Corporate governance and corporate social responsibility

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DOI:
10.33612/diss.135926510

Chapter 4. Board Gender Diversity Policies and Women on Boards Around the World: An Institution-Based View [29]

4.1 Introduction

Placed at the top of the corporate governance agenda, board gender diversity has captured worldwide attention of academics, the media, and policymakers. While to date the evidence supporting the "business case" of having more women on a firm's board is ambivalent (Adams, 2016; Hoobler, Masterson, Nkomo, & Michel, 2018; Post & Byron, 2015), arguments related to equal opportunities and social justice to break the "glass ceiling" have put considerable pressure on firms to make progress in appointing women to their boards (Gregorič, Oxelheim, Randøy, & Thomsen, 2017; Knippen, Shen, & Zhu, 2019). Lobbying groups like Catalyst and the Professional Women's Network add to this pressure through their campaigns that raise public awareness of women underrepresentation on boards (Dobbin, Kim, & Kalev, 2011; Hill, Upadhyay, & Beekun, 2015; Seierstad, Gabaldon, & Mensi-Klarbach, 2017). Despite these pressures, progress has been slow and female representation on corporate boards around the world remains low.

Setting up a board gender diversity policy (hereafter BGDP) has been advocated by scholars and policymakers as a pathway to achieve a more gender-balanced board (Joshi et al., 2015; Klettner et al., 2016; Kossek, Su, & Wu, 2017). BGDP refers to a firm-level corporate policy that aims to increase gender diversity in the boardroom. Data from Thomson Reuters suggest worldwide proliferation of BGDPs. By the end of 2013, about 29% of the largest firms globally had a BGDP, although, as suggested by Figure 4.1, there is considerable

[29] This paper is a joint work of Shili Chen, Shibashish Mukherjee, Niels Hermes, and Reggy Hooghiemstra. An earlier version of the paper was presented at the 18th Annual Meeting of the European Academy of Management, the 78th Annual Meeting of the Academy of Management, and the University of Agder, Norway. An earlier version of this paper received the "Best Transnational Research Paper Award" from the Gender and Diversity Division of the Academy of Management in 2018.

variation across countries. Our knowledge about the effectiveness of these firm-level policies in promoting a more gender-balanced board is surprisingly limited, however. What seems particularly puzzling is that, as shown in Figure 4.1 and 4.2, the number of firms in a country having a BGDP does not necessarily correspond with the country's degree of board gender diversity. This suggests cross-country variation with respect to the effectiveness of BGDPs in promoting the representation of women on boards. Accordingly, we focus our attention on two research questions. First, what is the relationship between BGDPs and the representation of women on corporate boards? Second, what country-level institutions condition the effectiveness in promoting women representation on boards?

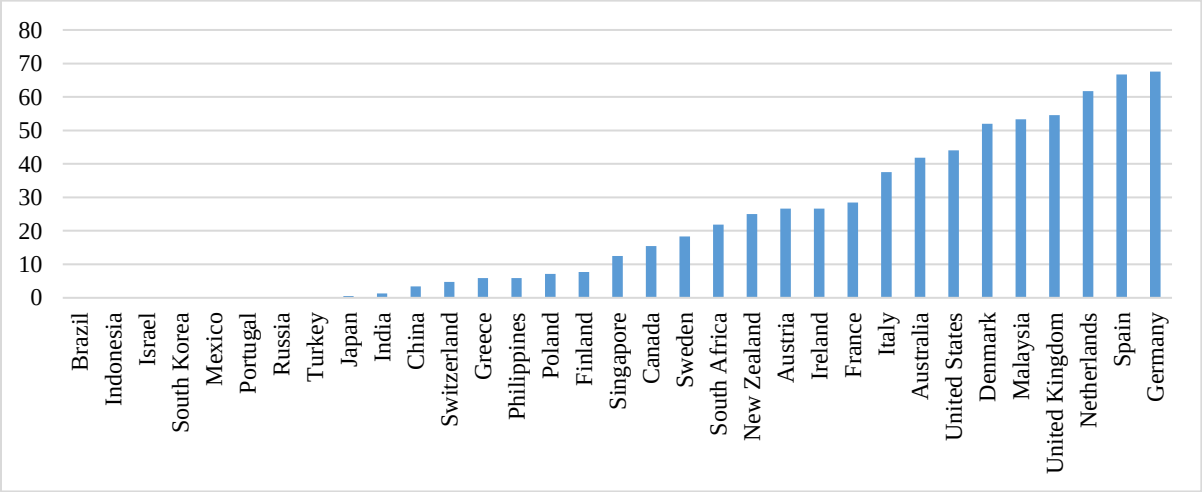

Figure 4. 1 Percentage of firms with board gender diversity policies (BGDPs) in 2013 in our sample countries

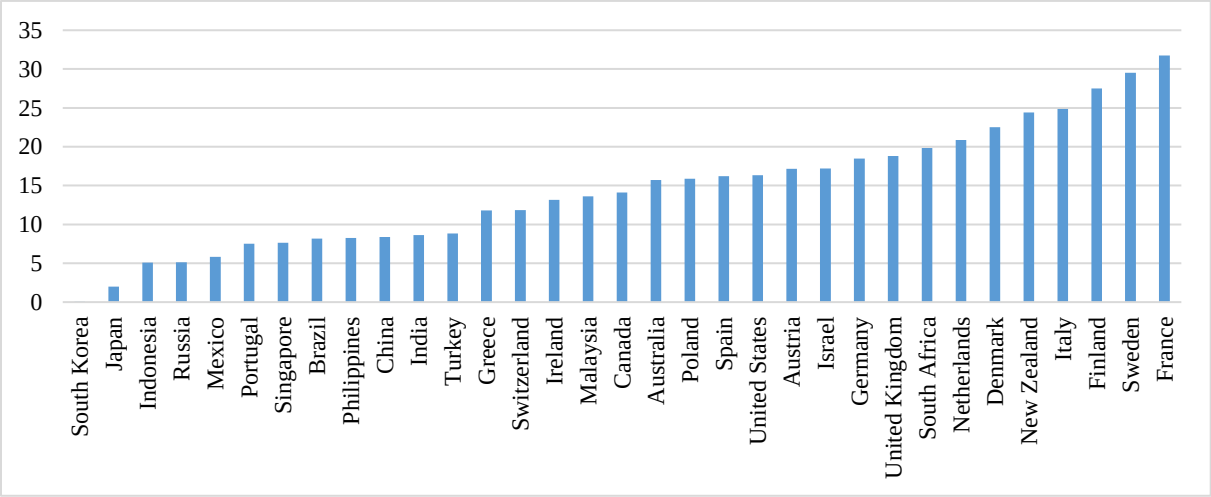

Figure 4. 2 Percentage of women on boards (WOB) in 2014 in our sample countries

To address these questions, we combine the literature on diversity programs (Dobbin, Schrage, & Kalev, 2015; Leslie, 2019; Nishii, Khattab, Shemla, & Paluch, 2018) and on the institution-based view (Peng, Sun, Pinkham, & Chen, 2009; Peng, Wang, & Jiang, 2008; van Essen, Heugens, Otten, & van Oosterhout, 2012). We start by arguing that a BGDP is positively associated with women on boards because not only are firms with a BGDP more likely to select directors from a gender diversity point of view, but also these firms may be more attractive to potential female director candidates. Subsequently, we draw on the ideas advanced by the institution-based view to argue that the influence of BGDP on the representation of women on boards is conditioned by legislative, cultural, and economic institutions prevailing in a country (Lel, Miller, & Reisel, 2019; Miletkov, Poulsen, & Wintoki, 2017; van Essen et al., 2012).

We focus on three institutions that either enable or constrain (Duran, van Essen, Heugens, Kostova, & Peng, 2019; Mathias, Lux, Crook, Autry, & Zaretzki, 2015) the effectiveness of BGDPs in promoting representation of women on boards. First, we focus on regulatory prescriptions regarding some target percentage of female directors (i.e., quota or gender-specific provisions in corporate governance codes). On the one hand, these regulatory prescriptions may enable BGDPs' effectiveness by providing support from a higher authority (e.g., government, stock exchange, or some other regulator) for the goals expressed in a BGDP. On the other hand, they may constrain it as the presence of nation-wide prescriptions in terms of a desired or targeted percentage of women on boards makes the added value of a BGDP in creating a more gender-balanced board less obvious.

Second, we gauge the effects of the prevailing cultural norms about the roles men and women have in society. In countries with a strong gender role bias, women are expected to be concerned with taking care of the family rather than with work and achieving success. As a result, "the legitimacy of female directors may be more questionable" (Post & Byron 2015:

1550) in these countries. Accordingly, we expect that in these countries the effectiveness of BGDPs in promoting women on boards is constrained.

Third, we focus on the role of the market for female directors as an institution. Both academics and the media have advanced the view that the limited supply of high-quality female candidates may restrict the ability of firms to make progress in creating more gender-balanced boards (Adams & Kirchmaier, 2015; Terjesen et al., 2015). We argue that the tighter the market for female directors is in a country, the more constraining it will be for the effectiveness of BGDPs in promoting the representation of women on boards.

Our analysis, which is based on a sample of 23,476 firm-year observations from 33 countries over the period 2003–2014, provides support for the expectations outlined above. We find a positive and statistically significant association between BGDPs and women on boards. We also find support for the view that institutions matter. Specifically, we find that provisions in corporate governance codes work as substitutes for BGDPs. At the same time, we do not find evidence that quota complement nor substitute for BGDPs. Our analysis further suggests that the other two institutions act as constraining factors in the sense that a strong gender role bias or tight market for female directors attenuates the positive effects of BGDPs on the representation of women on boards.

Our study makes three important contributions. First, we extend current understanding of the effectiveness of firm-level BGDPs (and diversity programs in general) around the world. We show that the effectiveness of BGDPs is conditioned by legislative, cultural, and economic institutions prevailing in a country. This is potentially important as gender composition at the top of the firm is highly visible to the firm's stakeholders. A lack of progress in creating a gender-balanced board may induce adverse perceptions about the firm's priorities to stimulate women's career equality (Kossek et al., 2017; Nishii, 2013). It may also negatively affect the firm's reputation and competitive advantages (Hillman et al., 2007;

Knippen et al., 2019; Leslie, Manchester, & Dahm, 2017; Nishii et al., 2018; Post & Byron, 2015). As such, our study has clear policy implications, because the findings suggest that there is no one-size-fits-all approach to creating a more gender-balanced board.

Second, this study adds to the emerging, yet until now still under-researched literature that focuses on the importance of national context to explain women representation on corporate boards (Chizema, Kamuriwo, & Shinozawa, 2015; Grosvold & Brammer, 2011; Terjesen & Singh, 2008). Almost all previous studies have focused on single country-level determinants such as female representation in official positions (e.g., in the parliament, in legislature, in the executive office), the gender pay gap (Terjesen & Singh, 2008), and the role of religiosity (Chizema et al., 2015) in addressing cross-country variation in board gender diversity. In this study, we focus on three more fundamental institutions—regulatory prescriptions, gender role bias and supply of female directors—that can either enable or constrain a firm-level policy in advancing women to the boardroom.

Finally, our study contributes to the international business literature in general and the literature on comparative corporate governance in particular (Aguilera & Jackson, 2003; Lel et al., 2019; van Essen et al., 2012). Most of these studies focus on how country-level institutions directly affect corporate governance outcomes (e.g., board structure and executive compensation), while "the interplay between country- and firm-level governance tends to be disregarded" (Schiehll & Martins, 2016: 181). In this study, we provide evidence of substitutive and complementary effects between a firm-level mechanism (BGDP) and country-level legislative, cultural, and economic institutions in bringing about more gender-balanced boards. By considering cultural as well as economic institutions, we complement the few studies that focused on the interplay between countries' legal systems and firm-level governance mechanisms in explaining firm outcomes, like IPO valuation (Bell, Filatotchev, &

Aguilera, 2014) and shareholder voting (Sauerwald, van Oosterhout, van Essen, & Peng, 2018).

4.2 Theory and Hypotheses

4.2.1 BGDPs and Women on Boards

Director recruitment usually involves a process biased by social contacts and based on a choice from within the bounds of existing social networks (Withers, Hillman, & Cannella, 2012). This may explain why it is difficult for women to enter the boardroom (Kirsch, 2018; Leslie et al., 2017; Terjesen et al., 2015). To level the playing field, an increasing number of firms around the world have formulated and implemented firm-level BGDPs. A BGDP is an important element of a firm's diversity program, particularly aimed at increasing women representation on the board (Dobbin & Kalev, 2016; Leslie et al., 2017; Nishii et al., 2018). In a BGDP, the firm addresses the strategic importance of board gender diversity, communicates what are the targets, how to accomplish those targets, and who is responsible for implementing the policy. As such, a BGDP is a targeted recruitment policy (Dobbin & Kalev, 2016; Nishii et al., 2018), and its intended outcome is to promote that the firm's board becomes more gender-balanced and when balance is achieved, remains so.

We argue that during the recruitment and appointment process, a BGDP is not only important for targeting and selecting female candidates, it also helps persuading female candidates to join the board. First, from the firms' perspective we expect that firms with a BGDP are more likely to actively seek for, and ultimately appoint, female directors. The presence of a BGDP signals that board gender diversity is a strategic priority for the firm. Its presence likely focuses directors' attention on gender diversity issues when evaluating board composition and candidates for a director position (Leslie et al., 2017). Moreover, since a BGDP is publicly released, the ensuing accountability vis-à-vis the firm's stakeholders (e.g.,

employees, specific interest groups, the media, and investors) likely incentivizes directors of firms with a BGDP to seriously engage with the policy and actively seek for female directors (Nishii et al., 2018).

Second, from the perspective of potential female candidates we argue that these candidates are more likely to be attracted to firms with a BGDP (Kossek et al., 2017). A BGDP signals a firm's commitment to leveraging women's talents and to supporting their interests and needs in a visible way (Kossek et al., 2017). In this sense, potential female directors may view firms with a BGDP as more comfortable to work for and more instrumental in obtaining their valued outcomes (Nishii, 2013; Terjesen et al., 2009). Hence, they may be more willing to accept appointments of, and remain in, such firms. Accordingly, we expect firms with a BGDP to have more women on the board than those without and hypothesize:

> ***Hypothesis 1:*** *Firms with a BGDP will have a higher proportion of women on their boards.*

4.2.2 The Moderating Effect of Country-Level Institutions

An important strand in the governance literature shows that country-level institutions affect firm-level policies and may amplify or attenuate the impact of these policies on firm-level outcomes (Bell et al., 2014; Sauerwald et al., 2018). The starting point of these studies is the institution-based view (Peng et al., 2009, 2008), which draws on North's (1990) institutional theory. The institution-based view highlights the importance of context when examining firm strategies, policies, and their outcomes (Aguilera & Grøgaard, 2019). While the focus within this framework is predominantly on the role of formal institutions (i.e., codified laws, rules, and regulations) and informal institutions (i.e., unwritten habits, conventions, and norms), it does not rule out the effects of market conditions (or economic institutions) as they also likely enable or constrain firms' strategies, policies, and outcomes (Duran et al., 2019; Mathias et

al., 2015). Accordingly, in our analysis we focus on a diverse set of institutional conditions that either enable or constrain the effectiveness of BGDPs in promoting a more gender-balanced board, that is, we investigate the role of regulatory prescriptions regarding women on boards, cultural beliefs regarding gender roles, and the market for female directors.

Regulatory prescriptions regarding women on the board. Many regulators around the world have followed the Norwegian initiative and introduced female board quotas and/or amended their corporate governance codes to incentivize firms to create a more gender-balanced board (Klettner et al., 2016; Kogut et al., 2014). Despite the differences in approach, both quotas and codes are part of a country's formal institutions, which broadly speaking refer to codified rules, laws, and regulations aimed at coordinating activities of firms embedded in a country. By providing written guidelines about desirable or undesirable behavior, these regulatory prescriptions create powerful pressures for firms to behave in a certain way (Peng et al., 2008; van Essen et al., 2012). Firms are likely to comply with them because they want to avoid monetary and/or regulatory penalties or more soft sanctions such as reputational damage that non-compliance may bring (Aguilera & Cuervo-Cazurra, 2004).

A key question obviously is whether regulatory prescriptions regarding women on boards amplify or attenuate the effectiveness of BGDPs in promoting the representation of women on boards. *A priori*, there is no clear-cut answer as these mechanisms can either complement or substitute each other in affecting the representation of women on boards. Focusing on the representation of women on boards, the joint presence of BGDPs and regulatory prescriptions regarding women on boards may be conducive to promoting more gender-balanced boards. Country-level regulatory prescriptions create powerful pressures by explicitly or implicitly sanctioning non-compliance (Gregorič et al., 2017; Seierstad et al., 2017), and since these prescriptions originate from a higher authority (e.g., government, stock exchange, or some other regulator), they accentuate the importance of the goals formulated in

a firm's BGDP. Consequently, their combination results in a mutual enhancement effect (Oh et al., 2018), implying that they amplify each other's impact on promoting the representation of women on boards.

Alternatively, it is possible that BGDPs and regulatory prescriptions regarding women on boards substitute for each other. That is, in the presence of country-level prescriptions regarding women on boards, there may be diminishing returns of having a BGDP at the firm-level in promoting a gender-balanced board. The intuition informing this alternative view is that as country-level regulatory prescriptions have such profound impact on firm behavior, having a BGDP at the firm-level may not really add any incremental value in increasing female representation on the firm's board (Dobbin et al., 2011; Kalev, Dobbin, & Kelly, 2006). As *a priori* it is unclear whether BGDPs and regulatory prescriptions act as substitutes or complements, we formulate the following non-directional hypothesis:

> ***Hypothesis 2a:*** *The positive relationship between BGDP and women on boards is moderated by country-level regulatory prescriptions regarding women on boards.*

Gender role bias. A key premise of the institution-based view is that informal institutions, similar to formal institutions, promote or constrain behaviors of firms embedded in these countries (Peng et al., 2008, 2009). While formal institutions refer to codified rules, informal institutions refer to unwritten norms, shared beliefs, and cultural values that have evolved in a society over time. These informal institutions have profound impact on what represents (un)acceptable behaviors in a society (North, 1990).

In this study we focus on gender role bias, which is widely recognized as one of the most important cultural barriers to advancing women's careers (Hermans et al., 2017; Parboteeah, Hoegl, & Cullen, 2008) and creating gender-balanced boards (Kossek et al., 2017; Terjesen & Singh, 2008). Broadly defined, gender role bias refers to the "enduring beliefs about the characteristics, attributes, and behaviors of members of gender groups"

(Kossek et al., 2017: 234). These beliefs lead to expectations about how women and men should typically behave (Heilman, 2012). In countries with strong gender role bias such as China, India, and Turkey, powerful positions such as the board of directors are perceived as less suitable for women (Post & Byron, 2015). This is because, in these countries, women are expected to be concerned with taking care of the family rather than with work and achieving success (Adams & Kirchmaier, 2015; Brandl, Mayrhofer, & Reichel, 2008). Women in these countries are also expected to show communal traits such as being helpful and compassionate, instead of having agentic traits—traits that are more associated with leaders—such as being assertive, dominant, and competitive (Kossek et al., 2017). These prevailing beliefs about women's stereotypical qualities may unconsciously feed ideas that women are perceived as less suitable for leadership positions (Heilman, 2012; Hermans et al., 2017; Hill et al., 2015; Kossek et al., 2017). In contrast, in countries with weak gender role bias such as Canada, Sweden, and the United Kingdom, men and women share various responsibilities and traits, including being able to act as powerful decision-makers within the firm (Parboteeah et al., 2008).

We posit that the existence of strong gender role biases may constrain the effectiveness of BGDPs in two ways. First, research suggests that in countries with strong gender role bias, members of selection committees are more likely to resist appointments of female managers since they are more likely to (unconsciously) discriminate women as inappropriate or lacking adequate skills and/or personality traits to be a leader (Brandl et al., 2008; Knippen et al., 2019; Kossek et al., 2017). As leadership is an important quality boards look for (Withers et al., 2012) and given the innate character of cultural beliefs, it is likely that individuals involved in the selection of new board members will perceive female candidates as less (or not) suitable to serve as director. These biases are pervasive and individuals generally are not aware of being prone to such biases (Knippen et al., 2019), making it

unlikely that BGDPs will be effective in promoting gender-balanced boards. Second, while BGDPs are intended to stimulate women's advancement to the boardroom, they may also backfire by working against achieving the goals expressed in BGDPs as research shows that diversity programs unintentionally reinforce stereotyping of women (Heilman, 2012; Nishii et al., 2018). We argue that such a backfiring effect is more likely to take place in countries with strong gender role bias. Accordingly, we hypothesize:

> ***Hypothesis 2b:*** *The positive relationship between BGDP and women on boards is negatively moderated by the country-level degree of gender role bias.*

Market for female directors. A fundamental institution in promoting the representation of women on boards is the market for female directors. This refers to the pool of female candidates from which directors can be selected. This pool consists of all available female individuals with the required skills and network to be appointed as a director. Both practitioners and academics mention the limited supply of female directors as an important barrier to effectively promote board gender diversity (Adams & Kirchmaier, 2015; Ahern & Dittmar, 2012; Leslie et al., 2017). For instance, in a recent report published by Spencer Stuart, a lack of qualified female candidates is frequently mentioned (especially by men) as an explanation for why the number of women on boards remains stagnant.

We posit that the extent to which the supply of female directors within a country is limited will be a constraint weakening the positive effect of BGDPs on women on boards. We focus on within country supply of female directors since research suggests that the recruitment of directors is to a large extent network-based (Terjesen & Singh, 2008; Withers et al., 2012) and the market for female directors is mostly affected by the local (i.e. within country) supply of female directors (Adams & Kirchmaier, 2015; Knyazeva, Knyazeva, & Masulis, 2013; Miletkov et al., 2017). A limited supply of female directors makes it more difficult for firms to find appropriate female candidates to serve on their boards (Adams &

Kirchmaier, 2015; Ahern & Dittmar, 2012; Leslie et al., 2017). As a result, although BGDPs may prompt firms to actively seek for female directors, these policies are more likely to successfully enhance women representation on boards in countries with a larger supply of female directors. Similarly, the benefit of BGDPs in attracting potential female directors is more likely to take hold when the market for female directors is not too tight. Accordingly, we hypothesize:

> ***Hypothesis 2c:*** *The positive relationship between BGDP and women on boards is negatively moderated by the limited supply of female directors at the country-level.*

4.3 Sample, Data, and Methods

4.3.1 Sample and Data Collection

Our sampling starts with the widely used ASSET4 database. ASSET4 provides objective, auditable, and systematic information on firms' environmental, social, and governance (ESG) policies and practices for over 6,500 listed companies worldwide going back to fiscal year 2002. ASSET4 is our main source to obtain information on firms' BGDPs and governance for the period 2003–2014.[30]

Firm financial data are from Thomson Reuters' Worldscope database. Data on regulatory prescriptions regarding women on boards (i.e. quotas and corporate governance codes) are hand-collected and come from a variety of sources, including Catalyst, ECGI's index of codes, and several academic papers published on this topic (Adams, 2016; Seierstad et al., 2017; Terjesen et al., 2015). Data regarding the other country-level institutions are from the GLOBE project (House, Hanges, Javidan, Dorfman, & Gupta, 2004), BoardEx, and World Bank's World Development Indicators.

[30] We start the sample in 2003 to allow for a one-year lag of the independent variable BGDP. We end the sample in 2014 because ASSET4 only tracks a firm's BGDP until 2013. Since 2014, ASSET4 provides data on board diversity policy in general.

Combining data from these sources yields a total of 24,279 firm-year observations. We exclude firms with less than three firm-year observations, resulting in a final sample of 23,476 firm-year observations representing 3,383 unique firms across 33 countries. Table 4.1 shows the breakdown of the sample by country.

4.3.2 Dependent Variable

Our dependent variable is women on boards (WOB), which is the percentage of women on the firm's board of directors (*i*) in a certain year (*t*).

4.3.3 Independent Variables

The main predictor of WOB is BGDP, which is a dummy variable that takes a value of "1" if the firm has a policy regarding the gender diversity of its board, and "0" otherwise. Data on BGDP come from ASSET4 and are based on the item "Does the company have a policy regarding the gender diversity of its board?"

To proxy for regulatory prescriptions regarding women on boards, we include two variables, that is, one variable measuring whether a country has a board gender quota (reflecting hard law) and one variable measuring whether a country's corporate governance codes recommend board gender diversity (reflecting soft law). We include these two variables separately as prior research indicates that hard and soft law may incentivize firms differently (Adams, 2016; Haxhi & van Ees, 2010; Klettner et al., 2016; Terjesen et al., 2015). Quota is measured as a dummy that takes the value "1" if the country in which the firm is headquartered has passed a quota for board gender diversity and "0" otherwise. Similarly, CGC is a dummy that takes the value of "1" if the country in which the firm is headquartered has incorporated board gender diversity provisions into its corporate governance codes, and "0" otherwise. Appendix 4.1 outlines details on Quotas and CGC of our sample countries.

Drawing on prior literature (Hermans et al., 2017; Parboteeah et al., 2008), we focus on House et al.'s (2004) gender egalitarianism dimension to derive the country's degree of gender role bias (GRB*)*. The gender egalitarianism score indicates (on a 1 to 7 scale) to what extent individuals in a country believe that there should be more women in positions of authority and less occupational sex segregation, males and females should receive similar levels of educational attachment, and women should be afforded a greater decision-making role in community affairs. A higher value on gender egalitarianism implies a society in which men and women are perceived as more equal. Hence, we measure GRB as seven minus the gender egalitarianism score, such that higher values of GRB represent societies in which men and women are considered as less equal.

To operationalize the supply for female directors (SUPPLY), we rely on information from the BoardEx database, which records the biographical profile and employment history of corporate directors. Specifically, we determine the annual net inflow of female directors into the labor market for board of directors for each country by dividing the difference between the total number of new female director entry[31] and the total number of female director drop-out[32] by the total number of board seats available in a country (in a year). A higher number for the variable SUPPLY implies a less tight market for female directors.

4.3.4 Control Variables

We include several firm-level control variables that may be associated with WOB. First, because the current level of women on board (WOB_t) may depend on its past values (Terjesen et al., 2009), we control for women on the firm's board in the prior year (WOB_{t-1}). We also

[31] New female directors can only be female directors who have been appointed to the boards of listed firms for the very first time. This also requires that these directors have never held a board position in the BoardEx universal database before the focal year in any of the countries represented in the database.
[32] Consistent with new entry, a female director drops out in a given year if she falls out of the BoardEx universal database in year t+1 and never re-enters the market in any of the listed firms anywhere in the world (this process was performed until 2016).

control for board size and board independence as research shows that board structures influence the appointment of female directors (Hillman et al., 2007; Terjesen et al., 2009). Board size is measured as the natural log of the total number of board members, and board independence is the proportion of independent outside directors on the board. Furthermore, since larger firms experience higher pressures to comply with societal expectations for board gender diversity (Hillman et al., 2007), we control for firm size using the natural log of the number of employees in the firm. The resource dependence literature (Hillman et al., 2007; Kirsch, 2018) indicates that firm performance is a determinant of board gender diversity. Therefore, we include accounting- and market-based performance as control variables into our analyses. Specifically, return on assets (ROA) is calculated as net income over total assets, and Tobin's Q is measured as the ratio of the market value of total assets (obtained by adding up the market value of common stock and the book value of liabilities) to the book value of total assets.

At the country level, we control for women in the labor force (measured as the percentage of women in the total labor force) and women in the parliament (measured as the proportion of seats held by women in the national parliament), both of which have been found to be positively related to WOB (Adams & Kirchmaier, 2015; Terjesen & Singh, 2008).

As our data cover twelve years (from 2003 to 2014), we include year fixed effects in all analyses. We measure our independent and control variables at time *t-1* and our dependent variable at time *t* to mitigate potential reverse causality issues. In Appendix 4.2, we provide variable definitions.

4.3.5 Estimation Approach

Our empirical model to analyze the effect of BGDP on WOB is as follows:

$$WOB_{ijt} = \beta_0 + \beta_1 BGDP_{ijt-1} + \beta_2 Quota_{jt-1} + \beta_3 CGC_{jt-1} + \beta_4 GRB_j +$$
$$\beta_5 SUPPLY_{jt-1} + \beta_6 BGDP_{ijt-1} \times Quota_{jt-1} + \beta_7 BGDP_{ijt-1} \times CGC_{jt-1} +$$
$$\beta_8 BGDP_{ijt-1} \times GRB_j + \beta_9 BGDP_{ijt-1} \times SUPPLY_{jt-1} + \beta_{10} Controls_{ijt-1} + \mu_{ijt.} \quad (1)$$

where the subscript i identifies firms, j identifies countries, and t identifies years. *Controls* is a vector of both firm- and country-level controls. The coefficient of the interaction terms provides us with information whether a country-level institutional variable enables (shown as a positive coefficient on the interaction effect) or constrains (shown as a negative coefficient on the interaction effect) the effects of BGDPs on promoting more women on boards.

Our data are longitudinal in nature with repeated measures for each firm across multiple years. Panel data regression is more appropriate than ordinary least squares (OLS) regression to estimate our model as it helps with addressing heteroscedasticity and autocorrelation. The Hausman test indicates that the fixed-effects model is more appropriate than the random-effects model ($\chi^2 = 4296.76$, $p<0.001$). Yet, since one of the country-level variables (i.e., GRB) is time invariant we use the Mundlak approach. This approach divides individual firm fixed-effects into two components: means of all time-varying variables ($means_i$) and an unobserved individual effect (ω_i), where the unobserved individual effect is assumed to be uncorrelated with the error terms. The new model is as follows:

$$WoB_{ijt} = \beta_0 + \beta_1 BGDP_{ijt-1} + \beta_2 Quota_{jt-1} + \beta_3 CGC_{jt-1} + \beta_4 GRB_j +$$
$$\beta_5 SUPPLY_{jt-1} + \beta_6 BGDP_{ijt-1} \times Quota_{jt-1} + \beta_7 BGDP_{ijt-1} \times CGC_{jt-1} +$$
$$\beta_8 BGDP_{ijt-1} \times GRB_j + \beta_9 BGDP_{ijt-1} \times SUPPLY_{jt-1} + \beta_{10} Controls_{ijt-1} + \beta_{11} Means_i +$$
$$\omega_i + \mu_{ijt.} \quad (2)$$

where $Means_i$ is a (27×1)-vector of the means of all time-varying variables, and ω_i is the exogenous unobserved individual effect. All other variables in this new model are the same as those presented in model (1).

4.4 Results

4.4.1 Descriptive Statistics

Table 4.1 provides descriptive statistics for our dependent (WOB*)* and main independent (BGDP) variable. The mean value of WOB is 0.11, indicating that the average women representation on boards of our sample firms during 2003–2014 is 11%. The mean value of BGDP is 0.17, suggesting that for 17% of our firm-year observations we record a BGDP. We find strong indications of heterogeneity across countries regarding the mean values of WOB (ranging from 0% to 26%) and BGDP (ranging from 0% to 44%). As can be seen from Figure 4.3, BGDP has increased dramatically since 2006. In contrast, WOB has experienced a slow growth over time.

In Table 4.2, we report the descriptive statistics for all variables included in our estimations in Panel A, along with the Pearson correlation matrix in Panel B. The highest correlation coefficient between our right-hand-side variables is |0.47|. We also compute the variance inflation factors (VIFs). All VIFs for our right-hand-side variables are less than 2 and the average VIF is 1.29. These statistics suggest that multicollinearity is not a serious concern.

4.4.2 Main Results

Table 4.3 presents the regression results of the relationship between BGDP on WOB. Column (1) of Table 4.3 tests our first hypothesis, which predicts a positive relationship between BGDP and WOB. The coefficient of BGDP is significantly positive (β=0.005, p=0.001), suggesting that on average, establishing a BGDP increases WOB by 0.5%.

Table 4. 1 Summary of WOB and BGDP by country

			$WOB_{2003–2014}$				$BGDP_{2002–2013}$			
Country	No. of Observations	No. of Firms	Mean	SD	Min	Max	Mean	SD	Min	Max
Australia	797	142	0.13	0.11	0	0.57	0.16	0.37	0	1
Austria	133	17	0.09	0.10	0	0.33	0.14	0.35	0	1
Brazil	210	48	0.07	0.08	0	0.33	0	0	0	0
Canada	1,440	237	0.12	0.11	0	0.55	0.12	0.32	0	1
China	410	83	0.08	0.08	0	0.36	0.01	0.11	0	1
Denmark	198	25	0.15	0.12	0	0.58	0.20	0.40	0	1
Finland	243	27	0.22	0.12	0	0.50	0.02	0.16	0	1
France	855	101	0.17	0.13	0	0.67	0.11	0.31	0	1
Germany	504	81	0.12	0.10	0	0.50	0.35	0.48	0	1
Greece	171	22	0.08	0.09	0	0.42	0.02	0.13	0	1
India	282	64	0.07	0.07	0	0.29	0.01	0.08	0	1
Indonesia	119	25	0.05	0.08	0	0.33	0	0	0	0
Ireland	137	15	0.09	0.08	0	0.36	0.05	0.22	0	1
Israel	58	11	0.17	0.09	0.07	0.46	0	0	0	0
Italy	408	52	0.10	0.11	0	0.54	0.11	0.31	0	1
Japan	2,379	400	0.01	0.04	0	0.30	0.00	0.05	0	1
South Korea	363	93	0.00	0.01	0	0.11	0	0	0	0
Malaysia	58	14	0.07	0.08	0	0.25	0.19	0.40	0	1
Mexico	109	23	0.06	0.08	0	0.36	0.04	0.19	0	1
Netherlands	327	41	0.13	0.12	0	0.57	0.33	0.47	0	1
New Zealand	34	7	0.14	0.11	0	0.29	0.06	0.24	0	1
Philippines	63	16	0.08	0.09	0	0.31	0.02	0.13	0	1
Poland	106	24	0.13	0.13	0	0.60	0.04	0.19	0	1
Portugal	101	12	0.03	0.05	0	0.28	0	0	0	0
Russia	60	13	0.07	0.06	0	0.18	0	0	0	0
Singapore	189	31	0.07	0.08	0	0.30	0.03	0.18	0	1
South Africa	247	62	0.19	0.09	0	0.46	0.21	0.41	0	1
Spain	409	53	0.10	0.09	0	0.45	0.44	0.50	0	1
Sweden	361	52	0.26	0.12	0	0.60	0.13	0.33	0	1
Switzerland	486	64	0.09	0.09	0	0.50	0.04	0.19	0	1
Turkey	118	24	0.09	0.11	0	0.36	0	0	0	0
United Kingdom	3,103	375	0.11	0.10	0	0.63	0.15	0.36	0	1
United States	8,998	1,129	0.14	0.09	0	0.67	0.26	0.44	0	1
Total	23,476	3,383	0.11	0.11	0	0.67	0.17	0.37	0	1

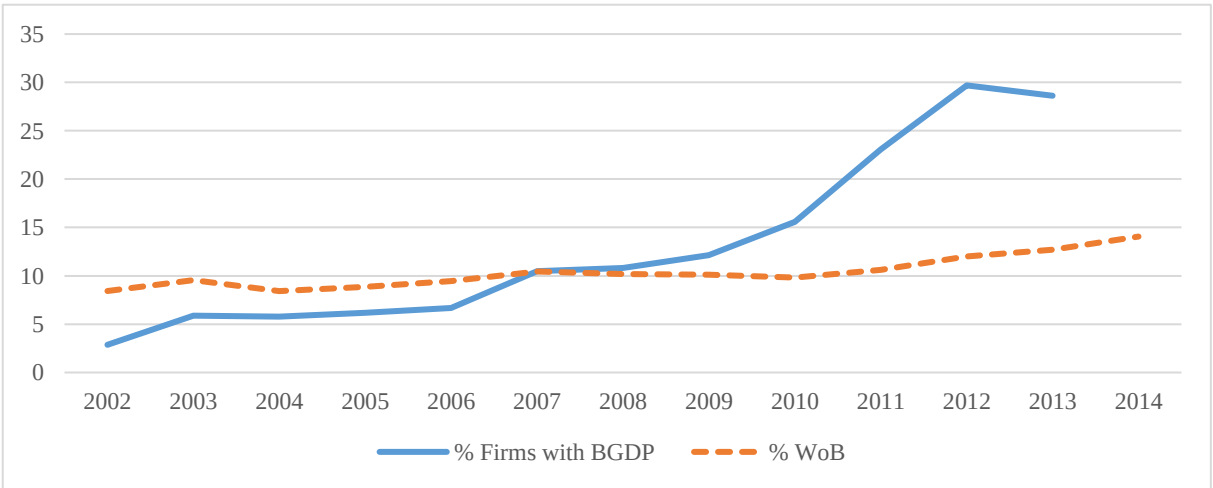

Figure 4. 3 Percentage of WOB and firms with BGDPs over time

Table 4. 2 Descriptive statistics and correlations

Panel A. Descriptive statistics

		Mean	S.D.	Min	Max
1	WOB_{t+1}	0.11	0.11	0.00	0.67
2	WOB_t	0.10	0.10	0.00	0.67
3	Board size	2.31	0.33	0.00	3.64
4	Board independence	0.59	0.28	0.00	1.00
5	Firm size	9.15	1.74	0.00	14.60
6	ROA	0.04	0.11	-3.59	3.36
7	Tobin's Q	1.39	1.51	0.02	83.77
8	Women in the labor force	0.45	0.03	0.24	0.49
9	Women in the parliament	0.20	0.08	0.07	0.47
10	*BGDP*	0.17	0.37	0.00	1.00
11	Quota	0.04	0.19	0.00	1.00
12	CGC	0.39	0.49	0.00	1.00
13	GRB	3.62	0.25	2.93	4.50
14	SUPPLY	-0.0002	0.0039	-0.01	0.02

Panel B. Correlation matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	WOB_{t+1}													
2	*WOB*	0.89												
3	Board size	0.14	0.14											
4	Board independence	0.33	0.33	-0.10										
5	Firm size	0.17	0.18	0.37	0.01									
6	ROA	0.05	0.04	-0.04	0.03	0.05								
7	Tobin's Q	0.01	0.01	-0.17	0.06	-0.14	0.38							
8	Women in the labor force	0.27	0.26	-0.09	0.37	-0.06	-0.02	0.02						
9	Women in the parliament	0.27	0.25	-0.02	0.13	-0.05	0.02	0.00	0.32					
10	BGDP	0.20	0.19	0.07	0.19	0.07	0.01	0.00	0.15	0.12				
11	Quota	0.14	0.11	0.15	-0.08	0.04	-0.02	-0.04	-0.10	0.18	0.11			
12	CGC	0.32	0.30	0.00	0.22	-0.03	0.01	0.01	0.27	0.31	0.36	0.19		
13	GRB	-0.20	-0.18	0.08	-0.15	0.10	-0.01	-0.02	-0.47	-0.26	-0.02	0.08	-0.11	
14	SUPPLY	0.12	0.07	0.06	-0.07	0.03	-0.02	-0.01	0.01	0.09	0.08	0.33	0.12	-0.05

Note: Correlations greater than or equal to 0.02 are significant at the 0.05 level.

Hence, hypothesis 1 is supported. Turning our attention to the control variables, Table 4.3, column (1) shows that WOB_{t-1}, firm size, women in the labor force, women in the parliament, quota, corporate governance code (CGC), gender role bias (GBR), and the supply of female directors (SUPPLY) are all significantly related to WOB_t. These results are largely consistent with prior studies focusing on the drivers of women on boards (Adams & Kirchmaier, 2015; Hillman et al., 2007; Terjesen & Singh, 2008).

Columns (2) to (5) examine the moderating effects of our country-level institutional variables, namely regulatory prescriptions (i.e. quota and codes), gender role bias, and the market for female directors, respectively. In columns (2) and (3), we test the moderating effects of quota and codes separately. Column (2) shows that the coefficient of the interaction term BGDP×Quota is insignificant. Column (3) reports that the coefficient of the interaction term BGDP×CGC is significantly negative (β=-0.004, p=0.092). We interpret the outcome for the coefficient on BGDP×CGC as providing support for the view that the effectiveness of BGDP in promoting board gender diversity is attenuated in the presence of a corporate governance code. To facilitate the interpretation of this negative interaction effect, we present the interaction plot in Figure 4.4. As the figure shows, the line representing a situation in which the country's corporate governance code does not contain provisions regarding board gender diversity is below the line representing a situation in which the country's corporate governance code does contain such provisions. More importantly, however, the slope of the line representing a situation in which the country's corporate governance code does not contain board gender diversity provisions is also steeper. This suggests that a corporate governance code acts as a substitute for a BGDP, providing support for hypothesis 2a.

The results in column (4) of Table 4.3 provide support for hypothesis 2b, suggesting that the positive relationship between BGDP and women on boards is negatively moderated by country-level gender role bias. Specifically, the coefficient of the interaction term

BGDP×GRB is significantly negative (β=-0.023, p=0.002). Figure 4.5 presents the interaction plot and suggests that if gender role bias in a country is high (i.e., at a level of the average plus one times the standard deviation), BGDPs are not effective in promoting a gender-balanced board.[33]

Hypothesis 2c states that the positive relationship between BGDP and women on boards is negatively moderated by the limited supply of female directors at the country-level. Table 4.3, column (5) lends support to this hypothesis. Specifically, the coefficient of BGDP×SUPPLY is positive and significant (β=0.961, p=0.001), suggesting that if the supply of female directors is less tight, BGDPs are more effective in bringing about a gender-balanced board. This interpretation is also confirmed by Figure 4.6.

We note that the incremental R^2 of the models with interaction terms (i.e. Model 2-4) does not increase as compared to the base model (i.e. Model 1). Similar to Kang (2016), we therefore perform likelihood ratio tests to check whether the addition of interaction effects add to the explanatory power of the model. We find they do as the tests are statistically significant when we include the interaction term BGDP×CGC (likelihood ratio χ^2 =3.78, *p=0.050*), BGDP×GRB (likelihood ratio χ^2 =18.06, p=0.000), and BGDP×SUPPLY (likelihood ratio χ^2 = 18.73, p=0.000). In contrast, including the interaction term BGDP×Quota does not add to the explanatory power of the model (likelihood ratio χ^2 = 1.28, p=0.260).

[33] Indeed, a simple slope test shows that the effect of BGDP on WOB is significantly positive (p=0.000) for low values of GRB (i.e., mean minus one standard deviation) and when GRB is at its mean (p=0.005). However, this effect is insignificant for high GRB (i.e., mean plus one standard deviation, p=0.600).

Table 4. 3 Regression results of the effect of BGDP on WOB

Dependent Variable = WoB_t	(1)		(2)		(3)		(4)		(5)	
	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value	Coef.	p-value
Constant	0.020	0.190	0.019	0.207	0.020	0.186	0.016	0.314	0.022	0.155
Control variables										
WOB_{t-1}	0.533^{***}	0.000	0.533^{***}	0.000	0.533^{***}	0.000	0.532^{***}	0.000	0.532^{***}	0.000
Board $size_{t-1}$	-0.002	0.300	-0.002	0.300	-0.002	0.295	-0.002	0.328	-0.002	0.305
Board $independence_{t-1}$	-0.004	0.196	-0.004	0.201	-0.004	0.189	-0.004	0.156	-0.004	0.208
Firm $size_{t-1}$	0.002^{*}	0.049	0.002^{*}	0.049	0.002^{+}	0.052	0.002^{+}	0.053	0.002^{*}	0.047
ROA_{t-1}	0.008^{*}	0.031	0.008^{*}	0.030	0.008^{*}	0.031	0.008^{*}	0.032	0.008^{*}	0.027
Tobin's Q_{t-1}	0.001^{**}	0.009	0.001^{**}	0.008	0.001^{**}	0.008	0.001^{**}	0.010	0.001^{**}	0.010
Women in the labor $force_{t-1}$	0.332^{**}	0.007	0.311^{*}	0.014	0.329^{**}	0.007	0.382^{**}	0.002	0.336^{**}	0.006
Women in the $parliament_{t-1}$	0.246^{***}	0.000	0.247^{***}	0.000	0.244^{***}	0.000	0.236^{***}	0.000	0.244^{***}	0.000
Year fixed effects	Included		Included		Included		Included		Included	
Predictors										
$BGDP_{t-1}$	0.005^{***}	0.001	0.005^{**}	0.003	0.008^{***}	0.000	0.086^{**}	0.001	0.004^{**}	0.005
$Quota_{t-1}$	0.025^{***}	0.000	0.024^{***}	0.000	0.025^{***}	0.000	0.026^{***}	0.000	0.024^{***}	0.000
CGC_{t-1}	0.008^{***}	0.000	0.009^{***}	0.000	0.009^{***}	0.000	0.008^{***}	0.000	0.009^{***}	0.000
GRB	-0.008^{***}	0.000	-0.008^{***}	0.000	-0.008^{***}	0.000	-0.008^{***}	0.000	-0.008^{***}	0.000
$SUPPLY_{t-1}$	1.130^{***}	0.000	1.130^{***}	0.000	1.124^{***}	0.000	1.102^{***}	0.000	0.991^{***}	0.000
Interaction terms										
$BGDP_{t-1} \times Quota_{t-1}$			0.005	0.419						
$BGDP_{t-1} \times CGC_{t-1}$					-0.004^{+}	0.092				
$BGDP_{t-1} \times GRB$							-0.023^{**}	0.002		
$BGDP_{t-1} \times SUPPLY_{t-1}$									0.961^{***}	0.001
Overall R^2	0.722		0.722		0.722		0.722		0.721	
Number of firms	3,383		3,383		3,383		3,383		3,383	
Number of observations	23,476		23,476		23,476		23,476		23,476	

Note: This table presents the regression results for the effects of BGDP on WOB. The models are estimated using the Mundlak approach, which produces the same results as the fixed effects model does, while reporting the coefficients of time-invariant variables (in our case: GRB). Year fixed effects are included in the regressions. Standard errors are clustered at the firm level. ***, **, *, and + represent significance levels at 0.1%, 1%, 5%, and 10%, respectively. Overall R^2 are based on the fixed effects regression results.

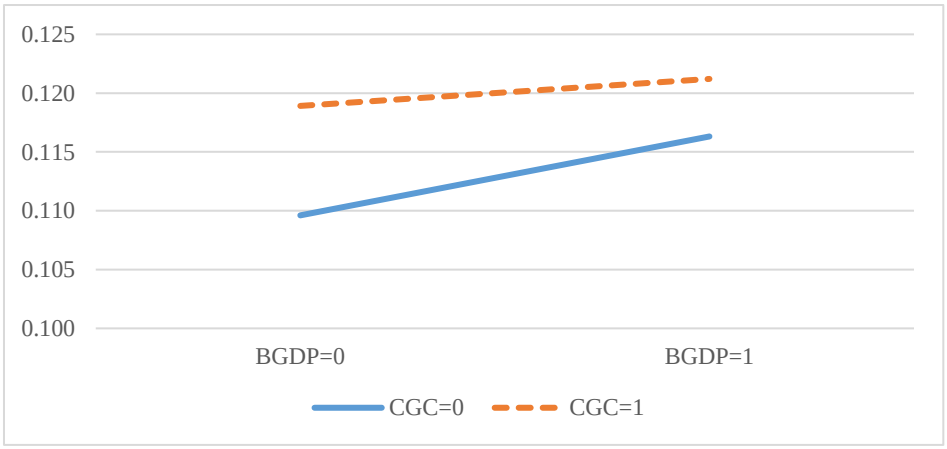

Figure 4. 4 The moderating effect of corporate governance codes (CGC) on the BGDP-WOB relationship

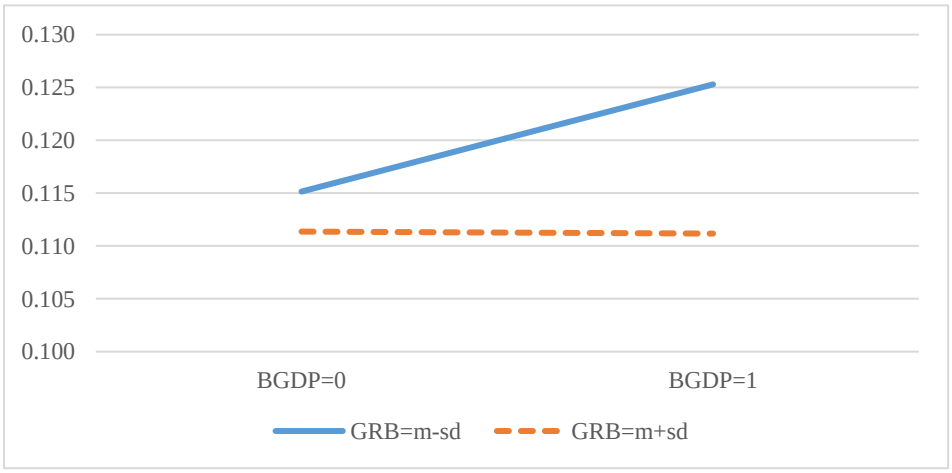

Figure 4. 5 The moderating effect of the gender role bias (GRB) on the BGDP-WOB relationship

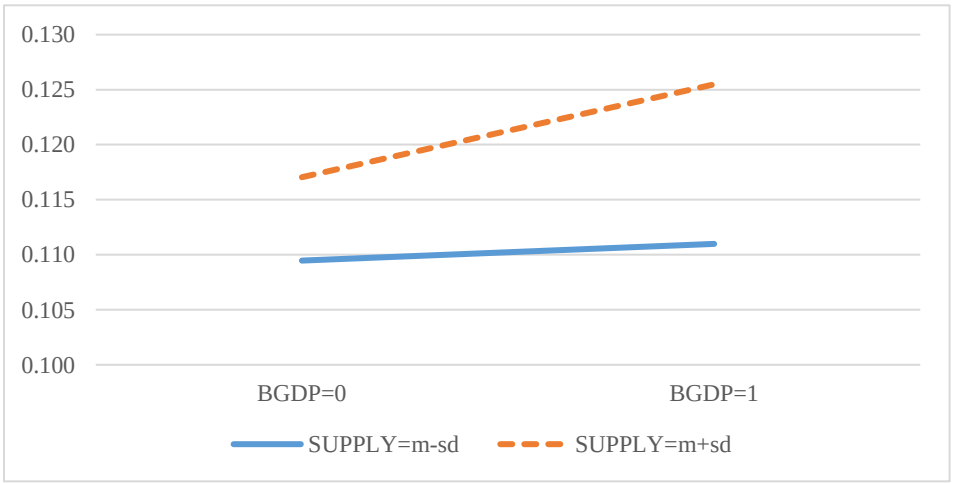

Figure 4. 6 The moderating effect of the supply of female directors (SUPPLY) on the BGDP-WOB relationship

4.4.3 Robustness Checks

Endogeneity of BGDPs. Our main results are consistent with the idea that BGDPs promote the representation of women on boards. Although in our main analyses we have lagged all right-hand-side variables by one year and included one-year lagged WOB as a control, the results may be subject to the criticism that firms with more women on their boards are more likely to adopt a BGDP, raising reverse causality concerns. Moreover, it cannot be ruled out that some unobserved, omitted variables may affect both the presence of a firm's BGDP and the representation of women on its board. To alleviate these endogeneity concerns, we conduct a two-stage least square regression (2SLS) and propensity score matching (PSM).

To identify the effects of BGDPs on women on boards using the 2SLS approach, we need an instrumental (exogenous) variable that is highly correlated with BGDP but is not directly affecting WOB. Consistent with prior research we use the industry-level adoption rate of BGDP as our instrumental variable (Ye, Deng, Liu, Szewczyk, & Chen, 2019). The notion underlying this instrumental variable is that a firm's decision to adopt a policy is affected by the practices at peer firms in the same industry (Okhmatovskiy & David, 2012). Equally important, while industry-level adoption of BGDPs directly affects the likelihood of having adopted a BGDP of each firm in an industry, it is unlikely that industry-level adoption of BGDPs directly affects all other firms' WOB in the same industry. Table 4.4 reports the results of the 2SLS regressions and provides results consistent with Hypothesis 1.[34]

The idea of PSM is to correct the estimation of the treatment effect (i.e., adopting a BGDP) for omitted variable bias by constructing matched pairs that are as similar as possible on observable characteristics. Ultimately, the idea is to match firms that have BGDPs with those that have the closest propensity to adopt BGDPs but do not actually have it. To do so,

[34] The results reported in Table 4.4 are based on the Fama-French 12 industry classification. The results are consistent if we define industry based on the Fama-French 48 industry classification or two-/three-/four-digit SIC codes.

we take a nearest-neighbor matching approach with a caliper constraint (≤ 0.01) (without replacement). Table 4.5 reports the results and indicates that all significant pre-PSM differences in firm-level characteristics between firms with and without BGDPs (Panel A) disappear with the propensity-score matched pairs (Panel B). More importantly, paired t-tests and Wilcoxon signed-rank tests show that firms with BGDPs have a significantly higher proportion of women on their boards than their matched firms. The results are consistent with our expectation about the positive effect of BGDP on women on boards.

Unequal representation of firms from different countries. As shown in Table 4.1, the distribution of our sample firms is not balanced across countries, with the United States, the United Kingdom, Japan, and Canada accounting for 38%, 13%, 10%, and 6% of all firm-year observations, respectively. To reduce concerns that this unequal representation of firms from different countries is driving the results, we test whether the positive effect of BGDP on women on boards is robust to multi-level regression models. Multi-level regression models reduce the influence of unequal sample size by allowing intercepts and/or slopes to vary across groups. We perform multi-level regressions using the *mixed* routine in Stata, allowing for random intercepts at both firm- and country-levels, and fitting the models via maximum likelihood approach. The results of these analyses (not tabulated) indicate that the multi-level regression results are consistent with the main results.

Table 4. 4 2SLS regression results of the effect of BGDP on WOB

	First-stage Dependent Variable = $BGDP_{t-1}$		Second-stage Dependent Variable = WoB_t	
	Coef.	p-value	Coef.	p-value
Control variables				
WOB_{t-1}	0.044	0.412	0.522^{***}	0.000
Board $size_{t-1}$	0.005	0.733	-0.003	0.220
Board $independence_{t-1}$	-0.123	0.455	-0.003	0.369
Firm $size_{t-1}$	-0.007	0.444	0.003^{*}	0.040
ROA_{t-1}	-0.021	0.374	0.008^{*}	0.031
Tobin's Q_{t-1}	0.002	0.377	0.001^{+}	0.076
Women in the labor $force_{t-1}$	1.568^{+}	0.099	0.353^{**}	0.010
Women in the $parliament_{t-1}$	-0.145	0.356	0.288^{***}	0.000
$Quota_{t-1}$	0.023	0.409	0.022^{***}	0.000
CGC_{t-1}	0.090^{***}	0.000	0.001	0.699
$SUPPLY_{t-1}$	0.916	0.143	1.139^{***}	0.000
Year fixed effects	Included		Included	
Firm fixed effects	Included		Included	
Main variable of interest				
Industry-level adoption rate of BGDP	0.480^{***}	0.000		
Predicted $BGDP_{t-1}$			0.049^{***}	0.000
Within R^2	0.254		0.438	
Partial R^2	0.036			
Kleinbergen-Paap rk Wald F statistic	193.429^{***}	0.000		
Endogeneity test of BGDP			25.307^{***}	0.000
Number of firms	3,317		3,317	
Number of observations	22,803		22,803	

Note: This table presents the 2SLS regression results for the effect of BGDP on WOB. Year and firm fixed effects are included in the regressions. Standard errors are clustered at the firm level. ***, **, *, and + represent significance levels at 0.1%, 1%, 5%, and 10%, respectively.

Table 4. 5 Comparison between firms with and without BGDP before and after propensity score matching

Panel A. Before propensity score matching, differences in the dependent and control variables between firms with versus without BGDPs

	BGDP=1 (N=3,899)			BGDP=0 (N=19,577)			Standardized differences	Differences (1–0)	
Variables	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	(%)	Mean	Median
WoB_{t+1}	0.161	0.154	0.100	0.105	0.100	0.104	55.72	0.057***	0.054***
WoB	0.148	0.143	0.099	0.096	0.091	0.100	51.53	0.051***	0.052***
Board size	2.362	2.398	0.281	2.302	2.303	0.338	19.17	0.060***	0.095***
Board independence	0.714	0.778	0.223	0.566	0.615	0.289	57.31	0.148***	0.162***
Firm size	9.411	9.473	1.690	9.100	9.199	1.745	18.13	0.311***	0.273***
ROA	0.047	0.044	0.083	0.045	0.040	0.112	2.50	0.002	0.004*
Tobin's Q	1.391	1.076	1.176	1.394	1.023	1.568	-0.24	-0.003	0.053*

Panel B. After propensity score matching, differences in the dependent and control variables between firms with versus without BGDPs

	BGDP=1 (N=3,667)			BGDP=0 (N=3,667)			Standardized differences	Differences (1–0)	
Variables	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	(%)	Mean	Median
WoBt+1	0.160	0.154	0.101	0.151	0.143	0.101	8.94	0.009***	0.011***
WoB	0.146	0.143	0.099	0.140	0.133	0.100	6.03	0.006**	0.010*
Board size	2.352	2.398	0.278	2.353	2.398	0.284	-0.18	-0.001	0.000
Board independence	0.715	0.778	0.218	0.721	0.778	0.212	-2.53	-0.005	0.000
Firm size	9.357	9.425	1.690	9.348	9.433	1.662	0.51	0.009	-0.008
ROA	0.048	0.045	0.083	0.050	0.044	0.101	-1.83	-0.002	0.001
Tobin's Q	1.406	1.083	1.187	1.435	1.061	1.982	-1.75	-0.029	0.022

Note: In both panels the standardized difference in percent is $100(\overline{x}_{BGDP1} - \overline{x}_{BGDP0})/\sqrt{(s^2_{BGDP1} + s^2_{BGDP0})/2}$, where $\overline{x}_{BGDP1}$ and $\overline{x}_{BGDP0}$ (s^2_{BGDP1} and s^2_{BGDP0}) are the sample mean (variance), where group 0 (1) refers to firms without (with) a BGDP. After PSM, standardized differences in covariates between treated and control groups in the range of [-20, 20] indicate a good match. Paired t-tests are used to test the differences in means and Wilcoxon signed-rank tests to test differences in medians. ***, **, *, and + indicate significance at the 0.1%, 1%, 5%, and 10% levels, respectively.

4.5 Discussion, Limitation, and Future Research

Despite their increasing numbers in the workforce, women are still underrepresented in the boardroom. Policymakers and researchers have advocated BGDPs as a remedy for the enduring gender inequality on corporate boards (Klettner et al., 2016). Along with the diffusion of BGDPs around the world, it is important to examine whether or not BGDPs are effective in promoting women on boards. We find a statistically significant positive effect of BGDP on the percentage of women on the firm's board of directors. Furthermore, we provide evidence that country-level institutions moderate the relationship between BGDP and the percentage of women on the firm's board of directors, suggesting that institutions matter. We show that provisions in corporate governance codes act as substitutes for BGDP; in contrast, quotas do not affect the relationship between BGDP and women on boards. Finally, we find that a stronger gender role bias and a tight supply of female directors weaken the relationship between BGDP and women on boards.

We extend the emerging literature that focuses on the importance of national context to explain women on boards (Chizema et al., 2015; Grosvold & Brammer, 2011; Terjesen & Singh, 2008). Prior studies only consider the direct effects of country-level institutions, ignoring the effects of a firm-level policy that is aimed at stimulating women's advancement to the boardroom. At the same time, our study advances ideas about the effectiveness of diversity programs (Dobbin et al., 2011; Leslie, 2019; Leslie et al., 2017; Nishii et al., 2018). To date, the large majority of these studies focus on the U.S. context and, consequently, their findings may not be generalizable to other countries, with different institutional settings. Our study provides a first glimpse regarding their effectiveness outside the U.S. At the same time, we acknowledge there is still much to gain in understanding the determinants of effective BGDPs.

Our study also adds to the institution-based view by showing that similar country-level institutions may differently affect firm-level outcomes. Specifically, while quotas and corporate governance codes are both elements of formal institutions, which provide written guidelines about (un)desirable behaviors and create powerful pressures for firms to behave in a certain way, our study reveals that they have different effects in terms of supporting a firm-level policy. We show that whereas the presence of corporate governance codes reduces the effectiveness of BGDPs, the presence of quotas does not have any effect on the outcomes of BGDPs. A possible explanation is that quotas are legal rules (hard law) that require firms to meet a certain target (i.e., minimum percentage of female directors) by a certain date (Ahern & Dittmar, 2012; Kogut et al., 2014; Terjesen et al., 2015). They also frequently include legally enforceable sanctions (e.g., financial penalties, dissolving of the firm, etc.) if the firm does not meet the specified target by a certain date (Kirsch, 2018). Corporate governance codes, by contrast, are considered soft law as most of them are applied on a comply-or-explain basis (Haxhi & van Ees, 2010). Hence, they provide firms with more flexibility regarding board gender diversity. The findings of our study suggest that it is important to disentangle formal institutions by considering the degree of enforcement or flexibility offered.

Our findings have practical implications as well. First, in a period during which policymakers are increasingly recognizing the economic and social benefits of improving women on boards (Adams, 2016), our finding that BGDP can enhance board gender diversity provides a compelling rationale for continuing to encourage firm adoption of BGDPs. However, our findings also suggest that the institutional environment in which firms operate should be carefully considered when evaluating the effectiveness of BGDPs in promoting women on boards, illustrating that there is no one-size-fits-all approach. With a better understanding of when and where BGDPs are more likely to succeed or fail, policymakers, as well as other stakeholders (e.g., women's associations and the media), could develop more

realistic expectations about the impact of BGDPs and utilize appropriate governance instruments to ensure substantive commitments from firms to increase women on boards. At the same time, our results indicate that the adoption of BGDP itself may not be sufficient to generate a substantive increase in the percentage of women on boards. One possible solution for policymakers might be to set up formal authorities to monitor the adoption and implementation of BGDP. A firm is more likely to act consistently with its BGDP when the authorities will regularly question the firm's real practices (Dobbin & Kalev, 2016).

Second, our research shows that in countries with strong gender role bias, firms may be more likely to adopt BGDP as a symbolic response to societal demands for board gender diversity, while leaving women on boards unchanged. This would correspond to the institution-based view that the success of any formal institutional change requires not only an appropriate design of the formal institutions, but also support from informal cultural values (Kim, Kim, & Hoskisson, 2010). Thus, in addition to designing formal institutions, policymakers should engage in public discourse by framing and making sense of the board gender diversity issue so as to enhance the pragmatic, moral, and cognitive legitimacy for improving women on boards (Seierstad et al., 2017). International organizations, women's champions, and researchers can also help accelerate the institutionalization of board gender diversity in countries with strong gender role bias by paying more attention to these countries.

Like any other study, our study is subject to caveats that have to be acknowledged. In this study, we focus on the presence of BGDP and not on its content. This is because the ASSET4 database does not provide details about the content of BGDPs. An interesting avenue for future research would be utilizing a content analysis approach to investigate whether the framing of BGDP predicts its effectiveness in promoting women on boards. For example, a BGDP using language similar to the corporate governance codes may be less

likely to lead to a more gender-balanced board than a BGDP using specific language that fits better with firm specificities.

Another interesting direction for future research is whether a BGDP contributes to increasing women representation in low, middle, and top levels of managerial positions. Because corporate executives form the basis of director pool, keeping women in the pipeline to executive positions is essential for the long-term success of BGDP (Klettner et al., 2016). With a firm-level policy that signals a high demand of female at the apex of the firm, managers could become keener to recruit women (Ferreira, 2015; Leslie et al., 2017). Women may also become more enthusiastic to accept the challenging task of climbing the corporate ladder (Kossek et al., 2017).

Appendix 4. 1 Quotas and corporate governance codes

Country[a]	Quota Passed Year and Goal	Corporate Governance Code[b]	Issuance Organization of Corporate Governance Code
Australia		Marked-Up Amendments Dated 30 June 2010 to the Second Edition August 2007 of the Corporate Governance Principles and Recommendations (2010)	ASX Corporate Governance Council
Austria		Austrian Code of Corporate Governance (2009)	Austrian Working Group for Corporate Governance
Belgium	2011, 33%	The Belgian Code on Corporate Governance (2009)	Belgium Corporate Governance Committee
Brazil		Code of Best Practices of Corporate Governance (2009)	Brazilian Institute of Corporate Governance
Canada		Best Practices for Proxy Circular Disclosure (2015)[c]	Canadian Coalition of Good Governance
Denmark		Recommendations for Corporate Governance of August 15, 2005; Sections III and V Revised by December 10, 2008 (2008)	Copenhagen Stock Exchange Committee on Corporate Governance
Finland		Finnish Corporate Governance Code (2008)	Securities Market Association
France	2011, 40%	Corporate Governance Code of Listed Corporations (2010)	Association Française des Entreprises Privées and Mouvement des Entreprises de France
Germany	2015, 30%	German Corporate Governance Code (2009)	Government Commission on the German Corporate Governance Code
Greece		Hellenic Corporate Governance Code for Listed Companies (2013)	Hellenic Corporate Governance Council
Hong Kong		Amendments to the Main Board Rules: Corporate Governance Code and Corporate Governance Report (2013)	Stock Exchange of Hong Kong
India	2013, at least 1 woman	Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations (2015)[c]	Securities and Exchange Board of India
Italy	2011, 33%	Corporate Governance Code (2011)	Corporate Governance Committee
Japan		Japan's Corporate Governance Code (2015)	Tokyo Stock Exchange
Malaysia	2011, 30%	Malaysian Code on Corporate Governance (2012)	Securities Commission Malaysia
Netherlands	2013, 30%	Dutch Corporate Governance Code (2008)	The Dutch Corporate Governance Code Monitoring Committee
New Zealand		NZSX/NZDX Listing Rules (2012)[c]	New Zealand Exchange
Norway	2003, 40%	The Norwegian Code of Practice for Corporate Governance (2004)	Norwegian Corporate Governance Board
Singapore		Code of Corporate Governance (2012)	Corporate Governance Council of the Monetary Authority of Singapore
South Africa		King Code of Governance for South Africa (2009)	Institute of Directors in Southern Africa
Spain	2007, 40%	Unified Good Governance Code (2006)	National Securities Market Commission
Sweden		Swedish Code of Corporate Governance (2004)	The Swedish Code Group
Switzerland		Swiss Code of Best Practice for Corporate Governance (2014)	Economiesuisse
Thailand		The Principles of Good Corporate Governance for Listed Companies (2012)	Stock Exchange of Thailand
Turkey		Principles of Corporate Governance (2014)	Capital Markets Board of Turkey
United Kingdom		The UK Corporate Governance Code (2010)	Financial Reporting Council
United States		Sec Proxy Disclosure Enhancements (2009)[c]	Securities and Exchange Commission

a. China, Indonesia, Ireland, Mexico, Russia, South Korea, and Taiwan are not present in this table as these countries/regions have not established any quotas or corporate governance codes for WoB for listed firms.
b. Corporate governance codes or disclosure regulations that introduce board gender diversity provisions for the first time.
c. Disclosure regulations.

Appendix 4. 2 Details on our measures

Variable Name	Definition	Source
Firm-Level Variables		
WoB	Number of Female Board Members/Total Number of Board Members	ASSET4
BGDP	A dummy that takes a value of "1" if the firm has a policy regarding the gender diversity of its board, and "0" otherwise	ASSET4
Board Size	Natural logarithm of the total number of board members	ASSET4
Independence	Number of Independent Board Members/Total Number of Board Members	ASSET4
Firm Size	Natural logarithm of the total number of employees	Worldscope
ROA	Net Income/Total Assets	Worldscope
Tobin's Q	(Market Capitallisation + Total Liabilities)/Total Assets	Worldscope
Country-Level Variables		
Quota	A dummy that takes a value of "1" if the country a firm locates has passed a quota for board gender diversity and "0" otherwise	
CGC	A dummy that takes a value of "1" if the country a firm locates has incorporated board gender diversity provisions into its corporate governance code or disclosure regulations	ecgi.org, etc.
Women in the Labor Force	Female Labor Force/Total Labor Force	WorldBank
Women in the Parliaments	Number of Seats Held by Women in National Parliaments/Total Number of Seats in National Parliaments	WorldBank
Gender Role Bias	7 - The Original Values of GLOBE Project's Gender Egalitarianism Practice	GLOBE Project
The Supply of Female Directors	(Total New Female Director Entry – Total Female Director Dropout)/Total Number of Board Seats in a Country	BoardEx