The Review of Leading Indicators of the Stock Market Activity in Poland*

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Abstract

This article presents a comprehensive review of the literature on leading indicators of stock market activity in Poland, aimed at identifying the most effective forecasting tools for market trends and economic cycles. The analysis includes publications from the Scopus and Web of Science databases, resulting in a collection of 63 articles, 11 of which directly address the Polish market. The studies are classified into four main groups: market indicators, banking sector indices, macroeconomic variables, and synthetic measures of financial stress and systemic risk. The review highlights the evolution of research approaches: from simple macroeconomic indicators used in the 1990s, through advanced econometric models and stress indices introduced after the 2008 global financial crisis, to sectoral analyses during the COVID-19 pandemic. The results confirm the high predictive value of stock market indices (including the WIG), the role of banking sector indicators in early warning systems, and the need to integrate macroeconomic data with risk analysis based on network models. This synthesis provides a structured source of knowledge for both researchers and market practitioners, and indicates directions for further research and development of economic situation monitoring systems.

Keywords: leading indicators, stock market, Poland

Introduction

Stock market conditions are a key source of information for investors and directly influence their decisions on the securities market. To predict future market trends, it's worth utilizing valuable analytical tools, namely, leading stock market indicators. These indicators, encompassing economic, financial, and sentiment variables, allow investors and analysts to react more quickly to changes in the market environment and help better understand the mechanisms behind their operation. A leading indicator is essentially a forecast of the overall level of activity in a given economy. Therefore, it is used to forecast the size and rate of GDP growth and other economic variables defining the state of the economy (Maria Drozdowicz-Bieć, 2002). The first studies on the state of the economy, initiated by Mitchell and Burns, involved selecting statistical information into those that describe the current state of the economy—parallel indicators; those that provide information about future trends in the economy - leading indicators and those that provide information about the state of the economy with a certain delay - lagging indicators (Business cycles and depressions. [in:] Encyclopedia. Ed. D. Glasner, New York 1997). A leading indicator of the stock market situation is a composite of economic information such as the inflow of new orders, stock market indices, profits, and others. It can indicate future trends in the economy, while turning points in business cycles or growth cycles are preceded by this indicator by several months (6-8) (Maria Drozdowicz-Bieć, 2006). Although this topic is widely discussed in the international literature, research focusing on the specifics of the Polish stock market is relatively scarce and still requires systematization and comparison. (Szeplewicz, K. (2011). The latest research worth mentioning is the empirical study by Widz (2016), which showed a moderate but statistically significant correlation between the dynamics of the WSE indices of the Warsaw Stock Exchange (WSE, WIG20, etc.) and GDP changes in the period 2003–2014, with a tendency for economic growth to be

outpaced by stock market movements. Kołodziejczyk (2016), in turn, modeled the reaction of the WIG20 index to the National Bank of Poland's announcements regarding interest rates, showing that changes in monetary policy do indeed influence the functioning of the stock exchange. It is also worth paying attention to studies using economic sentiment indicators – such as PMI and ESI. PMI is an index of purchasing managers' activity, published monthly, which reflects the condition of the industrial or service sector of a given country. In Poland, the most frequently cited is the PMI for manufacturing, published by S&P Global (formerly Markit). ESI is an indicator of economic sentiment, economic data, prepared by the European Commission (Directorate-General for Economic and Financial Affairs) and published monthly for EU countries, including Poland. Sobko and Klonowska-Matynia (2021) analyzed the relationship between PMI and GDP dynamics in Poland in the years 1998–2019, demonstrating the possibility of using PMI as a forecasting indicator.

Therefore, this study aims to address one specific question:

1. Which research in the context of leading indicators of stock market conjucture in Poland has been published in English in academic journals so far?

The comparison of leading indicators of the stock market situation in Poland will be based on the methodologies presented in the literature on the subject, in particular in scientific articles available in the Web of Science and Scopus databases.

This paper will contribute to the current academic and practical knowledge of leading indicators of stock market conjuncture by providing an overview of empirical, peer-reviewed English literature published in scientific journals. This paper will synthesize the available knowledge about the relevance of leading indicators for the stock market conjucture in Poland. The article also pays particular attention to the assessment of the forecasting power of individual indicators in the context of the volatility of the Polish stock market, which aims not only to indicate the most effective tools for predicting stock market cycles, but also to discuss their potential limitations and applications in investment practice.As a result, a comprehensive review will give a clear overview of the development over time and the current state of affairs concerning the topic. The primary objective of this study is to identify possible research gaps and derive suggestions for future research. Such a literature review may reveal new challenges faced by analysts and investors.

In the following section, we describe the research method and materials used. The results and discussion are included in the following sections. Finally, the last section presents the main conclusions and makes some recommendations for further research.

Methods and Materials

This study conducted a literature review as the basis for analyzing leading indicators of stock market activity in Poland. The goal of this approach was to identify and compare the results of previous studies on the use of various economic indicators in forecasting future changes in the stock market. To review the literature on leading indicators of stock market activity in Poland, two databases were used: Web of Science Core Collection and Scopus. The search was conducted using keyword combinations such as "leading indicators," "stock market," "business cycle," and "Poland," using Boolean operators. These databases were selected for their high quality and extensive databases of scholarly articles in economics, finance, and stock market analysis. Both databases are widely recognized as credible sources of information in the field of academic research, offering access to peer-reviewed publications and full scientific texts. The analysis focused on identifying indicator types, research methodologies, and their application in the context of the Polish capital market.

Web of Science (WoS) is a platform and a package of bibliographic and bibliometric databases that contain bibliographic data, abstracts, and publication citation information. Search bibliographic records from major journals, conference summaries, and books in science, social, arts, and humanities for high-quality research related to the area of interest. It is developed by the Clarivate company (https://clarivate.com/webofsciencegroup/solutions/web-of-science/). Scopus is a scientific abstract and citation database, launched by the academic publisher Elsevier as a competitor to older Web of Science in 2004 (https://www.elsevier.com/products/scopus). This database is accessible through its website after paying an annual subscription. In Poland, since 2012, it has been available free of charge to research institutions under a national license granted to the Ministry of Science and Higher Education (Virtual Science Library).

The empirical procedure uses a series of keywords and combinations of keywords pertaining to the underlying research interest and research question. For the research presented here, the research question is: Which research in the context of leading indicators of stock market conjucture in Poland has been published in English in academic

journals so far? To reduce the resulting corpus of documents to the relevant papers, selection criteria were defined that would guarantee the inclusion of all relevant studies (Table 1).

Table 1: Inclusion criteria.

Inclusion criteria	Rationale
Empirical and theoretical studies that were published in an academic journal with a peer review process.	To ensure a certain quality of studies.
Papers written in English.	English is the dominant language in research; it ensures accessibility and comparability of results.
Studies focusing on the leading indicators of the stock market conjuncture in Poland	To capture studies that relate to leading indicators of the stock market conjuncture in Poland

The search yielded a total of 88 hits. This process of refinement resulted in 64 articles that were suited for further analysis. Web of Science and Scopus were used as databases for the search. We chose these databases because they collect and use the most influential scientific publications [28] as the main criterion in making academic decisions [29,30]. The studies from two different databases were combined as shown in Figure 1 and Table 2.

Table 2: Results from individual databases.

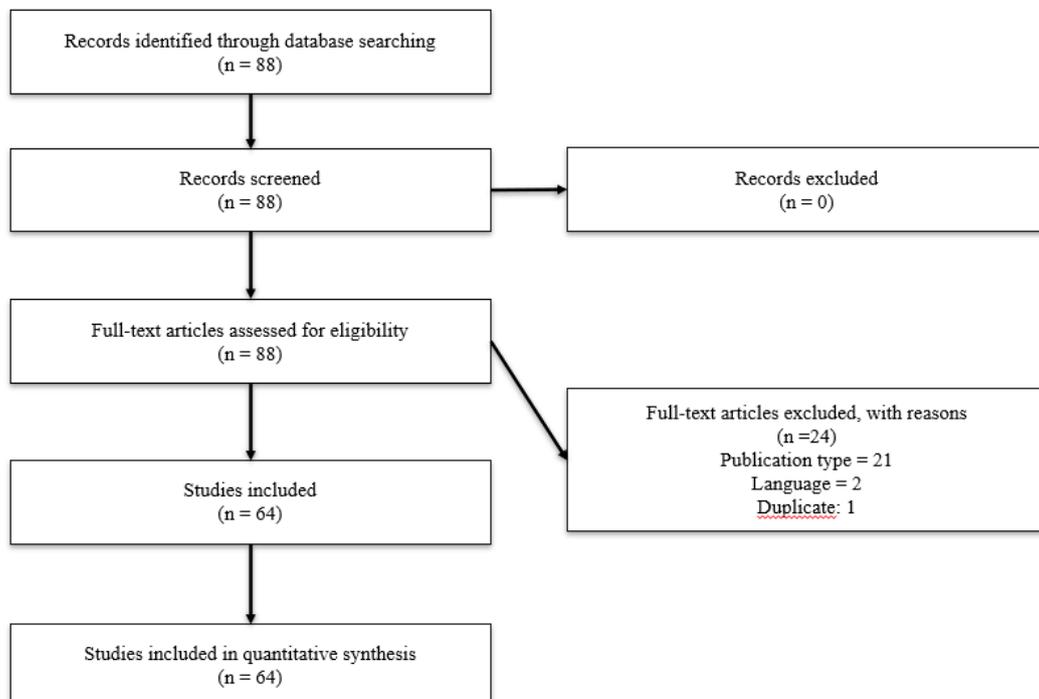| Database	Result
Web of Science	2
Scopus	86

Figure 1: Overview of the search and reduction process.

We carried out the data extraction and chart process using Excel and MS Word and collected the following information on all citations: author, publication year, and country of data collection. The following analyses were carried out: author, year of publication, publication outlet (journal), number of citations, and research methodology. These are the most commonly used analyses in various types of reviews.

Results

Data Analyses

The first publications collected in the review process appeared in 2021. From 2000 to 2013, the number of publications was very low, which may indicate a lack of interest in this research topic during this period. A dynamic increase in the number of publications has been observed since 2015, with the number of studies in some years ranging from 6 to 8 articles. The highest number of publications occurred in 2024, which may indicate that the research topic is currently being developed and is therefore increasingly popular. It should also be noted that the graph shows significant fluctuations in the number of publications, indicating that there is no consistent upward trend. The distribution of the 65 articles used in this study is shown in Figure 2.
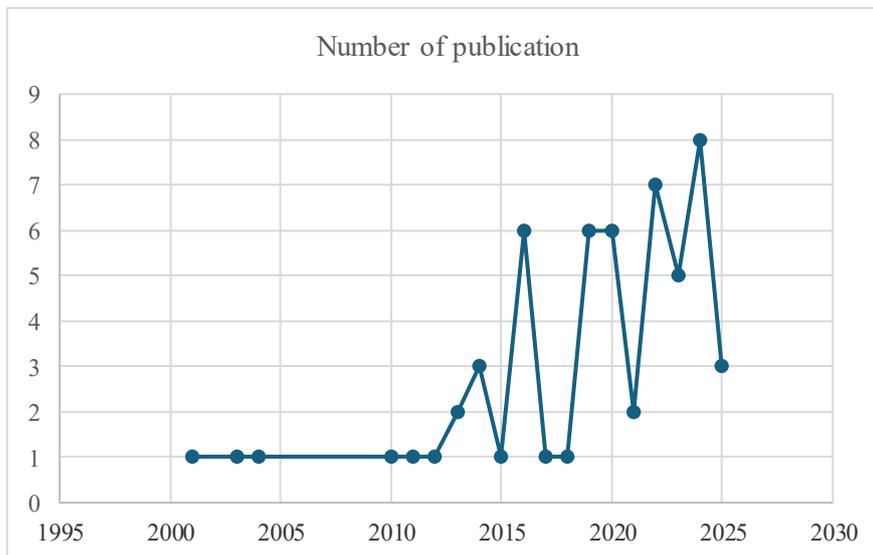

Figure 2: Evolution of scientific research– the year of publication.

These articles were published in 58 different journals. Only 1,72% published three articles, 8,62% two articles, and 89,66% published one article. It shows that scientific production in the field of leading indicators of the stock market conjuncture in Poland is often published in non-specialized journals; therefore, it can be concluded that so far, there are no leading journals in this field. All journals that published articles in this research field by the number of publications, are listed in Table 3.

Table 3: Most productive journals.

Journal	Number
Research in International Business and Finance	3
Energies	2
International Review of Financial Analysis	2
Sustainability	2
Emerging Markets Finance and Trade	2
Journal of Economic Behavior and Organization	2
International Journal of Technological Learning, Innovation and Development	1
Central European Economic Journal	1

Finance a Uver - Czech Journal of Economics and Finance	1
Technological and Economic Development of Economy	1
Chaos, Solitons and Fractals	1
Journal of Applied Economic Sciences	1
Journal of Behavioral and Experimental Finance	1
Credit and Capital Markets	1
Economic Computation and Economic Cybernetics Studies and Research	1
Argumenta Oeconomica	1
Futures	1
Journal of Economic Studies	1
Pertanika Journal of Social Sciences and Humanities	1
Empirica	1
Engineering Economics	1
Economic Modelling	1
Journal of Financial Stability	1
Quantitative Finance	1
Corporate Ownership and Control	1
Margin	1
Acta Oeconomica	1
Journal of Development Studies	1
IMF Occasional Papers	1
EASTERN EUROPEAN ECONOMICS	1
Transformations in Business and Economics	1
Eastern European Economics	1
North American Journal of Economics and Finance	1
Human Behavior and Emerging Technologies	1
Journal of Real Estate Portfolio Management	1
Systems	1
Journal of Economic Surveys	1
Canadian Journal of Economics	1
Investment Analysts Journal	1
Journal of Money, Credit and Banking	1
China Finance Review International	1
International Journal of Emerging Markets	1
Oeconomia Copernicana	1
Geographies	1
Managerial and Decision Economics	1
Accounting, Auditing and Accountability Journal	1
Decision Making: Applications in Management and Engineering	1
Journal of Financial Markets	1
Journal of Hospitality and Tourism Insights	1
Review of Integrative Business and Economics Research	1
Problems and Perspectives in Management	1

Journal of World Business	1
Reserve Bank of India Occasional Papers	1
Equilibrium. Quarterly Journal of Economics and Economic Policy	1
Journal of International Studies	1
Innovation and Development	1
Finance: Theory and Practice	1
CANADIAN JOURNAL OF ECONOMICS-REVUE CANADIENNE D ECONOMIQUE	1

The field of leading indicators of the stock market conjuncture in Poland is characterized by a quite small share of the number of authors. Table 4 lists the most productive authors. Five authors have published two articles. Most of the authors presented only one work, which indicates low concentration in this field of study.

Table 4: The most productive authors.

Author	Number
A., Zaremba	2
I., Alnafrah	2
A., Tkacova	2
K., Beck	2
O., Ozcelebi	2

Table 5 presents a summary of the 10 scientific articles with the highest number of citations. Analyzing the results, it can be seen that there are key publications that have influenced the development of the topic, as indicated by the high number of citations. The articles in Table 5 were published in various journals, which may also indicate the interdisciplinary nature of the topic and its attractiveness to various scientific communities.

Table 5: Most frequently cited articles

Title of the article	Authors	Year	Number of citations
Consequences of CSR reporting regulations worldwide: a review and research agenda	A.A., Ahmed Haji, Abdifatah Ahmed; P.J., Coram, Paul J.; I., Troshani, Indrit	2023	72
Measuring financial stress in transition economies	E.I., Çevik, Emrah Ismail; S., Dibooğlu, Sel; A.M., Kutan, Ali M.	2013	71
Industry herding and market states: Evidence from Chinese stock markets	C., Lee, Chien-Chiang; M., Chen, Meiping; K.M., Hsieh, Kuan Mien	2013	65
Financial Crises after Financial Liberalisation: Exceptional Circumstances or Structural Weakness?	C.E., Weller, Christian E.	2001	52
Do stock markets lead or lag macroeconomic variables? Evidence from select European countries	S.J., Camilleri, Silvio John; N., Scicluna, Nicolanne; Y., Bai, Ye	2019	44

Monetary and Financial Cooperation Between China and the One Belt One Road Countries	J., Sun, Jin; J.W., Hou, Jack W.	2019	39
Measuring systemic risk contribution of global stock markets: A dynamic tail risk network approach	Z., Wang, Ze; X., Gao, Xiangyun; S., Huang, Shupei; Q., Sun, Qingru; Z., Chen, Zhihua; R., Tang, Renwu; Z., Di, Zengru	2022	33
Investor sentiment, limits on arbitrage, and the performance of cross-country stock market anomalies	A., Zaremba, Adam	2016	31
Return and volatility interdependences in up and down markets across developed and emerging countries	S., Kundu, Srikanta; N., Sarkar, Nityananda	2016	30
State financial security: Comprehensive analysis of its impact factors	I.O., Shkolnyk, Inna O.; S.M., Kozmenko, Serhiy M.; J., Polách, Jiří; E., Wolanin, Elzbieta	2020	28

After reviewing all 64 scientific articles, only 11 specifically examine the topic of leading indicators for the stock market in Poland. The leading indicators identified in these articles were compared based on their type and methodology. The results are shown in Table 6.

Table 6: List of selected articles

Article Title, Author, Year	Type of indicator	Example indicators	Methodology
Lyócsa, 2011; 2014	Market	WIG index, real rates of return	Granger tests, cointegration
Ozcelebi & Yildirim, 2016	Market, currency	RER, stock index	SVEC, FEVD
Kacperska & Kraciuk, 2021	Market, sectoral	CAR, WIG-food	Event analysis
Skikiewicz & Garczarczyk, 2018	Banking	PIKBANK, BOSF	ARIMA, CLI
Mérő, 2004	Macro, structural	M2/PKB, capitalization	Comparative analysis
Çevik et al., 2013	Synthetic	FSI: CDS, rates, bonds	PCA, filters
Czapkiewicz et al., 2018	Macro	Unemployment, rates	VAR model
Grabowski & Welfe, 2016	Currency	PPP, UIP, market pressure	DSGE, Contagion models
Shkolnyk et al., 2020	Macro,	Public debt/ PKB, banking market	Synthetic indices
Min, J., Zhu, J., & Yang, J.-B.	Network	Capital market M2/PKB	Network risk models

The first publications included in the review appeared in 2004. Early studies focused on basic macroeconomic indicators and market capitalization. After the 2008 global financial crisis, research activity increased, incorporating econometric models and synthetic indices. In 2020, publications rose significantly, with a focus on sectoral analyses and rapid market responses due to COVID-19. The trend indicates Poland's shift from descriptive studies to advanced forecasting tools, reflecting a deeper integration of financial markets. Figure 3 shows the evolution of scientific research, the year of publication.
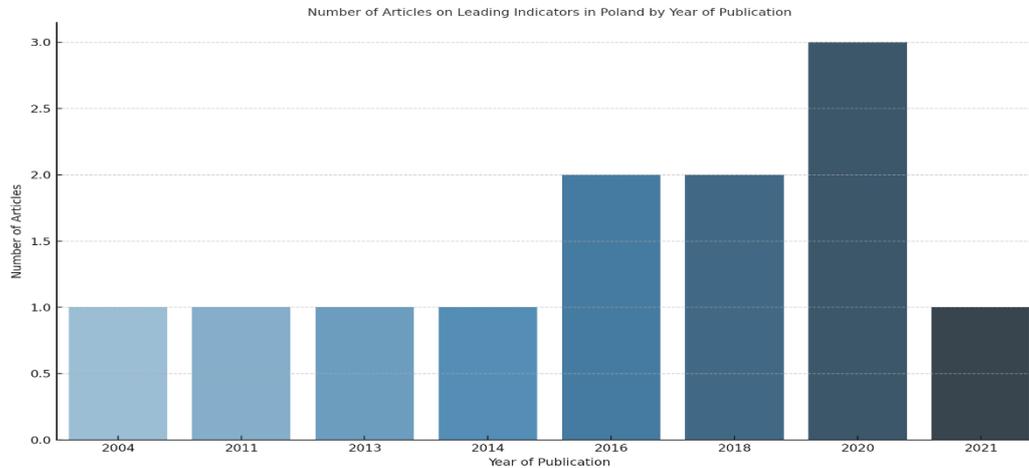

Figure 3: Evolution of scientific research– the year of publication.

The next Figure 4 shows the evolution of research approaches, reflecting economic and financial changes in Poland over three decades. In the early 2000s, research focused on simple macroeconomic indicators (M2/GDP, market capitalization) reflecting Poland's early transition economy phase. Post-2008: advanced econometric models and stress testing tools (e.g., FSI) became central to understanding systemic risk. Then, the COVID-19 pandemic led to sector-specific analyses and rapid-response forecasting models. The evolution illustrates Poland's growing role in regional research and the necessity of sophisticated risk assessment frameworks.
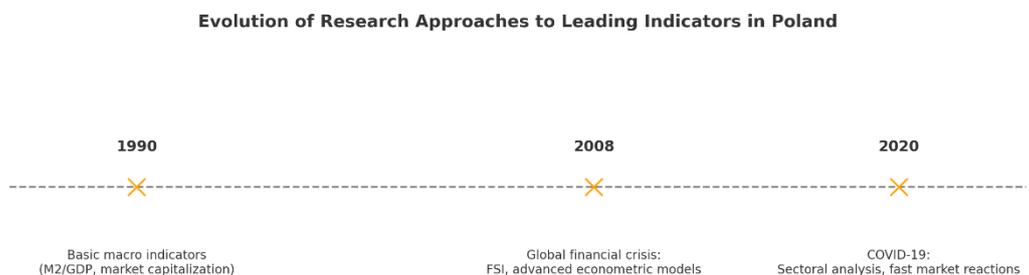

Figure 4: Evolution of Research Approaches to Leading Indicators in Poland.

Taking into account the leading indicators included in the research, we decided to divide these indicators into four main groups. The division is presented in Table 7. The first group consists of market indicators.

Research by Lyócsa (2011, 2014) indicates that the Polish stock market serves as a leading indicator of changes in the real economy, particularly in the medium and long term. During periods of increased volatility, such as the 2008 financial crisis, the predictive power of the stock market increases. The results support the present value theory of stock prices, indicating that the WIG index reflects investors' expectations regarding future economic activity. The article by Ozcelebi and Yildirim (2016) demonstrates that the relationship between the exchange rate and the stock market is particularly strong in Poland, and that stock market movements have a significant impact on the zloty exchange rate. An analysis of the effects of the COVID-19 pandemic (Kacperska and Kraciuk, 2021) showed that the food sector was resilient to shocks, and the Polish stock market recovered faster than the German market. The second group includes banking indicators. A study by Skikiewicz and Garczarczyk (2018) confirmed the usefulness of synthetic banking indicators (PIKBANK, BOSF) in forecasting business cycles. Banking sector data precedes changes in the economic situation, indicating the important role of banks as a barometer of the

economy. Mérő's analysis (2004) showed the evolution of Poland's financial depth: from low levels of private sector credit/GDP and stock market capitalization in the 1990s to a gradual increase in the stability and development of the financial sector, despite a persistent gap with developed countries.

Table 7: Division of articles by main categories of leading indicators

Indicator category	Full article titles
Market	Lyócsa, S., Baumöhl, E., & Výrost, T. (2011). The Stock Markets and Real Economic Activity: New Evidence from CEE; Lyócsa, S. (2014). Growth-returns nexus: Evidence from three Central and Eastern European countries; Ozcelebi, O., & Yildirim, Z. (2016). Exchange rates and stock prices: How do they interact in CEE countries?; Kacperska, E., & Kraciuk, J. (2021). Impact of COVID-19 on stock prices of food sector companies listed on the Warsaw Stock Exchange
Banking	Skikiewicz, R., & Garczarczyk, J. (2018). Cyclical fluctuations in the banking services market and the changes in the situation of entities from the financial services sector; Mérő, K. (2004). Financial depth and economic growth – the case of Hungary, the Czech Republic and Poland
Macroeconomic	Czapkiewicz, A., Jamer, J., & Landmesser, J. (2018). Co-movement between Central European stock markets and the impact of macroeconomic indicators; Grabowski, W., & Welfe, A. (2016). An Exchange Rate Model with Market Pressures and a Contagion Effect; Shkolnyk, I., Kozmenko, O., & et al. (2020). Assessment of financial security of EU countries
Stress and Risk / Networking	Çevik, E. I., Dibooğlu, S., & Kutan, A. M. (2013). Measuring financial stress in transition economies; Min, J., Zhu, J., & Yang, J.-B. (2020). The Risk Monitoring of the Financial Ecological Environment in Chinese Outward Foreign Direct Investment Based on a Complex Network

The third group presents macroeconomic indicators and international linkages. A study by Czapkiewicz, Jamer, and Landmesser (2018) found that the unemployment rate and long-term interest rates are key factors influencing the linkages between the Polish capital market and other stock exchanges. In contrast, the analysis by Grabowski and Welfe (2016) revealed a strong contagion effect, indicating the vulnerability of the zloty exchange rate to changes in neighboring countries. Shkolnyk et al. (2020) proposed a comprehensive assessment of Poland's financial security, emphasizing the stability of the banking sector but drawing attention to the growing threat posed by public debt. The final group of indicators includes financial stress and systemic risk indices. The study by Çevik, Dibooğlu, and Kutan (2013) provided a synthetic financial stress index (FSI) that accurately reflects crisis episodes (the 1998 Russian crisis and the 2008 financial crisis). The FSI has been recognized as an effective early warning tool. The article by Zhang, Y., & et al. (2020) identified Poland as a key financial risk node in the CEE region. Indicators such as M2/GDP, foreign exchange reserves, and public debt/GDP constitute the "core" elements of the risk network, disruptions of which can trigger the spread of crises. Comparing key leading indicators based on the articles analyzed, the following conclusions can be drawn: the most frequently studied market indicators are stock market indices (WIG, rates of return), which confirm their role as predictors of economic activity. Their predictive power is greater during periods of increased market volatility. Secondly, synthetic banking indices (PIKBANK, BOSF) demonstrate the ability to anticipate economic cycles and constitute an important early warning element. Macroeconomic indicators such as interest rates, unemployment, and exchange rates form the basis of analysis in the analyzed articles, but they mainly serve as context for financial markets. Considering stress and risk indices, it can be seen that the Financial Stress Index and web-based tools provide information on the sources of systemic risk, enabling early responses to potential crises. It is worth noting that macroeconomic and structural indicators (credit/GDP) dominated in the 1990s; after the 2008 crisis, complex FSI models were introduced, and the COVID-19 pandemic has emphasized the importance of sectoral research and rapid market reactions. Accumulated research indicates that the Polish economy has a broad set of leading indicators that complement each other. Stock market indices are the strongest predictors, but banking sector data and synthetic stress indices allow for more comprehensive monitoring of economic cycles. Combining classic

macroeconomic indicators with web-based tools and risk indices is crucial for effectively predicting changes in stock market conditions.

The analysis demonstrates a clear evolution in approaches to studying leading indicators in Poland. Stock market indices remain the most reliable tool for forecasting market cycles, while banking sector indicators and macroeconomic variables provide supplementary information. Network and stress models represent a significant step forward, and Poland is increasingly seen as a key participant in financial stability research in the CEE region.

Discussion

The literature review and identification of leading indicators of the stock market in Poland allow for several key conclusions and their broader interpretation. The research findings demonstrate that Poland possesses an extensive set of forecasting indicators, encompassing macroeconomic, market, and sectoral data, as well as synthetic indices. It should be noted, however, that these conclusions are based solely on 11 articles that directly addressed leading indicators of the stock market in Poland. First, the Polish stock market plays a significant role in predicting changes in the real economy. Research by Lyócsa (2011, 2014) and other authors confirms that the WIG index and real rates of return can be considered leading indicators, especially in the medium and long term. However, the Polish stock market is strongly linked to global factors, as confirmed by analyses of the relationship between exchange rates and capital flows. Second, the banking sector is a significant source of forecasting signals. Research on synthetic banking indicators (PIKBANK, BOSF) indicates that data on the banking sector's situation precedes changes in the economy, which can form the basis for developing early warning systems. Third, the use of composite indicators such as the Financial Stress Index (FSI) provides additional informational value. The FSI effectively reflects crisis periods and allows for the identification of sources of systemic risk. Research findings also demonstrate the importance of network analysis, which highlights Poland's role as a significant risk node in the Central and Eastern European region. Fourth, Poland has undergone significant transformation of its financial sector since the 1990s. Despite increased financial depth and capital market development, research indicates a persistent gap with developed countries. Institutional development and the presence of foreign banks have enhanced the stability of the system, but there remains a need for further integration and diversification of funding sources. Finally, the COVID-19 pandemic and previous financial crises have highlighted the importance of leading indicators in monitoring market reactions. Sectoral analyses indicate varying resilience across economic sectors, and crisis experiences demonstrate the need for comprehensive forecasting methods that combine macroeconomic, market, and qualitative indicators. In summary, these scholarly articles point to the need to build integrated stock market monitoring systems that utilize both classic economic indicators and advanced modeling tools (network analysis, financial stress indices). As a highly open economy, Poland is particularly susceptible to global and regional changes, requiring the use of broad-spectrum indicators and a rapid response to warning signals.

Conclusions

The literature review shows that research on leading indicators of stock market conditions in Poland has evolved from simple macroeconomic tools to complex forecasting models integrating market data, banking data, and synthetic financial stress indices. The results indicate that stock market indices, especially the WIG, have high predictive value for economic cycles, while banking sector data and macroeconomic indicators are a key complement to early warning systems. The development of advanced methods, such as network models and the Financial Stability Index (FSI), reflects the growing complexity of the Polish financial market and its strong integration with the global economy. From a practical perspective, these results suggest the need to build integrated systems for monitoring the stock market, combining traditional and modern analytical tools, enabling faster responses to shocks and better prediction of market turning points. Of particular importance here is the consideration of banking sector dynamics and signals from international markets, which will allow for more effective stabilization and investment policies. Future research should focus on developing hybrid forecasting models that combine quantitative and qualitative data, as well as analyzing the resilience of individual economic sectors to crises. As a country of growing importance in the Central and Eastern European markets, Poland requires continuous updating of analytical tools to meet the challenges of global instability and dynamic changes in the financial market structure.

References

- Business cycles and depressions. (1997). In: Glasner, D. (Ed.), Encyclopedia. New York.
- Çevik, E.I., Dibooğlu, S. & Kutan, A.M. (2013). Measuring financial stress in transition economies. Journal of Financial Stability, 9, 597–611.

- Czapkiewicz, A., Jamer, J. & Landmesser, J. (2018). Co-movement between Central European stock markets and the impact of macroeconomic indicators. Finance a Uver – Czech Journal of Economics and Finance, 68, 267–292.

- Drozdowicz-Bieć, M. (2002). Charakterystyka wskaźników wyprzedzających. Prace i Materiały Instytutu Rozwoju Gospodarczego SGH, 73, 41–51.

- Drozdowicz-Bieć, M. (2006). Wskaźniki wyprzedzające. Prace i Materiały Instytutu Rozwoju Gospodarczego SGH, 77. SGH, Warsaw.

- Grabowski, W. & Welfe, A. (2016). An exchange rate model with market pressures and a contagion effect. Emerging Markets Finance and Trade, 52, 2706–2720.

- Hodge, D.R. & Lacasse, J.R. (2011). Ranking disciplinary journals with the Google Scholar h-index. Journal of Social Work Education, 47, 579–596.

- Kacperska, E. & Kraciuk, J. (2021). The effect of COVID-19 pandemic on the stock market of agri-food companies in Poland. European Research Studies Journal, XXIV, 274–290.

- Kołodziejczyk, H.Z. (2016). The impact of monetary policy announcements on stock market index in Poland. Research Papers in Economics and Finance, 1(1), 7–16.

- Levac, D., Colquhoun, H. & O'Brien, K.K. (2010). Scoping studies: Advancing the methodology. Implementation Science, 5, 1–9.

- Lyócsa, Š. (2014). Growth-returns nexus: Evidence from three Central and Eastern European countries. Economic Modelling, 42, 343–355.

- Lyócsa, Š., Baumöhl, E. & Výrost, T. (2011). The stock markets and real economic activity: New evidence from CEE. Eastern European Economics, 49(4), 6–23.

- Mérő, K. (2004). Financial depth and economic growth – the case of Hungary, the Czech Republic and Poland. Acta Oeconomica, 54(3), 297–321.

- Min, J., Zhu, J. & Yang, J-B. (2020). The risk monitoring of the financial ecological environment in Chinese outward foreign direct investment based on a complex network. Sustainability, 12(22), 9456.

- Munn, Z., Peters, M.D.J., Stern, C. et al. (2018). Systematic review or scoping review? BMC Medical Research Methodology, 18, 143.

- Ozcelebi, O. & Yildirim, N. (2016). Exchange rates and stock prices: How do they interact in Eastern Europe? Argumenta Oeconomica, 36, 31–65.

- Peters, M.D., Godfrey, C.M., Khalil, H., McInerney, P., Parker, D. & Soares, C.B. (2015). Guidance for conducting systematic scoping reviews. International Journal of Evidence-Based Healthcare, 13(3), 141–146.

- Seipel, M.M.O. (2003). Assessing publication for tenure. Journal of Social Work Education, 39, 79–88.

- Shkolnyk, I., Kozmenko, O. et al. (2020). State financial security: Comprehensive analysis. Journal of International Studies, 13, 291–309.

- Sobko, R. & Klonowska-Matynia, M. (2021). The relationship between PMI and economic growth: The case for Poland. European Research Studies Journal, XXIV, 198–219.

- Szeplewicz, K. (2011). Wskaźniki wyprzedzające koniunktury – analiza ekonometryczna. Prace i Materiały Instytutu Rozwoju Gospodarczego SGH, 87, 33–63.

- Widz, E. (2016). The relationship between the market indices fluctuations and economic situation in Poland. Acta Universitatis Lodziensis. Folia Oeconomica, 4(323), 155–168.

- Zakres i zasady udostępniania zasobów licencyjnych Wirtualnej Biblioteki Nauki w roku 2016 oraz plan na rok 2017. (2016). Wirtualna Biblioteka Nauki.

- Web of Science. (n.d.). Available at: https://clarivate.com/webofsciencegroup/solutions/web-of-science/

- Scopus. (n.d.). Available at: https://www.elsevier.com/products/scopus