DOES BOARD GENDER DIVERSITY PLAY SIGNIFICANT ROLE IN DETERMINING FIRM PERFORMANCE? THE CASE OF CROATIAN LARGEST MANUFACTURERS

Pavić Kramarić, Tomislava; Miletić, Marko

Source / Izvornik: **Zbornik Veleučilišta u Rijeci,, 2022, 10, 1 - 19**

Journal article, Published version
Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

https://doi.org/10.31784/zvr.10.1.1

Permanent link / Trajna poveznica: https://urn.nsk.hr/urn:nbn:hr:227:039189

Original scientific paper
https://doi.org/10.31784/zvr.10.1.1
Received: 31. 5. 2021.
Accepted: 18. 10. 2021.

DOES BOARD GENDER DIVERSITY PLAY SIGNIFICANT ROLE IN DETERMINING FIRM PERFORMANCE? THE CASE OF CROATIAN LARGEST MANUFACTURERS

Tomislava Pavić Kramarić
PhD, Associate Professor, University of Split, University Department of Forensic Sciences, R. Boškovića 33, 21000 Split, Croatia; e-mail: tpkramaric@unist.hr

Marko Miletić
PhD, Senior Lecturer, University of Split, University Department of Professional Studies, Kopilica 5, 21000 Split, Croatia; e-mail: mamiletic@oss.unist.hr

ABSTRACT

The aim of this research is to analyse whether the board gender diversity plays vital part in explaining firm performance. The research is performed using static panel analysis using the sample of Croatian largest manufacturers that operated in the 2015 – 2019 period. In order to conduct such analysis several variables relating to board characteristics are employed in the research including proportion of women in the boardroom, dummy variable whether a female is present on the board, Blau index and size of the board. Furthermore, a set of firm-specific, industry oriented and macroeconomic variables are encompassed by the analysis as well comprising of size, liquidity, leverage, inventory management, capital intensity, market structure expressed with concentration ratio and GDP real growth rate. In order to obtain more robust results, three performance measures are introduced ROA, ROS and NPM. The findings reveal that size, liquidity, leverage, inventory management, capital intensity and concentration of the industry play an important role in determining firm profitability whereas we have not found support for greater gender diversity in the boardroom in terms of superior performance. Similar results are also provided with robustness check. The paper contributes to the scientific thought in a way that it adds to the scarce empirical evidence on gender diversity in manufacturing industry in general and particularly in Croatian context.

Key words: *Croatian manufacturing industry, gender diversity in the boardroom, company performance*

1. INTRODUCTION

Encouraging gender equality in various aspects of human life including economic, political, cultural, etc. has become a key issue of global importance. The importance attributed to gender equality in public life can be seen from the EU Gender Equality Strategy with policy objectives, including, among others, reaching equal share through different sectors of the economy in order to make substantial progress on the way to a gender-equal Europe by 2025 (Gender Equality Strategy 2020-2025). According to the European Commission (Achieving gender balance in decision-making), women in the EU still are under-represented in economic decision-making. Specifically, the share of women as board members in the largest publicly listed companies registered in the EU is less than 29%. Furthermore, they made up only 7.8% of board members and 8.2% of CEO's. Moreover, it can be seen that proportion of women at leading positions such as presidents and board members but also as employee representatives in EU27 in 2020 amount to 29.5% with Croatia lagging slightly with 26.2% share (Gender Statistics Database, 2020).

The number of research dealing with board diversity and its impact on corporate performance is increasing over last decades. The diversity of the board may include different features such as gender, age, race, ethnicity, nationality, education, professional background etc. (Campbell, Mínguez-Vera, 2008; Darmadi, 2011) while gender is being one of the most investigated features of the board. Thus, in our study, we are also oriented to gender diversity of the board and its influence on firm performance.

Despite the undoubted and desirable importance of greater gender diversity, the question of the benefits of board gender diversity for companies in terms of financial gains remains unclear. Therefore, we wanted to provide new scientific proof on this issue. Specifically, our study deals with the influence of board structure including board diversity of the largest Croatian manufacturing firms on firm performance that is measured with three different accounting-based measures including ROA, ROS and NPM. Furthermore, gender is used to proxy for diversity which is measured with proportion of women in the boardroom, dichotomous variable whether at least one female member is present in the boardroom and with Blau index. Since corporate performance might be influenced by different factors several control variables including firm-specific, industry-oriented and macroeconomic variables are included in the analysis which is conducted in the period running from 2015 till 2019. Moreover, the robustness check is performed afterwards.

This study makes several contributions to the existing literature. Primarily, it contributes to the limited empirical evidence in the context of relationship between gender diversity in the boardroom and firm performance in developing economy such as Croatian. Second, most of the previous studies have been oriented towards listed companies belonging to different sectors (e.g. Rose, 2007; Campbell, Mínguez-Vera, 2008; Darmadi, 2011; Lückerath-Rovers, 2013; Kılıç, Kuzey. 2016; Ahmadi et al., 2018). Exceptions are those relating to financial institutions (Gallego-Álvarez et al., 2010; Pathan, Faff, 2013) whereas our study focuses solely on one industry, i.e. manufacturers. Existing studies on gender diversity and its influence on performance in the Croatian context also deal with either financial institutions (e.g. Pavic Kramaric et al., 2018) or listed companies (e.g. Drmac et al., 2017). Moreover, we employ three performance measures as well as wide array of

different board characteristic measures and control variables including firm-oriented, industry-oriented and macroeconomic variables to make results more reliable.

The rest of the paper is structured as follows. After the introductory part explaining the importance of board diversity in terms of corporate performance, literature review follows. The third section of the paper explains variables included in the analysis as well as their potential impact on firm performance. Section dealing with empirical data and analysis follows afterwards. Results and discussion are given in section five, while the sixth section provides robustness check. The seventh section concludes.

2. LITERATURE REVIEW

Gender diversity in the boardroom has gained attention of many research papers in order to find out its influence on various aspects of companies' activities including e.g. corporate social responsibility (CSR), innovation and firm performance. Since the research on influence of board gender diversity on companies' performance is growing as well as the importance and social awareness devoted to this issue, the literature review in this paper presents some recent papers on the issue in more detail.

Marinova et al. (2016) examine influence of board diversity on performance measured with market performance measure, i.e. Tobin's Q using empirical data on 102 listed Dutch firms and 84 Danish firms listed on OMX Nordic Exchange in Copenhagen which operated in 2007, excluding football clubs and financial institutions such as banks and insurance companies. Regarding board gender diversity, the authors use two measures, i.e. proportion of women in the boardroom and dummy variable specifying if at least one woman is present in the boardroom while control variables comprise of board size, firm age, the share of independent directors, firm size, and industry. Applying two-stage least-squares technique, the authors haven't found relationship between board diversity and firm performance.

Kılıç, Kuzey (2016) study the influence of board gender diversity on firm performance using the sample of companies listed on BIST - the Borsa Istanbul in Turkey. Specifically, the authors conduct the analysis in the 2008 – 2012 period employing an instrumental variables regression analysis. The authors use three proxies to measure gender diversity in the boardroom comprising of dummy variable to indicate whether a female member is present on the board, share of female directors and Blau index while instrumental variables include board independence, board size, leverage and firm size. Positive influence of presence of women directors on firm performance using ROA, ROE and ROS variables is found.

Li, Chen (2018) investigate the relationship among board gender diversity and firm performance on the sample of listed firms in China in the 2007 – 2012 period excluding financial companies. Therefore, performance is measured with Tobin's Q. Moreover, the authors also examine whether firm size modifies this relationship. The authors consider four different measures on gender diversity that are the share of female directors in the boardroom, the dummy variable to specify presence of female directors, Blau index and the number of women acting as directors in the boardroom. Furthermore, individual-level, as well as board-level, firm-level and industry-level control variables

are employed in the analysis providing empirical evidence for the positive effect of board gender diversity on corporate performance. However, the results also find that firm size might moderate the positive link between board gender diversity and company performance. Specifically, this positive impact is evident only in the case when size of the firm is lower than critical value.

Paper by Brahma et al. (2020) deals with the relationship between gender diversity in the boardroom and financial performance of FTSE 100 firms. Since their sample comprise of listed firms, the performance measure used are Tobin's Q and ROA while gender diversity variables include dummy variables to indicate if one, two or three or more women acting as directors are present on the board and if a female is appointed as an executive director. Furthermore, multiple directorship variable is used to measure the total number of directorship positions held by the woman, education is taken into account to find out if a female director holds a master or PhD degree while prominence dummy suggests if the female director holds an honorary position of Dame or Baroness. After encompassing a range of control variables pertaining to board characteristics and firm-specific and industry-oriented variables, the results of the analysis reveal statistically significant and positive relationship between gender diversity and firm performance. Moreover, these findings become very significant and explicit if three or more women are appointed in the boardroom.

3. DESCRIPTION OF VARIABLES

Performance measures differ across studies. Since only small fraction of companies in our sample is listed on stock exchange, we have opted for accounting performance measures. Specifically, in our study, performance is measured with three different accounting-based ratios in order to gain better understanding of our sample firms' operating activities. Thus, we have employed ROA, ROS and NPM dependent variables. ROA is measured as net profit over total assets following e.g. Salim, Yadav (2012), Taani (2013) and Buallay et al. (2017). Furthermore, ROS, measured as net profit to sales ratio, is employed in the analysis as in paper by Hunton et al. (2003) while NPM, following Lee (2006) is calculated as net profit over revenues.

Regarding board characteristics, board size and gender diversity variables are employed in the study. Firstly, we indicate diversity by calculating the fraction of members with specific gender attributes. Furthermore, the authors employ dichotomous variable to specify if board is characterised by certain attributes and finally, heterogeneity index such as Blau index is used as well.

Board share of women is calculated as the number of women directors on the board over the total number of board members. This variable has been included in the analysis following Campbell, Mínguez-Vera (2008) and Shehata et al. (2017).

Dummy variable is used to indicate if the board is characterised by the presence of female directors. Specifically, it takes a value of one if there is at least one woman being member of the board and zero otherwise. Such dichotomous variable is used following eg. Campbell, Mínguez-Vera (2008) and Shehata et al. (2017).

Board of directors Blau index is heterogeneity index widely used in studies dealing with diversity of the boards (e.g. Campbell, Mínguez-Vera, 2008 and Shehata et al., 2017). Following these studies the Blau index is calculated as:

$$Blau\ index = 1 - \sum_{i=1}^{n} p_i^2 \qquad (1)$$

where p_i is the percentage of female directors and n is the total number of board members in the firm. The index values can range between 0 (when there is only one female in the boardroom)and 0.5 (when there is an equal number of men and women).

Although the importance of gender diversity in various aspects of corporate life, including the boardroom, is unquestionable, its financial benefits are not completely clear since empirical research has produced ambiguous findings. A huge amount of literature relating to this issue has produced papers that support gender diversity in the boardroom (Erhardt et al., 2003; Campbell, Mínguez-Vera, 2008 and Lückerath-Rovers, 2013). This could be explained with the fact that "the presence of women on company boards may enhance shareholder value if women bring an additional perspective to board decision-making" (Campbell, Mínguez-Vera, 2008:435). Greater gender diversity is justified with ethical and social equality reasoning but also with economic benefits. Campbell, Mínguez-Vera (2008:439-440), citing Robinson, Dechant (1997), add that "greater diversity promotes a better understanding of the marketplace by matching the diversity of a firm's directors to the diversity of its potential customers and employees". They also state that gender diversity leads to increased creativity and innovation, better problem-solving, decision making and image of the firm resulting with superior performance. However, there are papers that do not find a link between gender diversity and company performance (Randøy et al., 2006 and Rose, 2007) as well as those that indicate adverse effects on business operations in terms of financial performance (Adams, Ferreira, 2009 and Darmadi, 2011). Thus, the expected influence of gender diversity variables on firm performance is ambiguous.

For the purpose of analysing the influence of board characteristics on corporate performance of Croatian large-sized manufacturers the authors have also employed several control variables since firm performance is possibly affected by a selection of these factors. These are categorised into three groups comprising firm-oriented (size of the firm based on total assets, liquidity expressed as current ratio, leverage, inventory management and capital intensity), industry-oriented (industry concentration expressed with CR4) and macroeconomic variables. Although capital intensity is regarded as firm-oriented variable, it can be considered an industry-specific factor as well since it represents the source of barriers to entry (Lee, 2009). In order to capture macroeconomic environment in which companies operate real GDP growth rate has been employed as well.

Size is often employed variable in empirical research trying to explain profitability of the firms. It is logarithmic value of total assets following Hunton et al. (2003), Goddard et al. (2005), Lee (2009), Salim, Yadav (2012), Li, Chen (2018) and Corvino et al. (2019). As suggested by Lee (2009), the generally accepted view is that larger companies are presumably more profitable as compared to their smaller counterparts as a result of efficiency gains and exploiting economies of scale

and scope or higher market power. However, Goddard et al. (2005) find that manufacturers that increase in size tend to experience a decline in profitability which is explained by the fact that firms experiencing growth in size may experience diseconomies of scale. Therefore, the expected sign of size variable is not clear.

Liquidity is also employed in the model as control variable referring to current ratio which is calculated as short-term assets over short-term liabilities. Indicating the firms' ability to settle their short-term liabilities, positive effect on performance can be expected as found by e.g. Goddard et al. (2005) and by Nunes et al. (2012). On the contrary, Goddard et al. (2005) also note that excessive fraction of assets being held in liquid form might possibly stop companies from taking advantage of alternative profitable investment opportunities. Therefore, we can expect ambiguous influence.

Leverage is additional control variable frequently employed in empirical studies on determinants of corporate performance calculated as total debts over total assets. Mixed results have been documented in previous research on influence of leverage on firm performance. Specifically, positive relationship is found by e.g. Fosu (2013), negative by Cheng (2008) while Azeez (2015) did not find leverage to be determining factor in explaining firm performance. The rationale for such findings, as suggested by Ibhagui, Olokoyo (2018:57), can be found in the signalling theory which suggests that debt should be positively related to profitability if asymmetric information are present and in the agency costs theory which "predicts a negative relationship between leverage and firm performance resulting from the agency costs between firm owners and lenders".

Inventories management, calculated with the ratio of inventory stock to total sales, shows how efficiently companies manage their inventories. Higher profits rates are usually related to lower inventory to sales ratios, thus, negative sign could be expected. The rationale can be found in Klingenberg et al. (2013) suggesting that cash constrained in inventories and, not available for profitable usage, consequently increases company's cost of capital. Moreover, Amato, Amato (2004) find negative inventories management-profit relationship. Lee (2009) finds that the coefficient estimate for inventories management is not associated with the profit rates whereas it takes a positive sign when industry characteristics including industry dummy are observed.

Capital intensity is measured as total assets over sales ratio. Considering the fact that the capital intensity might raise the market power of a company the positive influence of this variable on performance is expected. This can be explained with the view offered by Lee, Roh (2012:654) stating that it represents a company's "long-term commitment to building technological base and upgrading productive capacity". Furthermore, the same authors add that despite the fact that capital expenditure may result in diluted short-term resources, it will pay off in the long-term. However, empirical research provides mixed results. Specifically, positive impact is found by Amato, Amato (2004). Moreover, positive sign on the sample of high-tech industries is obtained by Lee, Roh (2012) whereas the same study offers negative influence of this variable on accounting-based performance measures. Moreover, insignificant influence of capital intensity on corporate performance is found by Lee (2009).

Concentration is expressed using concentration ratio of four largest companies operating in the market since structure-conduct-performance paradigm points out the crucial role the market

concentration and conduct play in explaining profitability. The authors have employed this variable following Kapopoulos, Lazaretou (2007) and Lee's (2009) approach. It is observed as a main source of market power at the industry level, thus, positive impact of this variable is expected. Lee (2009) finds positive sign of this variable though it is insignificant in some regressions.

As in numerous studies (e.g. Lee, Grewal, 2004; Amato, Amato, 2004; Lee, 2009; Pattitoni et al., 2014) GDP real growth rate variable is employed to capture general economic conditions the companies operate in. Moreover, as conducting a longitudinal study, changes in economy need to be controlled for, which is achieved by employing changes in GDP variable. Having in mind that it stands for the level of economic development, we can conclude that if economic environment worsens, financial disruptions in performance of the firms might also be expected. Therefore, positive sign of this variable is expected. Lee (2009) finds positive, though insignificant, association of profit rates with business cycle whereas Lee, Grewal (2004) find positive influence on Tobin's Q while Cummins et al. (2017) find its positive effect in insurance industry.

All variables relating to board characteristics as well as firm-specific and industry-oriented variables were calculated on the basis of data manually collected from annual reports publicly available through Financial Agency (FINA) database. Data on GDP real growth rates were obtained from the web pages of Croatian National Bank.

Using FINA database, 100 large-sized companies in the manufacturing industry in Croatia were identified. However, after excluding companies with missing data and after omitting companies with registered negative capital, our initial sample was reduced from 100 to 81 companies making a balanced dataset. Moreover, since according to Croatian Companies Act, companies can decide to adopt organisation under a one-tier or dual-tier board system, our sample relates mostly to management boards of the companies that employ two tier board system (85%) while the rest are the companies having board of directors which are all referred to as a board.

4. EMPIRICAL DATA AND ANALYSIS

Descriptive statistics for both dependent and independent variables employed in research are presented in Table 1. These are calculated based on 400 observations for all variables.

Table 1. Descriptive Statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
ROA	400	5.313275	8.193576	−32.84	39.93
ROS	400	5.815325	9.306886	−47.77	43.92
NPM	400	5.6131	9.18494	−43.61	82.52
SIZE	400	20.0359	0.932727	17.71	23.82
LIQ	400	2.103025	2.262781	0.1	24.79
LEV	400	45.73085	20.74036	2.62	98.74
INV	400	0.1814	0.247823	0	3.26
CAP_INT	400	1.306	2.054846	0.25	39.22
Board_size	400	0.8329	0.500221	0	1.95
Share_women	400	0.1811	0.284303	0	1
Women_dummy	400	0.3825	0.486606	0	1
Blau	400	0.1355	0.204052	0	0.5
CR4	400	36.536	1.701205	33.63	38.43
GDP growth	400	3	0.405476	2.4	3.5

Source: authors' calculation

Firstly, the stationarity in a panel dataset has been tested. The presence of stationarity has been tested in all variables (except dummy variable) using a Harris – Tzavalis unit-root test where results showed that all variables were stationary. The results of employed Harris – Tzavalis unit-root test is presented with Table 2.

Table 2. Harris – Tzavalis unit-root test

Variable	*p*-value
ROA	0.0000
ROS	0.0000
NPM	0.0000
SIZE	0.0126
LIQ	0.0000
LEV	0.0000
INV	0.0000
CAP_INT	0.0000
SIZE	0.0000
Share_women	0.0000
Blau	0.0000
CR4	0.0000
GDP_growth	0.0000

Source: authors' calculation

After conducting stationarity test, the problem of multicollinearity between all independent variables was checked implementing the matrix of Pearson correlation coefficients. Since there is no value of the Pearson coefficient higher than 0.7, as presented with Table 3, we can conclude there is no problem with multicollinearity between independent variables.

Table 3. Correlation matrix

	SIZE	LIQ	LEV	INV	CAP_ INT	Board_ size	Share_ women	Blau	CR4	GD_ growth
SIZE	1.0000									
LIQ	0.0274	1.0000								
LEV	−0.2088	−0.4554	1.0000							
INV	0.1877	0.0965	0.0055	1.0000						
CAP_INT	0.1285	0.0116	−0.1621	0.2303	1.0000					
Board_size	0.3698	−0.1129	−0.0582	0.1172	0.0044	1.0000				
Share_ women	0.0482	0.1285	−0.1055	−0.0555	−0.0427	−0.0939	1.0000			
Blau	0.2074	−0.0929	0.0646	0.0442	−0.0114	0.4142	0.4854	1.0000		
CR4	0.0077	0.0332	−0.0376	0.0347	0.0396	−0.0538	0.0159	0.0160	1.0000	
GDP_ growth	0.0303	−0.0211	−0.0109	−0.0109	0.0016	0.0342	0.0010	0.0287	−0.6970	1.0000

Source: authors' calculation

With the aim of conducting econometric data analysis, static balanced panel data analysis is performed while model (2) creates the foundation of estimation.

$$Y_{it} = c + \sum_{k=1}^{K} \beta_k X_{it}^k + \varepsilon_{it} \quad (2)$$

where:

Y_{it} is the dependent model variable of company *i* at time *t*, with *i* = 1,..., N; *t* = 1,..., T

In research, three static panel models were employed each having different dependent variable (Y_{it}), i.e. ROA, ROS, NPM.

X_{it} are k independent variables as debated in description of variables section.

F-test, Lagrangian multiplier test for random effects and Hausman test were used to find the most appropriate model. Moreover, Breusch-Pagan test was used in each model in order to detect the problem of heteroscedasticity. If the heteroscedasticity was present after finding proper static panel model, robust standard errors were used in that same model.

The results of the analysis are presented with Table 4. The results of F-test, Lagrangian multiplier test for random effects and Hausman are also provided here. In model with dependent variable ROA results show that most appropriate model is the one with random effects while in model with dependent variables ROS and NPM results show that most appropriate one is the model with fixed effects. However, since Breusch-Pagan test for heteroscedasticity shows the presence of heteroscedasticity in the NPM model, after finding proper static panel model, robust standard errors were used in NPM model.

Table 4. Parameter estimates of conducted static panel model

Variables	ROA	ROS	NPM
SIZE	-0.9621486 (0.7258398)	3.876965* (2.118717)	2.949016* (1.681412)
LIQ	-0.3757061** (0.1775012)	-0.5570112** (0.2396476)	-0.5044507*** (0.1608514)
LEV	-0.1560594*** (0.0264518)	-0.2236357*** (0.0450383)	-0.184996*** (0.0592437)
INV	-1.618716 (1.431483)	5.935642*** (1.914725)	-1.846663 (1.825319)
CAP_INT	-0.3793733*** (0.1461452)	-0.2521718 (0.1896226)	-0.2534479*** (0.0927492)
Board_size	0.5541044 (1.266532)	-0.1658794 (2.2015)	0.6451627 (3.420741)
Share_women	2.414118 (3.306491)	1.600599 (4.597469)	1.57308 (2.250872)
Women_dummy	0.2465472 (3.140143)	1.825844 (4.886321)	1.062833 (3.160472)
Blau	0.0249212 (5.373906)	-4.118587 (9.196825)	-3.563615 (6.247409)
CR4	-0.2129899 (0.2097675)	-0.4864628* (0.2717343)	-0.2845229 (0.2846196)
GDP_growth	-0.3087461 (0.8717323)	-0.627896 (1.140587)	0.115506 (1.457474)
cons	41.01838** (16.68183)	-41.84703 (40.6214)	-33.9833 (37.68558)
R2 within	0.0833	0.1179	0.0702
R2 between	0.1717	0.1378	0.1049
R2 overall	0.1446	0.1178	0.0842
Model p value	0.0000	0.0000	0.0019
Lagrangian multiplier test for random effects	chi = 229.88	chi =111.35	chi =93.10
	p value = 0.0000	*p* value = 0.0000	*p* value = 0.0000
Hausman test	chi = 14.90	chi = 29.08	chi = 24.53
	p value = 0.1869	*p* value = 0.0022	*p* value = 0.0107

Breusch-Pagan test for heteroskedasticity	chi2 = 0.04	chi2 = 2.42	chi2 = 8.57
	p value = 0.8493	*p* value =0.1199	*p* value =0.0034
F-test	*p* value = 0.0000	*p* value =0.0000	*p* value =0.000

*, **, *** Statistically significant at the; 10%, 5%, 1% level, respectively. Standard errors between parentheses.

Source: authors' calculation

5. RESULTS OF THE ANALYSIS AND DISCUSSION

The results of the analysis showed that several variables in each of the specified models proved to be statistically significant in explaining profitability. Variables size, liquidity, leverage, inventories, capital intensity and structural variable CR4 play an important role when explaining corporate performance.

Specifically, firm size based on total assets has positive and statistically significant impact on performance in ROS and NPM models. This finding suggests that larger firms perform better, i.e. that size facilitates firms' activities resulting in better performance. Therefore, the view that smaller companies perform better due to e.g. less pronounced inertia forces or less rigid hierarchical structures is not proved here. On the contrary, it seems that Croatian largest manufacturers are effectively using economies of scale and scope and their market power resulting in superior results supporting Lee's (2009:200) view that size plays positive role in explaining firm profitability "due to efficiency gains or higher market power".

Liquidity is crucial factor in determining profitability in all models. The rationale for negative impact of liquidity expressed with current ratio is explained by Goddard et al. (2005:1273) by stating that „if a firm holds too high a proportion of its assets in a liquid form, this may constrain its ability to exploit profitable long-term investment opportunities". Moreover, the reason can be found in the fact that excessive levels of liquidity indicate accumulated unused funds from which the firm cannot achieve benefits in terms of profits (Ehiedu, 2014). Negative influence of liquidity measured with current ratio on performance is found by e.g. Mohamad, Saad (2010) when performance is measured with ROA and ROIC as well as by Saleem, Rehman (2011) when performance is measured with ROI.

Moreover, leverage is also found to be a crucial factor in a firm's profitability. Its negative influence is evident in all models. Its negative influence on performance is also found by e.g. Cheng (2008), Salim, Yadav (2012) when performance is expressed with ROA and Alarussi, Alhaderi (2018) in models with ROE and EPS. It shows the importance the capital structure plays when explaining firms' profitability indicating the fact that firms financing their activities by borrowings are faced with higher risks. Alarussi, Alhaderi (2018) also state that such finding might indicate high cost of financing from external sources that influences the profitability of the company.

The findings also show that inventories management is positively related to ROS although lower inventories are often thought to reflect prudent inventory control policies (Amato, Amato, 2004). Our finding can be supported with the view offered by Koumanakos (2008:356) stating that "too little inventory often disrupts manufacturing operations and increases the likelihood

of poor customer service… who may become irate and take their business elsewhere if the desired product is not immediately available." It can also be added that Obermaier, Donhauser (2012) find no support for a standard suggesting that firms should tend towards zero inventory.

In terms of the role capital intensity plays in determining corporate profitability, its negative sign found in ROA and NPM models is opposed to Lee, Roh (2012:654) saying that capital intensity "refers to the dominance of financial investment in technology, machines, and equipment as a means of reducing the cost of labour in operations". However, our finding is aligned with Lee, Roh (2012) and Vu et al. (2019) implying that these companies do not require much capital.

Structural measure of market structure represented with concentration ratio of four largest companies negatively affects performance in ROS model. It doesn't provide support for SCP hypothesis suggesting that more competitive market leads to higher levels of profitability. This result is aligned with findings of Yoon (2004) and Alhassan et al. (2015).

Gender diversity, like any other form of diversity, is usually viewed in a positive context. The same holds for gender diversity in top positions in companies. However, previous scientific research in the context of gender diversity in leading positions in companies and their impact on the firms' financial performance has not provided uniform results. Zhang (2020) explains that the variations in different impact of gender diversity on firm performance in different countries and industries covered with the analysis stem from the peculiar institutional features in which the firms operate. The results of this paper do not support generally accepted view on desirability of gender diversity in the boardroom either. Specifically, none of the variables relating to the board structure did not prove to be statistically significant. This suggests that the thesis for same representation of men and women in the boardroom is not supported. However, the paper upgrades the existing literature in a way that it provides new insight of the influence of board structure in terms of gender diversity in manufacturing industry in Croatia. Although the literature often cites positive effects of more gender diversified boards such as adding extra dimension to managing processes, innovativeness, more creative perspective, different perception and skills, the ethical and social reasons are not always supported with the financial ones. As stated by Adams (2016), some stereotypes such as that women in the role of directors have firm performance-increasing powers that arise from the fact that they are women and less prone to risk than men, can pose idealistic expectations from women. Therefore, incorporating more women in the boardroom should be justified with reasoning other than economic ones. Moreover, it should be emphasized that an increased number of women on boards does not lead to superior performance by itself but other factors should be taken into account as well such as e.g. their qualifications. Furthermore, women in the boardroom should not serve as mere tokens but they should be given the opportunity to achieve their full potential. This is also confirmed by the Proposal for EU Directive (2012:3) stating that „the under-utilisation of the skills of highly qualified women's constitutes a loss of economic growth potential." Insignificant influence of gender diversity is also found by e.g. Randøy et al. (2006), Rose (2007), Rose et al. (2013) as well as by Marinova et al. (2016). The rationale for such finding can be found in Rose (2007) who emphasizes that one should have in mind the nature of business adding that e.g. listed companies are not equal to democratic institutions nor are resulting from democratic

ideas. Considering the generally accepted view of the desirability of gender diversity in all aspects of life and business, some countries have mandated representation of women in the boardroom by laws through imposing quotas. However, Rose et al. (2013:16), citing Demsetz and Lehn (1985), add that imposing quotas stands in conflict "with the fundamental premise of property rights since it is the owners who bear the entire risk of the company if it goes into financial distress, hence shareholders should have the prerogative to decide for themselves".

6. ROBUSTNESS CHECK

As a robustness check, Shannon index is employed in the model as a diversity measure as it is done by Campbell, Mínguez-Vera (2008), Darmadi (2011) and Shehata et al. (2017). It is used instead of Blau index since these are qualitatively analogous measures of diversity with Shannon index being more sensitive to minor differences in the gender structure of board due to the fact that it represents a logarithmic measure of diversity. It is calculated as follows:

$$S = -\sum_{i=1}^{n} p_i * \ln(p_i) \qquad (3)$$

where p_i denotes share of female members on the board while n represents the total number of board members. It obtains its minimum value of zero when there are no women on board while diversity is at its maximum when both genders are equally represented on the board with the value of 0.69. Having in mind that the logarithmic value of 0 is not defined, if proportion of female members in the boardroom is zero, we adopt Campbell, Mínguez-Vera (2008) approach that the expression p_i*ln(p_i) equals zero. Moreover, size variables based on total assets is replaced by the size variable based on total sales.

The results reported here are similar to those obtained in our empirical analysis as it can be seen in Appendix.

7. CONCLUSION

Gender diversity, including gender diversity in leading positions in companies, is being given increasing importance in discussions among scientists, experts and the public. This is also much investigated topic among research papers, however, without uniform results. Therefore, we wanted to provide new findings on this issue in the context of Croatian manufacturing industry since most of these papers refer to listed or financial firms. With this aim, the analysis is conducted on the sample of largest manufacturers that operated in the 2015-2019 period using static panel analysis. Besides gender diversity variables, the model employed a range of firm-specific, industry-oriented and macroeconomic variables. However, our findings do not speak in favour of gender diversity in the boardroom as the authors find that gender diversity does not play determining role in explaining firm financial performance. Nevertheless, the same is confirmed with robustness check. Despite these findings, as stated by Marinova et al. (2016:1787), "gender equality is not only a means to an end, but also a matter of social justice and therefore an argument in itself". Thus, it is important to continue to foster the strengthening of gender diversity as a responsibility that is vital to our way of life.

Despite the undoubted scientific contribution of the results of the paper to the researched issue, the authors are aware of its limitations. Specifically, the present research is limited to accounting-based performance measures since a major fraction of the firms encompassed with the analysis is not listed. Furthermore, besides variables referring to gender of the board members, other human and social factors inherent to board members such as level of education, field of education, board tenure, board etc. are not employed. Incorporating more qualitative features of the board might facilitate a broadened view on the role of boards. Moreover, this research is conducted using solely the Croatian setting. Therefore, it might be useful to conduct cross-country analysis to see the role gender diversity plays in different economic environments. Moreover, since companies' performance might be affected by numerous factors, directions for future research might also include adding some other firm or industry oriented variables that are expected to potentially influence financial performance.

REFERENCES

Adams, R. B., and Ferreira, D. (2009) "Women in the boardroom and their impact on governance and performance", *Journal of financial economics*, 94(2), p. 291-309, https://doi.org/10.1016/j.jfineco.2008.10.007

Adams, R. B. (2016) „Women on boards: The superheroes of tomorrow?", *The Leadership Quarterly*, 27(3), p. 371-386

Ahmadi, A., Nakaa, N., and Bouri, A. (2018) "Chief Executive Officer attributes, board structures, gender diversity and firm performance among French CAC 40 listed firms", *Research in International Business and Finance*, 44, p. 218-226, https://doi.org/10.1016/j.ribaf.2017.07.083

Alarussi, A. S., and Alhaderi, S. M. (2018) "Factors affecting profitability in Malaysia", *Journal of Economic Studies*, 45(3), p. 442-458, https://doi.org/10.1108/JES-05-2017-0124

Alhassan, A. L., Addisson, G. K., and Asamoah, M. E. (2015) "Market structure, efficiency and profitability of insurance companies in Ghana", *International Journal of Emerging Markets*, 10(4), p. 648 – 669, https://doi.org/10.1108/IJoEM-06-2014-0173

Amato, L. H., and Amato, C. H. (2004) "Firm size, strategic advantage, and profit rates in US retailing", *Journal of Retailing and Consumer Services*, 11(3), p. 181-193, https://doi.org/10.1016/S0969-6989(03)00036-5

Azeez, A. A. (2015) „Corporate governance and firm performance: evidence from Sri Lanka", *Journal of Finance*, 3(1), p. 180-189, https://doi.org/10.15640/jfbm.v3n1a16

Brahma, S., Nwafor, C., and Boateng, A. (2020) "Board gender diversity and firm performance: The UK evidence", *International Journal of Finance and Economics*. p. 1-16

Buallay, A., Hamdan, A., and Zureigat, Q. (2017) "Corporate governance and firm performance: evidence from Saudi Arabia", Australasian Accounting, Business and Finance Journal, 11(1), p. 78-98, https://doi.org/10.14453/aabfj.v11i1.6

Campbell, K., and Mínguez-Vera, A. (2008) "Gender diversity in the boardroom and firm financial performance", *Journal of business ethics*, 83(3), p. 435-451, https://doi.org/10.1007/s10551-007-9630-y

Cheng, S. (2008) „Board size and the variability of corporate performance", *Journal of financial economics*, 87(1), p. 157-176, https://doi.org/10.1016/j.jfineco.2006.10.006

Corvino, A. et al. (2019) "The moderating effect of firm size on relational capital and firm performance: Evidence from Europe", *Journal of Intellectual Capital*, 20(4), p. 510-532, https://doi.org/10.1108/JIC-03-2019-0044

Cummins, J. D., Rubio-Misas, M. and Vencappa, D. (2017) "Competition, efficiency and soundness in European life insurance markets", *Journal of Financial Stability*, 28, p. 66-78, https://doi.org/10.1016/j.jfs.2016.11.007

Darmadi, S. (2011) "Board diversity and firm performance: The Indonesian evidence", *Corporate ownership and control Journal*, 8, p. 1-39

Drmac, I., Pervan, M., and Pavic Kramaric, T. (2017) "Zastupljenost žena u nadzornim odborima i utjecaj na profitabilnost poduzeća", *Ekonomska misao i praksa*, (2), p. 453-476

Ehiedu, V. C. (2014) "The impact of liquidity on profitability of some selected companies: The financial statement analysis (FSA) approach", *Research Journal of Finance and Accounting*, 5(5), p. 81-90

Erhardt, N. L., Werbel, J. D., and Shrader, C. B. (2003) "Board of director diversity and firm financial performance", *Corporate governance: An international review*, 11(2), p. 102-111

European Commission, Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012PC0614&from=EN (25 September 2021)

European Commission, Achieving gender balance in decision-making, March 2021, https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/equality-between-women-and-men-decision-making/achieving-gender-balance-decision-making_en#women-and-men-in-economic-decision-making (11 April 2021)

European Commission, Gender Equality Strategy 2020-2025, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0152 (11 April 2021)

European Institute for Gender Equality, Gender Statistics Database, 2020, https://eige.europa.eu/lv/gender-statistics/dgs/indicator/wmidm_bus_bus__wmid_comp_compbm (11 April 2021)

Fosu, S. (2013) "Capital structure, product market competition and firm performance: Evidence from South Africa", *The quarterly review of economics and finance*, 53(2), p. 140-151, https://doi.org/10.1016/j.qref.2013.02.004

Gallego-Álvarez, I., García-Sánchez, I. M., and Rodríguez-Dominguez, L. (2010) "The influence of gender diversity on corporate performance: La influencia de la diversidad de género en el rendimiento empresarial", *Revista de Contabilidad-Spanish Accounting Review*, 13(1), p. 53-88, https://doi.org/10.1016/S1138-4891(10)70012-1

Goddard, J., Tavakoli, M., Wilson, J. O. (2005) "Determinants of profitability in European manufacturing and services: evidence from a dynamic panel model", *Applied Financial Economics*, 15(18), p. 1269-1282, https://doi.org/10.1080/09603100500387139

Hunton, J. E., Lippincott, B., and Reck, J. L. (2003) "Enterprise resource planning systems: comparing firm performance of adopters and nonadopters", *International Journal of Accounting information systems*, 4(3), p. 165-184, https://doi.org/10.1016/S1467-0895(03)00008-3

Ibhagui, O. W., and Olokoyo, F. O. (2018) "Leverage and firm performance: New evidence on the role of firm size", *The North American Journal of Economics and Finance*, 45, p. 57-82, https://doi.org/10.1016/j.najef.2018.02.002

Kapopoulos, P., and Lazaretou, S. (2007) "Corporate ownership structure and firm performance: evidence from Greek firms", *Corporate Governance: An International Review*, 15(2), p. 144-158, https://doi.org/10.1111/j.1467-8683.2007.00551.x

Kılıç, M., and Kuzey, C. (2016) "The effect of board gender diversity on firm performance: evidence from Turkey", *Gender in Management: An International Journal*. 31(7), p. 434 – 455, https://doi.org/10.1108/GM-10-2015-0088

Klingenberg, B. Et al. (2013) "The relationship of operational innovation and financial performance—A critical perspective", *International Journal of Production Economics*, 142(2), p. 317-323, https://doi.org/10.1016/j.ijpe.2012.12.001

Koumanakos, D. P. (2008) "The effect of inventory management on firm performance", *International journal of productivity and performance management*. Vol. 57 No. 5, p. 355-369, https://doi.org/10.1108/17410400810881827

Lee, J. (2006). "Family firm performance: Further evidence", *Family business review*, 19(2), p. 103-114, https://doi.org/10.1111/j.1741-6248.2006.00060.x

Lee, J. (2009) "Does size matter in firm performance? Evidence from US public firms", *International Journal of the Economics of Business*, 16(2), p. 189-203, https://doi.org/10.1080/13571510902917400

Lee, R. P., and Grewal, R. (2004) "Strategic responses to new technologies and their impact on firm performance", *Journal of Marketing*, 68(4), p. 157-171, https://doi.org/10.1509/jmkg.68.4.157.42730

Lee, J. and Roh, J. J. (2012) "Revisiting corporate reputation and firm performance link", *Benchmarking: An International Journal*, 19(4), p. 649 – 664, https://doi.org/10.1108/14635771211258061

Li, H. and Chen, P. (2018) "Board gender diversity and firm performance: The moderating role of firm size", *Business Ethics: A European Review*, 27(4), p. 294-308, https://doi.org/10.1111/beer.12188

Lückerath-Rovers, M. (2013) "Women on boards and firm performance", *Journal of Management and Governance*, 17(2), p. 491-509, https://doi.org/10.1007/s10997-011-9186-1

Marinova, J., Plantenga, J., and Remery, C. (2016) "Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms", *The International Journal of Human Resource Management*, 27(15), p. 1777-1790, https://doi.org/10.1080/09585192.2015.1079229

Mohamad, N. E. A. B., and Saad, N. B. M. (2010) "Working capital management: The effect of market valuation and profitability in Malaysia", *International journal of Business and Management*, 5(11), p. 1-8

Nunes, P. M., Viveiros, A., Serrasqueiro, Z. (2012) "Are the determinants of young SME profitability different? Empirical evidence using dynamic estimators", *Journal of Business Economics and Management*, 13(3), p. 443-470, https://doi.org/10.3846/16111699.2011.620148

Obermaier, R., and Donhauser, A. (2012) "Zero inventory and firm performance: a management paradigm revisited", *International Journal of Production Research*, 50(16), p. 4543-4555, https://doi.org/10.1080/00207543.2011.613869

Pathan, S., and Faff, R. (2013) "Does board structure in banks really affect their performance?", *Journal of Banking and Finance*, 37(5), p. 1573-1589, https://doi.org/10.1016/j.jbankfin.2012.12.016

Pattitoni, P., Petracci, B., Spisni, M. (2014) "Determinants of profitability in the EU-15 area", *Applied Financial Economics*, 24(11), p. 763-775, https://doi.org/10.1080/09603107.2014.904488

Pavic Kramaric, T., Aleksic, A., and Pejic-Bach, M. (2018) "Measuring the impact of board characteristics on the performance of Croatian insurance companies", *International Journal of Engineering Business Management*, 10, p. 1-13, https://doi.org/10.1177/1847979018765864

Randøy, T., Thomsen, S., and Oxelheim, L. (2006) "A Nordic perspective on corporate board diversity". Nordic Innovation Centre.

Rose, C. (2007) „Does female board representation influence firm performance? The Danish evidence", *Corporate Governance: An International Review*, 15(2), p. 404-413, https://doi.org/10.1111/j.1467-8683.2007.00570.x

Rose, C., Munch-Madsen, P., and Funch, M. (2013) "Does board diversity really matter? Gender does not, but citizenship does", *International Journal of Business Science and Applied Management* (IJBSAM), 8(1), p. 16-27

Saleem, Q., and Rehman, R. U. (2011) "Impacts of liquidity ratios on profitability", *Interdisciplinary journal of research in business*, 1(7), p. 95-98

Salim, M., and Yadav, R. (2012) „Capital structure and firm performance: Evidence from Malaysian listed companies", *Procedia-Social and Behavioral Sciences*, 65, p. 156-166, https://doi.org/10.1016/j.sbspro.2012.11.105

Shehata, N., Salhin, A., and El-Helaly, M. (2017) "Board diversity and firm performance: evidence from the UK SMEs", *Applied Economics*, 49(48), p. 4817-4832, https://doi.org/10.1080/00036846.2017.1293796

Taani, K. (2013) "The relationship between capital structure and firm performance: evidence from Jordan", *Global Advanced Research Journal of Management and Business Studies*, 2(11), p. 542-546

Vu, T. H., Nguyen, V. D., Ho, M. T., and Vuong, Q. H. (2019) "Determinants of Vietnamese listed firm performance: Competition, wage, CEO, firm size, age, and international trade", *Journal of Risk and Financial Management*, 12(2), p. 1-19, https://doi.org/10.3390/jrfm12020062

Yoon, S. (2004) "A note on the market structure and performance in Korean manufacturing industries", *Journal of Policy Modeling*, 26(6), p. 733-746, https://doi.org/10.1016/j.jpolmod.2004.03.005

Zhang, L. (2020). "An institutional approach to gender diversity and firm performance", *Organization Science*, 31(2), p. 439-457

Appendix

Robustness Check

Variables	ROA	ROS	NPM
LN_SALES	5.815101*** (1.575681)	7.01449*** (1.977843)	5.1868** (2.0047052)
LIQ	−0.5286112*** (0.1881614)	−0.5394729** (0.2361859)	−0.4919637*** (0.1224586)
LEV	−0.1666371*** (0.0350651)	−0.2297408*** (0.0440148)	−0.1888518*** (0.0567058)
INV	1.417034 (1.678064)	9.425454*** (2.106357)	0.7562324 (1.486038)
CAP_INT	0.2608625 (0.2261189)	0.4852462* (0.2838313)	0.2918643 (0.2242475)
Board_size	3.153481 (1.747152)	0.3665637 (2.193079)	1.070147 (3.41631)
Share_women	4.896507 (4.426151)	2.707865 (5.55584)	2.341465 (1.805817)
Women_dummy	−1.292197 (3.329624)	−0.3694095 (4.179446)	−0.6945028 (1.53067)
Shannon	4.992183 (15.95066)	2.166231 (20.02176)	1.071907 (9.688176)
CR4	−0.490896** (0.220385)	−0.7312479*** (0.276634)	−0.4646901 (0.283854)

Variables	**ROA**	**ROS**	**NPM**
GDP_growth	-1.407493 (0.8853574)	-1.235725 (1.111328)	-0.3292815 (1.393283)
cons	-83.7415 (29.64328)	-495.35362 (37.20915)	-72.00262* (40.10175)
R2 within	0.1296	0.1016	0.0833
R2 between	0.0155	0.2838	0.0460
R2 overall	0.0224	0.2142	0.0445
Model p value	0.0000	0.0000	0.0000
Lagrangian multiplier test for random effects	chi = 236.31	chi = 115.91	chi = 96.47
	p value = 0.0000	*p* value = 0.0000	*p* value = 0.0000
Hausman test	chi = 27.60	chi = 44.67	chi = 30.91
	p value = 0.0037	*p* value = 0.0000	*p* value = 0.0011
Breusch-Pagan test for heteroskedasticity	chi2 = 1.16	chi2 = 1.92	chi2 = 8.91
	p value = 0.2811	*p* value =0.11664	*p* value =0.0028
F-test	*p* value = 0.0000	*p* value =0.0000	*p* value =0.000

Source: authors' calculation

Izvorni znanstveni rad
https://doi.org/10.31784/zvr.10.1.1
Datum primitka rada: 31. 5. 2021.
Datum prihvaćanja rada: 18. 10. 2021.

IMA LI RODNA RAZNOLIKOST ODBORA KLJUČNU ULOGU U ODREĐIVANJU USPJEŠNOSTI PODUZEĆA? SLUČAJ NAJVEĆIH PODUZEĆA HRVATSKE PRERAĐIVAČKE INDUSTRIJE

Tomislava Pavić Kramarić
Dr. sc., izvanredna profesorica, Sveučilište u Splitu, Sveučilišni odjel za forenzične znanosti, R. Boškovića 33, 21 000 Split, Hrvatska; *e-mail*: tpkramaric@unist.hr

Marko Miletić
Dr. sc., profesor visoke škole, Sveučilište u Splitu, Sveučilišni odjel za stručne studije, Kopilica 5, 21 000 Split, Hrvatska; *e-mail*: mamiletic@oss.unist.hr

SAŽETAK

Cilj ovog istraživanja je analizirati igra li rodna raznolikost odbora ključnu ulogu u objašnjavanju uspješnosti poduzeća. Istraživanje se provodi pomoću statičke panel analize na uzorku najvećih hrvatskih poduzeća iz prerađivačke industrije koja su poslovala u razdoblju 2015. - 2019. godine. Da bi se provela takva analiza, u istraživanje je uključeno nekoliko varijabli koje se odnose na karakteristike uprave uključujući udio žena u upravu, dummy varijablu je li ženska osoba prisutna u upravi, Blau indeks i veličinu uprave. Nadalje, analizom je obuhvaćen niz poduzeću specifičnih, industriji orijentiranih i makroekonomskih varijabli koje obuhvaćaju veličinu, likvidnost, zaduženost, upravljanje zalihama, intenzitet kapitala, tržišnu strukturu izraženu koncentracijskim omjerom i realnu stopu rasta BDP-a. Da bi se postigli robusniji rezultati, uvode se tri mjere uspješnosti kao što su ROA, ROS kao i NPM. Rezultati otkrivaju da veličina, likvidnost, zaduženost, upravljanje zalihama, intenzitet kapitala i koncentracija industrije igraju važnu ulogu u određivanju profitabilnosti poduzeća, dok autori nisu pronašli potporu većoj rodnoj raznolikosti u upravi u smislu poboljšanih performansi. Slični rezultati dobivaju se i s provjerom robusnosti. Rad doprinosi znanstvenoj misli dajući nove spoznaje oskudnim empirijskim dokazima o rodnoj raznolikosti u prerađivačkoj industriji općenito, a posebno u hrvatskom kontekstu.

Ključne riječi: *hrvatska prerađivačka industrija, rodna raznolikost uprave, uspješnost poduzeća*