



Gender Diversity in the Boardrooms of Public Companies in Poland: Changes and Implications

KRZYSZTOF KOMPA¹, and DOROTA WITKOWSKA²

¹ Professor, Department of Econometrics and Statistics, SGGW-WULS in Warsaw, Poland
e-mail: krzysztof_kompa@sggw.pl

² Professor, Department of Finance and Strategic Management, University of Lodz, Poland

ARTICLE INFO

Received December 03, 2017
Revised from December 19, 2017
Accepted February 26 2018
Available online March 15, 2018

JEL classification:

G34; J16; M21.

DOI: 10.14254/1800-5845/2018.14-1.6

Keywords:

gender diversity,
women in boardrooms,
chairwomen,
public company,
financial performance,
taxonomic measure

ABSTRACT

Gender diversity in management became one of the “hot topics” in recent years. The literature reports examples of research proving all possible effects (i.e. both positive and negative together with lack of influence) of gender diversity among top managers to the company performance. (Research Aims). Therefore, the aim of our research is to find out the women share on boards of companies listed on the Warsaw Stock Exchange in the years 2010-2016, and to check how the changes in the gender structure of the management boards influence the company performance. (Research hypothesis). There is no essential gender diversity on the boards of Polish public companies, and change in the management structure does not affect the situation of the companies. (Method). In our investigation we use data provided by Notoria Serwis, and apply taxonomic measures together with dynamic and correlation analysis. (Conclusions). Our results show that it would be impossible to obtain the 40% parity level on boards till 2020 since increasing tendency of women representation in upper management is rather slow. There is no significant positive correlation between changes in the women share on boards and financial performance of companies, we observe only single negative significant relations.

INTRODUCTION AND BACKGROUND

The phenomenon of the gender and ethnic diversity of corporate boards encompasses at least two significant, and interrelated, propositions. The first viewpoint holds that those competent women and ethnic minorities with the human capital, external networks, information, and other characteristics of importance to the corporation deserve opportunities to serve on corporate boards and in upper management. The second proposition suggests that gender and ethnic diversity of directors results in better governance which causes the business to be more profitable. Karen J. Curtin, a former executive vice president of Bank of America, describes the interaction of the two propositions of board diversity in the following statement, “*There is real debate between those who think we should be more diverse because it is the right thing to do and those who think we should be more diverse because it actually enhances share- holder value. Unless we get the sec-*

and point across and people believe it, we're only going to have tokenism", quoted in (Carter, Simkins and Simpson, 2003, p. 34).

In order to ensure sustainable functioning of the capital market, European Commission (EC) adopted the proposal of a directive about gender parity among non-executive directors of publicly listed companies with the exception of small and medium size enterprises. Similar regulations have been already existing in France, Spain, Norway and Germany, Belgium, Italy and the Netherlands, while for state-owned companies only - in Austria and Greece. However, there are different opinions about this legislative solution. The supporters underline that the men who dominate corporate boards promote people like themselves and ignore women therefore it is necessary to force changes by law. The opponents argue that in the majority of European countries sexism is no longer the main obstacle to women's careers and women themselves resign because for them family is more important than career. Therefore, most of female employees take career breaks to look after their children. Also being manager (especially senior manager) requires spending more time at work, attending evening meetings, travelling or even working in more than one country, and such requirements disrupt families thus many women turn managerial positions down.

Employment of women in listed companies in Poland has been growing systematically. Therefore, it is worth asking, especially in the light of the EC directive, the following questions.

- What is the women's engagement level in executive and supervisory boards of companies from the Polish capital market?
- Is the women's employment in senior management of various segments of the Polish capital market comparable to the capital markets in other states?
- How advanced is the implementation of the EC directive?
- How changes in the gender structure of the management boards influence the company performance?

The aim of the paper is to answer the above mentioned questions on the basis of research conducted for the companies listed on The Warsaw Stock Exchange in the years 2010-2016. In our investigation we use data provided by Norotia Serwis, and apply multidimensional statistical analysis, namely taxonomic measures together with dynamic and correlation analysis methods.

1. WOMEN IN BOARDROOMS WORLDWIDE

The increase of women participation in the management of enterprises and institutions became a "hot" topic among politicians, economists and researchers. There is a significant body of literature on gender diversity within senior management, see (Richard, Barnett, Dwyer & Chadwick, 2004; Campbell & Minguez-Vera 2008; Carter, D'Souza, Simkins & Simpson, 2010; Joecks, Pull & Vetter, 2013; McPhail, 2010) among others. However, the opinions concerning the role of women directors and benefits for the company performance from the increase of the gender diversity in boards are diversified. There are researchers who find advantages from the increasing number of women in management, especially positive effects on firm performance, for example (Bear, Rahman & Post, 2010; Catalyst, 2004; Desvaux, Devillard-Hollinger & Baumgarten 2007; Devillard, Graven, Lawson, Paradise and Sancier-Sultan, 2012; Curtis, Schmid & Struber 2012; Lenard, Yu, York & Wu, 2014; Lisowska, Zachorowska, Sznajder & Grabowska, 2014, p. 4 and 21-29; McKinsey, 2007; Smith, Smith & Verner, 2006). These authors claim that more women at the top managerial positions is supposed to be good not only for women but also for corporations because:

- the companies faster improve results and are more profitable,
- the stability of the company increases since women are less likely to risk,
- the price of the company shares rises more rapidly,
- it increases the firms' corporate social responsibility ratings,
- the employees are more satisfied with their work, and more productive.

However, some authors show that there is no significant relation between gender diversity and economic performance (see results obtained by: Carter et al, 2010; Farrel and Hersch, 2005; Wang and Clift, 2009; Kompa et al, 2016). Adams & Ferreira, 2009 claim that average effect of gender diversity on firm performance is negative. Lee and James (2007) and Adams, Gupta & Leeth, (2009) documented a negative short-run market reaction to the appointment of female CEOs. Whereas Ahern and Dittmar (2012), examining the influence of 40% quotas in the boards of directors of Norwegian companies, find that quota caused a significant drop in the stock price and large decline in Tobin's Q over the following years. Bertrand, Black, Jensen & Lleras-Muney (2014) claim that in the short run quota in Norway had very little discernable impact on women in business beyond its direct effect on the newly appointed female board members.

In fact, the impact of gender diversity at upper management is not uniform since it depends on the region, industry, size of company, etc. (Whittaker, 2014, p. 5). It also depends on the general situation of the company (see Triana et al, 2013) and applied methodology since empirical findings on the link between gender diversity and performance have been inconsistent (Ali et al, 2011).

Table 1. Representation of women on the boards of large listed companies in the EU in the years 2010-2015

Year	Share of women	Action taken by European Commission
Oct. 2010	11.9%	Sept. 2010, Strategy for Equality between Women and Men (2010-2015)
Oct. 2011	13.7%	
Jan. 2012	13.8%	Mar. 2011, Call for self-regulation: Women on the Board Pledge for Europe
Oct. 2012	15.8%	Mar. 2012, Progress report: self-regulation not working
Apr. 2013	16.6%	Nov. 2012, Legislative proposal
Oct. 2013	17.8%	Nov. 2013, European Parliament backs proposal
Apr. 2014	18.6%	Linear trend function estimated for semiannual data 2010-2015: $y_t=0,97t+10,12$; $R^2=0,9681$ and both statistically (at the level $\alpha=0,05$) parameters significant
Oct. 2014	20.2%	
Apr. 2015	21.5%	

Source: Own calculation on the basis of (EU, 2014, p. 3, and 2016, p. 2).

The European Union Commission improving the gender balance in company boardrooms proposed in 2012 legislation with the aim of attaining a 40% objective of the under-represented sex in non-executive board-member positions in publicly listed companies, employing more than 250 employees with a turnover of 50 million € or total assets of over 43 million €. By 2020, in these companies the 40% women employment quota in the above mentioned positions is to be obtained. It is worth mentioning that quota (in Table 2 countries with quotas in place are denoted by *) is an administrative way which strongly affects decisions made in companies and it may cause unwanted situations such as this same women in the boards of many companies.

In November 2012, boards are dominated by one gender: 85% of non-executive board members and 91.1% of executive board members were men. Changes in the women representation on the boards of large listed companies in the EU in the years 2010-2015 and action taken by the European Commission is presented in Table 1. According to the estimated linear trend in the period from October 2010 to April 2015, the share of women on the boards was increasing by one percent every half a year. It means that in October 2020 there will be 31.5% women in boardrooms of EU companies, and suggested 40% quotas will be obtained in April 2025.

The situation in EU member states essentially differ, and has been changing (Table 2). In three years from October 2010 to October 2013 the share of women on boards increased in 22 of the 28 EU member states. The biggest increase was observed in France by 17.4 pp, Slovenia 11.8 pp, the Netherlands 10.2 pp and Germany 8.8 pp. While in Romania it decreased by 13.5pp, in Hungary by 2.3pp, in Czech Republic by 1pp. In 2013 the average share of women on boards EU-28 was

17.8% but in Poland this share equaled 12.3% (in Finland and France nearly 30%, and in Latvia - 29%). In Oct. 2013 women represent 11.8% of executives and 18.8% of non-executives. 2.8% of CEOs were women.

Table 2. Share of women on the boards of large listed companies in the EU member states

EU States		Share of women on the boards		Changes
		October 2013	April 2015	
Finland	FI	29.8%	32.8%	10.1%
France*	FR	29.7%	29.5%	-0.7%
Latvia	LV	28.6%	32.3%	12.9%
Sweden	SE	26.5%	29.4%	10.9%
Netherlands*	NL	25.1%	23.8%	-5.2%
Slovakia	SK	24.0%	13.6%	-43.3%
Denmark	DK	22.9%	25.8%	12.7%
Slovenia	SI	21.6%	22.2%	2.8%
Germany*	DE	21.5%	25.4%	18.1%
United Kingdom	UK	21.0%	25.8%	22.9%
Belgium*	BE	16.7%	23.4%	40.1%
Bulgaria	BG	16.7%	17.6%	5.4%
Lithuania	LT	16.1%	16.3%	1.2%
Croatia	HR	15.1%	20.3%	34.4%
Italy*	IT	15.0%	25.8%	72.0%
Spain*	ES	14.8%	16.8%	13.5%
Austria*	AT	12.6%	17.8%	41.3%
Poland	PL	12.3%	17.6%	43.1%
Luxemburg	LU	11.3%	11.1%	-1.8%
Czech Rep.	CZ	11.3%	11.6%	2.7%
Hungary	HU	11.3%	11.1%	-1.8%
Ireland	IE	11.1%	13.2%	18.9%
Portugal	PT	8.8%	10.7%	21.6%
Greece*	EL	8.4%	10.3%	22.6%
Romania	RO	7.8%	11.3%	44.9%
Estonia	EE	7.3%	8.0%	9.6%
Cyprus	CY	7.3%	8.4%	15.1%
Malta	MT	2.1%	2.5%	19.0%
EU average	FI	17.8%	21.2%	19.1%

Note: * denotes countries with quotas in 2013

Source: Own elaboration on the basis of (EU, 2014, p. 4-6 and 2016 p. 6-7).

In April 2015 European Commission reported 7.1% of women among board chairs and only 3.6% among CEOs. It is also documented that in comparison to October 2010 women representation on boards of large listed companies increased in 24 EU states. Italy, which increased female representation the most, recorded 21.2 pp. rise and the second is France (20.5pp). Slovenia, United Kingdom, Germany and Belgium reported increase from 12.4pp. to 12.9pp. Czech Republic, Hungary, Slovakia and Romania experienced decrease from 0.7pp to 10 pp., respectively. One may also notice significant changes which took place in 2015 in comparison to 2013 – huge increase (by 72%) in Italy, significant rise (40%-45%) in Poland, Romania, Austria and Belgium, and moderate increase (21%-34%) in UK, Croatia, Greece and Portugal. Although the significant decrease of over 40% is observed in Slovakia.

The factors which influence women participation in managerial bodies in different countries are connected with tradition, culture, religion and education. Table 3 shows the women representation in managerial bodies in 44 countries grouped geographically in the years 2011-2013. As one may notice, the Scandinavian countries are the leaders followed by Israel, South Africa, USA, Canada and some UE member states. Arabic countries as Saudi Arabia, Qatar, etc. together with Japan and S. Korea are on the opposite side with very small representation of female managers.

Table 3. Global board seats held by women [%%]

Country	2011	2012	2013	Country	2011	2012	2013
Europe				Asia: Middle and Far East			
Austria	7.5	7.5	11.3	China	8.5	8.5	8.1
Belgium	7.7	7.7	9.2	Hong Kong	8.9	9.0	9.6
Denmark	13.9	13.9	17.2	India	5.3	5.3	4.8
Finland	24.5	24.5	26.8	Indonesia	4.5	4.5	6.0
France	12.7	12.7	18.3	Japan	0.9	0.9	1.1
Germany	11.2	11.2	14.1	Malaysia	6.3	7.8	7.8
Greece	8.8	8.8	7.0	Singapore	7.3	6.9	7.9
Ireland	9.5	9.5	8.7	South Korea	1.9	1.9	1.9
Italy	3.7	3.7	8.2	Taiwan	6.1	6.1	4.4
Netherlands	14.0	14.0	17.0	Thailand	8.7	8.7	9.7
Norway	39.5	40.1	40.5	Asia: Near East			
Poland	10.8	10.8	13.6	Israel	15.0	15.0	16.6
Portugal	2.3	2.3	3.7	Bahrain	1.0	1.0	1.7
Russia	5.9	5.9	4.8	Kuwait	2.7	2.7	1.7
Spain	9.3	9.3	9.5	Oman	2.3	2.3	1.8
Sweden	27.3	27.3	27.0	Qatar	0.3	0.3	0.3
Switzerland	8.7	8.7	10.0	Saudi Arabia	0.1	0.1	0.1
Turkey	10.8	10.8	12.7	UAE	0.8	0.8	1.2
UK	12.5	15.0	20.7	North America			
South America				Canada	10.3	10.3	12.1
Brazil	5.1	5.1	7.7	United States	15.7	16.1	16.9
Chile	1.9	1.9	2.8	Mexico	6.8	6.8	5.8
Oceania				Africa			
Australia	8.4	8.4	12.3	South Africa	15.8	15.8	17.1
New Zealand	9.3	7.5	7.5				

Source: Own elaboration on the basis on (Catalyst, 2011, 2012, 2014).

Table 4. Percentage shares of the board chairwomen

Country	2011	2012	2013	Country	2011	2012	2013
Turkey	11.1	11.1	11.8	United States	2.6	2.6	3.1
South Africa	5.3	5.3	5.5	Australia	2.5	2.5	3.0
Philippines	0.0	0.0	5.3	Singapore	2.0	3.0	2.7
Italy	3.8	3.8	5.2	Spain	0.0	0.0	2.3
Israel	5.0	5.0	5.0	Germany	1.2	1.2	2.2
New Zealand	0.0	4.0	5.0	Hong Kong	2.4	2.1	2.1
Poland	6.7	6.7	4.8	France	2.0	2.0	2.0
Sweden	2.5	2.5	4.5	India	0.0	2.0	2.0
Belgium	4.2	4.2	4.2	Malaysia	0.0	2.0	2.0
Denmark	0.0	0.0	4.2	South Korea	3.3	3.3	1.9
Mexico	4.3	4.3	4.2	Taiwan	1.2	1.2	1.9
Canada	3.2	3.6	4.1	United Kingdom	2.0	1.0	1.0
China	3.1	4.1	4.0	Ireland	5.3	5.3	0.0
Brazil	5.4	5.4	3.9	Russia	3.8	3.8	0.0
Indonesia	4.3	4.3	3.1	Switzerland	1.9	1.9	0.0

Source: Own elaboration on the basis on (Catalyst, 2011, 2012, 2014).

Regardless the share of women in the boards of directors there is still very small representation of women as a board chairs. Table 4 contains percentage shares of chairwomen of management boards by countries ordered according to the women representation observed in 2013. It is worth noticing that the situation in Europe seems to be rather bad although the first place in this ranking is kept by Turkey, which being classified as European states is in fact Near East and Islamic country. Poland keeps the second position in this ranking in the years 2011 and 2012. We

would like to mention that the percentage participation of women CEOs in Austria, Czech Rep., Finland Greece, Hungary, Netherlands, Norway and Portugal was 0.0 (taking into account this level of accuracy). Comparison of data presented in tables 3 and 4 shows that there is no simple relation between representation of women as a board chairs and the share of women in boards and quotas.

2. WOMEN IN BOARDS OF PUBLICLY LISTED COMPANIES IN POLAND

Analysis of women representation in the supervisory and executive boards and as chairs in the years 2010-2016 is provided for the whole capital market in Poland, the main market of the Warsaw Stock Exchange (WSE) and NewConnect (NC). We also investigate situation in companies which are state owned at least in 25%. In our study we compare the situation in boards in June of following years, applying data concerning all companies listed on the Warsaw Stock Exchange available in Notoria Serwis.

Table 5. Percentage share of women on the executive and supervisory boards of companies listed on the Warsaw Stock Exchange - Market type perspective

Year	Women on the executive boards			Women as Presidents		
	Total	WSE	NC	Total	WSE	NC
2010	11,1	10,8	11,0	7,1	6,3	9,6
2011	11,9	10,6	14,2	7,9	6,8	10,7
2012	13,0	12,0	14,1	7,3	6,5	8,3
2013	12,5	11,5	14,5	7,9	6,7	9,2
2014	12,7	12,0	14,0	7,2	7,5	6,8
2015	12,4	11,6	14,0	7,4	7,6	7,3
2016	12,0	11,1	13,8	7,0	6,9	7,2

Year	Women on the supervisory boards			Chairwomen		
	Total	WSE	NC	Total	WSE	NC
2010	12,1	10,7	17,9	11,7	9,1	21,3
2011	11,8	10,6	15,3	10,2	8,2	15,3
2012	14,5	11,2	19,8	12,8	8,5	18,5
2013	14,5	11,4	18,9	12,5	8,9	16,7
2014	17,0	13,3	21,5	12,8	9,1	16,9
2015	18,0	14,2	22,3	13,3	9,9	17,1
2016	18,8	15,1	23,5	11,7	7,8	17,1

Note: WSE denotes WSE main market while NC denotes WSE NewConnect

Source: own calculation on the basis of data from Notoria Serwis

In the supervisory boards of listed companies men are dominating and there are no significant changes in the period of research. There are from 10.7% to 23.5% of women in boardrooms. Companies listed on NewConnect are often family business and the women representation in management is essentially bigger there than on the main market (Table 5). Similar situation is observed when women senior managers of companies listed is taken into consideration although the share of women CEOs is significantly smaller, i.e. from 6.1% to 10.7% whereas chairwomen of supervisory boards are from 7.8% to 21.3%. It may be also noticed that there are more women in the supervisory than in executive boards.

To answer the question if it is possible to reach the level of 40% women in supervisory boards of public companies we estimated (on annual data) trend functions for all companies and the ones from the main market.

All companies:

$$y_t = 10.2429 + 1.2500\tau \quad R^2=0.9474$$

t: (9.5) (17.4)

Main market:

$$y_t = 9.1428 + 0.8036\tau \quad R^2=0.9087$$

t: (7.1) (18.0)

Both trend functions well describe changes of the women representation in boardrooms since determination coefficients are high, and all parameters essentially differ from zero. From obtained parameter estimates, assuming *ceteris paribus*, we conclude that the level of 40% women in supervisory boards will be obtained for the total market in 2033 and the main market not earlier than in 2047. However, one should realize that we consider all companies, also these medium and small size.

Table 6. Percentage share of women on different positions in the executive and supervisory boards of companies listed on the Warsaw Stock Exchange - Market type perspective

Year	Executive boards			Supervisory boards		
	President	Vice-President	Member	Chairwomen	Vice-Chairwomen	Member
2010	7,1	10,0	16,1	11,7	9,1	21,3
2011	7,9	11,2	16,8	10,2	8,2	15,3
2012	7,3	13,9	18,7	12,8	8,5	18,5
2013	7,9	12,4	18,1	12,5	8,9	16,7
2014	7,2	12,4	19,8	12,8	9,1	16,9
2015	7,4	12,3	18,5	13,3	9,9	17,1
2016	7,0	11,6	18,3	11,7	7,8	17,1
2016/2010	-1%	16%	14%	0%	-14%	-20%

Source: own calculation on the basis of data from Notoria Serwis

Table 7. Percentage share of women on the executive and supervisory boards of companies listed on the WSE - Warsaw Stock Exchange indexes and sector perspectives

WSE main stock indexes perspective						
Year	Women in the executive boards [%]			Women in the supervisory boards [%]		
	WIG20	mWIG40	sWIG80	WIG20	mWIG40	sWIG80
2014	5.3	12.1	11.5	17.6	10.3	11.3
2015	11.8	7.2	11.9	19.9	12.3	11.8
2016	12.6	6.7	11.3	18.3	11.2	14.2
Economic sector perspective						
Year	Women in the executive boards [%]			Women in the supervisory boards [%]		
	Industry	Finance	Services	Industry	Finance	Services
2014	10.5	15.1	13.0	16.5	14.8	18.9
2015	9.5	15.1	13.2	18.0	15.7	18.7
2016	9.3	14.4	12.4	18.5	15.3	20.5

Source: own calculation on the basis of data from Notoria Serwis

Table 6 contains data concerning women participation in different positions in managerial bodies. The smallest shares are observed among presidents and the biggest among members of executive and supervisory boards i.e. the leaking pipeline phenomenon is observed. The last row contains dynamic measure describing changes that took place during analyzed years which show that there is no improvement since in 2016 there is even less presidents than in 2010, and no change among chairwomen, and in general there are less women in supervisory boards.

Analysis is provided also for main WSE indexes and for three main sectors (Table 7). It is visible that, if the situation in 2016 is compared to 2014, there is an increase of women share in the supervisory boards and in the executive boards of the biggest companies included to the index

WIG20. But for medium and small size companies (from the indexes mWIG40 and sWIG80, respectively), together with all sectors the decrease of women participation in executive boards is observed. Investigation shows slight increase of the share of women in boardrooms in different economic sectors. Higher feminization in finance is visible.

The last comparison (Table 8) is made according to the essential changes in boards of state owned companies which started at the end of 2015 (after the last parliament election in Poland) and is called “good change” by politicians of victorious party. And it is hard to claim that there is any change.

Table 8. Women representation in boardrooms in new political situation “good change”

Women representation in state-owned companies number and percentage share			
Year	Women in the executive boards [%]		Women in the supervisory boards [%]
2015	3 (3.3%)		22 (22.2%)
2016	5 (5.4%)		18 (17.6%)
Number of companies with women on senior managerial positions			
2015	230		502
2016	225		513

Source: own calculation on the basis of data from Notoria Serwis

Comparing the share of women on boards in companies creating the main stock indexes (Table 9) in the world wide capital market we notice that in 2014 Poland was ranked at the end of the list however the situation in 2016 diametrically changed (see Table 7) since this share was doubled in comparison to 2014.

Table 9. Women’s share of board seats at main index companies in 2014

Country	Stock index	% share	Country	Stock index	% share
West and North Europe			Central and East Europe		
Norway	OBX	35.5	Slovenia	SBITOP	17.1
Finland	OMXH25	29.9	Austria*	ATX	13.0
France*	CAC40	29.7	Czech Rep.	PX	8.3
Sweden	OMXS30	28.8	Poland	WIG20	5.1
Belgium*	BEL20	23.4	Hungary	BUX	4.4
UK	FTSE100	22.8	North America		
Denmark	OMXC20	21.9	Canada	S&P/TSX 60	20.8
Netherlands*	AEX	21.0	USA	S&P 500	19.2
Germany*	DAX	18.5	Asia-Pacific		
Spain*	IBEX35	18.2	Australia	S&P/ASX200	19.2
Switzerland	SMI	17.0	Hong Kong	Hang Seng	10.2
Ireland	ISEQ	10.3	India	BSE200	9.5
Portugal	PSI20	7.9	Japan	TOPIX30	3.1

Source: Own elaboration on the basis of Catalyst (2014)

3. HOW WOMEN PARTICIPATION ON BOARDS INFLUENCES FINANCIAL PERFORMANCE OF COMPANIES

The question if gender of upper management or gender diversity in boards influences the firm performance is one of the main ones which should be asked before quota directive become a law. The problem is not trivial because it is very difficult to separate different factors affected economic

situation of the enterprise and to determine time span which is necessary to observe the effects of the manager decisions. Another problem is how to measure the firm performance (using ROE, ROA, Tobin's Q, etc.) and "diversity" (i.e. - all manager boards, only supervisory or executive boards, or maybe CEOs).

We investigate situation of companies listed on the main market of Warsaw Stock Exchange. In fact, we use data concerning nearly 86% of companies quoted in the years 2010-2014 since companies (in different years) with lacking observations or outliers were excluded from our analysis. In total 1448 cases - companies classified to 16 economic sectors are investigated described in Table 10.

Table 10. The distinguished sectors

Sectors		Sectors	
A	Banks	I	Wood and paper, light industry
B	Construction	J	Electro-engineering & automobiles
C	Developers	K	Energy, oil and gas
D	Capital market, finance others	L	Building materials
E	Retails	M	Metals
F	Wholesale	N	Food
G	IT	O	Telecom and media
H	Chemicals, pharmaceutical, plastic materials	P	Hotels and restaurants, services-others

Note: Count of companies from the sectors A-O: 337 (87.76%) in 2010; 368 (86.79%) in 2011; 369 (84.83%) in 2012; 374 (84.42%) in 2014.

Source: own elaboration on the basis of WSE sectors

Table 11 contains information about female representation in boards in all analyzed sectors and years separately for executive and supervisory boards and women on the top positions i.e. president of the executive boards and chair in the supervisory boards. We consider women CEOs because it seems that the management decisions affecting financial performance are made only by them. In the analyzed period the biggest increase is observed in developers' sector (by 78% in the executive boards and 433% in the supervisory boards) and the biggest decrease for building materials sector (by 37% in the executive boards and 19% in the supervisory boards) in 2013 in comparison to 2010. It is worth mentioning that, at least in one year, there is no woman president of the executive board in 8 sectors, and no chairwoman of the supervisory board in 6 sectors, and there are 4 sectors without women CEOs in all four years of analysis.

In our analysis we ask the question if annual changes in the gender structure of upper management in companies belonging to the sectors B-O are correlated with the changes of the financial situation of these sectors. Banks were excluded from this investigation (because they are considered individually) thus the number of investigated companies was reduced to 1393.

To evaluate the annual changes in female representation in:

- supervisory and executive boards,
- presidents of the executive boards, and
- chairs of the supervisory boards

we calculate the relative growth rates year by year for the period 2010-2013, thus increase of the women share is denoted by positive numbers while decreasing by negative ones.

Table 11. Share of women on executive and supervisory boards and chairwomen

Sectors	Bodies	Share of women on boards				Share of women as chairs			
		2010	2011	2012	2013	2010	2011	2012	2013
A	Executive	12.79	12.36	9.18	13.13	18.18	9.09	7.69	6.67
	Supervisory	7.62	6.60	10.43	14.17	7.69	7.69	7.14	13.33
B	Executive	10.08	7.76	9.52	10.75	12.50	6.25	3.45	11.11
	Supervisory	12.21	15.10	14.59	15.68	6.06	8.82	3.23	3.45
C	Executive	8.70	8.33	13.04	15.49	7.69	11.76	21.05	19.05
	Supervisory	1.19	4.90	5.08	6.34	0.00	5.26	4.76	9.52
D	Executive	18.75	22.09	21.25	20.88	20.83	12.50	12.90	16.67
	Supervisory	17.32	13.53	14.02	13.09	0.00	3.23	3.23	3.03
E	Executive	14.71	11.67	10.34	11.54	5.00	0.00	0.00	5.26
	Supervisory	9.00	12.15	12.75	8.91	0.00	0.00	0.00	0.00
F	Executive	9.88	10.34	10.98	9.20	3.85	3.57	4.00	8.00
	Supervisory	18.80	19.33	18.62	19.05	12.50	15.38	16.00	11.54
G	Executive	6.72	7.69	7.55	6.86	0.00	0.00	3.70	3.70
	Supervisory	10.07	8.72	10.27	13.48	18.52	7.41	11.54	20.00
H	Executive	20.75	14.75	16.07	13.33	15.79	20.53	10.53	10.00
	Supervisory	9.71	11.93	11.71	11.38	10.53	11.11	10.53	15.00
I	Executive	7.14	7.32	9.76	6.25	0.00	0.00	0.00	0.00
	Supervisory	12.22	14.89	17.39	12.64	11.76	11.11	11.76	6.25
J	Executive	9.52	10.00	10.99	8.33	0.00	0.00	0.00	0.00
	Supervisory	15.13	14.38	12.99	13.90	7.41	7.41	3.45	7.14
K	Executive	10.17	10.45	5.71	11.86	0.00	0.00	0.00	0.00
	Supervisory	11.22	13.51	13.85	15.57	0.00	0.00	12.50	18.75
L	Executive	17.50	9.76	11.63	11.11	14.29	12.50	6.67	11.76
	Supervisory	14.10	12.22	9.47	11.46	0.00	0.00	0.00	5.56
M	Executive	8.11	6.98	7.32	6.38	12.50	11.76	11.11	10.53
	Supervisory	13.58	13.64	14.43	13.59	18.75	17.65	17.65	21.05
N	Executive	7.02	8.06	9.26	9.52	0.00	0.00	0.00	5.00
	Supervisory	8.57	11.02	11.21	10.26	0.00	5.26	5.88	0.00
O	Executive	6.38	13.46	10.71	9.23	0.00	5.56	5.00	10.00
	Supervisory	10.42	11.01	11.02	14.52	12.50	11.11	11.011	11.76
P	Executive	14.71	16.25	13.00	13.46	8.70	3.57	0.00	0.00
	Supervisory	14.07	17.92	18.05	13.53	13.04	11.54	11.76	12.50

Source: Own elaboration on the basis of Samorajczyk 2014, pp. 43-68.

Financial performance changes are measured by annual changes of the positions in the ranking of these sectors, provided according to synthetic indicators. The evaluation of the financial situation is made using the multidimensional comparable analysis. We construct financial indicators applying three taxonomic measures (Kompa, Witkowska, 2015): (a) the synthetic measure of development, following Hellwig idea (1968), (b) relative development indicator (Łuniewska and Tarczyński, 2006, p. 54) and (c) vector taxonomic measure, following Nermend works (2009, p. 63-89).

Construction of each measure is based on five financial ratios: (1) return on equity (ROE), (2) return on assets (ROA), (3) Cash Flow per share, (4) EBIDTA per share, and (5) equity to assets ratio. According to the values of three synthetic indicators, the ranking of sectors for each considered year is made, and then - since applying different taxonomic measures the ranking may differ - we averaged the ranking and present it in Table 12. The best position in the ranking is denoted by one.

It is visible (Table 12) that positions of the sectors are not stable in time therefore we evaluate the changes of the financial situation of sectors as the difference between the positions kept by each sector in the neighboring years. In such a case we obtain differences in rankings for each sector in the years 2011-2013 which are denoted by positive numbers if the position was improved and by negative otherwise. In the last step of our investigation we calculate Pearson coeffi-

cients to find out if there is linear correlation between changes observed in the women shares on boards and the sector positions. As it was already mentioned, changes of senior managers or structure of boards do not cause immediate effects. Therefore, it is difficult to determine the length of the time span between being appointed to the manager position and effects observed as the financial performance of the company. Therefore, in our analysis we look for the relations observed between gender board diversity and company performance in the same year and a year after. Correlation coefficients are calculated for all analyzed years i.e. for:

- the years 2011-2013 as relation between concurrent phenomena,
- the years 2011-2013 as relation between current changes in the positions of the sectors and lagged by one year changes of the gender diversity,
- each year separately i.e. for the years 2011, 2012 and 2013 as relation between concurrent phenomena,
- the pair of years 2011-2012, 2012-2013 as relation between current changes in the positions of the sectors and lagged by one year changes of the women's representation in upper management.

Table 12. Ranking of sectors according to their financial situation

Sectors	2010	2011	2012	2013
B Construction	7	13	11	15
C Developers	6	4	14	12
D Capital market, finance others	10	8	7	5
E Retails	3	11	2	1
F Wholesale	14	14	12	13
G IT	9	9	5	7
H Chemicals, pharmaceutical, plastic materials	12	3	10	14
I Wood and paper, light industry	15	15	15	11
J Electro-engineering and automobiles	8	2	4	8
K Energy, oil and gas	1	1	1	10
L Building materials	5	10	13	2
M Metals	4	5	6	9
N Food	2	6	3	3
O Telecom and media	11	7	8	4
P Hotels and restaurants, services-others	13	12	9	6

Source: Own elaboration on the basis of Samorajczyk 2014, pp. 69-70.

Analyzing values of the Pearson coefficients (Table 13) and statistical significance of correlation coefficients, we notice that although there are some positive values, all these relations are statistically insignificant. Correlations which allow us to reject null hypothesis about lack of influence of the gender structure of boards and CEOs and financial performance of analyzed sectors are negative. In other words, the increase of women share on boards causes worsening of the financial performance of sectors in:

- 2012 and 2013 for the executive boards when current relations are considered,
- 2011-2013 and 2012 for supervisory boards when lagged relations are considered,
- 2012 for presidents of executive boards when lagged relations are considered,
- 2013 for chairwomen of supervisory boards when current relations are considered.

However, the results for women CEOs are obtained for small number of observations thus they should be treated rather as illustration although they acknowledge the results obtained by (Kompa, 2018) who evaluated correlation between financial standing of sectors, defined by the values of all three taxonomic measures, and women representation on senior positions.

Table 13. Values of Pearson coefficients between changes of the women representation on boards and changes of the sector's position in the ranking

Years	2011-2013		2011	2012	2013	2012	2013
	current	lagged	current	current	current	lagged	lagged
No. of observations	45	30	15	15	15	15	15
Executive	-0,191	0,184	0,327	-0,492	-0,516	0,090	0,327
Supervisory	0,040	-0,397	0,067	0,277	-0,089	-0,546	-0,160
No. of observations	21	14	7	7	7	7	7
President	0,017	-0,332	0,595	-0,376	-0,290	-0,909	0,1132
No. of observations	27	18	9	9	9	9	9
Chair	-0,236	0,133	-0,208	0,275	-0,589	-0,210	0,392

Source: own calculations. Italic letters denoted significant relations at the level $\alpha = 0.05$.

CONCLUSIONS

Investigation on the gender structure of employment in companies quoted in the Warsaw Stock Exchange shows that listed companies, having more than 2500 employees, employ more women than men, and that finance sector is the most feminized one. However, the share of women on boards is much smaller than men. During 7 years of investigation no essential changes are visible. There are only 7-8% presidents – women. The situation in NewConnect is slightly better than in the main market. However, everything seems to indicate that even if women participation in the management bodies of companies has been slowly growing, there is no chance to obtain the 40% women parity level in the boardrooms till 2020 by “natural way”. Due to linear trend, without legislative regulations and ceteris paribus, this level might be obtained from 13 to 27 years later if all companies are taken into consideration.

Our preliminary investigation does not prove that there is positive correlation between the increase of the women share in boards and financial performance of companies. In contrary, we obtain statistically significant negative correlation between both phenomena for 6 among 28 variants of possible measurements. However, our results may be biased by the length of the samples, and small share of women in boards of Polish enterprises.

REFERENCES

- Adams, R. B., Ferreira, D. (2009), “Women in the boardroom and their impact on governance and performance”, *Journal of Financial Economics*, No. 94, pp. 291-309.
- Adams, S.M., Gupta, A., Leeth, J.D. (2009), “Are female executives over-represented in precarious leadership positions?”, *British Journal of Management*, Vol. 20, No. 1, pp. 1–12.
- Ahern, K.R., Dittmar, A.K. (2012), “The change of the boards: The impact on Firm valuation of mandated female board representation”, *The Quarterly Journal of Economics*, No. 127, pp. 137-197 DOI: 101093/qje/qjr049
- Ali, M., Kulik, C. T., Metz, I. (2011), “The gender diversity–performance relationship in services and manufacturing organizations”, *The International Journal of Human Resource Management*, Vol. 22, No. 07, 1464-1485.
- Bear, S., Rahman, N., Post, C. (2010), “The impact of board diversity and gender composition on corporate social responsibility and firm reputation”, *Journal of Business Ethics*, No. 97, pp. 207-221. DOI 10.1007/s10551-010-0505-2.
- Bertrand, M., Black, S. E., Jensen, S., Lleras-Muney, A. (2014), “Breaking the Glass Ceiling? The Effect of Board Quotas on Female Labor Market Outcomes in Norway”, *IZA Discussion Paper 8266*, <http://ftp.iza.org/dp8266.pdf>

- Campbell, K., Minguez-Vera, A. (2008), "Gender Diversity in the Boardroom and Firm Financial Performance", *Journal of Business Ethics*, Vol. 83, pp. 435–451, DOI 10.1007/s10551-007-9630-y
- Carter, D. A., D'Souza, F., Simkins, B. J., Simpson W. G. (2010), "The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance", *Corporate Governance: An International Review*, Vol. 18, No. 5, pp. 396-414. DOI: 10.1111/j.1467-8683.2010.00809.x
- Carter, D.A., Simkins B. J., Simpson, W. A. (2003), "Corporate Governance, Board Diversity, and Firm Value", *The Financial Review*, Vol. 38, pp. 33-53.
- Catalyst, (2004), *The Bottom Line: Connecting Corporate Performance and Gender Diversity*, Catalyst, New York.
- Catalyst (Catalyst Census), (2011), *Women on board*, available at: <http://www.catalyst.org/knowledge/women-boards>
- Catalyst (Catalyst Census), (2012), *Women on board*, available at: <http://www.catalyst.org/knowledge/women-boards>
- Catalyst (Catalyst Census), (2014), *Women on board*, available at: <http://www.catalyst.org/knowledge/women-boards>
- Curtis, M., Schmid, Ch., Struber, M. (2012), *Gender diversity and corporate performance. Research Institute Credit Suisse*, available at: http://www.calstrs.com/sites/main/files/file-attachments/csri_gender_diversity_and_corporate_performance.pdf (10.07.2016).
- Desvaux, G., Devillard-Hollinger, S. Baumgarten, P. (2007), *Women matter: Gender diversity a corporate performane driver*, McKinsey&Company, available at: <http://www.raeng.org.uk/publications/other/women-matter-oct-2007> (13.07.2016)
- Devillard S., Graven, W., Lawson, E., Paradise R., Sancier-Sultan, S. (2012), *Women Matter 2012, Making the breakthrough*, McKinsey&Company, available at: http://www.mckinsey.com/features/women_matter (12.03.2017),
- EU (2014), *Improving the gender balance in company boardrooms*, European Commission proposal for a directive – adopted by the Commission on 14 November 2012), available at: http://ec.europa.eu/justice/gender-equality/files/gender_balance_decision_making/boardroom_factsheet_en.pdf
- EU (2016), *Gender balance on corporate boards. Europe is cracking the glass ceiling, European Commission Fact sheet*, July 2016, available at: http://ec.europa.eu/justice/gender-equality/files/womenonboards/factsheet_women_on_boards_web_2015-10_en.pdf.
- Farrel, K. A., Hersch, P. L. (2005), "Additions to corporate boards: The effect of gender", *Journal of Corporate Finance*, Vol. 11, 85–106, DOI: 10.1016/j.jcorpfin.2003.12.001
- Hellwig, Z. (1968), "Zastosowanie metody taksonomicznej do typologicznego podziału krajów ze względu na poziom ich rozwoju oraz zasoby i strukturę kwalifikowanych kadr", *Przegląd Statystyczny*, No. 4, pp. 307-327.
- Joecks, J., Pull, K., Vetter, K. (2013), "Gender Diversity in the Boardroom and Firm Performance: What Exactly Constitutes a "Critical Mass"?", *Journal of Business Ethics*, Vol. 118, pp. 61–72, DOI 10.1007/s10551-012-1553-6
- Kompa, K., Witkowska, D. (2015), "Synthetic Measures of the European Capital Markets Development", *Econometrics*, Vol. 4 (50), pp. 214-227.
- Kompa, K. (2018), "Zmiany w kierownictwie spółek giełdowych a zmiany w sytuacji finansowej firm", *Przedsiębiorczość i Zarządzanie*, (in print).
- Lee, P. M., James, E. H. J. (2007), "She'-e-os: gender effects and investor reactions to the announcements of top executive appointments", *Strategic Management Journal*, Vol. 28, No. 3, pp. 227–241.
- Lenard, M. J., Yu, B., York, E. A., Wu, S. (2014), "Impact of board gender diversity on firm risk", *Managerial Finance*, Vol. 40, No. 8, pp. 787-803.

- Lisowska, E., Zachorowska, M., Sznajder, A., Grabowska, M. (2014), *Więcej kobiet w zarządzaniu – to się opłaca*, Seria: Równość w biznesie, Raport na zlecenie Ministerstwa Pracy i Polityki Społecznej, Warszawa (in Polish),
- Łuniewska, M., Tarczyński, W. (2006), *Metody wielowymiarowej analizy porównawczej na rynku kapitałowym*, Wydawnictwo Naukowe PWN, Warszawa (in Polish).
- McKinsey (2007), *Women Matter: Gender diversity, a corporate performance driver*, McKinsey and Company, Inc., available at:
<https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Organization/Our%20Insights/Gender%20diversity%20a%20corporate%20performance%20driver/Gender%20diversity%20a%20corporate%20performance%20driver.ashx>
- McPhail, K. (2010), "Board diversity, the logic of difference & the logic of equivalence: a critical study of the emergence of corporate democracy", *Revista Contabilidad-Spanish Accounting Review*, Vol. 13, No. 1, pp. 125-144.
- Nermend, K. (2009), *Vector Calculus in regional Development Analysis. Comparative Regional Analysis Using the Example of Poland*, Physica-Verlag, Heidelberg.
- Richard, O.C., Barnett, T., Dwyer, S., Chadwick, K. (2004), "Cultural diversity in management, firm performance, and the moderating role of entrepreneurial orientation dimensions", *Academy of Management Journal*, Vol. 47, No. 2, pp. 255-266.
- Samorajczyk, M. (2014), *Rola i znaczenie kobiet na polskim rynku kapitałowym*, Praca magisterska niepublikowana, napisana w SGGW pod kierunkiem K. Kompy, Warszawa.
- Smith, N., Smith, V., Verner, M. (2006), "Do women in top management affect firm performance? A panel study of 2,500 Danish firms", *International Journal of Productivity and Performance Management*, Vol. 55, No. 7, pp. 569–593, DOI 10.1108/17410400610702160
- Triana, M. D. C., Miller, T. L., Trzebiatowski, T. M. (2013), "The double-edged nature of board gender diversity: Diversity, firm performance, and the power of women directors as predictors of strategic change", *Organization Science*, Vol. 25, No. 2, 609-632.
- Wang, Y., Clift, B. (2009), "Is there a "business case" for board diversity?", *Pacific Accounting Review*, Vol. 21, No. 2, pp. 88–103, DOI 10.1108/01140580911002044
- Whittaker, R. (2014), *Does corporate gender equality lead to outperformance?* ROBECOSAM, available at:
http://www.robecosam.com/images/Does_corporate_gender_equality_lead_to_outperformance.pdf

ACKNOWLEDGEMENTS

Research is conducted in frame of project: Changes of women's position in the labour market. Analysis of the situation in Poland and in the selected European Union States in the years 2002-2014, financed by National Science Centre grant No. 2015/17/B/HS4/00930, Poland.