19	3.45	5.72	3.91	3.49	6.01	6.25	0.817
Switzerland	4.93	5.01	3.2	5.63	4.87	3.31	6	5.16	0.780
Thailand	6.26	4.12	5.71	5.05	5.08	3.43	5.76	5.73	0.700
Turkey	5.71	4.46	4.61	5.4	5.18	2.68	5.34	5.63	0.618
United States	5.34	5.03	3.99	5.51	4.2	4.36	6.14	5.79	0.750
Venezuela	5.61	4.70	5.19	5.24	5.28	3.34	6.11	5.92	0.690
Zambia	5.76	4.27	4.45	5.37	4.55	4.24	6.08	5.64	0.640
Zimbabwe	6.01	4.40	4.68	5.20	4.84	4.6	6.33	5.74	0.700

Appendix B. Institution factors

Country	Political empowerment	GEN	Paid Maternity leave	Paid paternity leave	Universal suffrage	Parliaments	WOB
Australia	0.189	5.02	42	14	1894	27	12.3
Austria	0.257	4.83	112	0	1918	31	11.3
Bahrain	0.214						1.7
Belgium	0.395		105	14		39	9.2
Brazil	0.148	4.91				10	7.7
Canada	0.223	5.04	119	0	1920	26	12.1
Chile	0.259		126	7		16	2.8
China	0.151	3.73				24	8.1
Denmark	0.431	5.2	126	14	1915	37	17.2
Finland	0.616	4.47	123	21	1906	42	26.8
France	0.352	4.71	112	14	1944	26	18.3
Germany	0.400	4.97	98	0	1919	37	14.1
Greece	0.096	4.84	301	3	1952	20	7
Indonesia	0.126	3.71				17	6
India	0.385	4.4					4.7
Ireland	0.414	5.07	182	0	1923	16	8.7
Israel	0.196	4.66	98	0	1948	27	16.6
Italy	0.248	4.88	152	1	1945	31	8.2
Japan	0.058	4.41	98	0	1947	10	1.1
Kuwait	0.027	3.5				2	1.7
Malaysia	0.052	3.72				10	7.8
Mexico	0.238	4.57	84	7	1947	42	5.8
Netherlands	0.412	5.1	112	3	1919	37	17
New Zealand	0.287	4.32	112	0	1893	31	7.5
Norway	0.544	4.95	91	0	1913	40	40.5
Oman	0.021					1	1.8
Poland	0.161	4.53	182	14	1918	27	13.6
Portugal	0.212	5.12	42	28	1931	35	3.7
Qatar	0.013	3.49					0.3
Russia	0.066	4.34	140	0	1917	14	4.8
Saudi Arabia	0.077					20	0.1
Singapore	0.120	4.43				23	7.9
South Africa	0.397	4.43				42	17.1
South Korea	0.112	4.23	90	4			1.9
Spain	0.314	4.82	112	15	1977	40	9.5
Sweden	0.500	5.19	60	10	1919	33	27

Switzerland	0.374	5.01	98	0	1990	32	10
Taiwan							4.4
Thailand	0.070	4.12				6	9.7
Turkey	0.088	4.46	112	0	1934	15	12.7
United Arab Emirates	0.111					23	1.2
United Kingdom	0.270	5.2				29	20.7
United States	0.185	5.03	0	0	1920	19	16.9