EKONOMIA I PRAWO. ECONOMICS AND LAW
Volume 23, Issue 2, June 2024
p-ISSN 1898-2255, e-ISSN 2392-1625
www.apcz.umk.pl/EiP

ORIGINAL ARTICLE
received 12.06.2023; revised 06.07.2023; accepted 01.04.2024
Citation: Zabielska, I., & Ejsmont, A. (2024). The NewConnect market as a source of raising funds for the SMEs. *Ekonomia i Prawo. Economics and Law*, 23(2), 359–379.
https://doi.org/10.12775/EiP.2024.018.

The NewConnect market as a source of raising funds for the SMEs

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Abstract

Motivation: The NweConnect market is intended for small, innovative and dynamically developing companies, especially in the so-called new economy. A debut on this market is one of the possible strategies for raising capital by a small and medium-sized entrepreneur. In times of economic downturn and limited supply of capital on the capital market, only the most credible have a chance to raise capital on the alternative market.

Aim: recognition of the actual nature of companies listed on the alternative market in Poland, with particular emphasis on the voivodeships of Eastern Poland. It was assumed that mainly young, innovative and fast-growing companies are listed on the NewConnect market. The analysis was based on a review of domestic and foreign literature and on the estimated linear econometric model.

Results: Most companies on the NewConnect market are not characterized by rapid development, short period of entering the market and a high level of innovation. There are also companies from industries where the level of innovation was not a key element of activity from the beginning. In addition, the changes that have taken place (i.e. from market entry to the current situation, 2007–2022) are not favourable. While at the beginning of their activity (since 2007) listed companies were characterized by a relatively high level

of innovation, now (2022) this level is decreasing. This justifies the need for further research on the development of the NewConnect market as a source of financing for small and medium-sized enterprises.

Keywords: NewConnect market; SMEs; capital market; voivodships of Eastern Poland
JEL: D53; E44; G32; M13; O16

1. Introduction

Micro, small and medium-sized enterprises (SMEs) are currently the main driving force of economies. They account for the majority of enterprises in economies, including Poland (99.8%). Among them, micro-enterprises are the most numerous group (97.0%; 2.2 million) (Central Statistical Office, 2022). SMEs generate nearly 49.6% of the gross value added to GDP by enterprises in Poland. It should also be noted that SMEs employ almost 6.8 million employees (approx. 68% from the enterprise sector) (PARP, 2022).

In 2007 The Warsaw Stock Exchange (WSE) created a stock market in the form of an alternative trading system, NewConnect, with SMEs in mind. It was to contribute to facilitating the acquisition of financing by innovative SMEs.

Given the importance of small and medium-sized enterprises for the Polish economy and regions, the purpose of this article is to identify the actual nature of companies listed on the alternative financial market in Poland, with a particular focus on the provinces of Eastern Poland. It was assumed that mainly young, innovative and fast-growing companies are listed on the NewConnect market. Therefore, taking into account the specific character of peripheral voivodeships located at the eastern border of Poland, which is at the same time the external border of the European Union and the border between the countries of the former post-socialist bloc, the authors assumed that this is a development opportunity for innovative SMEs of the entire macroregion. Especially that the peripherality of Eastern Poland's voivodeships has not only a spatial dimension (defined by the distance from Poland's and the European Union's development centres), but also a socio-economic one. The level of economic development of these areas is one of the lowest in the European Union. Innovation, competitiveness and investment attractiveness are very low. The development backwardness of the macro-region has deep historical roots and is an example of long-lasting processes. Such a location creates both constraints and opportunities for development.

The achievement of the presented objective implies the verification of the main hypothesis of the study, according to which: NewConnect market is a market dominated by innovative micro, small and medium-sized enterprises and represents a development opportunity for enterprises from Eastern Poland provinces (H1).

The paper consists of an introduction, a main section and a conclusion. The objective accompanying the entire study and the main hypothesis are pre-

sented. The main part presents the NewConnect market, the rationale for its creation and its general characteristics. A comparison of alternative trading systems in Europe is also made. The results of a survey of issuers who have chosen to list their shares on NewConnect are also included. In addition, a linear econometric model was constructed in an attempt to prove the impact of rotation rates of companies listed on the NewConnect market on the obtained rates of return calculated for the years 2008–2022. The analysis was carried out for the provinces of Eastern Poland: Warmińsko-Mazurskie, Podlaskie, Lubelskie, Świętokrzyskie and Podkarpackie. In conclusion, the final verification of the hypothesis accompanying the study was presented and conclusions were formulated.

2. Literature review

The European Community system has a Multilateral Trading Facility (MTF) and refers to a multilateral platform for trading in financial instruments organized by investment firms or by institutions organizing a regulated market (Directive, 2014). Here, the system operator offers to buy and sell financial instruments to conclude transactions (MTF analyses: Busch & Han, 2021; Jain et al., 2020; Klein & Song, 2021; Pen & Pascal, 2021).

In Polish terms, an MTF is referred to as Alternative Trading System (ATS) (GPW, 2016)[1]. It is a trading system for securities and other capital market instruments. It takes place over the counter and allows transactions to take place by concentrating bids and offers to buy and sell financial instruments (Degryse & van Achter, 2001). It can be organised by an investment firm or a company operating a regulated market. The same principles of session trading apply here. But some differences are also apparent (see: Mościbrodzka, 2020; Thiel, 2010)[2].

Thus, ATSs are mainly created for emerging, innovative companies based on intangible assets (high-tech industries). They have the advantage of higher investment risk, but also allow investors to achieve above-average returns. Here, the ATS acts as an intermediary for raising capital and increasing its liquidity. For it appears that many companies are unable to meet many of the requirements for admission to a regulated market (such as the requirement for an appropriate capitalisation ceiling) (Harwood & Konidaris, 2015; Pietrzyk & Knichnicki, 2010). In such cases, companies are more likely to raise market capital precisely through the ATS. In Poland, the market (GPW, 2016; Law on trading in financial instruments, 2005) is:

– NewConnect (for shares, rights to shares, pre-emptive rights and other equity securities)[3];

[1] ATS is the terminology also used in the U.S. and Canada (Hayes, 2022).

[2] The authors treat alternative market, alternative trading system markets or alternative trading systems as synonyms.

[3] As the article is only concerned with the NewConnect market, alternative trading systems operating in European countries will be labelled MTF.

– Catalyst (for debt financial instruments).

It is worth noting that the vast majority of European exchanges have alternative markets or segments (Table 1). Approximately 1.500 companies were listed on these specialised stock markets/segments (FESE, 2023). Such an example is the EntryStandard operated by the Frankfurt Stock Exchange (Open Market Segment). Exceptions are stock exchanges in Hungary and Bulgaria. Some institutions own and operate several ATSs that differ in the instruments traded within these markets (e.g. Vienna Stock Exchange) or in their business model and catering to different needs (e.g. AIM Italia) (Korenik, 2019). According to some researchers (Pietrzyk & Knichnicki, 2010), most alternative markets operate on the basis of internal regulations of the market operators and some on the basis of statutory regulations of the respective country (and mostly as unregulated markets). Although in the literature there are many references to the comparison of alternative trading systems (see: Feder-Sempach, 2010; Granier et at., 2019; Mikołajczyk & Kurczewska, 2010; Panfil, 2013; Pastusiak, 2011; Pietrzyk & Knichnicki, 2010), they cover a small number of markets. Authors compares 13 alternative trading systems (Table 1).

It is worth noting that the most developed alternative markets in Europe are the Alternative Investment Market (AIM) run by the London Stock Exchange and the Open Market called Entry Standard. Also important is the Scandinavian First North created by the Nasdaq OMX Nordic Exchange (owned by the US Nasdaq). Poland's NewConnect, has become a leader in the Central and Eastern European region (research results: Feder-Sempach, 2010; GPW, 2022; Panfil, 2013; Pastusiak, 2011; Radke, 2020).

An interesting analysis of alternative European markets is made by Granier et al. (2019) in terms of solutions in continental Europe (using the solutions of the UK alternative investment market AIM and Japan's oldest — junior markets). Similarly, Vismara et al. (2012) analysed second markets (in Germany). Bernstein et al. (2020), on the other hand, created a dataset covering 285 stock exchanges in 115 countries to identify the drivers of the success of new second markets.

The Polish NewConnect (NC) market is dedicated to small companies with high growth potential that do not meet the requirements of the Warsaw Stock Exchange (WSE). Although it has the status of an organised market, it is operated (by the WSE) outside the regulated market. Thanks to simpler listing conditions and low debut costs, such companies can list their shares on the stock exchange via NewConnect. But according to the regulations, they should (GPW, 2016):

– raise capital from several hundred thousand to several tens of millions of PLN;
– represent innovative sectors based on intangible assets (IT, electronic media, telecommunications, biotechnologies, environmental protection, alternative energy, modern services);
– achieve high growth dynamics and be from the SME sector.

According to some researchers (Kordela, 2013; Mosionek-Schweda, 2014; Zygmanowski, 2016; 2017), the creation of such a source of financing for SMEs in Poland contributed to the faster development of SMEs and to the country's economic growth (such an approach to the development of the financial system, which influenced economic growth, was already proven by, among others, Goldsmith, 1969; Gurley & Shaw, 1967). In addition, SMEs were able to strengthen their competitive position and achieve new business scale (Kordela, 2013). In addition, the NewConnect market has improved the process of allocation and mobilisation of savings by investors characterised by increased risk appetite (e.g. venture capital funds and selected individual investors). It has strengthened corporate governance in the largest group of companies in Poland. Improved the risk management process through the participation of new groups of investors in the ventures concerned. At the same time, it created a platform for obtaining financing for innovative enterprises that base their activities mainly on intangible assets.

Thus, access to such a capital market represents an opportunity for SMEs (and micro-enterprises) to raise capital more cheaply (relative to commercial loans or direct investment outside the market). There are more liberal formal requirements and information obligations on this market. This adaptation to the needs of SMEs has been appreciated by entrepreneurs and has resulted in more than 650 listings since 2007. At the end of 2022, 379 companies were listed on this market, including four foreign companies. Such a high number of IPOs and the rapid increase in the number of listed companies indicate a precisely identified gap in the availability of capital. Since 2014, the composition of the market has been relatively stable, with the number of listed companies remaining at around 400 entities and the number of new IPOs averaging 19 each year (Chart 1).

The NewConnect market is characterised by a high share of domestic individual investors, who account for an average of 81% of trading.

Their high share was influenced, among other things, by the characteristics of the debuting companies. They were young entities, listed by their founders, mainly natural persons.

In the context of IPOs, it is worth noting the phenomenon of reverse takeovers. The GPW (2022) report shows that nearly 60 companies used it in the analysed period. Thus, the actual number of entities on the NewConnect market was over 700 (which is not included in the statistics of IPOs). On the one hand, this phenomenon may have had a positive impact on investors (the targets of reverse takeovers usually became companies with a difficult financial situation). On the other hand, the reverse takeover mechanism is used by companies that do not meet the requirements of the standard debut procedure. As a result, reverse takeovers may increase the investment risk for investors. One important factor shaping the change in the number of issuers was the transition of companies to the Main Market. This is a direct result of the NewConnect market, which assists in the transformation from SMEs in the early stages of growth into

established companies. Since 2007, 75 issuers have successfully transitioned to the Main Market. Another reason for the change in the number of listed companies was related to bankruptcies (less than 10% of issuers were affected) and other phenomena for stock exchange trading (more than 20%; related to mergers with other entities, delisting, exclusion from trading for the safety of investors).

There were no large institutional or foreign investors (e.g. pension funds and investment fund companies) among the investors. This is due to the nature of NewConnect, which operates outside the regulated market, which is a limitation. In addition, transparency and trading security regulations were established in 2012 and the Council of Authorised Advisers in 2015. Such changes may have encouraged institutional and foreign investors with rather lower risk tolerance, who in the first years of listing only observed the market (Chart 2).

The capitalisation of the NewConnect market has increased steadily since the start of trading to PLN 14.5 million (December 2022). The cumulative annual growth rate (CARG) of capitalisation was 18%, higher than on the Main Market. This was mainly due to: 1) the global financial crisis of 2008 causing an outflow of capital from the Main Market and, consequently, an increase in the number of listed companies on NewConnect in the post-crisis period (after 2011) and 2) the outbreak of the global pandemic Covid-19 and an increase in interest in innovative companies (Chart 3) (NewConnect, 2022).

1/4 of the smallest debuts belonged to the group with an initial capitalisation of less than PLN 5 million. The same number were the largest companies with a capitalisation of at least PLN 25 million (Chart 4).

It is also worth noting the correlation between the change in capitalisation vs. company size on the day of the debut. The capitalisation of the smallest companies (basket of capitalisation on the day of debut < 5 million PLN) increased by almost 10 times, and thus showed by far the highest growth dynamics. Slightly lower growth was recorded by medium-sized companies (basket of capitalisation on the day of debut 5–25 million PLN), whose cumulative capitalisation increased by over 250%. The majority (84%) of issuers were companies operating in innovative sectors: healthcare, technology, finance and insurance. Consumer goods and services (30% of the market value), i.e. new media and e-commerce, were the most represented. Slightly less — the finance and insurance sector (15%; from fintech) and technology companies (13%). But the healthcare sector grew by 90% and accounted for 10% of the NewConnect capitalisation (COVID-19 effect). Together, these four sectors 2/3 of the market capitalisation.

Geographically, issuers were concentrated in the Mazowieckie (40% of companies, 40% of capitalisation) and Małopolskie (10% of companies, 25% of capitalisation) provinces. The smallest number of them operated in the provinces of Eastern Poland, i.e. Podkarpackie and Podlaskie (1% of companies and 0.1% of capitalisation each). And there was no strong correlation between the size of a voivodeship (by GDP) and the number and size of local issuers on NewCon-

nect. But between 2012 and 2020, it was the provinces of Eastern Poland that recorded the highest increases in capitalization: the Warmian-Masurian (647% vs. 39% GDP growth) and the Podkarpacie Province (405% vs. 45% GDP growth). This was a consequence of the increasing capitalisation of companies from Eastern Poland, as well as the relatively large number of entrepreneurs from these regions deciding to list their companies on NewConnect.

From an economic perspective, NewConnect issuers have played a significant role in job creation (14.000 full-time jobs). Similar to the structure of the market and the economy (including Eastern Poland's provinces), the employment structure reflects the NewConnect assumptions. A large share of employment (15%) was in the technology sector (3 times higher than in the economy). And the most underrepresented segment was industry and construction (62% lower share).

NewConnect has thus become an important catalyst for the Polish economy, and for the border regions of Eastern Poland from the perspective of supporting innovative SMEs. It provided a platform to help bridge the equity gap for SMEs with high growth potential. It has created added value in the national and regional economy and new jobs. In addition, NewConnect has become one of the largest European ATS in terms of capitalisation and number of listed companies in Central and Eastern Europe. It achieved such a position between 2007 and 2022, despite the global financial crisis of 2008, the COVID-19 pandemic and the current armed conflict in Ukraine. The success of NewConnect has also inspired other ATSs in the region (Table 2).

3. Methods

The data presented in the article for the construction of a linear econometric model is an attempt to prove the impact of turnover ratios of companies listed on the NewConnect market on the obtained rates of return calculated at the end of the period. The research period covers the years 2008–2022. In particular, the research is aimed at studying the impact of averaged indexes calculated for listed companies located in five provinces of Eastern Poland, i.e., the Warmian-Masurian, Podlasie, Lublin, Świętokrzyskie and Subcarpathian provinces, on also averaged in a given year the rate of return at the end of the period.

Accordingly, the model consists of five explanatory variables intended to have a greater or lesser impact on the explanatory variable. Thus, the following variables are distinguished:

- y — average end of period return (% from EUR);
- x_1 — average turnover ratio of companies calculated for the Warmian-Masurian province;
- x_2 — average turnover ratio of companies calculated for Podlaskie province;
- x_3 — average turnover ratio of companies calculated for Lublin province;
- x_4 — average turnover ratio of companies calculated for the Świętokrzyskie province;

– x_5 — average turnover ratio of companies calculated for Podkarpackie province.

The econometric model constructed is assumed to be transparent and accurate. It expresses the simplest method of reasoning. It culminates in an examination of the causal relationship between the dependent variable and the independent variables. The econometric model contains panel data, which also have the characteristics of a time series, describing the impact of turnover ratios of listed companies located in five voivodeships of Eastern Poland on the amount of the average rate of return calculated for all surveyed companies located there.

To analyze the results of the study, the authors used GRETL and Excel, which enabled the calculations described below. The analysis of the relationship began by determining the effect of the explanatory variables on the explanatory variable. For the adopted data series from 2008–2022, the arithmetic mean was counted. A detailed description is presented in Table 3.

The analysis of the data shows that in 2020 joint-stock companies listed on the NewConnect market achieved the highest rates of return. The highest values of the companies' turnover rates were also recorded in 2020 (with the exception of the Podkarpackie region, where the highest increases in rates were observed in 2014). The data presented in the Table 3 are used to estimate the econometric model.

4. Results of econometric model estimation

The econometric model presented in this article is a linear model with five explanatory variables. It takes the following form (Kruszewski, 2004):

$$Y_t = \alpha_0 + \alpha_1 x_{1t} + \alpha_2 x_{2t} + \ldots + \alpha_j x_{jt} + \varepsilon_t, \tag{1}$$

$$Y_t = \alpha_0 + \alpha_1 x_{1t} + \alpha_2 x_{2t} + \alpha_3 x_{3t} + \alpha_4 x_{4t} + \alpha_5 x_{5t} + \varepsilon_t, \tag{2}$$

where:

n — the number of units studied;

j — the number of explanatory variables;

x_t, α, α_{01}, ..., αj — model parameters (t=1, 2, ..., n);

ε_t — random component.

Using Gretl software, the estimation of parameters used in the econometric model is carried out by the classical least squares method, using panel data (three units of cross-sectional data were included in the model). The study sample is the years 2008–2022 (15 observations, time series length=30).

The correlation analysis between variables clearly indicates that the set of explanatory variables used in the model x–x_{23} are strongly correlated with each other. The sample size of n=15, combined with the p-value values calculated for the individual variables, further confirms the fact that the turnover rates of listed companies located in Podlaskie and Lubelskie provinces have the strongest ef-

fect on increasing the level of the return rate calculated at the end of the period (the results are presented in Table 4).

In the estimated econometric model, the p-value is below the level of 0.05. Therefore, the null hypothesis H0 should be rejected in favor of the alternative hypothesis H1, assuming that the average values of turnover ratios of companies located in Podlaskie and Lubelskie provinces have the greatest impact on the averaged rate of return of the research period of 2008–2022.

In the process of estimating the econometric model, the authors conducted selected tests to evaluate the model under construction. The data are presented in Table 5.

The tests performed confirm the fact that the model estimated by the authors has a correct specification. Heteroskedasticity of the residuals does not occur. The tested units have a common residual variance, while the random component has a normal distribution without any structural changes. The test results also indicate the absence of first-order autocorrelation (rho=0). In addition, tests for nonlinearity (squares and logarithms) proved that it is a linear model examining the impact of the turnover rates of companies listed on the NewConnect located in the area of the Eastern Poland on the rate of return recorded in 2008–2022. The estimated model takes the following form:

$$Y_t = \alpha_0 + \alpha_2 x_{2t} + \alpha_3 x_{3t} + \varepsilon_t, \tag{3}$$

where:

Y_t — the explanatory variable defined as the average rate of return at the end of the period calculated for the years 2008–2022 (t=1, 2, ..., n);

x_2 — explanatory variable examining the impact of the trading ratios of NewConnect companies located in the Podlaskie province on the average rate of return;

x_3 — an explanatory variable examining the impact of the turnover rates of NewConnect companies located in the Lublin region on the average rate of return;

α_0, α_1 — model parameters;

ε_t — random component.

In the presented article, the authors make a forecast describing a specific economic phenomenon concerning the study of the impact of the turnover rates recorded by companies listed on the NewConnect located in Podlaskie and Lubelskie provinces on the average rate of return calculated for the entire area of the Eastern Poland in 2008–2022. The econometric model taking into account the impact of two explanatory variables x_2 and x_3 on the explained variable y is a more or less faithful reflection of the studied reality. Based on the output equation below, the forecasting process was carried out (Table 6):

$$Y^* = 11.29459282 + 0.46496684 1 x_2 - 0.366160617 x_3. \tag{4}$$

The projections for the years presented in Table 4 confirm that in 2023–2030 both the explanatory variable y and the explanatory variables x_2 and x_3

show an upward trend. The average values of the companies' turnover ratios recorded in the Podlaskie and Lubelskie Voivodeships exert a positive influence on the growth of the rate of return achieved by companies listed on the NewConnect market in the entire area of the Eastern Poland (Chart 5).

Analyzing the value of explanatory variables x_2 and x_3 influencing the explained variable y, described by a linear trend line, it should have been concluded that the coefficient of determination R^2 calculated for the years 2023–2030 showed an increasing trend from year to year. The constructed econometric model shows a positive influence of independent variables on the dependent variable *y*.

5. Conclusion

The NewConnect market has played an important role in the whole system of support for fast-growing companies at an early stage of development. The analysis confirms that it is an alternative source of funding for small and medium-sized companies, and indeed for companies from Eastern Poland. NewConnect gives them the opportunity to raise additional capital for development or monetise their investments at low cost. In the context of crowdfunding companies, NewConnect is often the only exit option for individual investors (studies: Feder-Sempach, 2010; Kordela, 2013; Korenik, 2019; Mikołajczyk & Kurczewska, 2010; Panfil, 2013; Pastusiak, 2011; Pietrzyk & Knichnicki, 2010; Radke, 2020; Zygmanowski, 2016; 2017). In addition, SMEs were able to strengthen their competitive position and achieve a new scale of operations (research: Kordela, 2013).

NewConnect is also a market with great potential, as evidenced, among other things by the growth rate of capitalisation compared to the other analysed markets. However, developed markets in Europe (AIM and Nasdaq FN) are still a valuable source of inspiration for the NewConnect market, e.g. in the area of systemic solutions improving communication between issuers and investors; ensuring adequate market liquidity or supporting issuers whose shares are characterised by low liquidity (compare research: Bernstein et al.; Granier et al., 2019; Vismara et al.)

The conducted own research allowed for the full realisation of the article's objective. The obtained results confirm the adopted main hypothesis, stating that the NewConnect market is a market dominated by innovative micro, small and medium-sized enterprises and it constitutes a development opportunity for companies from Eastern Poland's provinces. This hypothesis was confirmed by the research results obtained. Well, 98.7% of issuers at the time of their debut qualified as SMEs and mostly from innovative industries (77% share of innovative sectors) based on intangible assets (related to health care and development of new technologies). Thus, the highest capitalisation was recorded by companies from the consumer goods and services sector (over 30% of the market value), finance and insurance (15%), technology (13%), healthcare and industry

(over 10). The poorly represented sectors were mainly real estate and industry and construction (both with five times less exposure).

Geographically, issuers were predominantly concentrated in the Mazovia Province (42% of companies, 38% of capitalisation). The smallest number of companies operated in the Podkarpackie and Podlaskie Voivodeships (1% of companies and 0.01% of capitalisation, respectively). The highest growth in capitalisation was recorded in the Warmińsko-Mazurskie voivodeship (647% compared to GDP growth of 39%) and the Podkarpackie voivodeship (405% compared to GDP growth of 45%). This was a consequence of the increasing capitalisation of companies from these regions and the large number of entrepreneurs deciding to launch their companies on the market.

Furthermore, the empirical analysis based on the linear econometric model estimated in the article clearly showed that the majority of companies listed on the NewConnect market in Eastern Poland are not growing at such a fast pace. On the other hand, the study of the impact of their turnover ratios on the average value of the profit rate calculated at the end of the period from 2008 to 2022 showed that companies from the Podlaskie and Lubelskie Voivodeships are characterised by a good financial condition, which translates into an improvement in the overall financial situation of companies located in the entire area of Eastern Poland. The rapid development, the short period of market entry and, consequently, the high level of innovation of companies from both voivodeships may contribute to the further development of all business entities from the area of Eastern Poland, which still has a lot of catching up to do (compare analyses conducted for the western part of Poland by Majchrzak, Ejsmont, 2023).

The authors of the publication caution that this study does not exhaust all aspects of the issue. They are also aware of the existence of certain limitations resulting, for example, from the use of a linear econometric model to analyse listed companies only for the provinces of Eastern Poland (given the complex dynamics of the entire NewConnect market, averaged variables that may "smooth out" individual differences; limited possibility of generalising the results to other markets or regions). The authors' intention was to identify the NewConnect market in the peripheral (and at the same time unique) macro-region of Eastern Poland. Therefore, the obtained results should be interpreted taking into account the specificity of the described assumptions and scopes, becoming a contribution to broader research.

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Acknowledgements

Author contributions: authors have given an approval to the final version of the article. Authors contributed to this work equally.

Funding: this research was fully funded by the University of Warmia and Mazury.

Note: the results of this study were presented at *12th International Conference on Applied Economics Contemporary Issues in Economy* (June 29–30, 2023, Poland).

Appendix

Table 1.
Summary of alternative markets/segments in Europe operated by FESE-affiliated exchanges

Exchange	Market/segment	Established in year	Regulated market/MTF
Athens SE	market	2007	MTF
BME (Madrit)	market	2008	MTF
Borsa Italiana	market	2007	MTF
Cyprus SE	market	2004	regulated
Deutsche Boerse	segment	2005	regulated*
Irish SE	market	2005	MTF
London SE	market	2005	MTF
Luxembourg SE	market	2005	MTF
NYSE Euronext	market	2005	MTF
NASDAQ OMX	market	2005	MTF
Oslo Bors	market	2007	regulated
Warsaw Stock Exchange	market	2007	MTF
CEESEG Viena	market	2002	MTF

Notes:

* According to FESE, it is a regulated market segment, but is not included in the list of regulated markets published in the *Annotated presentation...* (2009).

Source: Own preparation based on FESE (2023).

Table 2.
Characteristics of the analysed ASOs

AIM (UK)	Nasdaq FN (Denmark, Finland, Iceland, Sweden)	NewConnect (Poland)	Xtwnd (Hungary)	START (Czech Republic)
Capitalisation (EUR million)				
122 298	46 932	3 214	932	265
Number of non-company companies				
835	644	379	10	9
Number of listed companies (%)				
63	66	77	11	72
Liquidity (%)				
22	83	25	2	5
Free float (%)				
61	58	32	25	36
Cost of listing and maintenance for 3 years (EUR 1.000)				
1 260	710	134	131.5	87

AIM (UK)	Nasdaq FN (Denmark, Finland, Iceland, Sweden)	NewConnect (Poland)	Xtwnd (Hungary)	START (Czech Republic)
		Key facilitators and incentives		
– in building investor relations – ESG certification – tax relief	– advanced analytical systems – ESG certification – liquity provider service	– in building investor relations – in analytical coverage – in transitions to the Main Market	– "technical debuts" – tax relief	– in building investor relations

Source: Own preparation based on NewConnect (2022).

Table 3.
2008–2022 data determining the effect of averaging the turnover ratio s of companies listed on the NewConnect market on the rate of return calculated for all business units located area of Eastern Poland on an annual basis

Years	End of period return (%, EUR), y	Turnover ratio of companies (Warmian-Masurian, %), x_1	Turnover ratio of companies (Podlaskie, %), x_2	Turnover ratio of companies (Lubelskie, %), x_3	Turnover ratio of companies (Swietokrzyskie, %), x_4	Turnover ratio of companies (Podkarpackie, %), x_5
2008	0.00	0.00	0.00	23.55	197.40	0.00
2009	32.79	0.00	23.50	29.75	65.50	0.00
2010	–12.51	18.40	19.30	117.35	32.50	0.00
2011	–23.60	23.90	3.35	53.35	25.25	0.00
2012	–14.50	16.05	19.35	71.30	16.00	0.00
2013	18.98	23.00	31.03	15.97	14.87	399.40
2014	–11.10	11.00	7.05	11.60	17.40	512.30
2015	23.34	12.86	4.20	6.20	33.10	83.10
2016	24.23	9.63	13.10	5.63	9.57	185.15
2017	–8.94	8.44	7.87	2.53	14.83	275.50
2018	–8.06	7.20	10.23	3.50	17.33	29.33
2019	49.55	22.64	3.27	4.33	7.90	9.63
2020	91.15	84.31	297.70	157.53	32.63	135.25
2021	–6.50	69.93	26.48	70.08	24.63	91.60
2022	20.01	52.64	19.50	29.52	14.97	76.07

Source: Own preparation based on NewConnect (2022).

Table 4.
Final model estimation, Panel MNK, using 15 observations (cross-sectional data units were included), time series length=5, dependent variable (Y): *y*

Factor		Standard error	T-Student	The value of p
const	11.2946	6.7015	1.685	0.1177
x_2	0.4649	0.0998	4.656	0.0006***
x_3	−0.3661	0.1594	−2.296	0.0405**

arithmetic mean of the dependent variable	11.657	standard deviation of the dependent variable	30.3867
sum of squares of the residuals	4272.180	standard error of residuals	18.8683
the coefficient of determination R^2	0.6695	adjusted R^2	0.6144
F(2. 12)	12.1551	the p-value for the F-test	0.0013
logarithm of reliability	−63.6728	Akaike's information criterion	133.3456
Schwarz's Bayesian information criterion	135.4697	Hannan–Quinn criterion	133.3230
autocorrelation of residuals – rho1	−0.3132	Durbin–Watson statistics	2.1984

Source: Own preparation.

Table 5.
The results of the model verification based on the tests performed for the explanatory variables x_2 and x_3

Specification	Statistic of test	p-value for test
non-linearity test (LM squares)	LM=0.5482	p=P(Chi-square(2)>0.5482)=0.7602
non-linearity test (logarithms)	LM=0.0797	p=P(Chi-square(1)>0.0797)=0.7776
RESET test for specifications	F(2. 10)=0.1833	p=P(F(2. 10)>0.1833)=0.8352
White's test for heteroskedasticity of residuals (variation of residual variance)	LM=5.0955	p=P(Chi-square(5)>5.0955)=0.4043
Wald test distributions for heteroskedasticity	asymptotic test statistic: Chi-square(3)=1.8176	p=0.6111
test for normality of the distribution of the residuals	Chi-square(2)=0.9658	p=0.6169
Chow's test for structural change when sample is split in 2:2 observations	F(3. 9)=0.1758	p=P(F(3. 9)>0.1758)=0.9100
Wooldridge test for autocorrelation for panel data	t(2)=−1.0894	p=P(|t|>1.0894)=0.3897

Notes:

Significance level: x_2 *** $\alpha<0.01$; x_3 ** $\alpha<0.05$.

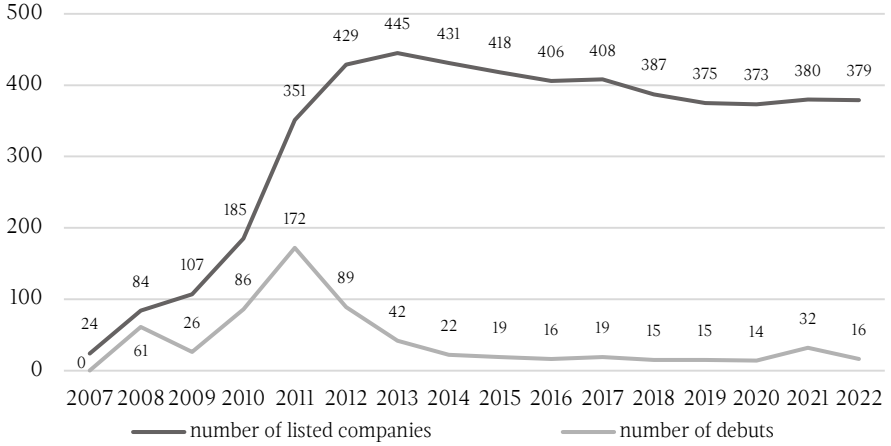
Source: Own preparation.

Table 6.
Data describing the forecast econometric model

t	Year	End of period return (%. EUR) (*Y*)	Turnover ratio of companies (Podlaskie. %), (x_3)	Turnover ratio of companies (Lubelskie.%)
1	2008	0	0	23.55
2	2009	32.789	23.5	29.75
3	2010	–12.508	19.3	117.35
4	2011	–23.591	3.35	53.35
5	2012	–14.5012	19.35	71.3
6	2013	18.98	31.025	15.96667
7	2014	–11.1007	7.05	11.6
8	2015	23.34257	4.2	6.2
9	2016	24.23476	13.1	5.633333
10	2017	–8.94105	7.866667	2.533333
11	2018	–8.05581	10.23333	3.5
12	2019	49.55067	3.266667	4.333333
13	2020	91.15128	297.7	157.525
14	2021	–6.502	26.475	70.08
15	2022	20.00779	19.5	29.51667
16	2023	61.24455	74.6344	41.6414
17	2024	68.47481	79.9145	41.8283
18	2025	79.18619	85.1944	42.0152
19	2026	89.64764	90.4744	42.2021
20	2027	101.1496	95.7545	42.389
21	2028	113.7862	101.0344	42.5759
22	2029	127.652	106.3144	42.7628
23	2030	142.8402	111.5945	42.9497

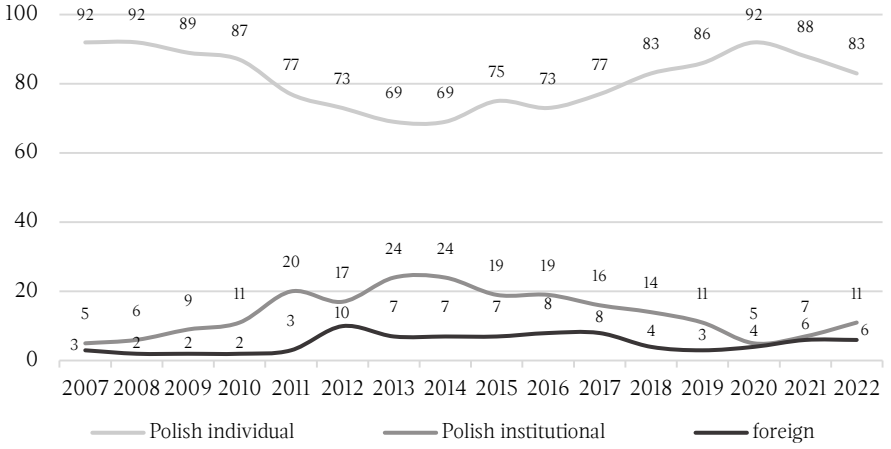
Source: Own preparation.

Chart 1.
New Connect market structure 2007–2022



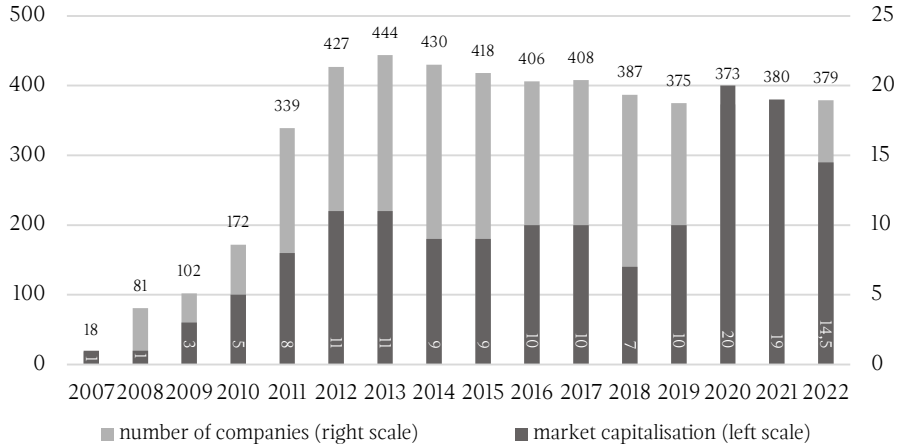
Source: Own preparation based on NewConnect (2022).

Chart 2.
Investors in the New Connect market between 2007 and 2022 (%)



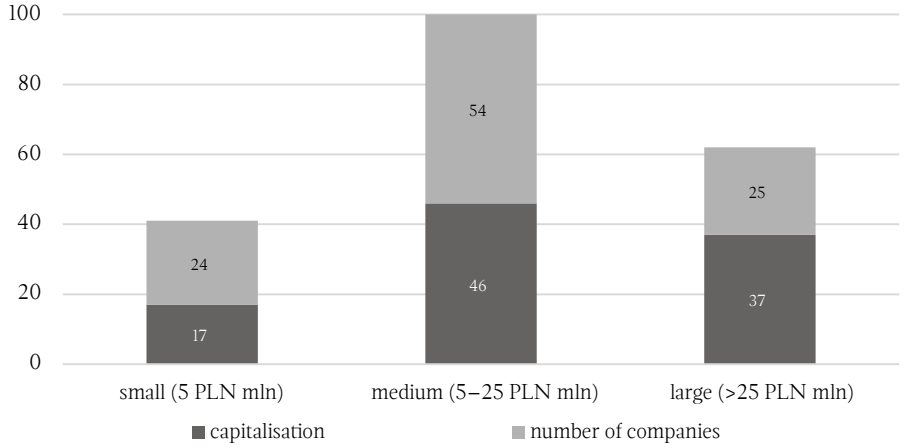
Source: Own preparation based on NewConnect (2022).

Chart 3.
Capitalization (PLN bn) and number of companies listed on New Connect between 2007 and 2022



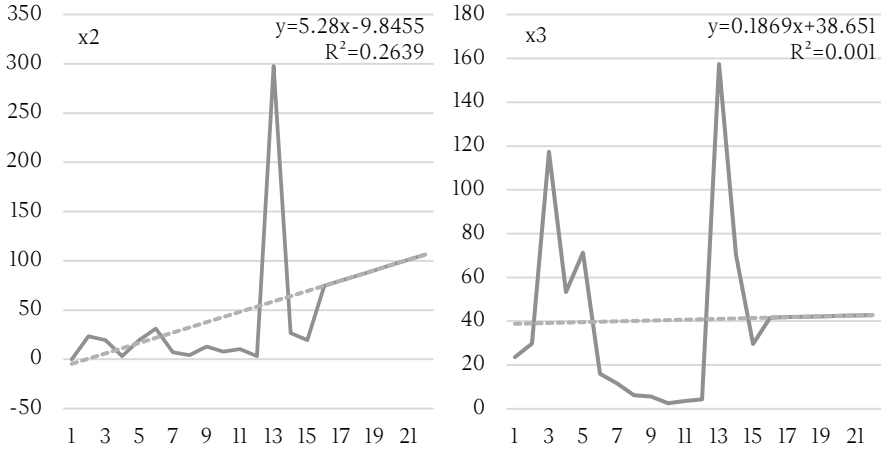
Source: Own preparation based on NewConnect (2022).

Chart 4.
Number of issuers and share of current capitalisation (at date of debut) (%)



Source: Own preparation based on NewConnect (2022).

Chart 5.
Trend lines describing the impact of turnover ratios of companies listed on the NewConnect located in the Podlaskie or Lublin Voivodeship on the average rate of return calculated for the whole area of the Eastern Poland for 2023–2030



Source: Own preparation.