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THE IMPACT OF EU SUSTAINABILITY REGULATIONS ON THE FINANCIAL PERFORMANCE OF EUROPEAN OIL AND GAS COMPANIES

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Abstract
Financial performance (FP) is a subjective yet pivotal measure of how effectively a firm can use its assets from primary business activities to generate revenues and thus maximize value, a core aim within the economic system. FP acts not only as a key indicator of a firm's overall financial health but also as an important criterion for assessing how well a business can adapt to market changes, enhance operational methods, and face potential challenges. This study seeks to understand how sustainability initiatives affect financial performance and whether they facilitate or obstruct the pursuit of value maximization in the corporate sector.
This study aims to explore the impact of Directive 2014/95/EU, which for the first time in Europe mandates the disclosure of non-financial information, on the financial performance of European oil and gas companies listed on Euronext. Employing retrospective analysis and utilizing secondary data sources such as annual reports, the research analyzes how sustainability regulations influence profitability indicators like return on assets (ROA), return on equity (ROE), and return on invested capital (ROIC). The financial data covering five years before and seven years after the directive's implementation is subjected to Wilcoxon Signed-Rank Test analysis using the SPSS software. The purpose of this test is to determine if there are statistically significant differences in financial performance between the periods before and after the implementation of the directive.
Results of the Wilcoxon Signed-Rank Test, applied to multi-year averages over a five-year pre and seven-year post directive period, indicate that the values of these indicators did not change significantly between the two timeframes for oil and gas companies. In this context, the non-financial reporting requirements introduced by the directive did not have a statistically significant impact on the profitability of the analyzed companies.
The limitations of the study include the selection of financial indicators that remains an subjective choice and may not fully capture the broader effects of sustainability related regulations. Additionally, external economic and geopolitical factors affecting the oil and gas sector during the analyzed period were not controlled for and may have influenced financial performance independently of the directive.
Keywords: *financial performance; sustainability; non-financial reporting; regulation; oil and gas industry.*
JEL Classification: M41; M14; Q56; L71.

1. INTRODUCTION

Over the past few decades, expectations regarding corporate social and environmental responsibility have increased significantly within the European Union, driven by public pressures, the evolution of investor requirements and expectations, and the strengthening of the regulatory framework in the corporate sustainability field (European Commission, n.d.). In this context, corporate sustainability has evolved from a best-practice initiative into a formal requirement under European legislation, with a direct impact on business strategies and both financial and non-financial reporting processes. The growing importance of ESG (Environmental, Social, and Governance) criteria in investor decision-making has highlighted this trend making sustainability transparency a key factor in assessing corporate performance (Meynier *et al.,* 2023). The oil and gas industry, known for its significant environmental impact and high exposure to regulatory risks, stands at the center of these pressures, frequently targeted both by emission reduction policies and by criticism concerning the actual transparency of its sustainability efforts (Ishwar and Frode, 2023).

In order to establish a regulatory framework that promotes systematic reporting of non-financial information, the European Union adopted Directive 2014/95/EU, amending Directive 2013/34/EU on financial reporting. This directive introduced, for the first time in Europe, the obligation for large public-interest entities with more than 500 employees to disclose information on their policies, risks, and performance in environmental, social, and governance matters (Envoria, 2022). Directive 2014/95/EU was designed not only to ensure greater transparency for investors, but also to integrate non-financial risks into the overall performance assessments of companies. In sectors with a significant environmental impact, such as oil and gas, the implementation of these requirements has led to substantial adjustments in reporting strategies and internal risk management systems, including the integration of ESG performance indicators into annual reports, the development of internal carbon emission monitoring systems, the implementation of clear climate risk management policies, and the establishment of sustainability committees at the board level (IPIECA, API, IOGP, 2020). At the same time, the literature also highlights potential negative effects of regulation, such as the intensification of compliance formalism, heavier administrative burdens, higher reporting costs, and, implicitly, a diversion from the actual goals of improving sustainability performance (Antonini and Gomez-Conde, 2024).

Considering these circumstances, through this study I aim to examine the impact of Directive 2014/95/EU on the financial performance of European oil and gas companies listed on one of the largest stock exchanges in continental Europe, Euronext. The main objective is to assess the changes in the level of return on assets (ROA), return on equity (ROE), and return on invested capital (ROIC), which are key indicators for evaluating the efficiency of economic resource

utilization. The statistical analysis will be conducted using the Wilcoxon Signed-Rank Test, a method appropriate for comparing the means of dependent samples when the normality assumption is not met (Pallant, 2020).

By focusing on a strategic sector positioned at the intersection of traditional economic performance and emerging sustainability requirements, and by employing a rigorous methodology adapted to the characteristics of the empirical data, the proposed study offers a meaningful contribution both to the literature and to contemporary managerial practices. The findings may provide a deeper understanding of how sustainability regulations influence resource utilization and profitability strategies within a sector exposed to the energy transition.

2. LITERATURE REVIEW

Corporate sustainability is conceptualized as the voluntary integration of social, environmental, and governance concerns into business activities and stakeholder interactions, with the aim of balancing short-term economic objectives with long-term sustainable development considerations (World Commission on Environment and Development, 1987). Over time, corporate sustainability has evolved from a set of ad hoc philanthropic initiatives into a strategic and fundamental dimension of modern corporate governance, becoming a key component in the assessment of long-term organizational risks and opportunities.

The emergence of ESG standards reflects a global trend toward the codification and formalization of non-financial criteria in the analysis of corporate performance. ESG indicators, structured around three fundamental dimensions, environmental protection, social responsibility, and corporate governance, were initially promoted by initiatives such as the Global Reporting Initiative (GRI) (Global Reporting Initiative, 2021) and the Principles for Responsible Investment (PRI) (United Nations, 2006), aiming to establish a unified reference framework for reporting and assessing extra-financial impact. The integration of ESG criteria into investment decision-making processes has accelerated under pressure from institutional investors, regulatory bodies, and public opinion, reflecting a growing recognition that ESG risks are inherently connected to traditional financial risks.

In a context marked by increasing demands for transparency and corporate accountability, non-financial reporting has become an essential tool for companies to legitimize their behavior toward stakeholders and to reduce the informational risks perceived by investors (Meynier *et al.,* 2023). Proper ESG disclosure not only facilitates access to capital and enhances corporate reputation, but also serves as a strategic differentiation mechanism in financial markets that are increasingly sensitive to sustainability issues. From the investors' perspective, non-financial information has become essential in the due diligence process, as it enables a comprehensive assessment not only of economic performance but also of an organization's exposure to environmental, social, and governance risks. This

information facilitates the anticipation of systemic risks and the identification of strategic opportunities, aspects considered critical in the context of the global transition to a sustainable economy (Bell, 2023).

Directive 2014/95/EU was adopted by the European Parliament and the Council of the European Union in October 2014, amending Directive 2013/34/EU concerning the disclosure of non-financial information and diversity information by certain large enterprises and groups. This was the first mandatory legislative framework at the European level for non-financial reporting, aimed at improving corporate transparency, social responsibility, and investor confidence in European financial markets (European Union, 2014). The reporting obligation introduced by the NFRD applies to public-interest entities that exceed the threshold of 500 employees and are either listed on a stock exchange or are credit institutions or insurance companies (Anderson, 2025). According to Article 19a, introduced by Directive 2014/95/EU into Directive 2013/34/EU, the affected companies must include in their management report or in a separate report information on the policies adopted, associated risks, and results achieved in the areas of environmental, social, and governance matters (European Union, 2014).

A defining element of the NFRD Directive is the principle of materiality, according to which organizations must report that information necessary to understand the development, performance, and financial position of the company, as well as the impact of its activities on the environment and society (Eccles *et al.*, 2012). This flexible approach has allowed reporting to be adapted to the specific characteristics of each organization; however, in the absence of clear and uniform standards, it has often led to heterogeneous reporting practices across companies and sectors. Successive assessments conducted by the European Commission have highlighted a number of structural limitations of the NFRD. Among the main issues identified are the lack of comparability between reports, the low level of detail in the information provided, the excessive use of vague formulations, and the difficulties investors face in assessing non-financial risks (Hao *et al.,* 2023).

In line with the objective of this study, which is to analyze the impact of sustainability regulations on the financial performance of companies from the oil and gas sector, Directive 2014/95/EU serves as the reference regulatory framework. The period under analysis, covering five years prior to and seven years following the implementation of the directive, is governed exclusively by the requirements established by the NFRD. Although the Corporate Sustainability Reporting Directive (CSRD) was adopted in December 2022, its applicability begins with the financial year 2024 (Edlinger, n.d.) which is why it does not influence the results of this research. Financial performance is a fundamental concept in economic and financial analysis; however, despite its wide usage, there is no single, universally accepted definition. In the literature, the term is approached from multiple perspectives, each emphasizing certain dimensions of a company's financial success. For some authors, financial performance refers to

an entity's ability to generate profits and maintain long-term financial stability through the efficient use of resources and the minimization of financial risks (Brealey *et al*., 2019). This definition highlights the importance of profitability and financial sustainability over time. From a more applied perspective, certain authors argue that financial performance should be analyzed from the standpoint of the relationship between risk and return, depending on the specific objectives and context of each economic entity (Saputra, 2022). This approach emphasizes that financial performance indicators vary depending on industry, strategy, and external economic factors.

The European Union, through Directive 2013/34/EU on annual financial statements, defines financial performance as the result of an entity's economic activities, reflected in its financial position, profitability, and cash flows (European Union, 2013). This definition, used in financial reporting standards, focuses on the measurability of performance through specific financial indicators. Due to the complexity of the concept, financial performance is assessed using a variety of indicators, which are selected based on the objectives of the analysis and the characteristics of the entity being studied. Among the most commonly used indicators are return on equity (ROE), earnings before interest and taxes (EBIT), return on investment (ROI), etc. (Vimrova, 2015). One of the primary financial performance indicators is ROI (Return on Investment). Invented by Donaldson Brown, it was designed to provide a financial representation of the company. Brown also stated that ROI is a final and fundamental measure of industrial performance and represents the ultimate test of management efficiency in any business (Flesher and Previts, 2014). In the decades that followed, several other financial performance indicators were developed, largely inspired by ROI, such as ROE (Return on Equity) and RONA (Return on Net Assets).

Studies on the relationship between sustainability and financial performance have developed significantly in recent decades, strengthening their presence in major scientific journals and becoming one of the central topics in corporate finance and strategic management. Broadly speaking, research highlights the trend of identifying a positive correlation between sustainable practices and financial performance indicators, although there are also studies that find inconclusive results or suggest a neutral or even negative impact. One of the most cited studies is the meta-analysis conducted by Orlitzky, Schmidt, and Rynes, who examined over 50 previous studies and concluded that, on average, there is a positive correlation between corporate social responsibility and financial performance. Furthermore, the meta-analysis suggests that the positive effect is stronger in certain industries and for specific types of sustainability initiatives (Orlitzky *et al.,* 2003). Some authors have found that the improvement in economic performance (measured using ROA and ROE indicators) in the aquaculture industry is correlated with better resource management and sustainable practices (Llorente *et al.*, 2020). Others, through their research, highlight that companies included in the

Dow Jones Sustainability Index (DJSI) achieve superior financial performance compared to those in the industry, demonstrating that social and environmental responsibility contributes to a strategy that generates value. Although short-term liquidity is lower, long-term financial leverage is higher (DiSegni *et al*., 2015).

A study conducted between 2014 and 2018 on a sample of firms highlighted a significant positive relationship between sustainability performance and financial performance. The total ESG score positively influenced financial performance, although the individual components (economic, environmental, and social) did not have a significant separate impact (Yilmaz, 2021). On the other hand, some studies do not identify a significant direct link that there are neutral or even negative effects, particularly in the short term. Methodological, sectoral, or contextual differences (regulations, economic climate, firm size) may explain these heterogeneous results (Landi *et al*., 2022). Therefore, there is no consensus regarding the way to define the relationship between sustainability and financial performance.

The oil and gas sector is distinguished by an extremely high-risk profile regarding sustainability, both in terms of its direct environmental impact and its exposure to legislative and financial risks associated with the energy transition. Companies in this industry contribute significantly to global greenhouse gas emissions, and their activities involve risks such as water pollution, ecosystem degradation, and the intensive use of natural resources (Johnston *et al.,* 2020). In this context, non-financial reporting regulations, such as Directive 2014/95/EU, are not only a formal obligation but also an essential tool for reshaping the strategic positioning of these companies in a business environment where ESG criteria are becoming increasingly decisive for access to capital and for maintaining the social license to operate. The risk of greenwashing is particularly pronounced in the oil and gas industry, given the structural discrepancy between the publicly stated decarbonization goals and the reality of the fossil fuel-based business model (Aronczyk *et al.,* 2024). This dissonance creates acute reputational vulnerabilities and intensifies pressure from institutional investors, who are reconfiguring their portfolios based on the ESG scores and climate risks reported by companies.

Therefore, in the oil and gas industry, effective and credible non-financial reporting can no longer be treated as a superficial communication exercise, but has become a critical condition for maintaining relevance in global financial markets and for navigating the complexities of the transition to a low-carbon economy (Nelson, 2017).

3. RESEARCH METHODOLOGY

This research employs a quantitative, ex post facto approach, focusing on the retrospective analysis of financial data (Antorine *et al.,* 2024) to assess the impact of implementing Directive 2014/95/EU on non-financial reporting and its effect

on the financial performance of European companies in the oil and gas industry. The methodological foundation of the study is based on the premise that available historical data can reveal potential changes in corporate performance resulting from the introduction of new European regulations, without direct intervention by the researcher on the analyzed variables.

The target population consisted of oil and gas companies listed on the Euronext stock exchange, a choice justified by the international nature of this market, the standardization of financial and non-financial reporting for listed entities, and the extensive availability of historical data. The sample selection was made based on strict criteria, including only those companies that had been presenting complete financial reports since 2012, the chosen starting year for the pre-directive period. The exclusion of other companies on Euronext was due to the fact that Directive 2014/95/EU imposes reporting obligations solely on large enterprises with over 500 employees, meaning that many small and medium-sized enterprises were not subject to the regulation and did not publish relevant non-financial reports for the analyzed period. Thus, the final selection ensures sample homogeneity and minimizes the risk of selection bias. The resulting sample is presented in the table below (Table 1):

Table 1. Population of study

S/N	Name of company
1	Aker BP
2	Equinor
3	Havila Shipping
4	Interoil Expl Prod
5	Magnora
6	Nel
7	Panoro Energy
8	Prosafe
9	Solstad Offshore
10	Subsea 7
11	Tgs

Source: own processing based on public data available on Euronext

The observation period was divided into two distinct segments, in line with the implementation of the directive: the pre-directive period, covering the years 2012 to 2016, and the post-directive period, extending from 2017 to 2024. This

temporal delimitation addresses the need to capture the effects of the directive's effective implementation, given that reporting obligations became applicable starting with the 2017 financial year (Carmo and Ribeiro, 2022). Additionally, the inclusion of 2024 in the post-directive analysis reflects the intention to leverage the most recent available financial data, thus enhancing the temporal relevance of the conclusions drawn.

Data collection was based on the audited financial reports published by the companies included in the sample, using exclusively secondary, official, and verifiable sources. The indicators chosen for evaluating financial performance are Return on Assets (ROA), Return on Equity (ROE) and Return on Invested Capital (ROIC), with their selection grounded in their recognition in the literature as relevant measures of resource efficiency, profitability, and investment performance. For the statistical analysis, a preliminary normality test was conducted using the Kolmogorov-Smirnov and Shapiro-Wilk tests, with the results indicating significant deviations from a normal distribution. Consequently, the Wilcoxon Signed-Rank Test for paired samples, a non-parametric method appropriate given the deviation from the normality assumption, was used to compare financial performance between the two periods. The statistical analysis was performed using SPSS software, with a significance level set at 5% ($\alpha = 0.05$), and interpretations were based on the p-values obtained for each analyzed indicator.

4. RESEARCH RESULTS

To assess the impact of Directive 2014/95/EU on the financial performance of European companies in the oil and gas industry, the research was structured into three distinct methodological stages, each designed to ensure the accuracy and robustness of the results obtained.

In the first stage, for each company included in the sample, the annual averages of the financial indicators Return on Assets (ROA), Return on Equity (ROE), and Return on Invested Capital (ROIC) were calculated separately for the pre-directive period (2012–2016) and the post-directive period (2017–2024). The calculation of the averages for each indicator and each company aimed to minimize the influence of annual cyclical variations and eliminate the impact of isolated economic events on financial performance. This approach allowed for the stabilization of the analyzed values and facilitated a coherent comparison between the two periods, capturing general trends rather than accidental fluctuations.

In the second stage, normality testing of the data distribution was performed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The purpose of this testing was to identify the nature of the financial indicators' distribution and to determine the appropriate statistical technique for analyzing differences.

Table 2. Normality test of ROA, ROE, ROIC for pre- and post-Directive periods

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ROA_pre_mean	.242	11	.071	.734	11	.001
ROE_pre_mean	.254	11	.046	.853	11	.047
ROIC_pre_mean	.409	11	.000	.586	11	.000
ROA_post_mean	.288	11	.011	.811	11	.013
ROE_post_mean	.464	11	.000	.453	11	.000
ROIC_post_mean	.225	11	.124	.949	11	.636

Source: own processing based on public data from annual reports

If the p-value is greater than 0.05, there is insufficient statistical evidence to reject the null hypothesis, which states that the data are normally distributed. In other words, we accept that the data could be normally distributed, meaning that tests assuming normality can be used. If the p-value is 0.05 or lower, then we reject the null hypothesis, suggesting that the data are not normally distributed. This means that the data distribution significantly deviates from a normal distribution, and statistical methods that do not assume normality, such as non-parametric tests, are more appropriate. According to the results obtained, the majority of the variables analyzed did not meet the normality assumption. These findings necessitated the use of non-parametric statistical methods for the comparisons between periods, as the normality assumptions required for parametric tests were not met.

In the third stage, based on the results of the normality tests, the Wilcoxon Signed-Rank test for paired samples was applied. This non-parametric test was used to compare the pre- and post-directive means for each of the three financial indicators analyzed, considering that the data did not meet the necessary conditions for the use of parametric tests. The Wilcoxon test is recognized for its robustness in the absence of normality and for its ability to assess changes in the population's median between two time points for the same group of entities.

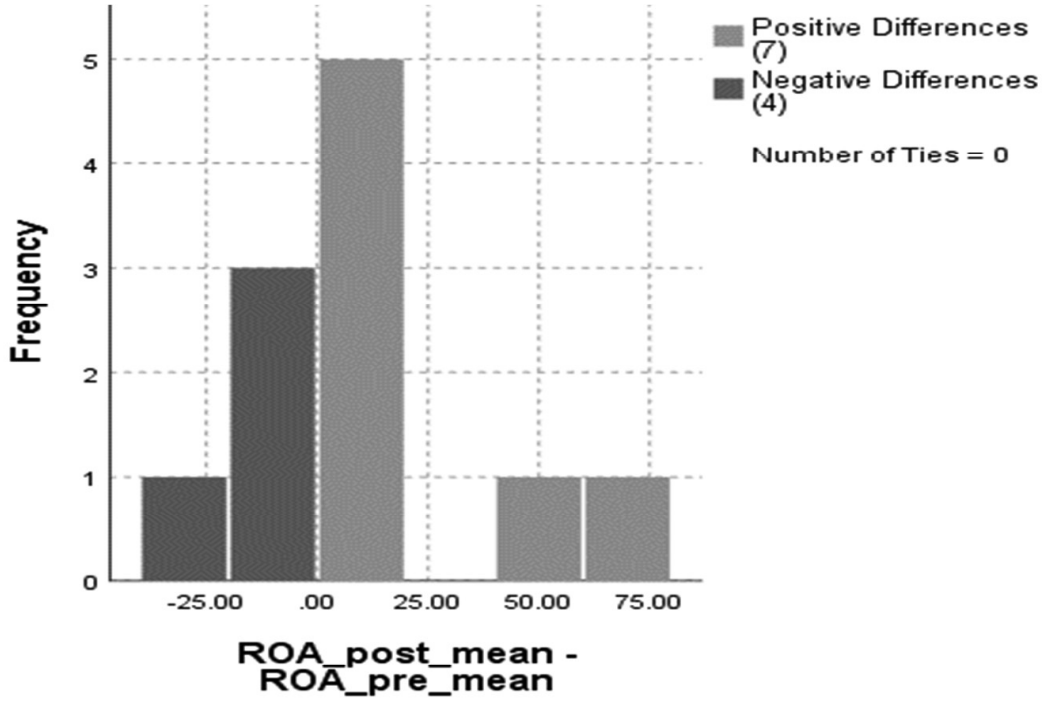
Table 3. Hypothesis test for ROA

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between ROA_pre_mean and ROA_post_mean equals 0.	Related-Samples Wilcoxon Signed Rank Test	.374	Retain the null hypothesis.

Source: own processing

The p-value is 0.374, which indicates that there is insufficient evidence to reject the null hypothesis. Therefore, there is no statistically significant difference

between the performance of assets before and after the implementation of the directive.



Source: own processing

Figure 1. Distribution of differences in ROA performance

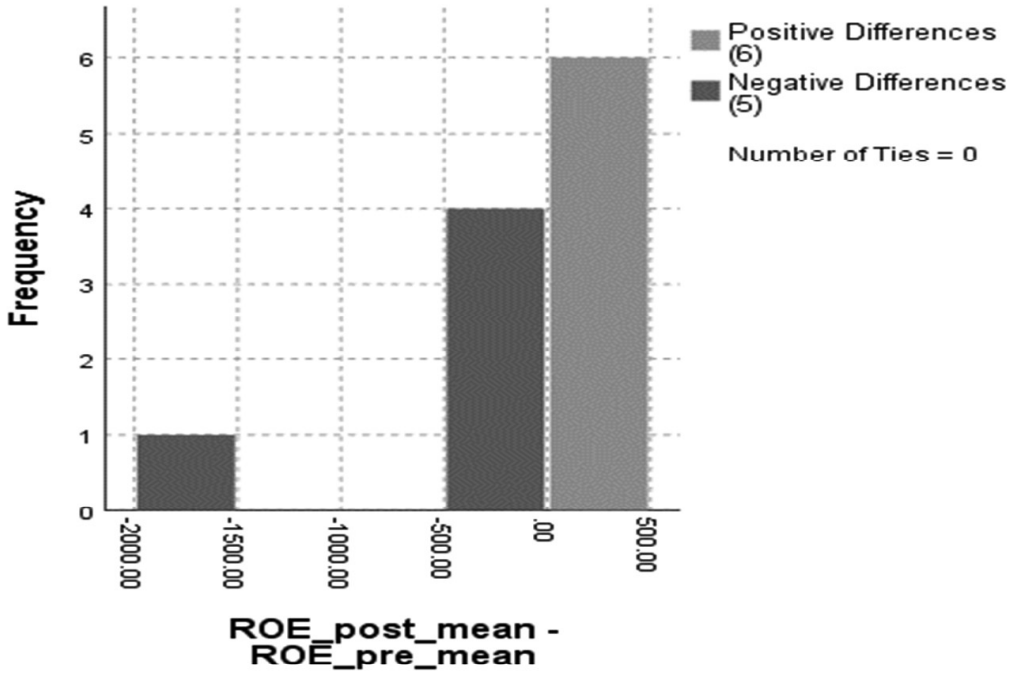
There were 7 positive and 4 negative differences, suggesting a slight individual improvement trend for most companies, but insufficient to generate a significant result at the sample level. These results show that, although there are certain individual variations in the ROA performance of the companies in the sample, they are not significant enough to indicate a widespread change caused by the implementation of the directive. Therefore, overall, there is no statistical evidence that the EU directive had a significant impact on the ROA of the companies analyzed.

Table 4. Hypothesis test for ROE

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between ROE_pre_mean and ROE_post_mean equals 0.	Related-Samples Wilcoxon Signed Rank Test	.594	Retain the null hypothesis.

Source: own processing

A p-value of 0.594 also indicates the absence of a statistically significant difference between the periods.



Source: own processing

Figure 2. Distribution of differences in ROE performance

The distribution of differences is relatively balanced, with 6 positive differences and 5 negative differences. Despite some individual changes in ROE for the companies in the sample, these are not consistently significant at the group level. The relatively balanced distribution of positive and negative differences suggests that there is no clear trend or uniform influence of the directive on the companies' return on equity performance.

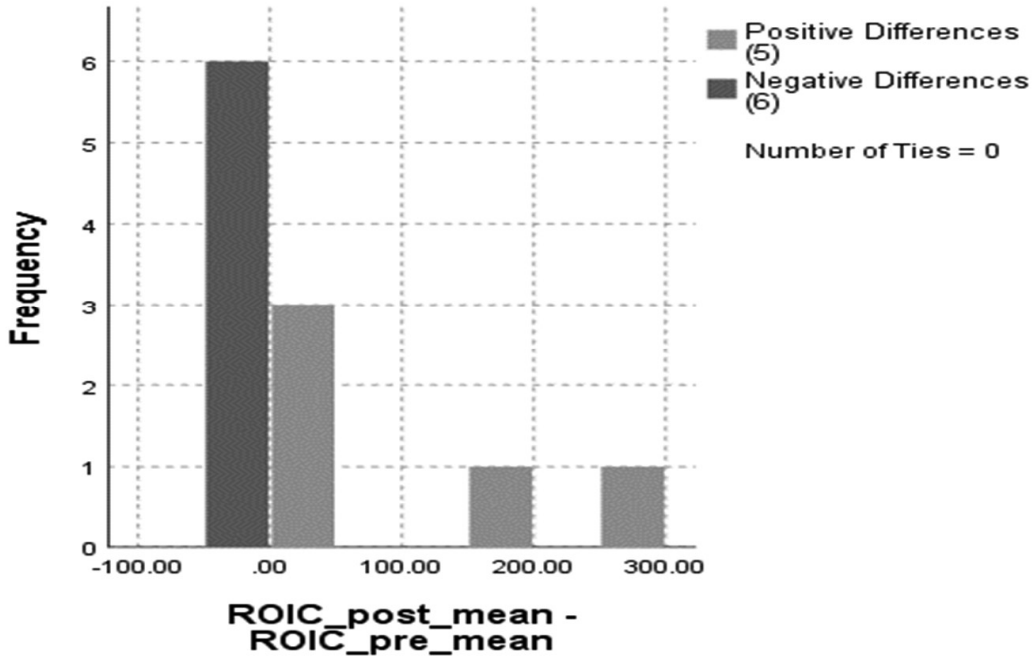
These findings indicate that, although some companies may have gained or lost as a result of the directive's implementation, the overall effect on ROE is not significant. This may suggest that other external or internal factors could have a greater impact on ROE than the implementation of the directive itself.

Table 5. Hypothesis test for ROI

	Null Hypothesis	Test	Sig.	Decision
1	The median of differences between ROIC_pre_mean and ROIC_post_mean equals 0.	Related-Samples Wilcoxon Signed Rank Test	.722	Retain the null hypothesis.

Source: own processing

The high p-value suggests that, overall, the implementation of the directive did not have a significant impact on the ROIC values of the companies examined. This may mean that, despite possible operational or strategic changes imposed by the directive, these did not significantly reflect in the return on invested capital across the entire sample of companies.



Source: own processing

Figure 3. Distribution of differences in ROIC performance

The nearly equal distribution between positive and negative differences shows that the effect of the directive on ROIC varied from company to company. Some experienced improvements, while others saw declines, but none of these effects were consistent or large enough to produce a statistically significant change at the group level.

Therefore, the analysis of means, normality tests, and the Wilcoxon test suggests that, while improvements in ROA and stabilizations in ROIC are observed after the implementation of Directive 2014/95/EU, these changes are not supported by statistically significant differences. Moreover, the high variability in financial performance between companies and the presence of extreme losses in the case of ROE suggest that the effects of the directive were heterogeneous and that adaptation to the new requirements varied significantly across organizations. Thus, the results indicate that Directive 2014/95/EU did not have a uniform and significant impact on the financial performance of companies in the oil and gas sector, at least in the short and medium term, and other external or internal variables may play a determining role in the dynamics of performance.

5. CONCLUSIONS

The impact of Directive 2014/95/EU on the financial performance of companies has been widely debated in the literature. Some studies suggest that the implementation of non-financial reporting can lead to greater transparency and, implicitly, an improvement in financial performance. For instance, research indicates that integrating sustainability information into corporate strategies can have positive effects on financial indicators such as return on assets and return on equity. However, other studies highlight that the effects of the directive may vary depending on the industry and the companies' ability to adapt to the new reporting requirements. In particular, in industries with a significant environmental impact, such as the oil and gas sector, companies may face challenges in effectively implementing non-financial reporting, which could negatively affect their financial performance.

The present study, focused on oil and gas companies listed on Euronext, aimed to assess the impact of Directive 2014/95/EU on financial performance, using a three-stage methodological approach. The results obtained indicate a slight improvement in ROA and stabilization of ROIC in the post-directive period, suggesting increased operational efficiency. However, ROE showed a significant deterioration, reflecting higher volatility and potential increased financial risks. Statistical tests did not reveal significant differences between the periods analyzed, suggesting that the impact of the directive on financial performance is not uniform and may be influenced by sector-specific factors and the companies' individual capacity to integrate non-financial reporting requirements. These findings highlight the complexity of the relationship between sustainability regulations and financial performance, emphasizing the need for tailored approaches and the strategic integration of non-financial reporting to maximize the potential benefits of the directive.

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