ORIGINAL ARTICLE

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Determinants of board diversity policy implementation by companies listed on the Warsaw Stock Exchange

Abstract

Research background: Diversity management is one of the hot topic issues present in current public discussions. Board diversity requirements are quite new for Polish public companies. The companies listed on the Warsaw Stock Exchange have to publish a statement on the company's compliance with the corporate governance recommendations and principles included in "Best Practice for GPW Listed Companies 2016". This regulation is based on the 'comply or explain' principle, thus the company may decide whether to comply with every rule included in the code, but decision on not implementing one or more rules should be explained by the company. Some of the recommended rules regard the board (supervisory and management) diversity policy implementation, where diversity refers to such dimensions as gender, education, age and professional experience.

Purpose of the article: This study aims to investigate determinants of board diversity policy implementation by domestic companies listed on the WSE. It also documents explanations provided by companies that do not apply board diversity policy.

Methods: The research sample covers 268 non-financial domestic companies listed on the Warsaw Stock Exchange between 2016 and 30 November 2018. The companies' current reports on company compliance with the corporate governance codes and information issued on companies' websites were analyzed in order to identify those that announced implementation of board diversity policy. This study uses logistic regression analysis to identify the firm-level characteristics that may influence the implementation of board diversity policy.

Findings & value added: This is the first study analyzing the drivers of board diversity policy implementation by Polish companies listed on the WSE. It shows that large companies, companies with larger management boards and companies with women acting as presidents of the su-

pervisory boards are more likely to take actions seeking to achieve management and supervisory board diversity.

Introduction

Diversity can take different dimensions — gender, race, ethnicity, nationality, age, educational background and many others. Indeed, initially, the main reason for promoting diversity was the integration of minorities in the labour market in the US in the second half of the 20th century (Brazzel, 2003, pp. 51–93). The academic and practitioner argument for diversity is that greater diversity leads to a better understanding of the market, increases creativity and innovation, provides more alternative solutions to problems and, thus, allows to make better decisions by working groups (Robinson & Dechant, 1997, pp. 21–31; Martín-Ugedo & Minguez-Vera, 2014, p. 141). Hence, both ethical and economical rationales are behind actions undertaken by the European Commission (EC) and private organizations (e.g. Catalyst) leading to increased awareness of benefits resulting from inclusion into organization persons who are different from one another in some aspects.

Initiatives undertaken by the EC aim at encouraging companies to develop and implement diversity policies in the workplace and especially in boardrooms. For example, due to boardroom underrepresentation of women, in November 2012 the EC submitted a proposal for a directive on improving the gender balance among non-executive directors of companies listed on European-based stock exchanges (EC, 2012).

According to Directive 2014/95/EU of The European Parliament and of The Council of 22 October 2014, the diversity of competencies and views of members of administrative, management and supervisory bodies contributes to "effective oversight of the management to successful governance of the undertaking" (Directive 2014/95/EU, p. 3). It, therefore, requires from large companies to issue information on their diversity policy in relation to the administrative, management and supervisory bodies as a part of the corporate governance statement. Age, gender or educational and professional backgrounds are examples of the diversity aspects listed in Directive 2014/95/EU. In accordance with the "comply or explain" rule, the company does not have to implement board diversity policy, but if it decides not to apply it, the explanation for this decision should be included in the corporate governance statement (Directive 2014/95/EU, p. 3). Hence, Poland, being a member of the EU, had to adjust to the above directive its Accounting Act (1994) and regulations concerning information revealed by public companies (Regulation of the Minister of Finance, 2016).

In addition, changes in Polish corporate governance codes had been made in order to increase the quality of corporate governance, and especially to promote management and supervisory board diversity. The document entitled "Best Practice for GPW Listed Companies 2016" (BP 2016), which came into force on 1 January 2016 includes principles and recommendations regarding board diversity policy (Best Practice, 2016).

In Poland, according to the principle I.Z.1.15., which is included in BP 2016, the company has to publish on its corporate website, "information about the company's diversity policy applicable to the company's governing bodies and key managers; the description should cover the following elements of the diversity policy: gender, education, age, professional experience, and specify the goals of the diversity policy and its implementation in the reporting period" (Best Practice, 2016, p. 5). A company is not obliged to implement diversity policy, but if the company decides not to draft or implement it, the explanation of this decision should be revealed on the company's website.

What is more, the recommendation II.R.2. disclosed in BP 2016 refers to the appointment of members of management and supervisory boards and states that in the decision to elect members of these bodies, it should strive for comprehensiveness and diversity in terms of gender, education, age and professional experience (Best Practice, 2016, p. 7).

After entry into force of BP 2016, companies listed on Polish stock exchange have to publish a current report that includes a statement on the company's compliance with the corporate governance principles and recommendations contained in BP 2016.

This study is motivated by the above regulatory changes that require publicly listed companies to reveal information on actions undertaken in order to diversify boards or to explain why such actions are not undertaken. While the decision on board diversity policy development and its implementation is voluntary, the question is why some companies decide to apply policies leading to a more diversified composition of management and supervisory bodies in dimension of gender, education, age and professional experience. Hence, the main objective of this research is to investigate determinants of board diversity policy as implemented by Polish companies listed on the WSE. Due to the nature of the dependent variable, logistic regression analysis was applied in this study. To identify those companies that announced board diversity policy implementation, both current reports and information published on company websites referring to this issue were analyzed. Additionally, this research gives evidence on the types of explanations provided by companies that do not apply board diversity policy. To

the best of the author's knowledge, there is no research regarding this topic, so this paper aims at filling this gap.

The paper is organized as follows. The second section provides some insights into literature on the role of corporate governance codes, board composition and other associated theoretical notions. The sample selection process, research method (logistic regression analysis) and hypothesizes development are then revealed. The subsequent part discusses the empirical results. Finally, the discussion and conclusions with the direction for future research are presented.

Literature review

The principles and recommendations found in corporate governance codes are used to regulate company activity. Over the last few years, the scope of codes has been expanded in terms of geographical sense and in terms of their content. Initially, the codes purposed to restore investor trust by reducing asymmetry of information, but recently, they have been applied to promote social issues through encouraging companies to disclose information regarding, for example, gender diversity (Adams, 2015, pp. 123–152; Klettner, 2016, pp. 715–739) or board diversity policy — as in the case of BP 2016.

Most of the existing literature on board composition concerns the benefits of appointing heterogeneous boards (see Carter *et al.*, 2003, pp. 33–53; Ujunwa *et al*., 2012, pp. 216–223), but relatively few studies have investigated the features that facilitate board diversification (Kang *et al*., 2007, pp. 194–207).

Gender is probably the most extensively studied dimension of board diversity. This results from the fact that many researchers are motivated by regulatory changes that impose gender quotas on boards or promote board diversity by including recommendations referring to board diversity in codes of corporate governance. Norway was the first country where gender quotas on boardrooms were passed (2003). Other countries (i.e., France, Spain, Italy) soon followed. Cabeza-García *et al*. (2019, pp. 56–67) provide evidence that a mandatory gender quotas system is positively associated with the presence of women in such boards.

However, more interesting results come from research that includes companies that are not obliged to appoint women, but are encouraged to take voluntary decisions on this issue. For example, Geiger and Marlin (2012, pp. 157–172) found that the board size, the number of directors serving on multiple boards and the percentage of outside board members have

a positive impact on the percentage of females holding director positions. They also noted a negative impact due to the presence of older board members. Of note, the company size, as measured by market valuation, is not a significant factor explaining female presentation on company boards.

The prior research of Hillman *et al.* (2007, pp. 941–952) saw that the probability of appointing female directors increases, among others, with the company size, firm age, total risk, board size.

Firm-level determinants of gender board diversity were also studied by Saeed *et al.* (2016, pp. 1076–1088) for a sample of firms operating within developing countries, by Ahmed *et al*. (2018, pp. 326–342) for Australian companies and by Bohdanowicz (2015, pp. 1420–1425) for Polish companies.

Researchers examining the factors affecting the appointment of women to boards report the importance of societal pressure for shaping the company's behavior and thus leading to the increased number of women in company governance boards (Allemand *et al*., 2014, pp. 73–92). Institutional theories suggest that achieving economic success is not enough for a company to survive, because it needs to obtain legitimacy by complying with laws or by being seen to be in alignment with cognitive frameworks (DiMaggio & Powell, 1983, pp. 147–160; Meyer & Rowan, 1977, pp. 340–363). Furthermore, the issue of legitimacy is emphasized by resource dependency theory, which is also used to provide rationales for determinants of women's presence on boardrooms. According to resource dependency theory formulated by Pfeffer and Salancik (1978), the corporate board provides to the firm advice, counsel, legitimacy, and access to channels of communication (Hillman *et al*., 2007, pp. 941–952; Hillman *et al*., 2009, pp. 1404–1427).

Referring to literature on the role of corporate governance codes and drawing from institutional theory, the adoption of Polish corporate governance regulations on board diversity policy may be perceived as the company's response to environmental expectations (Aguilera & Cuervo-Cazurra, 2004, pp. 415–443; De Cleyn, 2008, pp. 1–16) that legitimize the company in the financial market (Zattoni & Cuomo, 2008, p. 4). Thus, the question is which firm-level factors increase the probability of implementation of board diversity policy that is promoted by corporate governance codes.

This study analyzes only one topic included in the corporate governance codes, i.e. board diversity policy, but the issue of compliance with corporate governance codes has attracted the attention of other academics. For example, some researchers focus on the level of compliance with codes of corporate governance (see De Cleyn, 2008, pp. 1–16), others depict determinants of this compliance (Tagesson & Collin, 2015, pp. 262–277) or

examine the quality of explanations provided by companies in corporate governance codes (Koładkiewicz, 2017, pp. 34–54).

Research methodology and hypothesis development

The initial sample consists of 288 non-financial domestic companies listed on the main market of the WSE between 2016 and 30 November 2018. The beginning of the sample period results from the date of entry into force of new corporate governance codes that refer to board diversity policy. To achieve a similar research sample, companies that are bankrupt or that were suspended from trading as of 30 November 2018 were removed from the sample. The final sample of 268 companies was obtained after also excluding companies that did not issue information regarding board diversity policy or which are entities with missing financial data. The sample selection process is shown in Table 1.

This study is an analysis of whether firm-level characteristics are determinants of board diversity policy implementation. The dependent variable is board diversity policy (BDP). This is measured as a dummy variable with a value of 1 when a company announces that it has developed and implemented board diversity policy, and a value of 0 otherwise. As the dependent variable is discrete, binary logistic regression analysis was applied. Hence, the logistic regression equation for the board diversity policy implementation model is as follows:

$$Logit(BDP) = \ln \frac{BDP}{(1-BDP)} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n \quad (1)$$

where:
α	constant,
$\beta_1, \beta_2, \ldots \beta_n$	coefficients of the independent variables,
$X_1, X_2, \ldots X_n$	independent variables.

The set of dependent variables regarding the company's characteristics are described in detail in Table 2.

To investigate the relationship between the company size and its decision on board diversity policy implementation, the notion of variable market capitalization (MV) was employed.

Based on institutional theory, Hillman *et al.* (2007, pp. 941–952) assumed that larger organizations are more likely to respond to societal pressure for appointing women to their boards than smaller ones. This was confirmed, and Hillman *et al.* (2007, pp. 941–952) found a positive association

between the presence of women on the boards of UK companies and the company size. A similar relationship between the presence of women on boards and the company size was also reported by Saeed *et al*. (2016, pp. 1076–1088) for Brazilian, Russian, Indian, Chinese, US and UK companies and by Ahmed *et al*. (2018, pp. 326–342) for Australian companies.

Nevertheless, the study of Geiger and Marlin (2012, pp. 157–172) for US large public companies shows a positive but not significant relationship between female board representation and the company size measured by the natural logarithm of market value. However, the research by Bohdanowicz (2015, pp. 1420–1425) for Polish listed companies documents a negative correlation between the number of women in supervisory boards and the company size.

Following the arguments provided by institutional theory, I assume that the company size affects the decision to implement board diversity policy by that organization. Thus, the first hypothesis is as follows:

H1. *The company size is positively associated with the decision to implement board diversity policy.*

The next group of variables employed in this study refers to board characteristics. These are: the size of management board (SIZE_MB), the size of the supervisory board (SIZE_SB), the binary variable that takes 1 when a woman serves as the CEO and 0 otherwise (W_CEO); the binary variable that takes 1 when a woman serves as the president of the supervisory board and 0 otherwise (W_CHAIR_SB).

Prior literature reports that the probability of women being appointed to boards increases as the board size is made larger (Carter *et al*., 2003, pp. 33–53; Hillman *et al*., 2007, pp. 941–952; Geiger & Marlin, 2012, pp. 157–172, 2012). Geiger and Marlin (2012, p. 161) suggest that from the numbers perspective, larger boards are more likely to appoint women to the board, thus, following this line of reasoning, I assume that larger boards create a greater opportunity for diversification and thus the board diversity policy is more likely to be implemented.

What is more, the study of Tagesson and Collin (2015, pp. 262–277) on factors affecting company compliance with the Swedish Code of Corporate Governance reveals that smaller-sized boards are more likely to deviate from the Code.

It allows to state the following hypotheses:

H2a. *The size of management board is positively associated with board diversity policy implementation.*

H2b. *The size of supervisory board is positively associated with board diversity policy implementation.*

Referring to board characteristics, this study does not apply the percentage of women on management or supervisory boards as independent variables. Instead, it uses the binary variables that reflect the special role performed by women in management and supervisory boards. Arguments for the above decision can be found in Tokenism theory (Kanter, 1977, pp. 965–990) which states that female directors are appointed to boards for symbolic reasons and thus their presence cannot have a significant impact on decisions made by the company (Charles *et al*., 2015, pp. 185–197). Hence, only a critical mass or greater weight of status of women makes the female voice more likely to be heard (Konrad *et al*., 2008, 145–164; Charles *et al*., 2015, pp.185–197). Following this line of reasoning, I assume that women's impact on the company decisions is more significant if a woman serves as the CEO or as the president of the supervisory board. What is more, as some academics report that the presence of women has a positive impact on corporate social responsibility initiatives (Rao & Tilt, 2015, pp. 327–347; Bear *et al*., 2010, pp. 207–221; Yasser *et al*., 2017, pp. 210–221; Liu, 2018, pp. 118–142) and on "ethical and social compliance" (Isidro & Sobral, 2015, p. 1), the next two hypotheses are as follows:

H3a. *The company with female CEO is more likely to adopt and implement board diversity policy.*

H3b. *The company with female president of supervisory board is more likely to adopt and implement board diversity policy.*

The next independent variables used as predictors of board diversity policy implementation are the proxies for ownership structure. According to the Polish regulations, members of the supervisory board appoint management board members and shareholders appoint members of this supervisory board. Nevertheless, the company's statutes may provide for other solutions regarding this issue. This situation leads to the conclusion that the board size and its composition are affected by the ownership structure. Thus, the question is how the ownership structure affects decisions on board diversity policy implementation. In other words, the question is whether investors are interested in applying the corporate governance codes regarding board diversity policy.

This study applies two variables referring to ownership structure: the ownership concentration (OWN_CONC) and the percentage of shares owned by financial investors (FIN_OWN).

Bohdanowicz (2015, pp. 1420–1425) assessed the impact of ownership structure on the size and gender diversity of the supervisory boards of Polish companies listed on the Warsaw Stock Exchange. He noted that the higher the percentage of shares that is owned by financial investors, the larger the supervisory boards and the lower the degree of supervisory board diversity. This result provides evidence that in the case of Polish companies, financial investors are not interested in applying the principles of gender diversity included in best practice in corporate governance1.

According to Kang *et al.* (2007, pp. 194–207) and Ahmed *et al.* (2018, pp. 326–342), higher ownership concentration decreases the probability of women's appointment to boardrooms. Kang *et al.* (2007, p. 194–207) came to the conclusion that companies owned by a lower number of shareholders are under less societal pressure, in comparison with companies with a higher number of shareholders, and hence to have the need to be seen as being diversified.

The research by Tagesson and Collin (2015, pp. 262–277) also reveals that in companies listed in Sweden, higher ownership concentration increases the likelihood of deviance from corporate governance codes.

Thus, the next hypotheses are as follows:

H 4a. *Financial ownership is negatively associated with board diversity policy implementation.*

H 4b. *Ownership concentration is negatively associated with board diversity policy implementation.*

Two next independent variables employed in this study are the company's profitability as measured by ROA and the company's financial risk as measured by leverage (LEV).

Existing research for a sample of Spanish firms documents that women are appointed to boards with higher level of performance and lower level of financial risk (Martín-Ugedo & Minguez-Vera, 2014, pp. 136–162). Hence:

H 5. *The company's profitability is positively associated with board diversity policy implementation.*

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[1] The issue of gender board diversity was included in Polish corporate governance codes in 2010 for the first time (Code of Best Practice of WSE Listed Companies, 2013).

H 6. *The company's leverage is negatively associated with board diversity policy implementation.*

All the data concerning the characteristics of the analyzed companies have been collected from the annual reports for the financial year 2015, and from databases provided by Notoria Serwis and the Warsaw Stock Exchange. The sources of information on board diversity policy were current reports on compliance with The Best Practice for GPW Listed Companies 2016 and information published on companies' websites.

Results

Only 62 (23.13%) companies from the research sample of 268 companies stated that they apply board diversity policies. Table 3 provides insights into some statistics for the two groups of companies distinguished in the research sample.

Referring to Table 3, it should be noticed that companies that implement board diversity policy are larger and more profitable, and appoint larger management and supervisory boards. The percentage of women on management boards is, however, higher for the sub-sample consisting of companies that did not implement board diversity policy. Nevertheless, women in this sub-sample less frequently act as the president of the supervisory board, in comparison with the other sub-sample.

While companies are not obliged to implement board diversity policy, the decision on not implementing should be explained and made publicly available. Table 4 lists the types of explanations provided by 206 companies that do not apply board diversity policies. Herein, management explanations were manually collected and then sorted into different types. Based on the results presented in Table 4, it may be stated that the majority of companies listed on the Warsaw Stock Exchange are not interested in implementing rules regarding diversity. The explanations provided by 152 companies reveal that competence, experience and qualifications are the most important criteria for appointing board members, and, consequently, gender and age are not important dimensions (59 companies). What is more, on analyzing the types of explanations, the conclusion that is drawn is board diversity policy implementation is perceived by many companies as unnecessary, because the company complies with the law and to rules on equality and discrimination, or the management board and the supervisory board are already diversified, or the company cannot affect the decision on

appointing members of boards, or that the present rules of appointing of board members are effective.

Table 5 lists descriptive statistics for the variables employed in logit regression models.

Accordingly, on average, the management board consists of 3.1 members and the supervisory board accounts for 5.7 members. It is not surprising, as the Polish regulation requires from public companies to appoint at least one person to the management board and at least five members to the supervisory board. What is more, on average 17.4% of shares are owned by financial investors. In addition, the percentage of companies with a woman serving as the CEO is 6%, while 9.3% of the listed companies have a female president of the supervisory board.

The Pearson's pairwise correlation matrix of the variables used in the analysis is depicted in Table 6. This reveals the existence of a significant correlation between some independent variables. Nevertheless, all the variables were included in the model because the observed correlation may be an evident effect of the company's growth (Ujunwa *et al*., 2012, pp. 220–221).

After examination for multicollinearity, I ran several logistics regression models. Table 7 presents the estimated coefficients and odds ratios with a significance level of the logistic regression models.

All the models show positive and statistically significant (at 0.05 level) coefficients for company size (MV). The odds ratio for MV in model 1 suggests that the odds of board diversity policy implementation increase by 1.277 when the natural logarithm of market value increases by 1 unit. The positive correlation between market value and board diversity implementation is consistent with hypothesis 1.

Companies with a larger management board (SIZE_MB) and with a woman acting as the president of the supervisory boards (W_CHAIR_SB) are more likely to develop and implement diversity policy (the Wald statistics of these two variables are significant at 0.05 or 0.01). In model 1, the odds ratio for SIZE_MB at 1.354 suggests that appointment of another person to the management board increases by 1.354 the odds of board diversity policy implementation. Regarding variable W_CHAIR_SB, the odds ratio of board diversity policy implementation in firms with a female president of the supervisory board is 3.357 times greater compared to companies with male counterparts. Other models also depict a significant association between these dependent variables and BDP. These results give support to hypotheses H2a and H3b.

As other variables referring to board characteristics, such as W_CEO (model 6) and SIZE_SB (all models) are not correlated with implementation of board diversity policy, hypotheses H2b and H3a are rejected.

The variables used as a proxy for ownership structure, i.e. ownership concentration (model 5) and the percentages of shares owned by financial investors (model 4) are not associated with implementation of board diversity policy. Thus, these results do not give support for hypotheses H4a and H4b.

What is more, the Wald statistics of independent variables referring to company's financial characteristics is not significant, which suggests that both ROA (model 2) and LEV (model 3) are not correlated with the board diversity policy implementation. This evidence is not consistent with hypotheses H5 and H6.

Model fit statistics for all models are included in Table 7. The Chi2 coefficient for all the models is significant, which means that the model is statistically significant. The Hosmer and Lemeshow Test of Chi2 is not significant and thus indicates that all the models fit the data. The value for the Cox-Snell R2 suggest that independent variables in model 1 can explain 13.2% of all the variability in the dependent variable, and according to Nagelkerke R2, this value increases to 20%. For all the models, the predictive accuracy is 80.224%.

Discussion

This research is based on company declarations of board diversity policy implementation that were issued after the BP2016 came into force. The logistic regression analysis does not, however, include the date of publication of such declarations (in some cases, it is impossible to specify the date), thus the findings of this study might be disturbed by the fact that some companies might imitate actions taken by other companies. This effect could result in taking decisions on board diversity policy implementation for the wrong reasons, and thus without a good understanding of its essence and benefits.

This paper deals with an important but relatively new issue. Due to the lack of similar research regarding determinants of board diversity policy implementation, these findings might be compared to research on predictors of women's presence on management boards or studies on compliance with corporate governance codes. This is because these activities are perceived as company responses to societal pressure. This study also points out the role of company size in adopting environmental expectations (i.e.

board diversity policy implementation), and is consistent with findings of Hillman *et al.* (2007, pp. 941–952) for the sample of 950 US firms from the period 1990–2003, Saeed *et al.* (2016, pp. 1076–1088) for 1009 companies from Russia, Brazil, China, India, US and UK (the research period covers 2005–2012) and Ahmed *et al.* (2018, pp. 326–342) for Australian companies included in ASX500 index in the period of 2011–2014. In accordance with institutional theory, the above research confirms that larger companies are more likely to respond to societal pressure for appointing female directors to boards.

Furthermore, the findings referring to the role of management board size in board diversity policy implementation are in line with hypothesis 2a and the results reported by studies on determinants of women's presence in boards (Carter *et al.*, 2003, pp. 33–53; Hillman *et al.*, 2007, pp. 941–952; Geiger & Marlin, 2012, pp. 157–172) and predictors of companies' compliance with corporate governance codes (Tagesson & Collin, 2015, pp. 262–277).

For example, Carter *et al.* (2003) report a positive relationship between the board size and percentage of women in the board for the sample of 638 1000 Fortune companies in 1997. The similar relationship is documented by Geiger and Marlin (2012) for large publicly traded companies in US. The research of Tagesson and Collin (2015, pp. 262–277) based on a sample of 193 public Swedish companies (data from 2010 year) finds that a larger board decreases the likelihood of deviance from the Swedish Code.

This study also provides evidence that women serving as presidents of supervisory boards increase the likelihood of the company responding to institutional pressure.

Conclusions

Board diversity policy is one of the many pressing issues for publicly traded corporations. This article lists and examines the explanations provided by companies that did not voluntarily take a decision to diversify their management and supervisory boards, and identify factors that may influence the implementation of board diversity policy.

The board diversity policy included in BP2016 refers to four dimensions of diversity, but companies most frequently emphasized competence, experience and qualifications or set these as the only criteria for board membership. Quite often, they indicate that age and gender are of little or no importance in membership decisions.

As it was expected, the larger companies are in terms of market capitalization, the more likely they are to respond to societal pressure and thus to implement board diversity policy. This result is in line with the H1 hypothesis. The larger size of the management board and the presence of a woman as the president of the supervisory board also increase the likelihood of the company to respond to diversification expectations. This result confirms the H2a and H3b hypotheses. Contrary to expectations, other variables such as profitability, leverage and ownership structure are not important in explaining the company's decisions on applying board diversity policy.

While this study provides some insights into the reasons for not implementing board diversity policy, the above results are of relevance for policy-makers responsible for preparing regulations regarding societal issues and for organizations promoting diversity among companies. As companies are obliged to achieve both positive financial outcomes and to comply with societal expectations, the findings might be also useful for investors seeking investment opportunities.

This research is not free from limitations. Firstly, this study is based on company-supplied announcements regarding board diversity policy implementation. The question is if such announcements lead to more diversified boards. Secondly, as the logistic regression models in this study employ a selected set of variables, other dependent variables may be in play — such as managerial ownership or family ownership.

The above limitations are suggestions for future research on the topic of board diversity policy, as doing so might provide answers on the efficiency and role of existing regulations.

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Annex

Table 1. Summary of the sample selection process

Specification	No. of companies
Non-financial domestic companies listed on the GPW Main List between 2016 and 30 November 2018	288
Less: companies in bankruptcy and/or suspended from trading at 30 November 2018	13
Less: companies that did not issue information on board diversity policy or explanations for decision on not complying with it	5
Less: companies with missing financial data	2
Final sample	268

Table 2. Description of variables

Variables	Definition	Predicted sign
	Dependent variable	
BDP	Board diversity policy – dummy variable with values of 1 when a company develops and implements board diversity policy, and 0 otherwise.	
	Independent variables	**Predicted sign**
MV	Natural logarithm of market capitalization	+
SIZE_MB	Number of directors in the company's management board	+
SIZE_SB	Number of supervisors in the company's supervisory board	+
W_CEO	Dichotomous variable "1" if the CEO of the company is a woman, and "0" otherwise	+
W_CHAIR_SB	Dichotomous variable "1" if the president of the supervisory board is a woman, and "0" otherwise	+
FIN_OWN	Number of shares held by financial investors divided by total number of shares	-
OWN_CONC	Ownership concentration as measured by the Herfindahl-Hirschman Index (HHI)	-
ROA	Net income divided by total assets	+
LEV	Total debt divided by total assets	-

Table 3. Statistics describing two sub-samples of companies

Specification	Board diversity policy implementation	
	No	Yes
No. of companies	206	62
Mean value of assets (in mln PLN)	1296,87	4141.92
Mean value of sales (in mln PLN)	1048.82	4208.12
Mean value of market capitalisation (in mln PLN)	633.99	2394.73
ROA (mean)	-1.56%	0.52%
ROE (mean)	-2.90%	1.08%
ROS (mean)	-1.93%	0.51%
LEV (mean)	45.11%	49.41%
No. of management board members (mean)	2.8	3.9
No. of supervisory board members (mean)	5.5	6.1

Table 3. Continued

Specification	Board diversity policy implementation	
	No	Yes
Percentage of women on management board	11.26%	7.95%
Percentage of women on supervisory board	13.74%	13.16%
Percentage of companies with woman serving as CEO	6.31%	4.84%
Percentage of companies with woman serving as president of supervisory board	6.31%	19.35%
FIN_OWN (mean)	17,28%	23,88%
OWN_CONC (mean)	17,68%	21,00%

Table 4. Classification of explanations provided by companies not applying board diversity policy

Specification	No. of companies	%
Competence, experience, qualifications are the most important criteria for appointing board membership	152	73.79%
Age and gender criteria are not important or not taken into account in the process of board appointment	59	28.64%
The company complies with the law and internal regulations regarding discrimination and equal opportunities in the recruitment process for management positions	43	20.87%
The company's management board and supervisory board are heterogeneous or the company is already seeking to diversify the composition of boards	36	17.48%
The members of the management board are appointed by the supervisory board and the composition of the supervisory board results from shareholders' decision, thus the company cannot ensure that the composition of boards will be diversified	33	16.02%
It is not necessary to develop and implement board diversity policy, because the present rules regarding board appointment are effective, or implementation of this policy could be inconsistent with company regulations	28	13.59%
The company is going to develop and implement board diversity policy in the future	16	7.77%
The management board is of small size or is of stable composition	13	6.31%
The management and/or supervisory board's composition is already diversified	9	4.37%
The company appreciates the importance of board diversity	8	3.88%
The insignificant size of the company or the specificity of the company's activity prevent diversity	7	3.40%
Specificity of the sector prevents diversity	5	2.43%
The company has already developed a document on employee diversity	4	1.94%
Ownership structure and shareholder wealth prevent diversity	2	0.97%
The lack of women with an appropriate technical education prevents diversity	1	0.49%
Total number of companies	**206**	**100%**

Notes: because the companies usually provide more than one explanation, the sum of companies in the lat two last columns is higher than 206 or 100%, respectively.

Table 5. Descriptive statistics (n=268)

Specification	Mean	Median	Std. Dev.	Min	Q1	Q3	Max	Skewness	Kurtosis	Jarque–Bera
BDP	.231	.000	.422	.000	.000	.000	1.0	1.28	-0.36	74.8 (.0000)
MV	12.067	11.941	1.796	8.348	10.9	13.142	17.23	0.38	0.01	6.4 (.0399)
SIZE_MB	3.078	3.00	1.442	1.00	2.00	4.00	11.0	1.29	3.54	214.3 (.0000)
SIZE_SB	5.653	5.00	1.258	2.00	5.00	6.00	12.0	1.93	5.80	542.2 (.0000)
W_CEO	.060	.000	.237	.000	.000	.000	1.0	3.74	12.06	2248.0 (.0000)
W_CHAIR_SB	.093	.000	.291	.000	.000	.000	1.0	2.81	5.96	749.5 (.0000)
FIN_OWN	.174	.116	.200	.000	.000	.252	.88	1.47	1.90	136.6 (.0000)
OWN_CONC	.232	.172	.175	.000	.099	.339	.92	1.10	0.75	59.97 (.0000)
ROA	.020	.036	.174	-1.468	.007	.069	.88	-4.44	39.2	18037.3 (.0000)
LEV	.464	.459	.184	.030	.343	.594	.96	0.12	-0.27	1.4 (.4971)

Notes: Jarque-Bera p-value in parentheses

Table 6. Correlation matrix

Variables	BDP	MV	SIZE_MB	W_CEO	SIZE_SB	W_CHAIR_SB	ROA	LEV	FIN_OWN	OWN_CON
BDP	1									
MV	.299**	1								
SIZE_MB	.296**	.493**	1							
W_CEO	-.026	-.028	-.047	1						
SIZE_SB	.208**	.511**	.290**	-.006	1					
W_CHAIR_SB	.189**	.093	.072	-.027	.027	1				
ROA	.043	.173**	.104	.154*	-.108	.051	1			
LEV	-.017	-.082	.097	-.012	.078	.065	-.115	1		
FIN_OWN	.008	.068	-.011	.137*	.035	-.016	.017	.058	1	
OWN_CONC	-.070	.066	.002	.067	.002	-.063	.044	.020	-.134*	1

Notes: *. ** denote significantly different from zero at the 0.05 and 0.01 levels respectively

Table 7. The results of logistic regression analysis

Specification	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	B	B	B	B	B	B
Constant	-5.913	-5.909	-5.557	-5.939	-5.762	-5.907
SIZE_MB	0.303**	0.303**	0.322**	0.304**	0.303**	0.303**
	(1.354)	(1.354)	(1.380)	(1.356)	(1.354)	(1.354)
SIZE_SB	0.095	0.096	0.108	0.095	0.094	0.095
	(1.099)	(1.101)	(1.114)	(1.100)	(1.099)	(1.099)
W_CEO						-0.041
						(0.96)
W_CHAIR_SB	1.211***	1.211***	1.253***	1.215***	1.168**	1.21***
	(3.357)	(3.355)	(3.499)	(3.369)	(3.215)	(3.355)
MV	0.245**	0.244**	0.23**	0.244**	0.255**	0.245**
	(1.277)	(1.276)	(1.258)	(1.277)	(1.290)	(1.277)
OWN_CONC					-1.167	
					(0.311)	
FIN_OWN				0.141		
				(1.151)		
ROA		0.041				
		(0.971)				
LEV			-0.680			
			(0.506)			
Model Chi^2	37.929***	37.931***	38.498***	37.961***	39.449***	37.933***
- 2LL	251.990	251.989	251.421	251.959	250.470	251.986
Cox and Shnell R^2	0.132	0.132	0.134	0.132	0.137	0.132
Nagelkerke R^2	0.200	0.200	0.202	0.200	0.207	0.200
Hosmer and Lemeshow Test Chi^2	5.637	5.653	5.010	4.249	6.558	4.754
Hosmer and Lemeshow Test Sig.	0.688	0.686	0.756	0.834	0.585	0.784
Predictive accuracy (in %)	80.224	80.224	80.224	80.224	80.224	80.224

Notes: Numbers in parentheses are odds ratios; *. **. *** denote significantly different from zero at the 0.1. 0.05. 0.01 levels respectively