

WOMEN DIRECTORS ON THE BOARDS OF POLISH FIRMS LISTED WITHIN THE ALTERNATIVE TRADING SYSTEM

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Purpose: There were two main goals for the paper. The first concerned showing the representation of women on the executive boards (EBs) and supervisory boards (SBs) of companies quoted on the NewConnect market (Poland). The presence of women directors on company boards was considered through the prism of potential benefits for companies, which were identified from the literature review. The second objective examined the relationships between the amount of women in EB of NewConnect companies and: the amount of men in EB; the amount of EB members; the amount of men in SB; the amount of women in SB; the amount of employees in the company. The relationships between the amount of women in SB of NewConnect companies and: the amount of men in SB; the amount of SB members; the amount of employees were also investigated.

Design/methodology/approach: Descriptive statistics were used to describe the population structure of the number of women and their participation in the bodies of NewConnect companies. Relationships between variables were examined using spread charts and correlation matrixes.

Findings: The analysis of the mean measures shows that women were more represented in the SBs of NewConnect companies than in the EBs. The representation of women on company boards was low. The potential benefits of a higher presence of female non-executive directors were mainly seen in the area of monitoring. On the basis of analyses of interdependencies between variables, four statistically significant relationships were identified between: the amount of women in EB and the amount of men in EB (weak negative correlation); the amount of women in EB and the amount of EB members (moderate positive correlation); the amount of women in EB and the amount a company employs (weak positive correlation); the amount of women in SB and the amount of men in SB (strong negative correlation).

Originality/value: The issue of the presence of female members on the boards of companies listed on NewConnect has not yet been adequately explored. Study results are addressed to management theoreticians as well as practitioners and to shareholders of NewConnect quoted companies.

Keywords: women directors, women's participation in boards, NewConnect quoted companies.

Category of the paper: Research paper.

Abbreviations used in the paper: EB – executive board; EB (W) - executive board (number of women); EB (Ws) - executive board (women's share); EB (M) - executive board (number of men); EB (T) - executive board (number of members); SB – supervisory board; SB (W) - supervisory board (number of women); SB (Ws) - supervisory board (women's share); SB (M) - supervisory board (number of men); SB (T) - supervisory board (number of members); NoE - number of employees; SME – small and medium enterprises.

1. Introduction

Nowadays, the complexity of the corporate environment is accompanied by a high degree of volatility. This poses completely new challenges for managers. They arise not only from the need to adapt enterprises to the changes taking place, but also from the need to anticipate changes and to take advantage of the opportunities the changes generate. In such a defined environment, a gender-balanced composition of executive boards (EBs) and supervisory boards (SBs) may prove to be a source of market success for businesses and the building of sustainable competitive advantages for companies, sectors and the economy as a whole. Still, the participation of women in firm boards is insufficient. This observation applies not only to large enterprises, but also, and perhaps especially, to businesses in the small and medium-sized enterprise sector (SME).

In this context, the following research questions may be formulated:

- What benefits can a company derive from gender diversity on the firm's board(s)?
- What does the representation of women on business boards depend on?
- What limits the gender diversity of business boards and why?
- What is the presence and participation of women in the EBs and SBs of companies quoted on NewConnect?
- Are there correlations in NewConnect companies between the amount of women in EB (EB (W)) and: the amount of men in EB (EB (M)); the amount of members in EB (EB (T)); the amount of men in SB (SB (M)); the amount of women in SB (SB (W)); the amount of employees (NoE)?
- Are there correlations in NewConnect companies between SB (W) and: SB (M); the amount of members in SB (SB (T)); NoE?
- Whether, and to what extent, the results of international research on the representation of women on boards can be applied to the situation in companies quoted on the NewConnect?

The NewConnect market (Poland) mainly lists companies from the SME sector.

In addressing the benefits of women's presence on company boards, the determinants of this presence and the barriers to gender balance of boards, it is important to look at reports from studies conducted in different geographical areas. This will allow the problem of the low

presence of women on company boards to be assessed in a broader perspective. Such an approach will also provide an opportunity for a deeper analysis of the situation of women directors in the companies under study and allow for the formulation of future research areas.

Different approaches to the issue of women on company boards can be distinguished in the literature (Terjesen, Sealy, Singh, 2009). This issue is considered at the individual level, at the board level, at the company level and at the level of its surroundings (Terjesen et al., 2009). Further considerations will also be made in these perspectives.

Burke (2003) believes that there should be an increase in the proportion of women on company boards of directors. The benefits of having women on boards are seen in their qualifications, experience, commitment and knowledge (Burke, 1997; 2003). Women directors enhance the board's perspective, influence board discussions in an objective manner and act as mediators (Joecks, Pull, Scharfenkamp, 2019). Women directors also attach great importance to the management of conflict at work. This trait is particularly evident in the case of women board chairs (Furlotti, Mazza, Tibiletti, Triani, 2019). The presence of women on company boards affects the social capital and human capital of the boards (Dang, Bender, Scotto, 2014). Nielsen and Huse (2010) find that presence of female directors on company boards increases their effectiveness. Women reduce the level of conflict. They also contribute to increasing the quality of the board's development activities (Nielsen, Huse, 2010). Women's presence on boards also allows for the creation of a board dynamic that contributes to the diversification of capacities, skills and knowledge (Slomka-Golebiowska, De Masi, Paci, 2023). Gender diversity on boards can also contribute to strengthening the link between a company's entrepreneurial orientation and its performance. Gender diversity on the board also strengthens the strategic commitment of the board (Arzubiaga, Iturralde, Maseda, Kotlar, 2018). When a company is threatened by poor performance, women directors inhibit strategic change. In the opposite situation, women directors are the impetus for strategic change (Triana, Miller, Trzebiatowski, 2014). Women's representation on boards of Norwegian companies at a level of at least three (critical mass) contributes to greater innovation (Torchia, Calabrò, Huse, 2011). The presence of women directors representing employees and shareholders reinforces the innovation of German companies (Joecks, Pull, Scharfenkamp, 2023). Al-Matari and Alosaimi (2022) sought to find a link with the presence of female directors in companies and the market success of the business. The researchers identified a moderately positive relationship (Al-Matari, Alosaimi, 2022). The presence of women directors on company boards promotes better monitoring, more ethical business practices and improved stakeholder relations (Galbreath, 2011).

Conversely, when answering the question of what the presence of women on company boards depends on, it is first necessary to look at the benefits to company boards, companies as a whole and the economy. In recent years, the gender-balancing policy of (mainly European) regulators on firm boards has been crucial for the presence of women on corporate boards. Carbone and Dagnes (2019), based on the experiences of women directors of Italian listed

companies, concluded that discrimination against women is multidimensional and gender quotas in corporate boards are essential. However, women's perceptions of discrimination depend on personal experiences and individual career paths (Carbone, Dagnes, 2019). Huang, Diehl and Paterlini (2020) find that male corporate elites pursue homophily within boards by not including women. In contrast, women behave differently, whose presence on supervisory boards promotes gender diversity on boards. They also point to the effectiveness of quota policies in the gender differentiation of boards in Germany (Huang, Diehl, Paterlini, 2020). Barnes, Lewis, Yarker and Whiley (2019) noted that the growth in the amount of women directors on boards is mainly linked to the increase in non-executive directors. In their view, public attention should now shift from non-executive directors to executive directors and the development of management talent among women (Barnes, Lewis, Yarker, Whiley, 2019). Kim and Kim (2023) concluded, based on the Korean experience, that a greater female presence on company boards promotes a bigger share of women executives, but also blocks other women aspiring to the business board (Kim, Kim, 2023). Similar findings have emerged from UK-based research. It was noted that the greater presence of women on boards is important for gender differentiation in senior management positions (Biswas, Chapple, Roberts, Stainback, 2023). However, the relationship is two-sided. Thus, a key factor that determines women's participation in the boards of Danish companies is the greater number of women in top management positions (Smith, Parrotta, 2018). Skaggs, Stainback and Duncan (2012) surveyed 81 Fortune 1000 corporations on the gender diversity of managers employed by these companies. Their study also concluded that the greater presence of women in corporate leadership positions leads to a greater presence of females on the boards of these companies. In addition, other factors such as the number of female employees in a given company, the company's size, and the length of time the company has been in business also affect the gender mix of boards (Skaggs, Stainback, Duncan, 2012). Burke (1999) came to a similar conclusion. In his view, the female presence on corporate boards is determined by board size and the company (Burke, 1999). Nekhili and Gatfaoui (2013) find that the female presence in French listed companies is also related to the company or board size, but also to family ownership, to their skills and to their network connections. They also recognised the phenomenon of the 'double glass ceiling'. In addition, they pointed out that demographic characteristics are important when appointing women to senior positions (Nekhili, Gatfaoui, 2013). Dimovski, Lombardi and Cooper (2013) found, based on the experience of Australian investment trusts, that female directors were more likely to be employed on boards of directors in larger entities and in entities with larger boards. The presence of women directors on boards was also determined by the location of the entity. In this case it was Sydney (Dimovski, Lombardi, Cooper, 2013). Singh, Vinnicombe and Johnson (2001) studied the representation of women on the boards of UK companies in the FTSE 100 index and concluded that greater diversity in the gender mix of boards of directors can improve company performance. Indeed, more female directors can be found in companies with more employees and higher turnover

and profits (Singh, Vinnicombe, Johnson, 2001). de Jonge (2014) characterised women directors on the boards of listed companies in China and India. The study found that women directors perform above average well in companies operating in the financial services sector as well as in companies with large numbers of employees. In addition, gender diversity on boards in state-owned companies is slightly higher in India than in China (de Jonge, 2014). Terjesen, Aguilera and Lorenz (2015), based on a study of countries that have introduced gender quotas in companies, identified the institutional factors behind gender equality policies. These are: legal arrangements that address gender welfare, the female labour market and left-leaning government coalitions (Terjesen, Aguilera, Lorenz, 2015).

Thus, when considering the reasons that limit the gender balance of boards in companies, it is important to look first at the cultural determinants that translate into legal solutions and business practices. Foppiano-Vilo, Matus-Castillo, Cornejo-Améstica (2022) identified a number of cultural barriers to career advancement for women. These include gender stereotyping, social assignment of specific roles, and masculinised work environments (Foppiano-Vilo, Matus-Castillo, Cornejo-Améstica, 2022). It is the cultural differences between countries that account for the different representation of women on boards of directors in companies - issues of masculinity, uncertainty avoidance, power distance (Gallego, Briones, Barbadillo, 2011). Attention should also be paid to the occurrence of the 'glass ceiling' phenomenon (Bakken et al., 2023; Nekhili, Gatfaoui, 2013). In many companies, women are promoted to a certain level, above which promotion becomes impossible. Very often, women's promotion is also determined by their demographic characteristics (Nekhili, Gatfaoui, 2013). In the case of women directors, there is also the phenomenon of 'ornamental directors'. Furthermore, the reasons for the low representation of women directors on company boards are attributed to both structural problems and the low dissemination of knowledge about the successes of many women directors (signalling problem) (Rowley, Lee, Lan, 2015).

In this background, it is relevant to refer to women's representation in EBs and SBs of companies quoted on NewConnect.

2. Research method

The subject of the study is therefore the female representation on the governing bodies of companies quoted in the alternative trading system NewConnect (Poland) ('NewConnect - Lista Spółek', n.d.).

Descriptive statistics were used to describe the population structure of the number of women and their participation in the boards of NewConnect companies (Holmes, Illowsky, Dean, 2018; Kassyk-Rokicka, 1997; Peck, Olsen, Devore, 2008; Rabiej, 2012; Sheskin, 2000; Sobczyk, 1997; Starzyńska, 2012; StatSoft, n.d.; TIBCO Software Inc., 2017; Wierzbiński, 2008).

The analysis of the properties of the distributions of EB (W), EB women's share (EB (Ws)), SB (W), SB women's share (SB (Ws)) is carried out across measures of mean, measures of dispersion, measures of asymmetry and measures of concentration (Sobczyk, 1997).

Relationships between variables were examined using spread charts and a correlation matrix. A relationship analysis was carried out between variables such as: EB (M), EB (W), EB (T), SB (M), SB (W), SB (T), NoE. The linear correlation coefficient was calculated to determine the direction and strength of the correlation (Holmes et al., 2018; Peck et al., 2008; Rabiej, 2012; Sheskin, 2000; Śmigielski, 2021; Sobczyk, 1997; Starzyńska, 2012; StatSoft, n.d.; TIBCO Software Inc., 2017). The linear correlation coefficient is assumed to be statistically significantly different from 0 when the significance level p for the t-statistic is below 0.05 (Rabiej, 2012, p. 221).

The study verified the veracity of eight null hypotheses¹:

1. Null hypothesis: There is not statistically meaningful linear correlation among EB (W) and EB (M).

Alternative hypothesis: There is a statistically meaningful linear correlation among EB (W) and EB (M).

2. Null hypothesis: There is not statistically meaningful linear correlation among EB (W) and EB (T).

Alternative hypothesis: There is a statistically meaningful linear correlation among EB (W) and EB (T).

3. Null hypothesis: There is not statistically meaningful linear correlation among EB (W) and SB (M).

Alternative hypothesis: There is a statistically meaningful linear correlation among EB (W) and SB (M).

4. Null hypothesis: There is not statistically meaningful linear correlation among EB (W) and SB (W).

Alternative hypothesis: There is a statistically meaningful linear correlation among EB (W) and SB (W).

5. Null hypothesis: There is not statistically meaningful linear correlation among EB (W) and NoE.

Alternative hypothesis: There is a statistically meaningful linear correlation among EB (W) and NoE.

6. Null hypothesis: There is not statistically meaningful linear correlation among SB (W) and SB (M).

Alternative hypothesis: There is a statistically meaningful linear correlation among SB (W) and SB (M).

¹ Hypotheses were formulated using the textbook: Holmes, A.B., Illowsky, B., Dean, S.L. (2018). *Introductory business statistics*. OpenStax. Houston: Texas Rice University.

7. Null hypothesis: There is not statistically meaningful linear correlation among SB (W) and SB (T).

Alternative hypothesis: There is a statistically meaningful linear correlation among SB (W) and SB (T).

8. Null hypothesis: There is not statistically meaningful linear correlation among SB (W) and NoE.

Alternative hypothesis: There is a statistically meaningful linear correlation among SB (W) and NoE.

Data on EBs and SBs members of individual companies was obtained from the Notoria Serwis information service (<https://ir.notoria.pl/>) ('Notoria Serwis S.A.', n.d.) and the Krs-Pobierz service (<https://krs-pobierz.pl/>) ('Krs-pobierz. Wszystkie informacje z KRS', n.d.). The data on NoE in each company was established based on the Notoria Service information service (<https://ir.notoria.pl/>) ('Notoria Serwis S.A.', n.d.). Data on companies was obtained between 15 March and 19 March 2023. Companies with fewer than 249 employees were included in the research and data on executive and supervisory boards were complete.

For the clarity of further argumentation, the concept of the NewConnect market and the rules of joint-stock companies in Poland need to be clarified. NewConnect is an organised share market operated over the counter. It is operated by the Warsaw Stock Exchange (Poland). This market is intended for SME ('NewConnect - O Rynku', n.d.). Companies listed on this market are mainly organised in the joint-stock company form. Polish joint-stock companies have a dual-tier governance system. The company's affairs are conducted by the EB. The EB consists of one or a greater amount of members. EB members are appointed and also dismissed by the SB (the company's articles of association may provide otherwise). The SB's primary task is the ongoing supervision of all areas of the company's business. In public companies, the SB has at least five members. The members of the SB are established and recalled by the shareholders' general meeting (ISAP, n.d.).

3. Research findings

When describing the structure of the EB (W), EB (Ws), SB (W), SB (Ws) populations, I will first refer to measures of mean. A comparison of the arithmetic mean, median and mode shows that the empirical distributions are right asymmetric (Table 1). The median and the mode for EB (W) and SB (W) are lower than the mean. This is also the case for EB (Ws) and SB (Ws). In the distribution of EB (W) and in the distribution of EB (Ws), the most frequent value is 0. This is the case for 286 companies out of 356 surveyed. Furthermore, for EB (W) and EB (Ws), the lower quartile, median and upper quartile were all at 0. In the SB (W) distribution and in the SB (Ws) distribution, the modal values were also at 0. The number of

the modal values was 126. This means that 126 companies had no females in the SB. The median (second quartile) for SB (W) was 1. This shows that there was no less than 1 woman in half of the SBs companies. The remaining half of SBs companies had no more than 1 woman. The bottom quartile of SB (W) was 0, the top quartile was 2. The bottom quartile (first) divides the empirical distribution in the proportion of one-quarter and three-quarters and the top quartile (third) in the proportion of three-quarters and one-quarter (Holmes et al., 2018; Kassyk-Rokicka, 1997; Peck et al., 2008; Sobczyk, 1997; Wierzbiński, 2008). The median SB (Ws) was 0.20, the lower quartile 0 and the upper quartile 0.40.

The analysis of the dispersion measures of the compared EB (W) and SB (W) populations and of the EB (Ws) and SB (Ws) distributions begins with a comparison of the empirical area of variation measured by the range. The range for EB (W) was 3 and for SB (W) 5. For EB (Ws) and SB (Ws) distributions, the range was 1. The quarterly deviation for EB (W) and EB (Ws) was 0. For SB (W) and SB (Ws) distributions, the quarterly deviation was 1 and 0.20 respectively. The standard deviation for EB (W) was 0.51 and for EB (Ws) 0.25. For SB (W), the standard deviation was 1.07 and for SB (Ws) 0.21. The coefficient of variation for EB (W) was 219.94 and for SB (W) 98.96. For EB (Ws) and SB (Ws), the coefficients of variation were 222.16 and 97.87, respectively.

The analysis of the measures of asymmetry in the compared populations shows that the empirical distributions are right-asymmetric, positive in nature. At the same time, the skewness coefficient is significantly higher for the EB (W) and EB (Ws) populations (2.41 and 2.26, respectively) than for the SB (W) and SB (Ws) populations (0.95 and 0.88, respectively). This demonstrates the greater asymmetry of the empirical distributions of two of the first set of populations discussed.

The analysis of concentration measures in the compared populations shows that the empirical distributions have a leptokurtic character. For the data sets under consideration, the kurtosis was above 0. For the EB (W) set, the kurtosis was 6.46; for the EB (Ws) set, the kurtosis was 4.38; for the SB (W) set, the kurtosis was 0.53 and for the SB (Ws) set, 0.42.

Table 1.

Number of women and their participation in NewConnect company boards - descriptive statistics

Variable	EB (W)	EB (Ws)	SB (W)	SB (Ws)
N valid	356.00	356.00	356.00	356.00
Mean	0.23	0.11	1.08	0.21
Median	0.00	0.00	1.00	0.20
Moda	0.00	0.00	0.00	0.00
Count (Modes)	286.00	286.00	126.00	126.00
Minimum	0.00	0.00	0.00	0.00
Maximum	3.00	1.00	5.00	1.00
Lower (Quartile.)	0.00	0.00	0.00	0.00
Upper (Quartile.)	0.00	0.00	2.00	0.40
Range	3.00	1.00	5.00	1.00

Cont. table 1.

Quartile. (Range)	0.00	0.00	2.00	0.40
Variance	0.26	0.06	1.15	0.04
Standard deviation	0.51	0.25	1.07	0.21
Coefficient of variation	219.94	222.16	98.96	97.82
Skewness	2.41	2.26	0.95	0.88
Kurtosis	6.46	4.38	0.53	0.42

Note. Calculations were done using Statistica software (TIBCO Software Inc., 2017). Data for the analyses was obtained from the Notoria Serwis information service (<https://ir.notoria.pl/>) ('Notoria Serwis S.A.', n.d.) and Krs-Pobierz information service (<https://krs-pobierz.pl/>) ('Krs-pobierz. Wszystkie informacje z KRS', n.d.).

Eight null hypotheses were verified as being true in the studies on correlation analyses between variables:

1. There is not statistically meaningful linear correlation among EB (W) and EB (M).
2. There is not statistically meaningful linear correlation among EB (W) and EB (T).
3. There is not statistically meaningful linear correlation among EB (W) and SB (M).
4. There is not statistically meaningful linear correlation among EB (W) and SB (W).
5. There is not statistically meaningful linear correlation among EB (W) and NoE.
6. There is not statistically meaningful linear correlation among SB (W) and SB (M).
7. There is not statistically meaningful linear correlation among SB (W) and SB (T).
8. There is not statistically meaningful linear correlation among SB (W) and NoE.

The calculated significance level p is less than 0.05 for hypotheses 1, 2, 5 and 6 (Table 2). This means that these hypotheses should be rejected. For hypotheses 3, 4, 7, 8, the calculated significance level p is greater than 0.05. This means that there are no bases to reject the accepted hypotheses.

Thus, from the analyses of interdependencies between variables, it appears that there are relationships between:

- EB (W) and EB (M),
- EB (W) and EB (T),
- EB (W) and NoE,
- SB (W) and SB (M).

A statistically significant linear correlation exists between these variables. For the correlation occurring between EB (W) and EB (M), the correlation is blurred with a negative value (- 0.1701) (Table 2). The strength of the correlation occurring between EB (W) and EB (T) is medium and its direction is positive (0.4607). There is an indistinct positive relationship between EB (W) and NoE (0.1483). As for the relationship between SB (W) and SB (M), it is clear with a negative direction (-0.8486).

Table 2.
Correlation matrix

Variable	Marked correlation coefficients are significant with $p < .05000$ N=355 (Missing data were removed by chance)						
	EB (M)	EB (W)	EB (T)	SB (M)	SB (W)	SB (T)	NoE
EB (M)	1.0000	-.1701	.7962	.0235	-.0083	.0302	.2879
	p= ---	p=.001	p=0.00	p=.659	p=.876	p=.571	p=.000
EB (W)	-.1701	1.0000	.4607	-.0227	.0524	.0460	.1483
	p=.001	p= ---	p=0.00	p=.670	p=.325	p=.388	p=.005
EB (T)	.7962	.4607	1.0000	.0072	.0247	.0554	.3504
	p=0.00	p=0.00	p= ---	p=.892	p=.643	p=.298	p=.000
SB (M)	.0235	-.0227	.0072	1.0000	-.8486	.4463	.0032
	p=.659	p=.670	p=.892	p= ---	p=0.00	p=.000	p=.952
SB (W)	-.0083	.0524	.0247	-.8486	1.0000	.0947	.0489
	p=.876	p=.325	p=.643	p=0.00	p= ---	p=.075	p=.358
SB (T)	.0302	.0460	.0554	.4463	.0947	1.0000	.0888
	p=.571	p=.388	p=.298	p=.000	p=.075	p= ---	p=.095
NoE	.2879	.1483	.3504	.0032	.0489	.0888	1.0000
	p=.000	p=.005	p=.000	p=.952	p=.358	p=.095	p= ---

Note. Calculations were done using Statistica software (TIBCO Software Inc., 2017). Data for the analyses was obtained from the Notoria Serwis information service (<https://ir.notoria.pl/>) ('Notoria Serwis S.A.', n.d.) and Krs-Pobierz information service (<https://krs-pobierz.pl/>) ('Krs-pobierz. Wszystkie informacje z KRS', n.d.).

4. Discussion

The issue of women's presence on company boards was considered at four levels, i.e. individual, board, company and surrounding environment (Terjesen et al., 2009). At each of these levels, the benefits of greater gender diversity in company boards have been identified. At the individual level, these are related to women's qualifications, experience and knowledge (Burke, 1997; 2003). At the company board level, gender diversity leads to improved social and human capital for boards (Dang et al., 2014), increases the efficiency of the boards (Nielsen, Huse, 2010), and improves their dynamics (Slomka-Golebiowska et al., 2023) and strengthens the strategic commitment (Arzubiaga et al., 2018). At the company level, the gender diversity of boards can contribute to initiating strategic change (Triana et al., 2014), greater innovation (Joecks et al., 2023; Torchia et al., 2011), or improving the performance (Singh et al., 2001). Also promotes better monitoring of different areas of the company's operations (Galbreath, 2011). At the level of the company environment, the benefits of greater gender diversity of the councils are related to improved ethical business practices or stakeholder relations (Galbreath, 2011). Gender diversity of corporate boards can also strengthen a company's market success (Al-Matari, Alosaimi, 2022).

In this context, the question should be asked whether and to what extent the results of international research on the benefits of the presence of women on corporate boards can be applied to the situation in companies listed on the NewConnect market? It is first appropriate to refer to the very presence of women in the EBs and SBs of NewConnect companies, and then

to consider the potential benefits. It is important to highlight at this point, however, that a company can only benefit from the existence of women in the EB and SB if this presence exists and is significant. This is because it is essential to note here the concept of "critical mass" (Torchia et al., 2011). After all, the critical mass is related to the minimum number of women on the company's board, which is the source of positive change. In the case of NewConnect companies, as many as 286 companies out of 356 surveyed had no women on the EBs of companies at all, and the position of CEO ('president') was held by women in only 27 companies. A total of 82 women sat on the EBs of 70 companies, with more than one woman in 10 companies and more than two women in 2 companies. In the case of the SBs, the situation regarding the representation of women on boards looked slightly better. There were no women in the SBs in 126 companies out of 356 surveyed. The function of SB chairperson was held by women in 38 companies². In total, there were 385 women on the SBs of 230 companies, with more than one woman in 106 companies and more than two women in 35 companies. Statistics on the representation of women on the EBs and SBs of NewConnect companies show that boards have a low level of gender diversity. There are particularly few female executive directors. The picture is somewhat better for women non-executive directors. So what conclusions can be drawn from this. Potential benefits can be seen primarily in the area of monitoring, for which SBs are responsible. On the other hand, the very low degree of gender diversity of EBs does not allow for an analysis of potential benefits. Instead, the reasons why the boards of NewConnect companies have such a low degree of gender diversity require in-depth research. Further research should also consider the corporate determinants of women's advancement in NewConnect companies. Gender quotas in NewConnect companies do not apply.

International research shows that male corporate elites, unlike women, do not favour gender diversity on boards (Huang et al., 2020). The representation of female directors on company boards is also determined by the board's size or the greater amount of employees in the firm (Burke, 1999; Dimovski et al., 2013; Singh et al., 2001). A study was therefore made of the relationships in NewConnect companies between EB (W) and: EB (M); EB (T); SB (M); SB (W); NoE. Also examined were the relationships occurring between SB (W) and: SB (M); SB (T); NoE. Statistically significant linear correlations were found for the relationships occurring between: EB (W) and EB (M); EB (W) and EB (T), EB (W) and NoE and SB (W) and SB (M). There is a moderately strong correlation with a positive direction between EB (W) and EB (T). This means that more female directors are found in EBs with more members. In contrast, a strong linear correlation with a negative direction occurs between SB (W) and SB (M). This means that an increase in the female share of the SB is accompanied by a decrease in the male share. In the other two cases, the strength of the linear correlation was weak.

² Data on the gender of the chairperson of the supervisory board was only available for 65% of the companies surveyed.

5. Conclusions

In summary, the analysis of the average measures shows that women are more represented in the SBs of NewConnect companies than in the EBs. However, the share of women in the companies' boards is very low. The analyses of correlations between variables show that there are correlations occurring between:

- EB (W) and EB (M) (unclear correlation with a negative value),
- EB (W) and EB (T) (moderate positive correlation),
- EB (W) a NoE (unclear positive correlation),
- SB (W) a SB (M) (strong correlation with negative value).

References

1. Al-Matari, E.M., Alosaimi, M.H. (2022). The Role of Women on Board of Directors and Firm Performance: Evidence From Saudi Arabia Financial Market. *Corporate Governance and Organizational Behavior Review*, Vol. 6, Iss. 3, pp. 44-55. Scopus. <https://doi.org/10.22495/cgobrv6i3p4>.
2. Arzubiaga, U., Iturralde, T., Maseda, A., Kotlar, J. (2018). Entrepreneurial orientation and firm performance in family SMEs: The moderating effects of family, women, and strategic involvement in the board of directors. *International Entrepreneurship and Management Journal*, Vol. 14, Iss. 1, pp. 217-244. Scopus. <https://doi.org/10.1007/s11365-017-0473-4>.
3. Bakken, B.K., Oudeh, R., Gaither, C.A., Arya, V., Doucette, W.R., Witry, M.J., Kreling, D.H., Mott, D.A., Schommer, J.C. (2023). Leadership aspiration: An intersectional analysis of racial and gender equity in pharmacy. *Journal of the American Pharmacists Association*, Vol. 63, Iss. 1, pp. 80-89. <https://doi.org/10.1016/j.japh.2022.08.014>.
4. Barnes, C., Lewis, R., Yarker, J., Whiley, L.A. (2019). Women directors on FTSE company boards: An exploration of the factors influencing their appointment. *Cogent Psychology*, Vol. 6, Iss. 1, pp. 1-24, Scopus. <https://doi.org/10.1080/23311908.2019.1691848>.
5. Biswas, P.K., Chapple, L., Roberts, H., Stainback, K. (2023). Board Gender Diversity and Women in Senior Management. *Journal of Business Ethics*, Vol. 182, pp. 177-198. <https://doi.org/10.1007/s10551-021-04979-x>.
6. Burke, R.J. (1997). Women on corporate boards of directors: A needed resource. *Journal of Business Ethics*, Vol. 16, pp. 909-915. Scopus. <https://doi.org/10.1023/A:1017987220508>.

7. Burke, R.J. (1999). Women on Canadian Corporate Boards of Directors: Getting the numbers right! *Corporate Governance: An International Review*, Vol. 7, Iss. 4, pp. 374-378. Scopus. <https://doi.org/10.1111/1467-8683.00167>.
8. Burke, R.J. (2003). Women on corporate boards of directors: The timing is right. *Women in Management Review*, Vol. 18, No. 7, pp. 346-348. Scopus. <https://doi.org/10.1108/09649420310498966>.
9. Carbone, D., Dagnes, J. (2019). Fare carriera ai vertici. La presenza delle donne nei consigli di amministrazione tra vecchi ostacoli e nuove opportunità (Moving up to the top. The presence of women in the boards of directors: Old obstacles and new opportunities). *Polis, Ricerche e Studi Su Società e Politica*, Vol. 33, No. 2, pp. 295-320. Scopus. <https://doi.org/10.1424/94249>.
10. Dang, R., Bender, A.-F., Scotto, M.-J. (2014). Women on French corporate board of directors: How do they differ from their male counterparts? *Journal of Applied Business Research*, Vol. 30, No. 2, pp. 489-507. Scopus. <https://doi.org/10.19030/jabr.v30i2.8420>.
11. de Jonge, A. (2014). The glass ceiling that refuses to break: Women directors on the boards of listed firms in China and India. *Women's Studies International Forum*, Vol. 47, Part B, pp. 326-338. Scopus. <https://doi.org/10.1016/j.wsif.2014.01.008>.
12. Dimovski, W., Lombardi, L., Cooper, B. (2013). Women directors on boards of Australian Real Estate Investment Trusts. *Journal of Property Investment and Finance*, Vol. 31, Iss. 2, pp. 196-207. Scopus. <https://doi.org/10.1108/14635781311302609>.
13. Foppiano-Vilo, G., Matus-Castillo, C., Cornejo-Améstica, M. (2022). Barreras, facilitadores y estrategias que influyen en la participación femenina en juntas directivas de federaciones deportivas chilenas (Barriers, facilitators and strategies that influence women's participation on boards of directors of Chilean sports federations). *Retos*, Vol. 44, pp. 34-44. Scopus. <https://doi.org/10.47197/RETOS.V44I0.90136>.
14. Furlotti, K., Mazza, T., Tibiletti, V., Triani, S. (2019). Women in top positions on boards of directors: Gender policies disclosed in Italian sustainability reporting. *Corporate Social Responsibility and Environmental Management*, Vol. 26, Iss. 1, pp. 57-70. Scopus. <https://doi.org/10.1002/csr.1657>.
15. Galbreath, J. (2011). Are there gender-related influences on corporate sustainability? A study of women on boards of directors. *Journal of Management and Organization*, Vol. 17, Iss. 1, pp. 17-38. Scopus. <https://doi.org/10.1017/s1833367200001693>.
16. Gallego, A.C., Briones, J.L., Barbadillo, E.R. (2011). Diferencias culturales entre países y acceso de la mujer a los consejos de administración (Cultural differences across countries and access of woman to boards of directors). *Spanish Journal of Finance and Accounting / Revista Española de Financiación y Contabilidad*, Vol. 40, Iss. 152, pp. 629-656. Scopus. <https://doi.org/10.1080/02102412.2011.10779714>.
17. Holmes, A.B., Illowsky, B., Dean, S.L. (2018). *Introductory business statistics*. Houston, Texas: OpenStax, Rice University.

18. Huang, J., Diehl, M.-R., Paterlini, S. (2020). The Influence of Corporate Elites on Women on Supervisory Boards: Female Directors' Inclusion in Germany. *Journal of Business Ethics*, Vol. 165, pp. 347-364. Scopus. <https://doi.org/10.1007/s10551-019-04119-6>.
19. ISAP (n.d.). Ustawa z dnia 15 września 2000 r. Kodeks spółek handlowych. Dz.U. z 2022 r., poz. 1467, 1488, 2280, 2436, z 2023 r., poz. 739. Retrieved from: <https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20220001467/U/D20221467Lj.pdf>, 30.04.2023.
20. Joecks, J., Pull, K., Scharfenkamp, K. (2019). Perceived roles of women directors on supervisory boards: Insights from a qualitative study. *German Journal of Human Resource Management*, Vol. 33, Iss. 1, pp. 5-31. Scopus. <https://doi.org/10.1177/2397002218783925>
21. Joecks, J., Pull, K., Scharfenkamp, K. (2023). Women directors and firm innovation: The role of women directors' representative function. *Managerial and Decision Economics*, Vol. 44, Iss. 2, pp. 1203-1214. <https://doi.org/10.1002/mde.3742>.
22. Kassyk-Rokicka, H. (1997). *Statystyka nie jest trudna. Mierniki statystyczne*. Warszawa: PWE.
23. Kim, H., Kim, Y. (2023). The effects of gender diversity in boards of directors on the number of female managers promoted. *Baltic Journal of Management*, Vol. 18, No. 1, pp. 122-139. <https://doi.org/10.1108/BJM-01-2022-0035>.
24. Krs-pobierz. Wszystkie informacje z KRS (n.d.). Retrieved from: <https://krs-pobierz.pl/>, 30.04.2023.
25. Nekhili, M., Gatfaoui, H. (2013). Are Demographic Attributes and Firm Characteristics Drivers of Gender Diversity? Investigating Women's Positions on French Boards of Directors. *Journal of Business Ethics*, Vol. 118, pp. 227-249. Scopus. <https://doi.org/10.1007/s10551-012-1576-z>.
26. NewConnect—Lista spółek (n.d.). Retrieved from: <https://newconnect.pl/spolki> 30.04.2023.
27. NewConnect—O rynku (n.d.). Retrieved from: <https://newconnect.pl/o-rynku> 30.04.2023.
28. Nielsen, S., Huse, M. (2010). The contribution of women on boards of directors: Going beyond the surface. *Corporate Governance: An International Review*, Vol. 18, Iss. 2, pp. 136-148. Scopus. <https://doi.org/10.1111/j.1467-8683.2010.00784.x>.
29. Notoria Serwis S.A. (n.d.). Retrieved from: <https://ir.notoria.pl/>, 30.04.2023.
30. Peck, R., Olsen, C., Devore, J.L. (2008). *Introduction to statistics and data analysis*. Belmont, CA: Thomson Brooks/Cole.
31. Rabiej, M. (2012). *Statystyka z programem Statistica*. Gliwice: Helion.
32. Rowley, C., Lee, J.S.K., Lan, L.L. (2015). Why Women Say No to Corporate Boards and What Can Be Done: "Ornamental Directors" in Asia. *Journal of Management Inquiry*, Vol. 24, Iss. 2, pp. 205-207. Scopus. <https://doi.org/10.1177/1056492614546263>.
33. Sheskin, D. (2000). *Handbook of parametric and nonparametric statistical procedures*. Boca Raton: Chapman & Hall/CRC.

34. Singh, V., Vinnicombe, S., Johnson, P. (2001). Women directors on top UK boards. *Corporate Governance: An International Review*, Vol. 9, Iss. 3, pp. 206-216. Scopus. <https://doi.org/10.1111/1467-8683.00248>.
35. Skaggs, S., Stainback, K., Duncan, P. (2012). Shaking things up or business as usual? The influence of female corporate executives and board of directors on women's managerial representation. *Social Science Research*, Vol. 41, Iss. 4, pp. 936-948. Scopus. <https://doi.org/10.1016/j.ssresearch.2012.01.006>.
36. Slomka-Golebiowska, A., De Masi, S., Paci, A. (2023). Board dynamics and board tasks empowered by women on boards: Evidence from Italy. *Management Research Review*, Vol. 46, No. 3, pp. 390-412. <https://doi.org/10.1108/MRR-09-2021-0678>.
37. Śmigielski, W. (2021, May 12). STATISTICA. Odc. 7. Korelacja Pearsona. Retrieved from: <https://www.youtube.com/watch?v=1PwpLSWNVAo>, 3.05.2023.
38. Smith, N., Parrotta, P. (2018). Why so few women on boards of directors? Empirical evidence from danish companies in 1998-2010. *Journal of Business Ethics*, Vol. 147, pp. 445-467. Scopus. <https://doi.org/10.1007/s10551-015-2974-9>.
39. Sobczyk, M. (1997). *Statystyka*. Warszawa: PWN.
40. Starzyńska, W. (2012). *Statystyka praktyczna*. Warszawa: PWN.
41. StatSoft (n.d.). Internetowy Podręcznik Statystyki. Retrieved from: https://www.statsoft.pl/textbook/stathome_stat.html?https%3A%2F%2Fwww.statsoft.pl%2Ftextbook%2Fgo_search.html%3Fq%3Dwsp%25F3%25B3czynnik, 1.05.2023.
42. Terjesen, S., Aguilera, R.V., Lorenz, R. (2015). Legislating a Woman's Seat on the Board: Institutional Factors Driving Gender Quotas for Boards of Directors. *Journal of Business Ethics*, Vol. 128, pp. 233-251. Scopus. <https://doi.org/10.1007/s10551-014-2083-1>.
43. Terjesen, S., Sealy, R., Singh, V. (2009). Women directors on corporate boards: A review and research agenda. *Corporate Governance: An International Review*, Vol. 17, Iss. 3, 320-337. Scopus. <https://doi.org/10.1111/j.1467-8683.2009.00742.x>.
44. TIBCO Software Inc. (2017). *Statistica (data analysis software system), version 13*. <http://statistica.io>.
45. Torchia, M., Calabrò, A., Huse, M. (2011). Women Directors on Corporate Boards: From Tokenism to Critical Mass. *Journal of Business Ethics*, Vol. 102, pp. 299-317. Scopus. <https://doi.org/10.1007/s10551-011-0815-z>.
46. Triana, M.C., Miller, T.L., Trzebiatowski, T.M. (2014). 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, Iss. 2, pp. 609-632. Scopus. <https://doi.org/10.1287/orsc.2013.0842>.
47. Wierzbński, J. (2008). *Statystyka opisowa*. Warszawa: Wydawnictwo Naukowe Wydziału Zarządzania Uniwersytetu Warszawskiego.