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DYNAMIC OF ESG PERFORMANCE AND RISK-RETURN CORRESPONDENCE FOR LARGE US COMPANIES: EMPIRICAL ANALYSIS OF THE DJIA INDEX BASKET

Background. ***Legislative and regulatory changes are reshaping the landscape of Environmental, Social, and Governance (ESG) principles. This is prompting companies to reassess their commitments and implement new business development strategies that align with sustainable development. At the same time, certain "anti-ESG" trends, primarily in the US, are creating uncertainty regarding ESG performance dynamics, and the risk-return correspondence dynamics also appear unstable. These developments motivated the study's purpose: to examine the dynamics of ESG and risk-return correspondence from 2019 to 2024.***

This paper presents results on the dynamics of 10 ESG subindexes and the K-ratio indicator for the largest US companies from 2019 to 2024. We also analyzed the hypothesis concerning the correspondence between ESG performance and the investment risk-return ratio.

Methods. ***Employed methods include factual and comparative analysis, statistical techniques, correlation estimation, risk-return measurement, synthesis, and deduction.***

Results. ***We estimated the dynamics of subindices for 30 US companies from the Dow Jones Industrial Average (DJIA) index basket using statistical analysis of ESG scores. The subindexes exhibited convex upward trajectories, reaching their highest scores in the year when the COVID-19 pandemic began. Analyzing risk-return correspondence from 2019 to 2024 revealed persistent and significant changes in this ratio's value. A statistical analysis of the relationship between ESG scores and risk-return correspondence showed that there is no clear correlation between these two components. Therefore, it can be concluded that these two factors have distinct dynamics and that there is no clear relationship between ESG performance and market risk-return outcomes.***

Conclusions. ***ESG principles are becoming an important component of sustainable business development; however, this process remains multifaceted and complex for large companies. The implementation of ESG scoring systems by several global rating agencies enables the identification and analysis of numerical patterns of this development. Current research focuses on analyzing the impact of ESG reporting on corporate financial and investment performance. Identifying such regularities will improve our understanding of the role and significance of ESG in the holistic analysis of corporate development.***

Keywords: ***environmental, social, and governance reporting, ESG scoring, risk-return correspondence, K-ratio, correlation analysis.***

Background

The concept of ESG has grown significantly over the last few decades. Although the term first appeared in a 2004 UN report, it did not gain widespread use until the late 2010s. The ESG concept is an integrated approach to managing a company's development that combines three key dimensions: Environmental (E), Social (S), and Governance (G). The environmental component includes measures such as greenhouse gas (GHG) emissions, resource use, pollution, and renewable energy. The social component reflects an organization's approach to diversity, equity, and inclusion concerning its workforce, human rights, equal opportunities, and other relevant aspects. The governance component focuses on corporate social responsibility (CSR) strategy, corporate governance structure, management, and shareholder relations. It can affect a company's long-term strategy and value (Mihail et al., 2021).

Incorporating ESG principles into corporate strategies has become important for companies seeking sustainable growth and competitive advantage. A key explanation is that aligning corporate operations with ESG principles is expected to improve long-term financial and investment performance. In addition, companies are integrating ESG practices into their decision-making processes. This includes incorporating ESG indicators into performance evaluations to ensure that managers prioritize sustainability alongside traditional financial metrics. ESG practice in corporate strategy involves setting clear objectives, applying ESG indicators in decision-making, and fostering a culture that promotes sustainable development. It forms a holistic approach to elaborating company strategy and enables firms to create value for all stakeholders while addressing contemporary challenges.

The assessment of corporations' implementation of ESG principles is made possible through the analysis of ESG reporting and ESG scores produced by specialized providers. The ESG score is a comprehensive quantitative evaluation tool that numerically formalizes various parameters from different categories. It typically comprises several subindices within individual evaluation categories, while integral indices encompass the measurement of the E, S, and G constituents. Such numerical databases make it possible to evaluate the current state and dynamics of ESG implementation based on changes in subindices. On this basis, specific economic segments and industries can be assessed, which enables a better understanding of ESG levels across sectors through comparative analysis.

The present study employed a methodological approach grounded in the analysis of ESG subindex dynamics to evaluate a selection of large American companies that are constituents of the Dow Jones Industrial Average (DJIA) index. The relevance of such research is as follows. This methodological approach facilitates the identification of the impact of a nation's policy environment on the adoption of ESG principles. This is achieved by undertaking a comparative analysis of the dynamics of score values for the companies under study. The movement's relevance is further underscored by the escalating anti-ESG sentiment, which is garnering increasing momentum in various regions globally. This movement is predominantly centered in the United States and is expected to have ramifications for companies across various industries. The results of this trend were presented in the report Strategic Intelligence: The Anti-ESG Movement (GlobalData, 2025), which provides a comprehensive analysis of the US context in 2025.

The anti-ESG movement gained prominence in 2021 when the US state of Texas passed legislation prohibiting financial institutions from ostracizing companies involved in fossil fuel production. The predominant concern among financial institutions stemmed from the perceived inconsistency between ESG investing and their fiduciary obligations to act in the best financial interests of their clients.

In 2025, the efforts of the anti-ESG movement in the United States underwent a marked intensification. In that year, the US altered part of its previous policy on climate action and criticized the DEI (Diversity, Equity, and Inclusion) concept. The United States of America has also declared its intention to withdraw from the Paris Agreement, which was established in 2015. At the corporate level, several companies are part of this movement. At the same time, companies continue to incorporate a sustainability component into their development, provided it makes financial sense and investors look for similar alignment.

The situation in Europe differs from that in the US in that there is a persistent commitment to ESG investing. A survey conducted in January 2025 revealed that more than 90 percent of European investors expressed significant concern regarding the state of ESG practices and sustainable development in the United States. Concurrently, they maintain their intention to either maintain or increase their impact allocation. European investors generally have a positive stance on impact investing, despite concerns about developments in the US (Lewis, 2025).

These trends guided the research tasks, and the subsequent results are presented in this paper. The initial scientific undertaking entails the analysis of whether the observed trend in the USA was reflected in the ESG scores of prominent corporations, and if so, the manner in which such a reflection occurred. The second scientific task is to investigate the dynamics of investment risk in relation to risk-return correspondence. The third scientific task is to study the relationship between the dynamics of ESG index scores and the level of the investment ratio between risk and returns. These tasks provide the structure for achieving the overall research goal.

The structure of our paper is as follows. The Literature Review section provides an overview of publications that present the results of analyzing the specified processes in the investment market. In the methodology section, we present our approaches to analyzing the three tasks previously mentioned. The findings of the research, accompanied by graphical representations, are delineated in the Results section. The final section presents the conclusions, which are based on the findings reported in the previous sections.

Literature review. Academic research, business practice, and corporate governance have dedicated significant attention to ESG performance, thereby establishing the implementation of these principles as integral to companies' sustainable development. This tendency is reflected in the rapid growth of publications on the topic. Al Azizah and Haron's (2025) bibliometric analysis of papers on ESG performance from 2013 to 2023 revealed a substantial annual publication growth rate of 26.81%. The ESG concept is an expansive one, encompassing a variety of economic and financial domains. Lykkesfeldt and Kjaergaard (2022) provide a comprehensive overview of the origins, history, and development of ESG in financial markets. They also consider ESG in the context of the total cost of doing business for a company, which is relevant when examining the dynamics of corporate ESG performance.

Passas (2024) delineates the evolution of ESG, thereby contributing to the elucidation of its conceptual and practical frameworks. The author presents a visual roadmap of ESG evolution with four stages. The initial stage (1950s–1990s) encompasses the emergence and evolution of CSR as a voluntary practice that addresses the ethical obligations of businesses. The second stage (2000s) is characterized by the emergence of ESG, with regulatory alignment and the standardization of selected metrics as its core components. The third stage, mainstream ESG (2010s), is characterized by the gradual integration of ESG principles into decision-making processes. The current stage, ESG 2.0 (2020s), is characterized by its integration into various strategies, the assessment of its results, and a pronounced focus on innovation. This roadmap facilitates a more profound comprehension of the dynamics of ESG as a factor of value creation and its role in business strategies.

The development of the ESG concept has occurred at disparate rates across nations and industries, and the methodologies employed in researching the role of ESG exhibit significant variation. Zatonatska et al. (2024) present a comprehensive analysis of best practices in applying ESG criteria within the energy sector. NABU (2024) expounds on the proactive integration of ESG principles by Ukrainian banking institutions. A salient related issue is the development of an ESG-oriented corporate culture. In particular, Prykazyuk, Pikus, and Lomonosova (2024) propose a concept for forming an ESG-oriented corporate culture in Ukrainian financial institutions. Consequently, when analyzing the dynamics of ESG, it is methodologically sound to consider the specific characteristics of each industry.

One of the actual questions of the ESG framework concerns the link between involvement in ESG activities and financial performance. Narula et al. (2025) presented a wide review of the current state of the literature on ESG investing and studied the impact of ESG ratings on firm performance. The authors attempted to collate scholarly work on ESG investing and considered questions about its impact on the firm. Research is groundbreaking because authors have considered this point from a diverse perspective.

In the present study, the ESG scoring toolkit was utilized, which is a numerical and multifaceted ESG score. There are numerous providers of this service. Darley (2025) delineates the salient features of prominent ESG rating providers, including Fitch, Moody's, MSCI, EcoVadis, LSEG, ISS, CDP, S&P, and FTSE. The primary benefit of the scoring approach in our context is its capacity to provide a quantitative representation of ESG dynamics. This approach facilitates the identification of regularities in ESG dynamics and enables correlation analysis using numerical risk measures. In the course of our research, we employed tools provided by LSEG (formerly Refinitiv).

The utilization of ESG scoring is associated with considerable methodological intricacies from both economic and mathematical standpoints, which must be considered during the interpretation of results. Benuzzi et al. (2025) analyzed LSEG (Refinitiv) scoring values from 2012 to 2021, demonstrating that data aggregation and score normalization through percentile ratings significantly impact the representation of progress in sustainable development. In particular, the expansion of coverage to a greater number of companies has the effect of evaluating firms that have disclosed a limited amount of information. This can result in an artificial overestimation of the scores of the highest-rated companies. The authors propose replacing percentile scoring with a "performance ratio" methodology, contending that it produces more adequate scores and a more accurate reflection of sustainability performance for a given company.

Guerrero and Viteri's (2025) study examined the impact of specific indicators and categories on overall ESG scores, once again focusing on LSEG scores. The primary hypothesis posits that indicators measuring outcomes and impact possess limited influence on overall ESG scores, while indicators reflecting the implementation of activities, policies, or processes exert a greater influence. Their analysis indicates that among the 186 indicators that comprise LSEG ESG scores, outcome and impact indicators account for a mere 18–37% of the total, with the remaining contribution stemming from process and policy indicators. This suggests that companies can prioritize the reporting of information. Outcome and impact indicators are less susceptible to this issue because they assess tangible progress that is more difficult to manipulate.

The analysis of investment risk dynamics encompasses a wide range of approaches, and risk measurement can rely on both classic and advanced risk measures. Busu (2002) presents an overview of the evolution of investment risks and explores different modifications of their measurement and management. A fundamental element of this research is the analysis of mathematical tools for the evaluation of investment risk problems in real-world contexts. Kaminskyi, Butylo, and Nehrey (2021) have developed an integrated approach to risk assessment based on eight conceptual frameworks. These approaches consider risk estimation through volatility, losses in adverse situations, asymmetry, sensitivity, interdependency, and the coupling of risk and return. Furthermore, they assess risk evaluation within the framework of long-term memory in return time series and liquidity risk. Kaminskyi, Baiura, and Nehrey (2022) investigated the risk-return correspondence in an ESG investing strategy during the pandemic, comparing risk estimates before, during, and after the COVID-19 shock and revealing risk differences depending on ESG level.

The present study focuses on large US companies. The initial pertinent body of literature pertains to the correlation between ESG factors and financial performance. The following publication is hereby noted: Lunawat, Elmarzouky, and Shohaieb (2025) examined the impact of ESG factors on the financial performance of publicly traded US companies from 2013 to 2023. The researchers employed data from 386 companies comprising the S&P 500 index, as well as over four thousand company-year observations. Regression models are employed to estimate the association between Environmental, Social, and Governance (ESG) scores and two financial indicators: return on assets (ROA) and Tobin's . The findings reveal a modest link with ROA but a relatively strong relationship with Tobin's Q, suggesting that ESG practices are connected to firms' long-term market value.

The second strand encompasses publications addressing attitudes toward ESG development and the frequency of changes in ESG-related policies and practices. Smetana (2021) delineates numerous state initiatives in the United States pertaining to ESG, observing that "US investors should be prepared for a considerably augmented focus and prioritization of ESG policies in the forthcoming months and years". Concurrently, Janknecht (2025) examines sustainability-related regulatory changes in the US in 2025, including the country's withdrawal from specific international agreements in this domain. The new administration rejected and denounced the Sustainable Development Goals and the UN's Agenda 2030, and a number of other anti-ESG measures were implemented. Media outlets such as Yahoo have characterized the United States as the "epicenter" of the mounting anti-ESG movement. This movement has also engendered opportunities by increasing demand for consulting services in this evolving landscape. A comprehensive review of the extant US literature reveals multidirectional trends in ESG that are subject to change over time.

Saci and Khalifa's (2025) review offers a comprehensive examination of research studies, reports, and articles from 2013 to 2024 concerning the evolving importance, trends, and developments of ESG in the European Union. Their analysis reveals discernible discrepancies between ESG development in the EU and in the US.

Methods

A variety of methodological approaches were implemented to address the formulated scientific tasks. The initial issue regards the selection of companies for analysis. Given the study's focus on the American market, a specific US stock index was selected, and the companies included in its index basket were used. The Dow Jones Industrial Average (DJIA) was selected as the index of interest. DJIA comprises 30 large industrial enterprises listed on the US stock exchange. A total of 30 companies have ESG estimation data available from 2019 onwards. While this set does not encompass the entire US market, it provides a consistent and analyzable sample for study. As an alternative, we considered the S&P 500 index, which includes the largest capitalized companies. However, aggregating ESG data for 500 companies over an adequately extensive historical period proved to be a formidable challenge, primarily because not all companies within the index possess long-term ESG scores. Therefore, for our study, the 30 DJIA companies constitute an acceptable sample for addressing the research tasks.

ESG scoring is a complex evaluation process that integrates a substantial volume of company information, particularly reported data, into numerical scores. A multitude of entities that provide ESG scoring services are currently operating within the market. Following an in-depth evaluation of the available products, LSEG ESG Scores were identified as the optimal solution. In our estimation, the assessments are meticulously designed to objectively and transparently evaluate a company's environmental, social, and governance (ESG) performance across ten fundamental themes. These evaluations are grounded in publicly accessible, verifiable data, ensuring a high level of rigour and replicability. The structure of these ten topics, represented by ESG subindices, provided the core measurement toolkit for our research.

Consequently, an analysis of ESG scores was conducted, with the criteria delineated in the subsequent layout (Fig. 1).

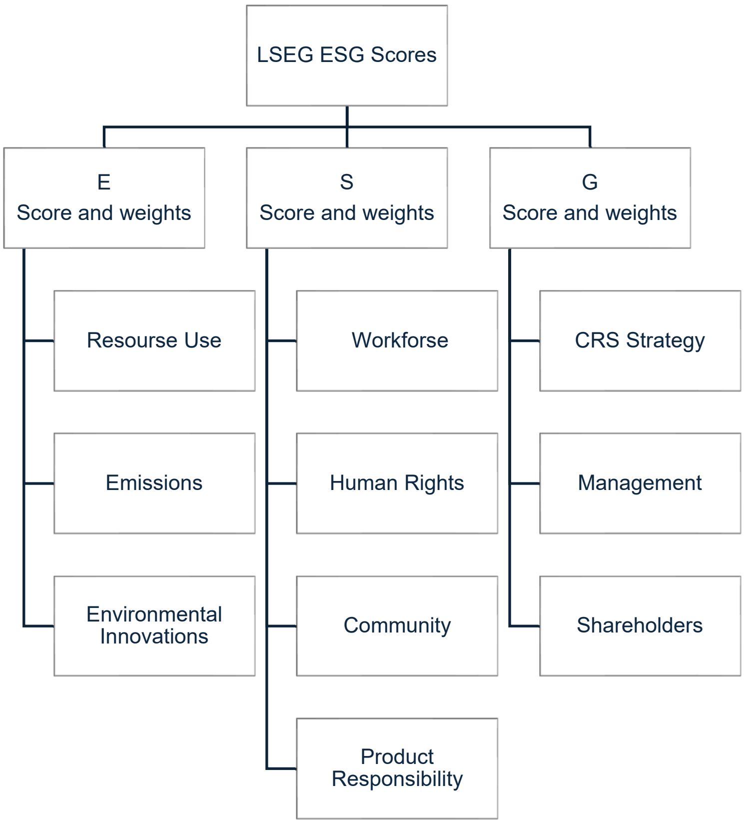

Fig. 1. LSEG ESG scoring system structure

Sourse: the scheme is formed on the basis [https://www.lseg.com/en/data-analytics/sustainable-finance/esg-scores].

The methodological approach to selecting time intervals involved using data from 2019 to 2023 for ESG dynamics (and up to 2024 for risk-return correspondence). The one-year step is indicative of the annual production of ESG scoring values by the provider, who utilizes annual reports in the process. When considering longer historical intervals, specific data challenges arise, including potential data gaps and changes or improvements in scoring methodologies. Concurrently, the designated time period is replete with informative content. In 2020, the COVID-19 pandemic significantly affected the activities of almost all companies, typically leading to a sharp drop in share prices, followed by a strong market recovery in the second half of 2020 and in 2021. In 2021, as previously mentioned, there was a notable increase in discourse surrounding the necessity of ESG strategies within the US market. During the 2022–2023 period, fluctuations in risk levels were evident. At the time of our study, the 2024 ESG scores had not yet been published; however, market price data were available to measure risk. Consequently, the time interval for ESG dynamics analysis was from 2019 to 2023, while for risk-return correspondence it was from 2019 to 2024.

To assess the dynamics of risk-return correspondence, a methodology was employed that integrated indicators of these two components into a unified metric. To this end, we employed the K-ratio logic to assess the correspondence. The K-ratio was first introduced by Lars Kestner in 1996 and subsequently modified (Kestner, 2013). It is a statistical instrument that integrates the growth of returns and the consistency of that growth (the latter being interpreted as a risk indicator). Methodologically, it is suitable for our research because it is based on the logic of the Value-Added Monthly Index, which, in our case, was adapted from monthly to weekly intervals. K-ratios have been employed to evaluate the performance and long-term viability of equities, and they are regarded as a valuable complement to ESG scoring. To this end, we calculated K-ratios with a one-year time lag for the period 2019–2024.

The present study investigated the correlation between ESG in its quantitative representation and risk-return correspondence using correlation analysis. ESG performance is reflected in the values of 10 subindex metrics over 5 years, while companies' K-ratios were calculated for each year. A correlation analysis was conducted on the structured database, with the calculations performed independently for each year.

Results

The application of ESG scores necessitated the calculation of the mean values for the selected 30 companies. The mean values were computed for each of the ten ESG subindices. While individual companies exhibit different absolute scores, the averages capture general trends that are in line with our analytical approach. The primary outcomes are illustrated in Fig. 2. The overarching patterns are discernible, exhibiting a convex shape in the dynamics of nine out of ten subindices. The convex pattern is absent only for the "CSR strategy" subindex (category G). One manifestation of this phenomenon is evident in the relatively pronounced increase in scores observed in 2020 compared to 2019. Specifically, the average increase across the three subindices in category E was 3.4 percent. The mean increase for the four subindices in category S was 2.9 percent, and for the three subindices in category G, it was 4.7 percent. A notable observation is the substantial increase recorded by the "Shareholders" subindex, which exhibited a growth of 10 percent.

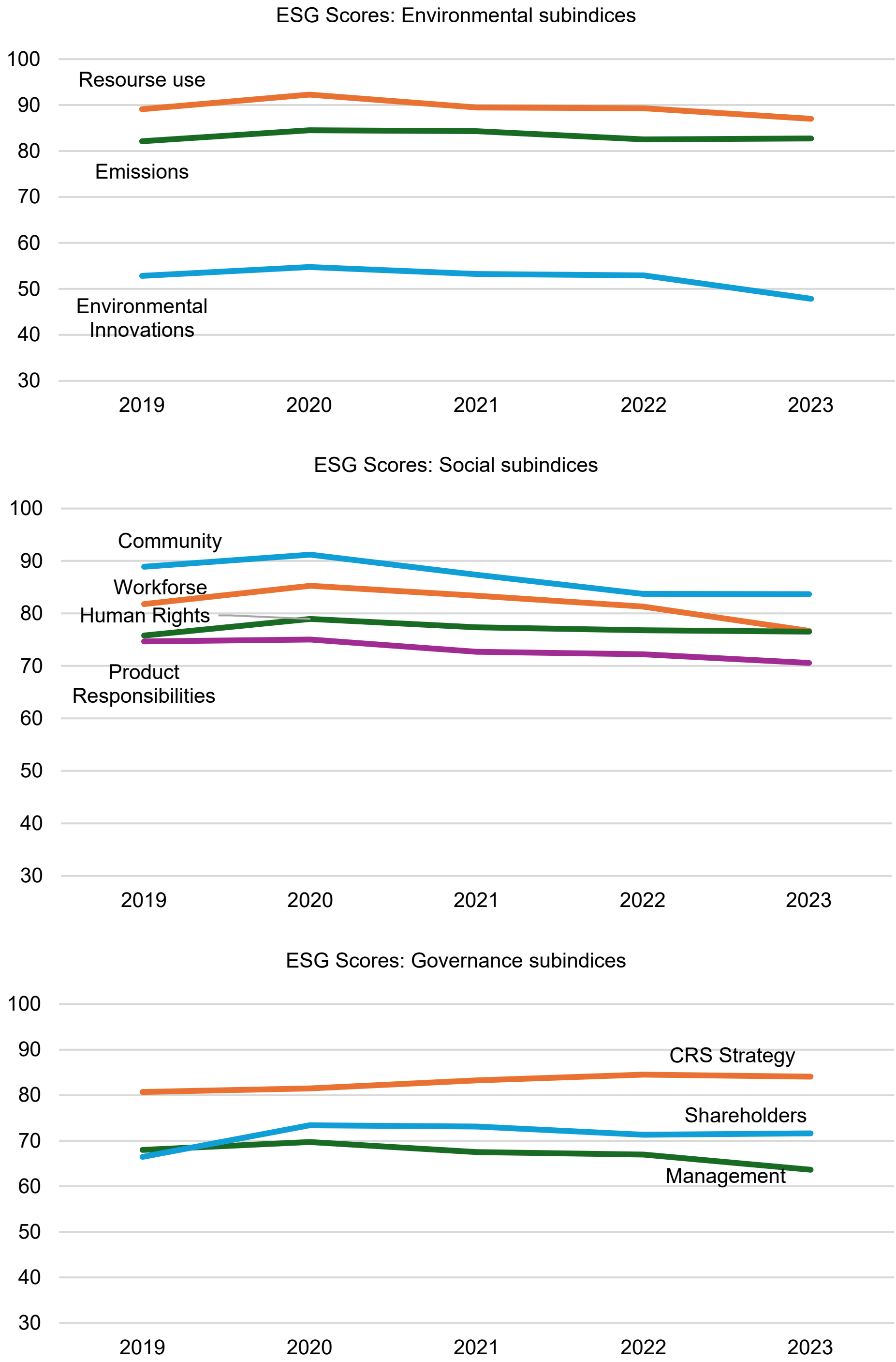

Fig. 2. Dynamics of sub-indices average scores for DJIA index basket companies

However, a shift in trend was observed in 2021. A decline in the mean values was observed. A comparison of the year 2021 with the year 2020 reveals a decrease of 2.0 percent for category E, 2.9 percent for category S, and 0.5 percent for category G. The only subindex that exhibited growth was "CSR strategy." A moderate decline was observed from 2021 to 2023.

A subsequent observation pertains to the disparity in absolute score levels across ESG categories. Within category E, the "Resource use" and "Emissions" subindices have relatively high values (above 80 points), while "Environmental innovation" is substantially lower (around 50 points). In comparison, the subindices within category S demonstrate greater homogeneity in both score levels and dynamics. The behavior exhibited by the subindices in category G appears to be somewhat imbalanced. The term "CSR strategy" has exhibited a gradual upward trend, while the terms "shareholders" and "management" have been experiencing a steady decline since 2021. The discrepancy between "CSR strategy" and the other two G subindices exceeds 10 points.

The analysis of investment risk dynamics reveals high volatility in the risk-return correspondence. To this end, we used Value-Added Weekly Index (VAWI). The temporal framework was delineated on an annual basis to ensure congruence with the annual frequency of ESG scores. As illustrated in Fig. 3, the VAWI volatility exhibited a fluctuating pattern throughout the study period. A comparison of the graphs indicates a marked increase in VAWI in 2019, 2021, and 2024+. In contrast, the high volatility in 2020 is associated with the COVID-19 pandemic. A pronounced decline is evident in 2022, while 2023 is marked by a predominantly horizontal trend. A comprehensive examination of VAWI from 2019 to mid-2025 reveals a substantial overall growth, amounting to nearly 100 percent over the aforementioned period.

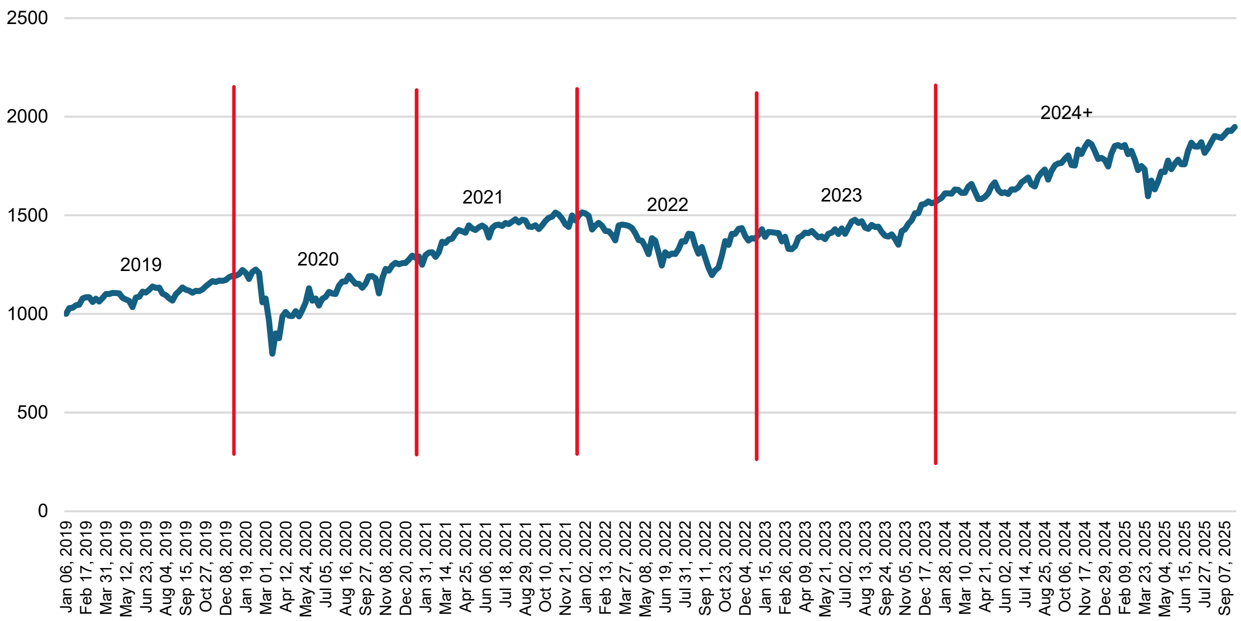

Fig. 3. VAWI for DJIA values. Annual division

A bar chart of the average K-ratio values and their standard deviations (STD), based on K-ratios for the 30 companies, is presented in Fig. 4. The findings of this study suggest a potential misalignment between the examined sample and the established mean ESG scores. Specifically, K-ratios reach their zenith in 2019 and 2024, a phenomenon that contrasts with the convex pattern observed in the ESG scores. Consequently, K-ratio analysis can be utilized as an autonomous instrument to evaluate investments in index basket constituents.

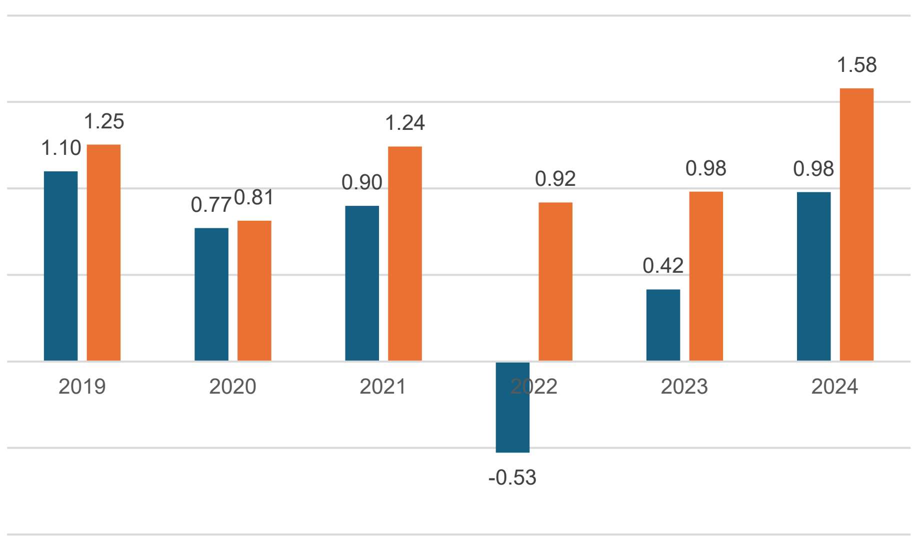

Fig. 4. K-ratios average (left columns) and STD (right columns)

The K-ratio is a quantitative measure of stock returns and VAWI dynamics over time; however, as illustrated in Fig. 4**,** its values exhibit considerable annual variation. The annual dynamics indicate a relatively high level of uncertainty. The K-ratio is a measure of stock performance, with higher values generally indicating higher investment efficiency. The persistent changes in K-ratio values over time reflect shifts in performance and provide a quantitative framework for characterizing this uncertainty.

The K-ratio was utilized to compare the returns and consistency of equities with different ESG scores. In the absence of observed dependence, a preliminary conclusion can be drawn regarding ESG scores: they appear to capture characteristics that are not directly related to market movements. Conversely, the viability of an investment can be evaluated using the K-ratio.

The subsequent phase of the analysis involved examining K-ratio dynamics from a holistic perspective, that is, by considering the changes experienced by all companies collectively. In practice, the trajectories of K-ratio values differ across companies. This comprehensive approach was executed through the utilization of statistical analysis and radar charts over an extended period. The sequence of comparative graphs with one-year increments reveals substantial changes in K-ratios for the DJIA companies, as illustrated in Fig. 5. The overall dynamics of the system appear to follow an alternating sequence of improvements and deteriorations, suggesting a degree of uncertainty regarding its long-term performance.

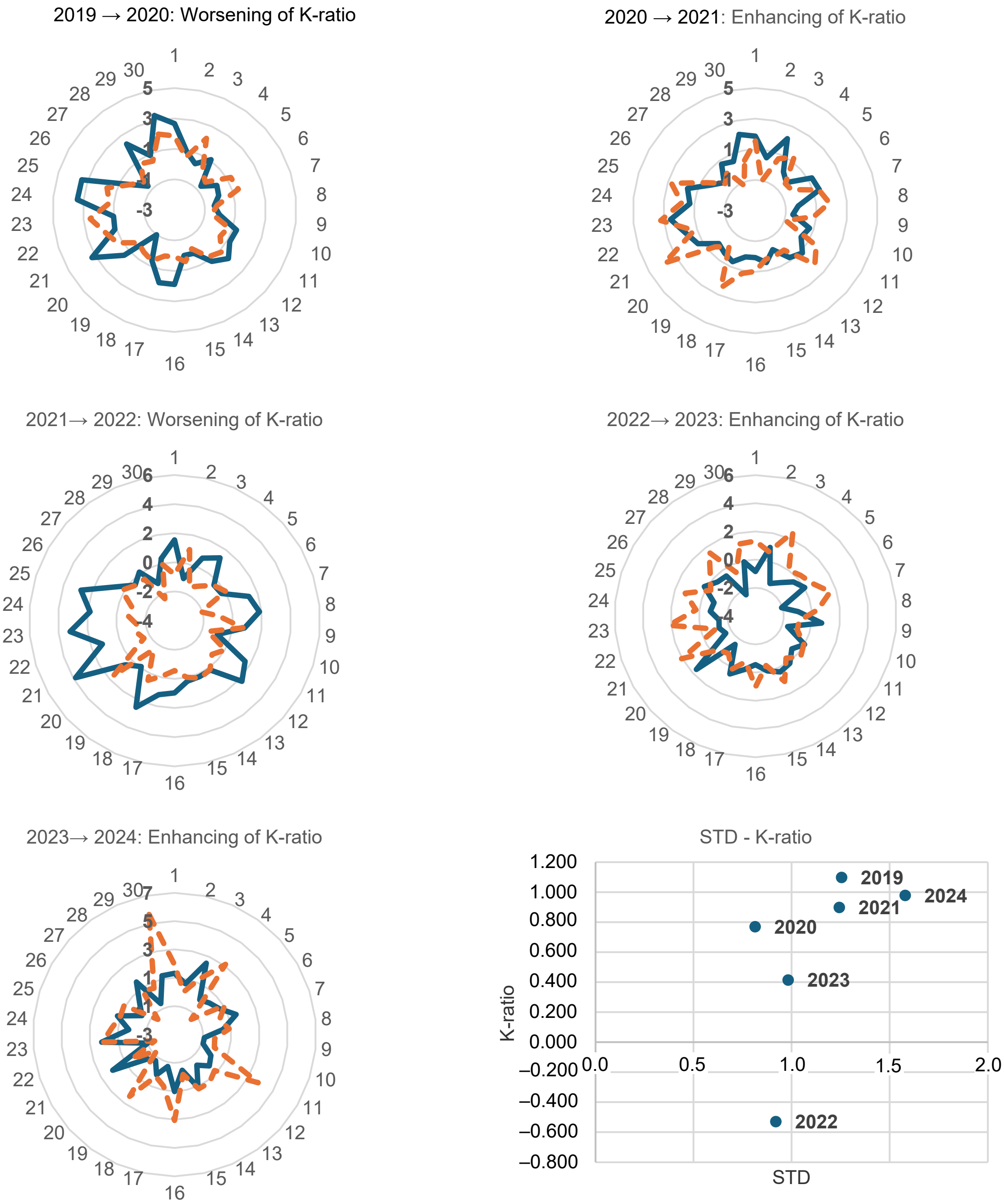

Fig. 5. Dynamic changes of the K-ratios at the company's level

Furthermore, the chart located in the lower right quadrant of Fig. 5 underscores the volatility of these dynamics and proposes a segmentation into two distinct groups. The initial cluster, designated as "2019, 2021, and 2024," manifests a relatively homogeneous nature, as evidenced by the application of the designated indicator. This cluster is distinguished by elevated levels of volatility and K-ratios. The second cluster, which includes 2020, 2022, and 2023, is distinguished by reduced volatility and notably divergent K-ratio levels. The findings of the second task can be encapsulated as such: the dynamics of investment risk, articulated through risk-return correspondence, manifest elevated uncertainty with persistent fluctuations in the direction of movement.

The third task was addressed using correlation analysis. Correlations were estimated between the 10 ESG subindices and the K-ratios. The analysis revealed no statistically significant correlation between ESG scores and risk-return correspondence. Furthermore, correlation coefficients were calculated for the aggregate ESG index and for the E, S, and G pillar scores. The correlation coefficients between these indices and the K-ratios were found to be nearly negligible. This finding suggests an absence of a detectable relationship between ESG dynamics (as reflected by scores) and the dynamics of risk-return correspondence.

Discussion and conclusions

The research findings enable us to draw several conclusions. The ESG concept is undergoing significant development in the USA, playing a pivotal role in the growth and evolution of major corporations. The dynamics of this development over the last five years were assessed using 10 LSEG ESG scores for companies included in the DJIA index basket. The analysis reveals a convex upward pattern in nine subindices (except for the "CSR strategy" subindex), with a peak in 2020. In summary, ESG scores increased in 2020, reached their highest point, and then began to decline. This phenomenon can be explained in two ways. First, companies' reactions to the pandemic, particularly the novel challenges it posed to their operations, can be cited as a primary factor. Second, the proactive support for ESG principles within US government policy during that period can be highlighted as a secondary factor. This support led to the implementation of ESG principles in corporate strategies, thereby influencing the market dynamics. Concurrently, the emergence of the anti-ESG trend in 2021 led to a moderation in the rate of ESG implementation and a decline in performance metrics.

The analysis further reveals nonuniformity in absolute score levels across different characteristics. Specifically, the category designated as "Environmental Innovation" (category E) exhibits comparatively diminished score values.

The investigation of risk-return correspondence was carried out using the K-ratio indicator. The findings indicate a dynamic pattern of change in companies' K-ratios. The average K-ratio over the past five years reflects a high level of uncertainty, with the average value turning negative in 2022. The proposed approach facilitates the tracking of the alternating nature of K-ratio dynamics, whereby periods of growth are succeeded by declines and vice versa.

The analysis of the correlation between ESG score dynamics and K-ratios indicates their mutual independence. The application of correlation analysis yielded coefficients that approximate zero, with deviations in most cases not exceeding 0.1. Consequently, no discernible relationship can be identified between these indicators. This finding indicates that the implementation of ESG does not appear to be reflected in indicators of profitability or investment risk. In our view, the implementation of ESG strategies by companies is characterized by a certain degree of autonomy.

The findings indicate a pervasive degree of uncertainty, as evidenced by the variability in the K-ratio, in conjunction with a discernible pattern in ESG scores that is independent of the dynamics of risk-return correspondence throughout the study period.

Authors' contribution: Andrii Kaminskyi – conceptualization of the research, scientific guidance, preparation of the literature review and survey of theoretical foundations of the research, results analysis, formulation of conclusions, writing the original draft; Maryna Nehrey – development of research methodology, data analysis, writing at the context of critical review and editing; results visualization; Nuno Almeida – conceptualization of the research, development of research methodology, participation in the formation of analytical conclusions from the obtained research results; Ivan Shalenyk – collection and processing of empirical data, participation in the formation of analytical conclusions, visualization of data and technical editing of the text, design of the bibliography and preparation of the final version of the manuscript.

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References

Al Azizah, U., & Haron, R. (2025). A trend analysis of research on environmental, social, and governance (ESG) performance: A bibliometric analysis. *Social Sciences & Humanities Open,* 12, 101670. https://doi.org/10.1016/ j.ssaho.2025.101670

Benuzzi, M., Bax, K., Paterlini, S., & Taufer, E. (2025). Chasing ESG performance: How methodologies shape outcomes. *International Review of Financial Analysis,* 104, 104239. https://doi.org/10.1016/j.irfa.2025.104239

Busu, M. (2022). *Essentials of investment and risk analysis: Theory and applications*. Springer.

Darley, J. (2025). Top 10: ESG ratings providers. *Sustainability Magazine*. https://sustainabilitymag.com/top10/top-10-esg-ratings-providers

García-Amate, A., & Haro de Rosario, A. (2025). Sustainable finance and ESG investing: A theoretical-practical approach from portfolio management. In S. Cruz Rambaud, J. E. Trinidad Segovia, & C. B. García-García (Eds.), *Advances in quantitative methods for economics and business*. Springer. https://doi.org/10.1007/978-3-031-84782-0_9

GlobalData. (2025). *Strategic intelligence: The anti-ESG movement*. https://www.globaldata.com/store/report/anti-esg-movement-theme-analysis/

Guerrero, S., & Viteri, J. (2025). What are environmental, social, and governance scores measuring? The role of outcome and impact indicators in ESG scores. *Finance Research Letters,* 72, 106529. https://doi.org/ 10.1016/j.frl.2024.106529

Janknecht, H. (2025). ESG in the US: What comes next? *Compliance & Risks*. https://www.complianceandrisks.com/blog/esg-in-the-us-what-comes-next/

Kaminskyi, A., Butylo, D., & Nehrey, M. (2021). Integrated approach for risk assessment of alternative investment. *International Journal of Risk Assessment and Management,* 24(2-4), 156–177. https://doi.org/10.1504/ IJRAM.2021.126413

Kaminskyi, A., Baiura, D., & Nehrey, M. (2022). ESG investing strategy through COVID-19 turmoil: ETF-based comparative analysis of risk-return correspondence. *Intellectual Economics,* 16(2). https://doi.org/10.13165/IE-22-16-2-06

Kestner, L. N. (2013). *(Re)introducing the K-ratio. SSRN*. https://doi.org/ 10.2139/ssrn.2230949

Lewis, I. (2025). *European investors upbeat on impact investing, despite US concerns.* Impact Investor. https://impact-investor.com/european-investors-upbeat-on-impact-investing-despite-us-concerns/

Lunawat, R. M., Elmarzouky, M., & Shohaieb, D. (2025). Integrating environmental, social, and governance (ESG) factors into the investment returns of American companies. *Sustainability*, 17, 8522. https://doi.org/10.3390/ su17198522

Lykkesfeldt, P., & Kjaergaard, L. L. (2022). The origin of ESG. In *Investor relations and ESG reporting in a regulatory perspective* (pp. 245–248). Springer. https://doi.org/10.1007/978-3-031-05800-4

Mihail, B. A., Dumitrescu, D., Serban, D., Micu, C. D., & Lobda, A. (2021). The role of investor relations and good corporate governance on firm performance in the case of the companies listed on the Bucharest Stock Exchange. *Journal of Risk and Financial Management,* 14, 569. https://doi.org/10.3390/ jrfm14120569

NABU. (2024). *Ukrainian banks actively implement ESG principles: Summary of the NABU, NBU, and World Bank meeting* [In Ukrainian]. [НАБУ (2024). *Українські банки активно впроваджують принципи ESG: підсумки зустрічі НАБУ, НБУ та Світового банку*].

https://nabu.ua/ua/ukrayinski-banki-aktivno-vprovadzhuyut-printsipi-esg-pidsumki-zustrichi-nabu-nbu.html

Narula, R., Rao, P., Kumar, S., & Paltrinieri, A. (2025). ESG investing and firm performance: Retrospections of past and reflections of future. *Corporate Social Responsibility and Environmental Management,* 32(1), 1096–1121. https://doi.org/10.1002/csr.2982

Passas, I. (2024). The evolution of ESG: From CSR to ESG 2.0. *Encyclopedia,* 4, 1711–1720. https://doi.org/10.3390/encyclopedia4040112

Prykazyuk, N., Pikus, R., & Lomonosova, L. (2024). The concept of developing an ESG-oriented corporate culture in financial institutions of Ukraine. *Bulletin of Taras Shevchenko National University of Kyiv,* 2(225), 61–68 [in Ukrainian]. [Приказюк, Н., Пікус, Р., & Ломоносова, Л. (2024). Концепція розвитку ESG-орієнтованої корпоративної культури у фінансових установах україни. *Вісник Київського національного університету імені Тараса Шевченка. Економіка*, 2 (225), 61–68]. https://doi.org/10.17721/1728-2667.2024/225-2/6

Saci, K., & Khalifa, S. (2025). Unveiling ESG dynamics: Lessons from their impact on sustainable business performance in the European Union. In D. Berkouk, U. Chatterjee, T. A. K. Bouzir, & I. B. Dhaou (Eds.), *Proceedings of the 1st International Conference on Creativity, Technology, and Sustainability (CCTS 2024). Proceedings in technology transfer*. Springer. https://doi.org/10.1007/978-981-97-8588-9_30

Smetana, S. (2021). *ESG and the Biden presidency.* Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2021/02/19/esg-and-the-biden-presidency/

Zatonatska, T., Soboliev, O., Zatonatskiy, D., Dluhopolska, T., Rutkowski, M., & Rak, N. (2024). A comprehensive analysis of the best practices in applying environmental, social, and governance criteria within the energy sector. *Energies,* 17(12), 2950. https://doi.org/10.3390/en17122950

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ДИНАМІКА ЕФЕКТИВНОСТІ ESG ТА СПІВВІДНОШЕННЯ РИЗИК-ДОХОДНІСТЬ ДЛЯ ВЕЛИКИХ КОМПАНІЙ США: ЕМПІРИЧНИЙ АНАЛІЗ ІНДЕКСНОГО КОШИКА DJIA

Вступ. ***Законодавчі та нормативні зміни змінюють ландшафт екологічних, соціальних та управлінських принципів (ESG). Це спонукає компанії переглядати свої зобов'язання та впроваджувати нові стратегії розвитку бізнесу, які відповідають сталому розвитку. Водночас певні "анти-ESG" тенденції, насамперед у США, створюють невизначеність щодо динаміки ефективності ESG, і динаміка співвідношення "ризик-доходність" також виглядає нестабільною. Такий розвиток подій мотивував мету дослідження: вивчити динаміку ESG та співвідношення ризик-доходність з 2019 по 2024 рр.***

Ця стаття має на меті представити результати щодо динаміки 10 субіндексів ESG та показника К-співвідношення для найбільших компаній США з 2019 по 2024 рр. Ми також проаналізували гіпотезу щодо відповідності між показниками ESG та співвідношеннями інвестиційного ризику та доходності.

Методи. ***Використані методи дослідження включали фактичний і порівняльний аналіз, статистичні методи, оцінювання кореляції, вимірювання ризику та доходності, синтез і дедукцію.***

Результати. ***Ми оцінили динаміку субіндексів для 30 компаній США з індексного кошика Dow Jones Industrial Average (DJIA) за допомогою статистичного аналізу балів ESG. Субіндекси демонстрували опуклі догори висхідні траєкторії, які досягли найвищих значень у рік, коли почалася пандемія COVID-19. Аналіз співвідношення ризик-доходність з 2019 по 2024 рр. виявив постійні та значні зміни у значеннях цього співвідношення. Статистичний аналіз зв'язку між балами ESG і співвідношеннями ризику та доходності показав, що чіткої кореляції між цими двома компонентами немає. Отже, можна зробити висновок, що ці два фактори мають різну динаміку і що немає чіткого зв'язку між ефективністю ESG і результатами ринкового співвідношення між ризиком і доходністю.***

Висновки. ***Принципи ESG стають важливою складовою сталого розвитку бізнесу; однак цей процес залишається багатогранним і складним для великих компаній. Упровадження систем оцінювання ESG кількома глобальними рейтинговими агентствами дає змогу ідентифікувати й аналізувати числові закономірності цього розвитку. Поточні дослідження зосереджено на аналізі впливу звітності ESG на корпоративні фінансові й інвестиційні показники. Виявлення таких закономірностей покращить наше розуміння ролі та значення ESG у цілісному аналізі корпоративного розвитку.***

Ключові слова: ***екологічна, соціальна й управлінська звітність, ESG-скоринг, співвідношення ризик-доходність, К-співвідношення, кореляційний аналіз.***

Автори заявляють про відсутність конфлікту інтересів. Спонсори не брали участі в розробленні дослідження; у зборі, аналізі чи інтерпретації даних; у написанні рукопису; в рішенні про публікацію результатів.

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