

# Slow-motion market: The lagging impact of ESG news on Romanian investors' behavior

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**Abstract:** This study examines the impact of ESG news sentiment on Romanian stock prices from 2019 to 2023, highlighting gaps in how an emerging market processes ESG-related information. The authors collected ESG-related web content through automated web scraping followed by manual data validation. Sentiment analysis was conducted in Python using the VADER model, and the results were linked to historical stock prices using regression analysis. The analysis revealed a delayed market response, with no significant effect on day  $t+1$ , but significant changes on days  $t+2$  and  $t+3$ . Positive ESG news was linked to gradual increases in stock returns and reductions in trading volumes. The findings indicate inefficiencies in ESG information processing, highlight potential arbitrage opportunities, and underscore the need for better ESG disclosures and greater investor engagement.

**Keywords:** ESG News, Web Scraping, Bucharest Stock Exchange, Emerging Market, Sentiment Scoring, Impact Investing, ESG Performance.

## Piața slow-motion: impactul întârziat al știrilor ESG asupra comportamentului investitorilor români

**Rezumat:** Acest studiu examinează impactul sentimentului știrilor ESG asupra prețurilor acțiunilor românești în perioada 2019–2023, evidențiind lacunele existente în modul în care o piață emergentă procesează informațiile legate de ESG. Autorii au colectat conținut web referitor la ESG prin web scraping automat, urmat de validare manuală a datelor. Analiza sentimentului a fost realizată în Python utilizând modelul VADER, iar rezultatele au fost corelate cu prețurile istorice ale acțiunilor prin analiză de regresie. Analiza a relevat un răspuns întârziat al pieței, fără efect semnificativ în ziua  $t+1$ , dar cu modificări semnificative în zilele  $t+2$  și  $t+3$ . Știrile ESG pozitive au fost asociate cu creșteri treptate ale randamentelor acțiunilor și reduceri ale volumelor de tranzacționare. Constatările indică ineficiențe în procesarea informațiilor ESG, evidențiază potențiale oportunități de arbitraj și subliniază necesitatea unor dezvăluiri ESG mai bune și a unei implicări mai mari din partea investitorilor.

**Cuvinte-cheie:** știri ESG, web scraping, Bursa de Valori București, piață emergentă, scor de sentiment, investiții cu impact, performanță ESG.

### 1. Introduction

At its core, ESG investing, or impact investing, is simple: investors place their money where their values lie. As more individuals recognize that our planet is in trouble, they demand that companies act to reduce their carbon footprint, utilize renewable energy sources, and ensure their supply chains do not harm the environment (Dai, 2020; Eliwa, Aboud & Saleh, 2021). However, ESG is about more than just saving the planet. Investors who focus on ESG want businesses to pay employees fairly and actively support their communities (Landi & Sciarelli, 2019; Mobius & Ali, 2021). These efforts help create workplaces (and a world) that are more equitable for everyone (Landi & Sciarelli, 2019; Mobius & Ali, 2021). Good corporate governance is not just about ticking boxes, but rather about making sure companies are truly responsible for what they do (Kotsantonis & Serafim, 2019; Pinney, Lawrence & Lau, 2021). ESG investors also examine how companies are (Matos, Barros & Sarmiento, 2020; Tripathi & Kaur, 2020). Are they run by honest leaders who take

responsibility for their decisions? Because, in the end, good governance means more than playing by the rules. It's about doing what's right, especially when no one is watching. Quixotic? Perhaps. But the numbers don't lie: in 2022, global ESG assets under management reached \$30 trillion, with projections of \$40 trillion by 2030 (Bloomberg, 2024). Europe leads in ESG investments at \$14 trillion, followed by the U.S. at \$8 trillion, and Japan, which has seen 50% growth, totaling \$4 trillion (Bloomberg, 2024).

Timely information and news serve as the “universal currency” guiding ESG investors, and digital data-processing tools (from real-time analytics to machine-learning models), that allow them to react swiftly and make evidence-based decisions. Today's markets change quickly, so it is important to use data-driven approaches to interpret and leverage ESG news and not to simply monitor (Serafeim & Yoon, 2023; Yin, Li & Su, 2023; Wong & Zhang, 2022; Orpiszewski & Thompson, 2025). These methods can shape how investors make decisions, influence stock prices, and affect market trends (Serafeim & Yoon, 2023; Yin, Li & Su, 2023; Wong & Zhang, 2022; Orpiszewski & Thompson, 2025). Learning how ESG news affects investor behavior and market dynamics is especially useful now, as more Romanian companies adopt international ESG standards (Serafeim & Yoon, 2023; Yin, Li & Su, 2023; Wong & Zhang, 2022; Orpiszewski & Thompson, 2025).

ESG may be a global megatrend, and ESG news informs investors, but the authors acknowledge that ESG news is only one of the several factors influencing the short-term price volatility (Capelle-Blancard et al., 2022).

A constant flow of diverse information beyond ESG news moves markets (Raimo, Vitolla & Rubino, 2021). News on earnings reports, sector shocks, political events, tax changes, and economic uncertainty can all create market reactions (Raimo, Vitolla & Rubino, 2021). These factors can overshadow or interact with the ESG sentiment, making market movements harder to interpret (Raimo, Vitolla & Rubino, 2021). Market reactions also depend on the share ownership and the amount of freely traded stock (Lin, Hung & Liu, 2023). The Romanian stock market is dominated by institutional investors, whose trading activity and ownership concentration play a much larger role in shaping price movements than that of the retail participants (Tudor, 2021). This study focuses primarily on how ESG sentiment affects stock prices. However, other factors also influence price movements, such as a company's financial performance, regulations, and global economic trends (Christensen, Serafeim & Sikochi, 2022). These are not covered in the present analysis. This paper is structured as follows: Section 1 reviews the relevant literature on ESG news, sentiment analysis, and investor behavior in emerging markets. Section 2 describes the research methodology, detailing the data collection process, sentiment evaluation, and regression design. Section 3 presents the empirical results on stock returns and trading volume. Section 4 interprets these findings within the broader context of market efficiency and ESG integration. Finally, Section 5 concludes by summarizing the main contributions, outlining the study's limitations, and suggesting directions for future research.

## **2. State of the art on the influence of ESG news**

Previous studies have established that ESG news influences stock prices but often overlook emerging markets like Romania, where unique socio-economic factors and regulatory environments shape these dynamics. The authors' review of the 1,907 ESG-related news articles in Romania shows that the legacy of state ownership and ongoing privatization can create governance challenges and conflicts of interest. The dependence on the state aid and subsidies in certain industries may distort market dynamics and foster dependencies. At the same time, the concentration of ownership and control among listed companies frequently leads to governance issues and concerns for minority shareholders. The evolving regulatory frameworks surrounding ESG disclosures and sustainable finance differ from those of more mature markets. The energy and utilities sectors play a significant role in addressing environmental concerns. Regional economic disparities and the social impact of corporate actions in smaller communities add a new dimension to the relationship between news events and stock price movements. Together, these factors create a unique context that influences

how ESG news affects stock prices in Romania. As such, the impact of ESG sentiment on stock prices requires more targeted research. This study addresses the lack of ESG information in the Romanian capital market, which contrasts with the established ESG practices in mature markets. Global markets have advanced ESG implementation, but the Romanian market is slower to adopt ESG. This was translated into a unique scenario in which the authors analyzed ESG integration in a post-communist, emerging market. Given Romania's evolving regulations and its emerging market status, how does ESG news sentiment influence the stock prices of companies listed on the Bucharest Stock Exchange? This study aims to clarify whether Romanian investors consider ESG factors in their strategies or focus solely on financial returns.

Romania is an emerging market that is characterized by thin liquidity, wide bid–ask spreads, and a strong reliance on market makers, which affects the speed at which new information is reflected in prices (Tudor, 2021). Liquidity providers account for a large share of the trading activity in markets with low retail participation, meaning that trading volumes may reflect market-making operations rather than genuine investor sentiment (Hoepner et al., 2025). In such markets, news (whether ESG-related or not) tends to be absorbed more slowly, leading to delayed or muted price adjustments (Krueger, Sautner & Tang, 2024). This helps explain why ESG reactions in emerging markets often differ from those in more efficient, high-liquidity environments (Krueger, Sautner & Tang, 2024). Stock market reactions to ESG information also depend on firms' ownership structures (Lin, Hung & Liu, 2023). Companies that have concentrated ownership, significant state involvement, or dominant institutional investors can often have distinct volatility patterns (Raimo, Vitolla & Rubino, 2021). For example, price changes can be driven by a small number of influential shareholders rather than by dispersed retail trading (Raimo, Vitolla & Rubino, 2021). In global markets, ownership concentration and insider holdings have the most impact on both the magnitude and timing of the reactions to ESG disclosures (Lin, Hung & Liu, 2023).

In Romania, free float is limited, and institutional investors account for a large share of market activity, so these structural characteristics may either strengthen or weaken the observed impact of ESG sentiment (Tudor, 2021). As such, financial fundamentals remain the main determinant of stock prices (McQueen & Roley, 2019). Events such as earnings releases, sector announcements, policy changes, and macroeconomic shifts typically generate stronger and faster price reactions than ESG news (Capelle-Blancard et al., 2022). Recent research shows that ESG signals tend to interact with fundamental information rather than replace it as the main driver of returns (Hu et al., 2025). Therefore, isolating ESG sentiment without considering these other factors provides a useful yet incomplete picture of short-term volatility (Negi et al., 2025).

Previous studies on how ESG news influences stock prices and investor responses have yielded mixed results. Factors such as industry type (Orpizewski & Thompson, 2025), the financial materiality of ESG incidents (Serafeim & Yoon, 2023), geographical differences in ESG interpretations (De Vincentiis, 2024), the nature of the news and whether it is expected or not (Serafeim & Yoon, 2023), as well as the timing of the news (Serafeim & Yoon, 2023), all influence stock performance. Investors react differently to ESG news depending on a company's industry (Orpizewski & Thompson, 2025). Companies with environmental risks tend to respond more to ESG changes, while those in controversial industries may be less affected by negative news (Orpizewski & Thompson, 2025). This shows the financial impact on companies that deal with environmental or natural resource issues when ESG issues arise (Orpizewski & Thompson, 2025). On the other hand, companies in industries such as adult entertainment, firearms, or tobacco face different expectations, and investors may already have accounted for these risks in their decisions (Orpizewski & Thompson, 2025). Investors who invest in these industries typically recognize the reputational and legal risks involved (Orpizewski & Thompson, 2025). They often expect higher returns, called the “vice premium,” to compensate for the added challenges of ethical concerns, regulations, and public scrutiny (Orpizewski & Thompson, 2025). Though both types of companies are affected by ESG news, the reasons behind their reactions are very different. For companies with environmental risks, reacting quickly shows that the market is trying to avoid possible financial losses. In controversial industries, a steady response to bad news may indicate that investors are used to these risks and have already factored them in. These different reactions show why it is important to have strategies that fit each industry when addressing ESG risks and identifying new opportunities.

Materiality plays a key role in how ESG news influences markets (Serafeim & Yoon, 2023; Orpizewski & Thompson, 2025). Serafeim and Yoon (2021) show that markets mostly react to ESG news that is financially important, especially when it is positive, widely reported, and concerns social issues such as labor or community relations (Serafeim & Yoon, 2023). Orpizewski (2024) finds that these events can cause stock prices to fall and volatility to rise, but without more short selling, suggesting investors may be unsure if the drop will last or still trust the company's long-term value. Market reactions also differ by region: negative ESG news has a bigger effect in Europe, while positive news stands out in the U.S.; in Asia-Pacific, ESG news has little connection with excess returns (De Vincentiis, 2024). In Africa, good ESG news leads to stronger stock price gains, showing that sustainability is valued differently across regions (Nyakurukwa & Seetharam, 2023). Serafeim and Yoon (2021) also note that markets respond more to surprising ESG news (when it is unexpected based on previous ratings), especially if it is financially important and widely covered. These results highlight how surprise and relevance drive market reactions to ESG news.

A strong ESG reputation can protect companies from some of the negative effects of bad events, especially those related to governance (Dorfleitner & Zhang, 2022; Orpizewski & Thompson, 2025). Firms with high ESG scores usually experience smaller drops in stock price, while those with weaker ESG records might see bigger gains from good news. These patterns matter for both investors and company leaders. Investors may reduce their exposure by focusing on companies with strong ESG profiles, leading to more stable returns. Even so, identifying companies with low ESG scores that could benefit from positive developments might offer new opportunities. For companies, strong ESG practices help manage risks and make the business more attractive to investors and customers. This “reservoir of goodwill” mitigates immediate adverse effects. Disclosure practices also influence market dynamics. Managers often withhold negative ESG information to maintain stability, especially during periods of high volatility (De Vincentiis, 2024). De Vincentiis (2024) notes that elevated stock price fluctuations reduce the likelihood of disclosing unfavorable ESG news. Vu et al.’s research shows that market reactions to ESG news are typically short-lived, with initial effects reversing within a month (Vu et al., 2024). Using a rolling portfolio approach, Vu et al. find that ESG news does not have a lasting impact on U.S. stock returns, suggesting investors fail to integrate it into long-term valuations (Vu et al., 2024). Nonetheless, firms with robust ESG credentials tend to achieve greater stability and sustained performance over time (Gillan et al., 2021; Barko et al., 2022; Yin, Li & Su, 2023; Moalla & Dammak, 2023; Nyakurukwa & Seetharam, 2023; Dorfleitner & Zhang, 2022; Orpizewski & Thompson, 2025). Overall, the studies reveal a consistent pattern: ESG news drives short-term volatility but lacks enduring influence on stock prices. Regional and cultural factors shape investor responses, and the absence of short selling during negative events suggests ESG information is not fully embedded in investment strategies. The complexity of disclosure and reaction dynamics underscores the need for further research into ESG perceptions across markets and industries.

The Bucharest Stock Exchange (BSE) reopened in 1995 following Romania’s transition to a market economy (Financial Newspaper, 2020). In 2015, the BSE launched the AeRO market to improve capital access for SMEs and bond (Bucharest Stock Exchange, 2015; Bucharest Stock Exchange, 2020). Romania’s upgrade to emerging market status by FTSE Russell in 2020 boosted foreign investment (Bucharest Stock Exchange, 2020), yet overall market development has lagged behind regional peers due to delayed privatization, weak OTC growth, and investor distrust from past scandals (Dragotă & Oprea, 2014; Bucharest Stock Exchange, 2024). In 2022, Romania introduced ESG reporting guidelines for BSE-listed companies, developed with support from the European Bank for Reconstruction and (Khan, Serafeim & Yoon, 2016; Bucharest Stock Exchange, 2022). These align with EU regulations such as CSRD, SFDR, and the EU Taxonomy (Khan, Serafeim & Yoon, 2016; Bucharest Stock Exchange, 2022). Firms with over 500 employees must disclose ESG-related information in annual reports, including business models, policies, environmental and social practices, human rights, anti-corruption efforts, risks, and KPIs (Khan, Serafeim & Yoon, 2016; Bucharest Stock Exchange, 2022). Overall, the BSE’s evolution reflects Romania’s growing commitment to sustainability and international standards. The authors’ study examines how ESG news influences market behavior, emphasizing the role of informed decision-making in financial analysis.

### 3. Research methodology

This study examines the influence of ESG-related news on short-term stock returns and trading volume in Romania's regulated market between 2019 and 2023. To fill the gap in ESG research focused on Eastern Europe, the authors developed a clear process that used web scraping, sentiment analysis, and statistical modeling. They gathered ESG news articles using Python APIs such as Gnews.io and NewsAPI.org. After, the authors used BeautifulSoup and Selenium to extract and clean the text. The authors selected 100 ESG-related keywords from academic and industry sources to organize the articles into the environmental, social, and governance pillars. The dataset included each article's title, date, and URL and ensured a consistent formatting. The dataset also included stock prices for 85 Romanian companies (the regulated side of BSE listed firms), which were retrieved using the yfinance Python package. This included daily returns and trading volumes. The study matched the stock data with ESG news dates to study the effects of ESG events.

The authors used the VADER model for sentiment analysis. The choice of VADER is supported by recent research applying it to ESG news sentiment (Pikatz-Gorrotxategi, 2024). More specifically, VADER was selected for sentiment analysis because it performs well on short, informal, and headline-style texts, which characterize most ESG news in the Romanian context. VADER handles polarity, intensity, and contextual sentiment markers (such as negations or amplifiers) without needing a large Romanian-language training dataset, which is not available for ESG-specific content. Using news-based sentiment is also appropriate in an emerging market like Romania, where formal ESG reporting is limited and investors rely heavily on media coverage to form expectations. For these reasons, VADER offers a reliable and consistent way to quantify the ESG tone across the large dataset collected. By running VADER in Python, the authors obtained sentiment scores for each article, which indicated the direction and strength of the sentiment. The researchers combined these scores with stock data to create a single dataset for a regression analysis. Regression models were built by using the statsmodels library in Python. The study had control variables such as previous returns and trading volume to focus on the effect of the ESG news tone. The authors analyzed the time-lag effects by examining abnormal returns on the first three days after publication. The research also required manual checks and data updates to confirm missed events and company changes. This approach produced reliable results and provided a method that others can use for ESG events in emerging markets. For a piece of text (article), VADER calculates:

$$compound = normalize\left(\sum_{i=1}^n valence(w_i)\right) \quad (1)$$

where  $w_i$  denotes each token in the text and its corresponding valence, which is then normalized to a value between -1 (most extreme negative) and +1 (most extreme positive).

As mentioned earlier, the authors used the VADER sentiment tool to analyze each ESG news article. The model compares words to a sentiment lexicon and adjusts for punctuation and other factors. Each article received a score from -1 (negative) to +1 (positive), measuring the market sentiment. Next, each sentiment score was assigned to stock data for the same company, resulting in a combined dataset with sentiment scores, dates, company codes, closing prices, and trading volumes. The study measured the impact of the ESG news on the stock prices on the next trading day and tracked changes over the following 3 days. The multivariate linear regression examined how the sentiment affects the stock performance, controlling prior price trends and market conditions. The study focused on two main results: changes in returns and trading volume. This method helped measure the short-term financial impact of the ESG news. The logarithmic stock returns over the next 1, 2, and 3 trading days were calculated using the following formula:

$$r_{t+t} = n \left( \frac{P_{t+k}}{P_{t+k-1}} \right), \quad k = 1, 2, 3 \quad (2)$$

where  $p_{t+k}$  is the adjusted closing price on the day.

The percentage change in the trading volume was calculated using the following formula:

$$\Delta Vol_{t+k} = \frac{Vol_{t+k} - Vol_{t+k-1}}{Vol_{t+k-1}}, \quad k = 1, 2, 3, \quad (3)$$

where  $Vol_{t+k}$  is the trading volume on day  $t+k$ .

The independent variable used was the sentiment score, *Sentiment* which represents the sentiment of the ESG news published on the day  $t$ . The study controlled for additional variables to account for market behavior: the lagged stock return addressed the momentum effects and mean reversion; the lagged trading volume accounted for liquidity and trading activity trends. This study concentrated on isolating the specific impact of the ESG news sentiment on stock returns and trading volumes. While the authors included basic controls like lagged returns and volume, they did not add other well-known volatility drivers. Such drivers include, but are not limited to earnings announcements, sector shocks, regulatory changes, inflation, or ownership structure. The exclusions were due to data limitations and because they fell outside the aim of this analysis. The goal was to examine how investors react to the ESG information on its own, rather than to build a full volatility model.

The authors used two regression models: model 1 tested the effect of the sentiment on stock price movements using the following formula:

$$r_{t+k} = \beta_0 + \beta_1 Sentiment_t + \beta_2 r_t + \beta_e Vol_t + \varepsilon_t, \quad k = 1, 2, 3. \quad (4)$$

The second statistical model tested the effect of the sentiment on trading volume using the following formula:

$$\Delta Vol_{t+k} = \alpha_0 + \alpha_1 Sentiment_t + \alpha_2 r_t + \alpha_3 Vol_t + u_t, \quad k = 1, 2, 3. \quad (5)$$

To ensure robustness, the authors applied multiple statistical tests. The significance tests were conducted using p-values from t-tests to determine whether the sentiment impacts stock returns and trading volume meaningfully. The model fit was assessed through  $R^2$  and adjusted  $R^2$  values, to check for indications on how well the sentiment and control variables explained stock movements. The Durbin-Watson test was used to check for autocorrelation in residuals, ensuring the independence assumption holds. An F-test was conducted to assess the joint significance of the regression coefficients. The Breusch-Pagan test was applied to check for heteroskedasticity, so as to ensure the error terms have constant variance.

## 4. Results

The Romanian capital market is highly concentrated, with the top five companies accounting for 66.64% of the total market capitalization and the top ten representing 81.60%. The market is led by the Utilities and Energy sectors, with the Financial Services close behind. These capital-intensive industries rely on large companies to create most of the value. Although the Industrials sector has the most listed companies, the Utilities and Energy have the largest average company sizes. The Communication Services stand out for having the highest number of employees per company. There is a moderate relationship between a company's market value and its workforce size, but this relationship varies across sectors. Overall, a few large companies in resource-heavy sectors shape the market, while many smaller firms are found in the Industrials and Consumer Cyclical sectors. Of the 85 companies reviewed, the web scraping identified 77 that had relevant ESG articles. Three companies from this group were delisted, and five did not have any pertinent ESG news. In total, the authors analyzed 1,907 articles for sentiment.

In Romania, the selected ESG articles focused mainly on “sustainability,” with 55 mentions, making it the leading theme. “ESG” followed with 28 mentions, reflecting its growing prominence in policy and business discussions. “Renewable energy” was cited six times, while “development” and “green energy” appeared five times each, showing a sustained interest in clean energy topics. “Environmental protection” and “carbon emissions” were each mentioned three times, signaling an

emerging focus on climate change and conservation. “Transparency,” “corporate governance,” and “decarbonization” appeared twice, suggesting these areas are just beginning to enter the national conversation. The terms “environmental impact,” “energy efficiency,” “social responsibility,” and “anti-corruption” each appeared once. Overall, these findings show that sustainability and clean energy are the dominant topics in the Romanian ESG reporting, while governance and corporate responsibility receive less attention.

Most articles had a positive tone, with an average sentiment score of 0.83. The scores ranged from almost -1 to nearly 1, so while most coverage was optimistic, some articles were strongly negative. The ESG reporting in Romania increased substantially in 2022 and 2023, with almost 700 articles each year. There were fewer articles in earlier years. Five main news outlets - G4Media.ro, stiripesurse.ro, DCNews, iDevice.ro, and Libertatea - published most of these stories. This shows that recent years, and a few key sources, have shaped the national ESG conversation.

The Regional Banks received the most coverage of all industries, making finance a main topic in ESG news. The Financial Services led at the sector level, showing a strong focus on banking. The Capital Markets had the most positive coverage, while the Farm and Heavy Construction Machinery had the most negative one. The Real Estate reporting was mostly positive, showing optimism in that sector. These trends show which industries got the most attention and how journalists reported on them. In contrast, the Consumer Defensive sector had a more negative average sentiment. These findings and examples highlighted the dominance of financial themes and significant sentiment variations by industry and sector, with Capital Markets and Real Estate viewed more positively. In contrast, sectors like Consumer Defensive and industries such as Farm & Heavy Construction Machinery reflected a more negative outlook.

Based on the articles reviewed, ESG topics are increasingly important in the Romanian capital market. Of the 85 listed companies, 77 shared ESG-related news, showing these issues are a key part of corporate communication. Company de-listings suggest governance challenges persist. Sustainability and renewable energy are often mentioned, reflecting strong interest in environmental matters, while governance and decarbonization receive less focus. A review of 1,907 articles shows a generally positive tone (average score: 0.83), though this varies by industry. Capital Markets and Real Estate received the most positive coverage, while Consumer Defensive and Farm and Heavy Construction Machinery received less favorable coverage. Financial topics are central in Romanian ESG discussions, and corporate governance and emissions strategies are not yet widely adopted.

The analysis shows that the Romanian stock market takes time to react to ESG news sentiment, with the strongest effects appearing two or three days after the news is released. On the first day ( $t+1$ ), the investors barely reacted. The ESG sentiment had no meaningful effect on stock returns (coefficient: 0.0028,  $p = 0.117$ ,  $R^2 = 0.001$ ) or trading volume (coefficient: -359.89,  $p = 0.253$ ,  $R^2 = 0.001$ ). This means that the new ESG information was not immediately reflected in the prices or trading activity, which runs counter to what we might expect in a fully efficient market. By the second day ( $t+2$ ), things started to change. The higher ESG sentiment was linked to a small but statistically significant increase in returns (coefficient: 0.0042,  $p = 0.021$ ,  $R^2 = 0.003$ ). The trading volume, on the other hand, dropped as the ESG sentiment rose (coefficient: -111.43,  $p = 0.021$ ,  $R^2 = 0.007$ ). This could mean that a positive ESG news made the investors more confident and less likely to trade on speculation. On the third day ( $t+3$ ), the impact of the ESG sentiment was even clearer. The stock returns showed a stronger positive response (coefficient: 0.0056,  $p = 0.009$ ,  $R^2 = 0.004$ ), and the trading volume continued to decline (coefficient: -63.82,  $p = 0.021$ ,  $R^2 = 0.012$ ). This pattern suggests that the investors need time to process and act on ESG news. The delayed reaction in the Romanian market can also be explained by its structure. On the BSE, market makers and institutional investors dominate the trading, so the changes in volume often reflect liquidity provision rather than shifts in the investor sentiment. Any new information, such as the ESG news, is absorbed into prices more slowly because of the limited free float and low order-book depth. This is in line with the global findings that markets with lower liquidity and higher ownership concentration respond more slowly to ESG disclosures (Cappelle-Blancard et al., 2022). The lagged effects observed in this study are typical of an emerging-market microstructure.

These results show that ESG sentiment influences the Romanian market slowly, not instantly. Traditional financial factors still drive most market changes, as ESG sentiment explains only a small share. The steady drop in the trading volume as the ESG sentiment rises may signal more investor confidence and less speculative trading. This pattern suggests that Romanian investors are still getting used to ESG information and learning how to incorporate it into their decision-making.

The study finds that ESG news does not move Romanian stock prices or trading right away, but its impact becomes noticeable after two or three days. This delay may mean investors need time to react to ESG news. The ongoing decline in trading volume suggests that as ESG news increases, market participants become more cautious. This points to early-stage ESG adoption in Romania and a market that is still adjusting. While the slow response highlights the market's challenges, it also gives early movers an opportunity to benefit from ESG signals. Faster and clearer ESG reporting could help investors and the market respond more quickly. Overall, these findings highlight how ESG trends are taking shape in Romania and why they matter to investors, regulators, and policymakers working toward sustainable finance.

## 5. Conclusions

This study deepens our understanding of how ESG factors are shaping the Romanian capital market. The findings show that ESG topics, especially sustainability and renewable energy, are now central in media coverage and corporate reporting, reflecting a growing interest from both the public and regulators. At the time of the study, 77 of the 85 regulated companies listed on the BSE had ESG-related news reported. This shows the growing importance of these topics for firms operating in emerging markets.

The research reveals that while sectors like Capital Markets and Real Estate show strong engagement with ESG principles, others remain more cautious, and ESG integration progresses unevenly. The gradual effect of ESG sentiment on stock performance points to structural and informational challenges. The market responses appear two to three days after news disclosure. Investors and analysts do not react instantly, which suggests the market is still learning to evaluate and incorporate ESG information into asset pricing. This slow adjustment also creates opportunities for those who act early on ESG signals.

The study acknowledges several limitations. Relying on sentiment scores from news articles may not fully capture the complexity of ESG performance. These scores reflect media discourse rather than the company's actual practices. The short dataset timeframe may not account for longer-term trends, especially as ESG regulations and market behavior evolve rapidly. The research also focuses on trends and correlations without fully exploring the underlying causal mechanisms or the impact of external economic factors. For example, the analysis relies on news-based sentiment scores, which capture how ESG issues are portrayed in the media rather than how companies actually perform. The model does not include several factors that are known to influence volatility (such as earnings announcements, competitor developments, policy changes, or broader economic conditions), which may interact with ESG sentiment. Additionally, the characteristics of the Romanian market, including the strong role of market makers, low free float, and concentrated ownership, can shape both the speed and the size of the responses observed. Lastly, the relatively short time frame the study covered makes it difficult to assess longer-term ESG trends. Future work could expand on this by adding more financial and structural variables and by using more advanced sentiment techniques to build a fuller understanding of ESG's impact.

This research highlights the increasing role of ESG in Romania's capital market and the slow but steady integration of sustainability into financial decision-making. The results underscore the need for clearer ESG disclosures and a more rigorous analysis of how sustainable investing shapes market dynamics. Future studies should track longer time horizons, apply stronger sentiment measures, and consider a wider range of economic factors to better capture the impact of ESG. As investors, companies, and regulators in Romania adapt, they can learn from these patterns to make finance more sustainable and drive long-term market growth.

## Author contributions

Conceptualization: L.P.; Data Curation: B.M.; Supervision: E.M.C.; Validation: L.P. and E.M.C.; Writing—original draft: L.P. Writing—review and editing: L.P. and E.M.C. All authors have read and agreed to the published version of the manuscript.

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