

INNOVATIVE COMPANIES ON NEWCONNECT – REGIONALIZATION AND POST-IPO PERFORMANCE

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Purpose: The aim of the study was to present companies debuting on the NewConnect market in Poland and to examine the impact of IPO on the economic situation of innovative firms. The methods of financing these enterprises were analyzed, and a characterization of innovative companies that debuted on the NC market was made.

Design/methodology/approach: The aim of the work was achieved by analyzing the literature and conducting research on companies debuting on the NC. The study covered the period from 2007 to 2018, during which 25 innovative enterprises were identified.

Findings: The results indicate statistically significant changes in financial liquidity and debt ratios post-IPO. A decrease in innovation levels, measured by the number of patents, was also observed. Notably, a small percentage of companies debuting on NC are innovative, with no correlation between their number and the innovation level of the voivodeship. The study suggests the need for stronger intellectual property protection in Poland and greater regional support for innovation. It also highlights that the NewConnect market does not fully address the financial needs of young, fast-growing enterprises.

Originality/value: The problem addressed in the paper has significant practical implications, with research findings that could be beneficial for managers overseeing enterprises and those responsible for guiding innovation strategies and financing methods. This study provides valuable insights into optimizing the financial decisions of innovative companies, especially in the context of alternative markets like NewConnect.

Keywords: innovative companies; IPO; NewConnect; firm performance.

Category of the paper: Research paper.

1. Introduction

Conducting innovative activities by companies guarantees many benefits, not only economic but also related to the company's image and reputation. In today's rapidly evolving global economy, innovation is a key success factor, enabling companies to develop new products, services, and processes, leading to sustainable competitive advantages. However, implementing innovative projects is often very risky, and the specific nature of innovative

entities creates problems, particularly in securing financing. Traditional financing methods, such as bank loans, may be difficult to obtain or unsuitable due to the high level of risk and uncertainty associated with innovative activities (Santos, Cincera, 2022). This financial challenge prompts many innovative companies to debut on the stock exchange.

Alternative markets like NewConnect are specifically designed for small, young companies with high growth dynamics, aiming to provide them with the necessary capital to support their innovative endeavors (Rauterberg, 2020). This study aims to present the methods of financing innovative companies and to characterize those debuting on the NewConnect (NC) market in Poland. By analyzing the distribution of companies listed on the NC and innovative Initial Public Offerings (IPOs) by voivodeship, the study provides insights into how the stock exchange debut affects the economic situation of innovative companies.

The topic is significant and current for several reasons. Firstly, innovative companies play a vital role in driving technological progress, contributing to economic growth and societal well-being (Agustia et al., 2022). Studying the impact of IPOs on these companies helps to understand how access to capital markets influences their ability to innovate and expand. Secondly, the findings can inform policymakers about the effectiveness of markets like NewConnect in achieving their primary goal of supporting young, innovative companies, which has broader implications for shaping policies that foster innovation and economic growth at both national and regional levels.

Moreover, this study adds a regional perspective by analyzing the correlation between the innovation level of voivodeships and the number of innovative companies debuting on NewConnect. This is crucial for understanding how local innovation ecosystems and support mechanisms impact the success and development of innovative firms.

Given the practical implications of this research, it holds great value for managers of innovative companies and decision-makers. It provides them with valuable information for making decisions about going public and choosing the most appropriate financing methods for their development strategies (Bulut, 2024). By delivering a comprehensive analysis of the financial dynamics of innovative companies on alternative markets, the study's findings can serve as a guide for enhancing support structures for innovation.

2. Innovative companies and methods of financing

Innovative enterprises are entities that conduct extensive research and development work and continually introduce scientific and technical novelties, aiming to build a competitive advantage. Their innovative capacity is influenced by high R&D expenditure, employment of highly qualified employees, and cooperation with scientific and research units (Sudolska, Łapińska, 2020). According to the Oslo Manual, an innovative company is one that engages in

innovative activities and has introduced at least one innovation during the period under examination (recommended period: 1-3 years) (OECD 2018). Patents are a popular measure of innovation due to easy access to data (Mohnen, 2019), and this approach was used for this study.

Innovative activity is risky due to the uncertainty of results and ease of imitation, requiring significant financial outlays. It may encounter financing problems due to its specific characteristics (Bernstein, 2017). Regardless of enterprise size, as the scope of innovative activity increases, the need for financing also increases (Bartoloni, 2013). Rapidly growing enterprises often face the issue of insufficient revenues to finance and develop. Finding the most effective and cheapest financing sources is crucial for these enterprises. The availability of capital sources for financing innovative activities depends on the development stage of the innovative project. High uncertainty regarding the outcomes of new ideas affects investor interest and willingness to fund innovative projects.

The primary source of financing for innovative activities is internal funds, which are usually limited and more expensive than external capital (Bednarczyk, Zepartowicz, 2019). Innovative companies can also utilize grants and public subsidies (Mazzucato, Semieniuk, 2017). Crowdfunding is another method that finances projects at an early stage, filling part of the financial gap common among small innovative companies (Hervé, Schwienbacher, 2018). Additional options include support from business angels, leasing, factoring, Venture Capital, Private Equity funds, and bank loans (Ottosson, 2019). Issuing new shares on the stock exchange is also a viable way to raise capital. As indicated by Aghion et al. (2004), the probability of issuing new shares increases with the intensity of research and development, while the use of debt financing initially increases and then decreases. Young innovative companies tend to finance their operations by issuing new shares despite the high costs associated with issuance (Kedzior et al., 2020). A well-functioning capital market, especially stock exchanges, supports the development of innovative companies by providing the necessary capital for expansion or new product development. Innovative companies have driven the need for specialized alternative exchanges to facilitate capital raising (United Nations, 2009).

However, market access is easier for companies that meet the high listing requirements. Going public spreads the risk associated with innovative activities among a larger number of shareholders, thus intensifying innovative processes. Most economists, however, note a weakening of internal innovativeness and a deterioration in economic conditions after a stock exchange debut (Lerner, 2011). Nonetheless, going public is an individual decision based on factors such as enterprise size and maturity. The presence of both advantages and disadvantages of a stock exchange debut makes it difficult to clearly assess the capital market as a source of financing for innovative activities.

Two hypotheses were adopted in this paper:

H1: The level of innovation in the region affects the number of companies debuting on NewConnect.

H2: The economic situation of innovative companies deteriorates to a lesser extent than that of non-innovative companies after IPO.

3. Debut of companies on NewConnect

The Alternative Trading System, organized by the Warsaw Stock Exchange, was established in 2007 for enterprises seeking relatively low development capital. The development of the domestic economy and the inflow of EU funds contributed to the expansion of Polish enterprises, especially small and medium-sized ones. The creation of the alternative market was intended to fill the financial gap. Less restrictive admission requirements compared to the main market allowed smaller, younger companies with an unestablished market position to go public. These companies were expected to demonstrate dynamic growth and base their operations on intangible assets, offering investors the potential for high returns due to increased investment risk.

On the Polish stock exchange, an IPO can be conducted in three ways: public subscription of new issue shares, public sale of existing shares, or a combination of both. Economists typically present an IPO as an issue of only new shares (Sosnowski, 2013), and this definition was used in this work.

The increasing number of companies listed on the NC highlighted the popularity of this capital-raising method. The period of market popularity peaked from 2010-2012, positioning it as the leading European market in terms of debuts. In subsequent years, the number of debuts decreased due to stricter legal regulations and weaker economic conditions, along with an increase in market withdrawals. Common reasons for this include transitions to the main market, exclusion of shares from trading, and issuer bankruptcy. Failure to comply with information obligations was the primary basis for almost all exclusions (Hadro, Pauka, 2018).

Table 1.

Number of domestic and foreign companies listed on the NC, number of market withdrawals and total capitalization (PLN million, 2007-2021)

Year	Domestic companies	Foreign companies	Number of withdrawals	Total capitalization (PLN million)
2007	24	-	-	1 185
2008	83	1	1	1 437
2009	105	2	3	2 554
2010	182	3	8	5 138
2011	344	7	7	8 488
2012	421	8	10	11 088

Cont. table 1.

2013	434	11	26	11 028
2014	421	10	36	9 122
2015	409	9	32	8 664
2016	398	8	30	9 799
2017	401	7	17	9 617
2018	381	6	36	7 386
2019	369	6	27	9 705
2020	368	5	16	19 760
2021	376	4	25	20 954
2022	379	4	17	12 889

Source: own study based on: www.newconnect.pl.

The data in Table 1 confirm that companies with low capital needs debut on the NC. After an increase in total capitalization until 2013, it decreased the following year and remained relatively stable until 2020, when it more than doubled. It is emphasized that the primary condition for debuting on the NC is to obtain capital from the issue. Less importance is given to other benefits of being a public company (Podedworna-Tarnowska, 2018).

Research confirmed that almost 99% of companies debuting on the NC are micro, small, and medium-sized entities. However, micro-enterprises dominate the market (68%). Less than 35% of newcomers belong to an industry considered innovative. Most companies belong to the trade sector. However, the industry does not influence the overall innovativeness of the entity. Additionally, approximately 26% of debutants base their business on intangible assets (Zygmanowski, 2016).

The distribution of companies listed on the NC by voivodeship is noteworthy (Table 2).

Table 2.

Number of companies listed on the NC and innovative IPOs, Millenium Innovation Index by voivodship

Voivodship	Number of listed companies (2023)	Number of innovative IPOs (2007-2023)	Share of innovative IPOs in all listed companies	Millennium innovation index
mazowieckie	156	10	6%	99
małopolskie	32	0	-	83
dolnośląskie	30	3	10%	73
pomorskie	14	1	7%	64
łódzkie	13	1	8%	55
śląskie	39	5	13%	55
wielkopolskie	30	0	-	55
lubelskie	5	4	80%	53
podkarpackie	3	0	-	47
zachodniopomorskie	6	2	33%	47
kujawsko-pomorskie	10	0	-	45
opolskie	6	2	33%	45
podlaskie	3	0	-	40
warmińsko-mazurskie	4	0	-	36
świętokrzyskie	3	0	-	33
lubuskie	4	1	25%	32
all	358	29	8%	-

Source: own study based on: www.newconnect.pl, uprp.gov.pl. Indeks Millenium, 2020.

The largest number of companies listed on the NC are based in the Mazowieckie Voivodeship, while only 10 companies are innovative, a low result considering Mazowieckie is considered the most innovative voivodeship in Poland. The absence of innovative companies from the Małopolskie Voivodeship is puzzling despite 32 companies listed on the market from this voivodeship, which ranks second according to the Millenium Index. Innovativeness in this region results mainly from innovation in services. Third in innovation is the Dolnośląskie Voivodeship, with 30 listed enterprises, of which only 10% are innovative. The Śląskie Voivodeship has 39 companies listed on the NC, with only 5 considered innovative. The Lubelskie Voivodeship has a high share of innovative IPOs (80%) but only 5 listed companies. The rapid development of the innovation potential of the Lubelskie Voivodeship is influenced by Lublin's strong academic center and numerous patents by local universities. Most listed and innovative IPOs come from the Mazowieckie Voivodeship, the strongest economic center in the country. The 7 most innovative voivodeships in Poland also have the largest number of companies listed on the alternative market. Therefore, H1 is not rejected. However, there is no correlation between the Millennium Innovation Index and the number of innovative IPOs. Perhaps patents in the Millenium Innovation Index belong to companies listed on the main market or private companies.

Table 3 presents the number of companies debuting on the NC in 2007-2018. Companies were selected, excluding foreign companies and financial institutions from the group of debutants. Moreover, it was decided to eliminate from the sample companies that do not have available financial statements for at least two periods before and after the IPO.

Table 3.

Number of debuts on the NC (2007-2018)

Year	Number of debuts	Number of debuts after selection
2007	24	5
2008	61	35
2009	26	11
2010	86	38
2011	172	68
2012	89	33
2013	42	22
2014	22	13
2015	19	8
2016	16	6
2017	19	6
2018	15	8
all	591	252

Source: own study based on: www.newconnect.pl.

Approximately 43% of companies debuting on the NC (252 entities) in 2007-2018 were analyzed. Using data from the year before the IPO, companies were characterized using descriptive statistics with indicators such as age, total employment (full-time positions), total assets size measured by total assets, profitability ratios (ROA, ROE, ROS), and the current ratio and total debt ratios.

Table 4.*General information about companies debuting on the NC*

Index	Arithmetic average	Median	Min	Max
Age	10.52	8.00	1.00	88.00
Total employment (FTE)	41.51	15.00	1.00	414.00
Total assets (PLN)	59 544.19	5 563.00	41.00	10 805 393.00
Size (ln total assets)	8.65	8.62	3.71	16.20

Source: own study based on data obtained from financial documents of companies debuting on the NC.

The analysis shows that companies with an average age of over 10 years debut on the alternative market (Table 4). The average total employment is over 41 employees, with a median of 15, indicating that small companies are debuting on the NC, confirmed by the size of total assets.

Table 5.*Profitability, financial liquidity and debt of companies debuting on the NC*

Index	Arithmetic average	Median	Min	Max
Net ROA	0.01	0.04	-3.48	0.64
Net ROE	0.06	0.11	-5.06	4.39
Net ROS	-2.50	0.04	-214.71	7.85
Current ratio	2.87	1.54	0.14	57.99
Quick ratio	2.25	1.18	0.14	48.02
Cash ratio	0.92	0.18	0.00	18.48
Total debt ratio	0.52	0.50	0.00	3.74
Debt equity ratio	1.57	0.91	0.00	23.16

Source: own study based on data obtained from financial documents of companies debuting on the NC.

Companies debuting on the NC showed low profitability rates, with the ROS indicator being negative. NC entities have excess financial liquidity, leading to reduced profitability and lower long-term operational efficiency. The average total debt ratio is 0.52, indicating that these entities can finance themselves with equity capital (Table 5).

Even though the NC market does not fully meet the assumptions of its organizer (debut of young and innovative companies), it allows obtaining the necessary capital for development activities, including innovative processes, especially for small companies. In the domestic literature, analysis of the number of companies listed on the NC or their underestimation was eagerly undertaken. There is a lack of research on how a debut on the alternative market affects the economic situation of companies, particularly innovative ones. This is significant as the alternative market was intended for innovative enterprises.

4. Post-IPO innovative firm performance

The study focused on innovative companies that debuted on the NC alternative market between 2007 and 2018, ensuring a 3-year study period before and after the IPO. Innovative enterprises are those granted at least one patent or submitted an application in the years preceding their debut. Among the companies debuting on the alternative market, 25 were recognized as innovative. Data were obtained from financial statements, prospectuses, and patent statistics. For comparability, data from the year of debut were excluded. "Pre-IPO" indicators were calculated from three years before the IPO, while "post-IPO" indicators were calculated from three years after the debut. Descriptive statistics (arithmetic mean, median, minimum value, maximum value, and standard deviation) were used. Differences were compared using the Shapiro-Wilk normality test, followed by either the Student's t-test or the Wilcoxon test, with a significance level of 0.1.

The study compared the economic situation of innovative companies before and after their stock exchange debut, noting the often reported deterioration after an IPO (Lerner 2011).

Table 6.

General information on innovative companies debuting on the NC before and after the IPO

Index	X	Arithmetic average	Median	Min	Max	SD
Numbers of patents (pcs)	before IPO	0.49	0.00	0.00	4.00	0.84
	after IPO	0.36	0.00	0.00	10.00	1.25
Total assets (PLN)	before IPO	14 655.51	5 087.00	34.00	106 033.24	22 495.00
	after IPO	31 341.62	23 170.51	1 558.59	163 865.00	30 887.14
Size (ln total assets)	before IPO	8.54	8.53	3.53	11.57	1.66
	after IPO	9.93	10.05	7.35	12.01	1.01

Source: own study based on data obtained from financial documents of companies debuting on the NC.

Table 7.

Comparison of general data on innovative companies debuting on the NC before and after the IPO

Index	Shapiro-Wilk test			Difference test		
	Statistics	df	Test significance	Statistics	Result of the test	Test significance
Numbers of patents (pcs)	0.428	150	0.000	Wilcoxon	-1.687	0.092
Total assets	0.742	130	0.000	Wilcoxon	-5.538	<0.001
Size (ln total assets)	0.948	130	0.000	Wilcoxon	-6.074	<0.001

Source: own study based on data obtained from financial documents of companies debuting on the NC.

The results indicate that among innovative companies debuting on the NC, innovation measured by the number of patents decreases after the IPO. However, the company size measured in total assets increases (Table 6). Conducting a test of significance of differences revealed statistically significant differences in the results achieved before and after the IPO in the examined categories (Table 7). The decline in innovativeness post-IPO is also confirmed by other studies, with financially constrained companies often experiencing the greatest

reduction in innovation (Cox et al., 2020). Public companies more frequently purchase technologies from private firms, limiting their own innovative projects (Bernstein, 2015).

Table 8.

Profitability of innovative companies debuting on the NC before and after the IPO

Index	X	Arithmetic average	Median	Min	Max	SD
Net ROA	before IPO	- 0.20	0.02	- 4.03	0.30	0.83
	after IPO	- 0.09	0.00	- 2.03	0.66	0.37
Net ROE	before IPO	- 0.30	0.02	- 7.88	0.60	1.26
	after IPO	- 0.55	0.02	- 38.38	3.37	4.55
Net ROS	before IPO	0.05	0.09	- 8.28	5.62	1.74
	after IPO	- 5.61	0.02	- 203.85	6.79	26.18

Source: own study based on data obtained from financial documents of companies debuting on the NC.

Table 9.

Comparison of the profitability of innovative companies debuting on the NC before and after the IPO

Index	Shapiro-Wilk test			Difference test		
	Statistics	df	Test significance	Statistics	Result of the test	Test significance
Net ROA	0.316	102	0.000	Wilcoxon	-0.109	0.913
Net ROE	0.231	102	0.000	Wilcoxon	-0.436	0.663
Net ROS	0.277	102	0.000	Wilcoxon	-0.847	0.397

Source: own study based on data obtained from financial documents of companies debuting on the NC.

For innovative companies, the IPO had a negative impact on ROE and ROS indicators, with the greatest decrease in ROS. Post-IPO, ROA indicators improved, but return on net assets remained negative (Table 8). Similar results were found among Turkish economists, noting increased ROA post-IPO (Mhagama, Topak, 2019).

Significance tests revealed no statistically significant differences in profitability indicators before and after the IPO for innovative companies (Table 9).

Table 10.

Financial liquidity and debt of innovative companies debuting on the NC before and after the IPO

Index	X	Arithmetic average	Median	Min	Max	SD
Current ratio	before IPO	0.00	0.04	0.00	100.15	81.51
	after IPO	5.86	2.09	0.01	57.49	9.88
Quick ratio	before IPO	0.00	0.01	0.00	0.42	97.16
	after IPO	4.96	1.63	0.01	57.49	8.70
Cash ratio	before IPO	0.00	0.00	0.00	0.00	0.00
	after IPO	2.95	0.39	0.00	40.72	6.47
Total debt ratio	before IPO	3.49	1.13	0.07	49.67	7.56
	after IPO	0.46	0.38	0.00	2.35	0.40
Debt equity ratio	before IPO	0.13	0.06	0.00	1.00	0.18
	after IPO	2.86	0.47	- 13.24	102.21	13.11

Source: own study based on data obtained from financial documents of companies debuting on the NC.

Financial liquidity ratios increased significantly post-IPO, exceeding standards in the literature, indicating a financial surplus after the debut. Innovation's significant impact on financial results was also noted in Chinese enterprises (Wang, Wang, 2012). The total debt ratio decreased (from 3.49 to 0.46), while the debt-equity ratio increased (from 0.13 to 2.86) (Table 10), indicating that NC debutants struggle to finance operations with equity capital and opt for external capital, which is cheaper. The public company status may facilitate obtaining external financing, such as bank loans, more than raising funds from the issue.

Table 11.

Comparison of financial liquidity and debt of innovative companies debuting on the NC before and after the IPO

Index	Shapiro-Wilk test			Difference test		
	Statistics	df	Test significance	Statistics	Result of the test	Test significance
Current ratio	0.550	124	0.000	Wilcoxon	-1.114	0.265
Quick ratio	0.521	124	0.000	Wilcoxon	-1.215	0.224
Cash ratio	0.467	124	0.000	Wilcoxon	-1.762	0.078
Total debt ratio	0.472	130	0.000	Wilcoxon	-2.002	0.045
Debt equity ratio	0.326	130	0.000	Wilcoxon	-0.821	0.412

Source: own study based on data obtained from financial documents of companies debuting on the NC.

The results of the Wilcoxon test comparing differences in financial liquidity and debt of innovative companies debuting on the NC confirm that only differences in the cash ratio and the total debt ratio are statistically significant (Table 11).

A debut on the alternative market allows companies to reduce the financial gap that occurs primarily among innovative entities. IPO increases financial liquidity ratios above the standards, especially in companies with patents. This is typical of this type of entities (Gryko, 2008). Moreover, it is noted that after the NC IPO, companies use external capital to a large extent, as evidenced by a significant increase in the debt-to-equity ratio. Perhaps this type of capital is the only option to finance innovative projects due to its lower cost and little interest from investors who are afraid of an uncertain investment in a company with an unestablished market position.

The above analysis concerned the verification of H2, which assumes that the economic situation of an innovative company after its debut deteriorates to a lesser extent than a non-innovative company. Using descriptive statistics and significance tests, there is no basis for rejecting the hypothesis. Profitability indicators achieved by companies debuting on the NC decrease after the IPO, but in the case of innovative companies, the decreases are smaller than for non-innovative companies.

Analyzing the research results regarding companies listed on the NC, it can be concluded that the basic problem is the small number of patents obtained by the companies. It is doubtful that such a small number of public companies are innovative. Therefore, it should be assumed that the Polish system of intellectual property protection is ineffective. Moreover, it can be noted that the alternative market in Poland does not meet one of its basic goals, i.e. filling the

financial gap in young and small innovative companies with high growth potential. Perhaps, in Polish conditions, young innovative enterprises are able to obtain external capital and treat the stock exchange debut as one of the last financing options. This has been a noticeable trend in recent years, as evidenced by the decreasing number of debuts.

5. Summary

The activities undertaken by innovative companies require significant capital expenditure. Often, the only source of financing is equity capital, but these funds may prove to be insufficient. On the other hand, obtaining external capital may not be possible at all due to investors' reluctance to engage in very risky innovative projects. Therefore, innovative companies decide to go public. Alternative markets were created for young, small companies looking for capital for innovative activities. However, researchers indicate that the stock exchange debut contributes to the reduction of internal innovation and the deterioration of the economic situation of companies. Conducting our own research on a group of companies debuting on the NC allowed us to notice that the alternative market in Poland does not meet its main goal, which is to fill the financial gap in young, dynamically developing entities. Companies that are approximately 10 years old and have a low level of innovation measured by the number of patents debut on the market. It was noticed that most innovative IPOs come from the Mazowieckie Voivodship. However, there is no correlation between the number of innovative IPOs and the level of innovation in the region. Regions should stimulate increasing the level of innovation of companies and encourage them to debut on the stock exchange. Moreover, it was noticed that after the IPO, statistically, profitability ratios are at a similar level, liquidity ratios increase, debt ratio decreases, so these are favorable changes. It should be remembered that after the IPO, the innovativeness of companies statistically significantly decreases. The obtained results do not allow for a clear assessment of the impact of the debut on the NC market on innovative companies.

However, it should be remembered that the innovativeness of an entity is not only the patents it holds. Perhaps conducting parallel research would allow the obtained results to be verified. This is therefore a direction for further research.

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