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How to explain stock returns of utility companies from an environmental, social and corporate governance perspective

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Abstract

Sustainability is a major challenge in today's business world, making environmental, social and governance criteria an indispensable tool for business management and investment decisions. Using 2020 data of 47 companies from the STOXX Europe Total Market Utilities Index and qualitative comparative analysis, this study aims to analyse how the combination of CO_2 equivalent emissions, sustainability compensation incentives, environmental investments, environment management training, and policy fair competition leads to utility companies' stock market returns. Two subsample models (electricity and non-electricity utilities) have been considered in the study. The results point to the absence of CO_2 equivalent emissions, the absence of incentives, and the presence of environmental investment as key variables to lead to stock market returns. The findings provide relevant information for managers and practitioners of utilities industry to achieve improvements in the environmental, social and governance management practices, maintaining profitability in financial markets and facilitating decision-making for investors.

KEYWORDS
business strategy, environmental performance, ESG practices, stock returns, sustainable development, utilities industry

1 | INTRODUCTION

In a world cornered by the global emergency of climate change and chronic shortages of clean air, fresh water, food or energy, efforts to halt the degradation of the planet and the deterioration of social well-being require a strong and sustained international commitment. At European level, regulatory efforts to address these current and future challenges have been intensified (Busch et al., 2022), while society's expectations and requirements demand a determined business action and the establishment of a new business paradigm based on sustainable principles. In this context, the utilities industry—which includes the electricity, gas, water and multi-utilities sectors, as well as waste and disposal services sector—has gained increasing attention for the successful and sustainable development of modern societies (Agovino et al., 2021; Gilardoni, 2020; Pais-Magalhães et al., 2021). Although utility companies play an invaluable role in providing economies with essential public goods and services (Giacomini et al., 2020), their activity is not without controversy, due to its large contribution to the climate crisis (Gilardoni, 2020). Utility companies are now facing the challenge to compete in markets where simultaneously have to create value for their stakeholders, whose demands have forced them to redefine their working practices and business models by initiating

actions aimed at encouraging a transition towards a green and sustainable development (Nguyen et al., 2021). Among these environmental, social and governance (ESG) actions are (i) progress towards decarbonisation and the establishment of net-zero targets (Busch & Lewandowski, 2018); (ii) linkage of executives' variable remuneration to the fulfilment of sustainability and corporate social responsibility (CSR) targets (Minciullo et al., 2022); (iii) commitment to proactive environmental investments to tackle extreme weather events and global risks, as well as increase future opportunities (Afrifa et al., 2020); (iv) implementation of green training programmes (Marrucci, Iannone, et al., 2022); and (v) establishment of codes of conduct that promote fair competition (Qi et al., 2022). This has led ESG issues climbing positions within organisations, entering the corporate agenda of companies and becoming benchmarks of business sustainability (Ritz, 2022). As a result, ESG scores have become an indispensable investment decision-making tool by collecting and aggregating information that allows companies to be assessed on the basis of their ESG performance (Berg et al., 2019), and providing a measure of a company's responsible behaviour (Dyck et al., 2019). However, the ESG scores have certain shortcomings. One of them relates to the divergence in the ratings published by the ESG data-providing agencies (Berg et al., 2019). Accordingly, the Bank of International Settlements has suggested deconstructing the three ESG rating pillars to allow investors to make a detailed and differentiated assessment of the ESG performance of the companies or assets in which they wish to invest (Ehlers et al., 2022).

Most previous research on ESG has focused on non-financial issues of business management. Little research has studied the impact of ESG on specific financial measures as ROA, ROE, profits, Tobin's Q (Bătae et al., 2021; Yoo & Managi, 2022), firm value (Fatemi et al., 2018); or stock returns (Feng et al., 2022; La Torre et al., 2020; Mănescu, 2011; Yoo et al., 2021). Less research has studied the effect of ESG measures independently considered—for example, greenhouse gas (GHG) emissions (Busch et al., 2022; Choi & Luo, 2021), environmental investment (Grassmann, 2021; Silva-Gao, 2012); employees' green training (Kwon, 2019; Yoo et al., 2022), fair competition policies (Le Roy et al., 2017); or the linkage of non-financial targets to executive compensation (Bachmann et al., 2020; Gan et al., 2020)—on firm performance. The fact that previous research concludes mixed results and that there are very few studies considering the utilities industry justifies the aim of this paper that propose a disaggregated analysis of the ESG pillars to analyse their effect on utilities industry's stock returns. Thus, this study aims to fill this gap by analysing how the combination of five ESG indicators—CO_2 equivalent emissions, sustainability compensation incentives, environmental investments, environment management training and policy fair competition—leads to the presence of stock market returns in the European utilities industry. For this purpose, ESG and stock market data for the year 2020 were gathered from a sample of 47 utility companies included in the STOXX Europe Total Market Utilities Index. The data was analysed using fuzzy set qualitative comparative analysis (fsQCA). To examine the potential discrepancies, the sample was split into two subsamples to consider electricity and non-electricity utilities (gas, water and multi-utilities and waste and disposal services sectors), considering the key role that the electricity sector is expected to play in the European energy transition (Ribeiro et al., 2023).

The research findings are relevant to understanding how companies can manage their efforts to achieve better financial and ESG performance and help them recognise which combinations of ESG factors motivate investors and drive companies' stock market performance. In this way, the paper contributes to the advancement of knowledge on the benefits of ESG practices on corporate stock returns, providing relevant information to assist utilities industry practitioners and investors in making decisions that support the sustainable value creation for the organisation, the environment and the stakeholders.

The rest of the article is structured as follows. Section 2 provides the theoretical background; Section 3 describes the sample, data and methodology used; Section 4 presents the results of the analysis; Section 5 discusses the results obtained; Section 6 outlines the practical implications of the paper; and finally, Section 7 concludes the paper and advances future lines of research.

2 | THEORETICAL BACKGROUND AND RESEARCH QUESTIONS

Utilities industry is the cornerstone of a nation's infrastructure as it provides essential services for the socio-economic and sustainable development of countries, regions and cities (Giacomini et al., 2020; Gilardoni, 2020). The Industry Classification Benchmark (ICB) includes within this industry companies generating and distributing electricity, water and gas, as well as waste management and recycling service providers. The electricity generation and distribution sector is considered a major contributor to the climate change and the environmental stress, placing it in the spotlight of stakeholders and regulators (Slacik & Greiling, 2020). Indeed, the ongoing climate scenario requires these companies to adapt their business models to changing policies and sustainable technological innovations to enable the transition to a low-carbon economy (Pereira et al., 2022). These actions must also be complemented with the revelation of specific sustainability indicators, which in the case of electricity companies is rather limited, making it difficult to assess their progress on the responsible behaviours (Slacik & Greiling, 2020). Gas distribution is other essential service in urban energy systems. This fossil fuel associated with high greenhouse gas emissions is widely used in industrial and domestic consumption, which also requires huge efforts to advance towards climate neutrality (Verhagen et al., 2022). The population growth and concentration in urban areas generates another environmental problem related to waste management. Waste generation, as well as the polluting processes necessary for waste management, turns this sector into another enemy of global ecosystems (Pais-Magalhães et al., 2021). Finally, water is more than a strategic resource, irreplaceable for the existence of living beings (Agovino et al., 2021). Ironically, water is an increasingly scarce resource that represents a major problem for many communities (Zarei et al., 2020). Companies focused on

the distribution and management of water must keep in mind their public utility role and work to advance in the social and environmental commitment of ensuring the supply of this essential good (Cagno et al., 2022).

With sustainability as one of the biggest challenges facing the modern business world, utilities must pay attention to ESG criteria and their impact on business performance. It has been shown that 'high sustainability companies', that is, those that have voluntarily adopted sustainability policies many years ago, achieve significantly better performance in the long run than traditional companies. This outperformance is stronger in sectors where firms rely heavily on the extraction of large amounts of natural resources (Eccles et al., 2011), such as utilities. Previous research has also concluded that companies' environmental communication can be rewarded with better performance in financial markets (Amores-Salvadó et al., 2022). Although there are several studies focused on the impact of a company's ESG policy on its economic and financial performance (Abdelmotaal & Abdel-Kader, 2016; Hussain et al., 2018), there is hardly any study focused on the utilities industry considering the stock returns as a measure of market-based financial performance. So, it is necessary to delve into the sustainability-stock returns relationship. In fact, the impact of ESG factors on the long-term profitability of companies is leading to consider 'sustainable investments' as 'common investments' (Eccles et al., 2020). Consequently, corporate ESG considerations have become a well-established criterion for evaluating corporate performance and strategy among investors (Morrow Sodali, 2021). Following previous studies' interest in deconstructing the ESG pillars to facilitate a detailed assessment of corporate sustainable performance (Ehlers et al., 2022; Hussain et al., 2018), this study focuses on the analysis of five ESG indicators relevant to the utilities industry, which individually and collectively can affect companies' performance.

2.1 | CO_2 equivalent emissions

In the transition to a sustainable and cleaner planet, the decarbonisation of businesses and economies around the world is an unavoidable requirement. At the European level, legislation and regulation on climate issues and corporate non-financial reporting is increasingly growing (Arvidsson & Dumay, 2022). The spotlight is now on highly polluting industries. The economic activities that generated the highest tonnes of CO_2 equivalent emissions in 2020 in the European Union (EU) include electricity, gas, steam and air conditioning supply, as well as water supply, construction and other service activities (Eurostat, 2022). These data highlight the importance and impact of GHG emissions from utilities. Although recent years show a decline in the GHG emissions intensity of the EU power generators, the electricity sector continues to find difficulties to achieve the climate targets, requiring drastic reductions related to emissions and environmental impacts (Slacik & Greiling, 2020).

From an investor perspective, carbon footprint represents a measure of a company's exposure to climate transition risk (Nguyen et al., 2021). This risk can directly impact on investors' portfolio companies throughout their investment decisions (Krueger et al., 2020). Previous literature provides mixed results regarding the relationship between firms' environmental performance (GHG emissions) and stock market performance. Hsu et al. (2023) find that highly polluting firms have greater exposure to environmental regulatory risks and thus higher average returns. Bolton and Kacperczyk (2021) report that stocks of US companies with the highest CO_2 emissions earn the highest returns. This carbon premium is related to the total level of emissions and to the annual change in company emissions. In the same vein, Busch et al. (2022) observe an association between lower carbon emissions and lower market-based financial performance, suggesting that investors do not perceive a company's enhanced carbon performance as a value driver. Conversely, other authors establish an inverse CO_2 equivalent emissions-stock market performance relationship. In this sense, Guastella et al. (2022) argue that the utilities industry's high GHG emissions have a negative impact on its financial performance. Griffin et al. (2017) conclude that GHG emissions information voluntarily disclosed through the Carbon Disclosure Project by companies in emissions-intensive sectors negatively affects investors' assessment of firms' value. Similarly, Matsumura et al. (2014) find that higher levels of direct carbon emissions are linked to lower values of S&P 500 companies. Likewise, Choi and Luo (2021) claim that companies are penalised in the stock market according to their level of GHG emissions. Aljughaiman et al. (2021) find that the most polluting FTSE350-listed UK companies have a higher probability of extremely negative stock returns, making them more unstable and riskier. The meta-analysis by Busch and Lewandowski (2018) supports the notion of a positive relationship between good corporate carbon performance (low amounts of carbon emissions) and superior financial performance (mainly market-based measures). There are still no conclusive results on the relationship between GHG emissions and corporate stock returns, so the following proposition is tested:

P1. *The absence of CO_2 equivalent emissions in utility companies leads to the presence of stock returns.*

2.2 | Sustainability compensation incentives

From the first corporate social efforts to today's ESG-based initiatives, sustainability has gaining traction on the agenda of corporate boards, progressing towards its integration into companies' strategic planning. Consequently, senior executive compensation requires changes to consider financial and non-financial metrics to better assess longer-term performance (Eccles et al., 2020). Traditionally, executive compensation has been considered a useful tool for reducing agency conflicts (Jenson & Meckling, 1976), approach that coexists with the stakeholder theory (Freeman, 2010) and the stream of research focused on resolving the conflicts between managers and stakeholders through a sustainable performance framework (Ng & Nathwani, 2012). This has encouraged companies to pursue social objectives through initiatives as linking executive pay to sustainability

targets (Abdelmotaal & Abdel-Kader, 2016). Prior research has concluded a positive and direct relationship between setting ESG targets in senior compensation plans and the sustainable performance of companies (Baraibar-Diez et al., 2019; Eccles et al., 2011; Minciullo et al., 2022). This stance is backed by institutional investors, who support the inclusion of ESG performance metrics in short- and long-term compensation plans (Morrow Sodali, 2021). For this reason, the companies' choice between different metrics turns out to be a very important issue for their business performance (Singer, 2012). However, some authors warn that managers may exercise control over ESG performance measures, so linking their remuneration to these metrics may not be synonymous with engaging in such activities (Qin & Yang, 2022). Moreover, executive remuneration may be boosted without effectively addressing executives' real motivations (Bebchuk & Tallarita, 2022).

Few prior studies have analysed the implications for firm performance of including non-financial measures in the design of executive compensation plans. Said et al. (2003) argue that the combined use of financial and non-financial performance measures leads to higher stock market returns, improving firms' current and future performance in financial markets. Gan et al. (2020) find that the existing marginal relationship between CEO equity-based compensation and higher future firm value becomes stronger when non-financial performance measures are integrated into bonus contracts. For Bachmann et al. (2020) the inclusion of quantifiable non-financial targets or performance targets linked to CSR in CEO bonus contracts is positively related to subsequent firm performance. Lastly, Abdelmotaal and Abdel-Kader (2016) show that the adoption of sustainable incentives leads to higher returns on shareholder funds but not on total shareholder returns. Despite this, the positive association between sustainable incentives and total shareholder returns indicates that these incentives can meet stakeholders' interests without negatively influencing shareholders' needs. Since more research is needed around this issue, the following proposition is tested:

> **P2.** *The presence of senior executives' incentives linked to sustainability targets in utility companies leads to the presence of stock returns.*

2.3 | Environmental investment

Climate change risks extend to business organisations, raising economic, environmental and social challenges and opportunities. The lack of state and regulatory support, the existence of stakeholder or market pressures, the organisational specificities, or the incremental costs are some of the challenges that companies must face, while new opportunities related to environmental, operational and financial improvements as well as new business initiatives are emerging (Lee et al., 2015; Seles et al., 2018). Accordingly, companies are designing strategies to adapt to and/or mitigate the consequences of climate change (Seles et al., 2018) that can affect their business performance and public image (Puertas et al., 2022). Environmental expenditure and investments focus on projects and activities with a positive impact on the environment, ranging from environmental protection (prevention, reduction and control of hazards and other environmental impacts such as waste and emissions management), to innovation through research and development (R&D) of green products or services (Grassmann, 2021). The specific characteristics of the utilities industry, such as its exposure to social and governmental pressures, its rigid regulatory framework or the large number of assets and infrastructure required, can condition the responses of these organisations to the climate crisis. Among the possible business reactions, the literature emphasises the design and development of effective policies that monitor and disclose the costs and benefits associated with mitigating the potential negative consequences of climate change (Lee et al., 2015), the cooperation with other organisations to provide better environmental management solutions (Bicknell & McManus, 2006), the voluntary adoption of practices that promote low GHG production, and the allocation of organisational economic resources to R&D (Seles et al., 2018).

From a proactive perspective, environmental investment and innovation have become a source of solutions for successful environmental management and the generation and exploitation of new opportunities. In this way, Afrifa et al. (2020) show that the investments in innovative technologies help mitigate and reduce the problems caused by climate change. For Ali et al. (2021), R&D investment in clean and renewable energy technologies can contribute to increase economic growth and enhance environmental conditions. Moreover, Shahbaz et al. (2020) argue that while energy consumption and financial development contribute to environmental deterioration, R&D investments help reverse this situation.

Investors seeking to maximise their returns should take into account environmental costs and assess the efficiency of the R&D investments of the target company, since they can have a high positive impact on market capitalization (Puertas et al., 2022). According to Hoang et al. (2020) companies' involvement in sustainable innovation along with an increasing environmental disclosure positively influence market performance. In sectors such as energy, R&D stimulates environmental practices related to the reduction of emissions, the reduction of resources consumption and eco-innovation, which are favourably perceived by shareholders (Uyar et al., 2022). Specifically, the disclosure of environmental capital expenditure in the electricity utility sector is strongly correlated with lower emission rates and superior financial performance (Silva-Gao, 2012). For Lee et al. (2015) the market reacts positively to investments in environmental R&D since they represent a credible corporate environmental commitment. However, according to Grassmann (2021), environmental expenditures follow a U-shaped relationship with firm value. Therefore, companies must exceed a certain threshold in terms of expenditures on environmental protection and environmental R&D to achieve a positive effect on their valuation. Conversely, some authors point out that achieving high environmental performance requires large environmental investments that can lead to assume huge costs not sufficiently rewarded, and consequently lower financial performance (Bénabou & Tirole, 2010). Although most of the previous literature argues that

environmental expenditure and investments bring benefits to business performance, especially with regard to R&D, more research is needed. Therefore, the following proposition is tested:

P3. *The presence of environmental investments in utility companies leads to the presence of stock returns.*

2.4 | Environment management training

Companies are increasingly engaging in green human resource management (GHRM) involving employees in the company's green initiatives (Ren et al., 2018). GHRM contributes not only to the transition towards the circular economy but also to improve organisational performance (Marrucci et al., 2021; Marrucci, Daddi, & Iraldo, 2022b). GHRM can be understood as a set of human resource management (HRM) practices that aim to promote responsible and environmentally friendly use of resources to foster employees' environmental awareness and engagement (Tang et al., 2018). HRM can play a double role what concerns to environment and sustainability; that is, the medium that can influence changes induced by the environment (Jabbour & Jabbour, 2016) or the end to encourage both attitudinal and behavioural changes among employees to contribute to the organisation's environmental performance (Ren et al., 2018). GHRM can be applied to five functions of HRM; namely, recruitment and selection, training, performance management, pay and reward systems, and involvement (Tang et al., 2018). Environmental training of employees is considered the main HRM practice related to environmental management and is a type of investment to be supported over time (Jabbour, 2011). Specifically, green training encompasses a set of activities that aim to motivate staff to acquire skills and commit to environmental care, including employees' awareness, knowledge management, and creation of a green organisational climate (Tang et al., 2018).

Prior research has addressed the relationship between employees training and organisational performance. Kwon (2019) finds that investment growth in training and development is positively related to the firm's future financial performance. Garavan et al. (2021) establish a direct relationship between training in both quantitative and qualitative terms and firm performance. More recently, Yoo et al. (2022) state that training and development investments lead to a subsequent increase in financial performance and, in turn, higher levels of financial performance also contribute to higher investment in training and development. Green training has also proven to have a positive impact on sustainable organisational performance, developing environmental knowledge and generating awareness and commitment among employees (Marrucci, Iannone, et al., 2022; Yong et al., 2020). In the utilities industry, green training can be relevant at both corporate and societal levels, due to the large environmental impact resulting from its activity and its huge involvement in the daily life of citizens. Pressures from stakeholders on firm's sustainability are positively related to organisational performance and the adoption of GHRM practices (Marrucci, Daddi, & Iraldo, 2022c). Renwick et al. (2013) note that these green practices do not only contribute to improve employees' well-being and environmental performance, but also boost the organisation's financial performance. According to Porter and Kramer (2011), meeting stakeholder demands such as green training of employees, leads to shareholders value creation. The research on green training and its impact on business performance is still at a starting point, so further study on this field is needed. Therefore, the following proposition is tested:

P4. *The presence of environmental management training in utility companies leads to the presence of stock returns.*

2.5 | Policy fair competition

From a management point of view, corporate communication is an indispensable strategy to set and implement the main organisational policies (Chen & Tao, 2020). The 'code of conduct' is a tool used by companies to communicate their policies, detailing desirable corporate behaviours and describing aspects of both business and personal ethics (Ruban & Yashalova, 2021). Therefore, this document can be understood as a roadmap for addressing some aspects related to the social pillar of ESG practices in organisations. It provides trust and reliability to stakeholders, complementing and enhancing existing legal regulations (López Jiménez et al., 2021). The quality of the code of conduct will affect the company's CSR performance, which in turn will affect the effectiveness of the code and its ability to bring about transformations in the organisational culture (Erwin, 2011). As a reliable social indicator embodied in the corporate codes of conduct, fair competition policies express the desired behaviour of companies with respect to their competitors, addressing issues such as respect for patents and intellectual property, antitrust tactics, manipulation and price increases, or anti-competitive behaviours. Fair competition policies lay the foundation for an improved business environment and contribute to economic and environmental performance (Qi et al., 2022). Therefore, in utilities industry it is essential to foster a fair competitive environment conducive to a well-functioning market, since any unethical and unfair competitive behaviour, such as price-fixing collusion or abuse of dominance, can have a strong and negative social, economic, and environmental impact (Duso et al., 2020; Razmi et al., 2020).

Although anti-competitive practices are considered strategies with potential negative impacts on firms' performance and market value, some previous research shows mixed results (Le Roy et al., 2017). Thus, some authors have found that convictions for anti-competitive practices have a negative effect on corporate market value (Bittlingmayer & Hazlett, 2000; De Vany & McMillan, 2004). Le Roy et al. (2017) show that three contingency factors (the amount of the fine, the degree of involvement of the company and the size of the company) can determine the greater or lesser impact of sanctions for anti-competitive behaviours on the beliefs of investors and, consequently, on the company's stock returns. However, other authors have not found that anti-competitive behaviours sanctions have a significant impact on the companies' stock value (Thompson & Kaserman, 2001). As the knowledge around the influence of fair

competition policies on firms' financial performance is limited, the following proposition is tested:

> **P5.** *The presence of fair competition policies in utility companies leads to the presence of stock returns.*

Considering the open discussion related to the above-commented five relevant ESG indicators affecting utility companies, and to test whether there are differences in the ESG drivers of stock market returns between electricity and other utility companies, the following proposition is tested:

> **P6.** *The causal configurations leading to the presence of stock returns among utility companies are different between electricity and non-electricity sectors.*

3 | METHODOLOGY

3.1 | Fuzzy-set qualitative comparative analysis

A fsQCA approach was adopted to identify the ESG factors that may influence the stock market returns of utility companies. FsQCA is a methodology based on set theory and Boolean algebra, useful for determining which combinations of a set of antecedent conditions (factors considered the cause of a phenomena) are likely to lead to a specific result (the phenomena under study) (Legewie, 2013; Longest & Vaisey, 2008). Therefore, it assumes the coexistence of different causal pathways that may be relevant to lead to a desired outcome. FsQCA explains causality in terms of necessity and sufficiency. A condition is considered necessary for an outcome if the outcome cannot be achieved in the absence of that condition. In turn, a condition or combination of conditions (configuration) is considered sufficient for an outcome if the outcome occurs whenever the condition is present, although the result may also occur in the presence of other conditions (Ragin, 2008). The 3.0 fsQCA software version was used to conduct the analysis.

3.2 | Sample and data

The STOXX Europe Total Market Utilities Index was chosen to identify the 65 companies that make up the initial study sample. This is a regional index resulting from a clustering of country indices representative of the utilities industry based on the ICB, which categorise companies depending on their main source of revenues. The utilities industry comprises all companies generating and/or distributing electricity, water, gas, as well as companies providing waste, recycling, and other environmental services. After removing those companies that lacked the necessary information for the analysis (this data is disclosed on a voluntary basis), the final sample comprises 47 companies with headquarters in Europe. These include 27 from the electricity sector, 16 from the gas, water and multi-utilities sector, and 4 from the waste and disposal services sector. The headquarters of these companies are mainly located in Italy (10), UK (8), Spain (6), France (5) and Germany (4). On average, the total assets reported by these companies amount to 33,689 million euros, with total revenues of around 12,662 million euros, a workforce of 22,774 employees, and an age of 38 years.

The main sample was split to conduct an in-depth analysis to compare possible discrepancies between companies in the electricity sector and other non-electricity utilities. This double approximation provides an interesting approach, since the decarbonisation, digitalisation and decentralisation of the European electricity sector is defining the energy transition strategy in the continent (Ribeiro et al., 2023). Furthermore, as electricity is expected to be the main energy driver for sustainable development (Starace, 2020), the decisions and investments made by electricity companies will have a significant impact in social, economic, and environmental terms for European societies.

The closing price of the stocks, as well as the company-level ESG data were gathered from the Thomson Reuters EIKON database. The study period refers to 2020 considering also the fiscal year of the companies analysed.

3.3 | Outcome, conditions and calibration

Stock returns is a widely used measure of corporate financial performance (Bolton & Kacperczyk, 2021; Feng et al., 2022) capable of capturing the impact of managers' actions on the firm value (Cadman et al., 2010). Hence, the annual stock market return of the utility companies was selected as the outcome. To calculate it, the closing prices in euros of each company's last stock prices of 2019 and 2020 were compiled. In those cases where the same company was listed in more than one market, the country where its headquarters were located was taken as the reference market. The annual company returns were calculated following Campbell et al. (1997, p. 11):

$$Ri_t = \ln(Pi_t) - \ln(Pi_{t-1}) \quad (1)$$

where Pi_t is the close price of the stock i (considering the 47 companies) at time t (2020). In addition, five antecedent conditions related to the three ESG pillars were selected: total CO_2 equivalent emissions, sustainability compensation incentives, environmental investments, environment management training, and policy fair competition (Table 1).

The raw data obtained for the outcome and the antecedent conditions were calibrated to denote the degree of membership of each case to each of the sets (Schmitt et al., 2017). While the dichotomous variables (INCEN, EXP, TRAIN and FAIR) were transformed into crisp sets, the continuous variables (RET and CO_2) were transformed into fuzzy sets. Commonly accepted thresholds in the literature for this kind of data were adopted in this study (López-Cabarcos et al., 2021; Olaya-Escobar et al., 2020) setting the breakpoints at the 90th, 50th and 10th percentiles (full membership, cross-over point and full non-membership).

TABLE 1 Outcome and conditions.

Type	Label	Description	ESG pillar
Outcome	RET	Annual company stock market return in the country of headquarters.	-
Condition	CO_2	Total carbon dioxide (CO_2) emissions and CO_2 equivalents measured in tonnes. Total CO_2 emissions include scope 1 + scope 2.	Environmental
Condition	INCEN	Whether or not senior executive compensation is linked to CSR, health and safety or sustainability targets.	Governance
Condition	INV	Whether or not the company reports on its environmental expenditures or reports that it makes proactive environmental investments to reduce future risks or increase future opportunities.	Environmental
Condition	TRAIN	Whether or not the company trains its employees on environmental issues.	Social/Environmental
Condition	FAIR	Whether or not the company describes in its code of conduct its efforts to be a fair competitor. This includes respecting other companies' patents, copyrights or intellectual property, or avoiding anti-competitive behaviour, price fixing or other monopolistic tactics.	Social

Note: Descriptions adapted from Thomson Reuters EIKON database.

4 | RESULTS

Three models were analysed: the first includes the 47 companies belonging to the utilities industry (M_utilities); the second includes those 27 companies belonging to the electricity sector (M_elect); finally, the third model (M_noelect) includes those 20 companies belonging to sectors other than electricity (gas, water and multi-utilities, or waste and disposal services).

Table 2 presents the results of the analysis of the necessary conditions. The results show that there are no necessary conditions, since in the three proposed models none of the conditions showed a consistency score exceeding the threshold value of 0.9. However, in M_elect and M_noelect, environment management training and policy fair competition were identified as quasi-necessary conditions, respectively (consistency values close to 0.9) (Schneider et al., 2010).

The sufficiency analysis was also performed. The following models were tested:

$$\text{M\_utilities}: \text{RET}_{(\text{utilities industry})} = f(\text{CO}_2, \text{INCEN}, \text{INV}, \text{TRAIN}, \text{FAIR})$$

$$\text{M\_elect}: \text{RET}_{(\text{electricity sector})} = f(\text{CO}_2, \text{INCEN}, \text{INV}, \text{TRAIN}, \text{FAIR})$$

$$\text{M\_noelect}: \text{RET}_{(\text{non-electricity sectors})} = f(\text{CO}_2, \text{INCEN}, \text{INV}, \text{TRAIN}, \text{FAIR})$$

Table 3 reports the intermediate solutions, including peripheral and core conditions. Peripheral conditions (small circles) indicate a weaker causal relationship of the conditions with the outcome, while core conditions (large circles) indicate a stronger relationship (Fiss, 2011). In M_utilities, configuration 1 [$\sim CO_2$* $\sim$ INCEN*INV*TRAIN] shows that the combination of the absence of CO_2 equivalent emissions, the absence of sustainability compensation incentives, and the presence of environmental investments and environment management training leads to the presence of utility companies' stock returns. Configuration 2 [$\sim CO_2$* $\sim$ INCEN*INV*FAIR] shows that the combination of the absence of CO_2 equivalent emissions, the absence of sustainability compensation incentives, the presence of environmental investments and the presence of a fair competition policy leads to the outcome. In both patterns, $\sim CO_2$, $\sim$INCEN and INV are shown as core conditions. Consequently, propositions P1 and P3 are supported. Proposition P2 is not supported as it is the absence and not the presence of executive incentives that leads to the presence of stock returns. Propositions P4 and P5 are partially supported since environmental training and fair competition policy are present in only one of the two causal configurations.

In M_elect, the first configuration [$\sim CO_2$*INCEN*TRAIN* $\sim$ FAIR] shows that the combination of the absence of CO_2 equivalent emissions, the presence of sustainability compensation incentives and the presence of environment management training leads to the presence of electricity companies' stock returns, even if policy fair competition is absent. The second configuration [$\sim CO_2$*INV*TRAIN* $\sim$ FAIR] shows that the combination of the absence of CO_2 equivalent emissions, the presence of environmental investments and the presence of environment management training leads to the presence of electricity companies' stock returns, once again even if policy fair competition is absent. The third configuration [CO_2* $\sim$ INCEN*INV* $\sim$ TRAIN*FAIR] shows that the absence of sustainability compensation incentives, the presence of environmental investments and the presence of a policy fair competition lead to the outcome, even if total CO_2 equivalent emissions are present and environment management training is absent.

Finally, in M_noelect, the first configuration [$\sim CO_2$* $\sim$ INCEN*INV*FAIR] shows that the combination of the absence of CO_2 equivalent emissions, the absence of sustainability compensation incentives, the presence of environmental investments and the presence of policy fair competition leads to the presence of non-electricity companies' stock returns. The second [$\sim CO_2$*INCEN* $\sim$ INV* $\sim$ TRAIN*FAIR] shows that the combination of the absence of total CO_2 equivalent emissions, the presence of sustainability compensation

TABLE 2 Analysis of necessary conditions (Outcome: Stock returns).

	M_utilities		M_elect		M_noelect	
Conditions	**Consistency**	**Coverage**	**Consistency**	**Coverage**	**Consistency**	**Coverage**
CO_2	0.484692	0.602570	0.511249	0.551926	0.476757	0.523753
~CO_2	0.728429	0.684348	0.740109	0.633466	0.747027	0.596718
INCEN	0.403976	0.461818	0.424360	0.497273	0.365405	0.307273
~INCEN	0.596024	0.599600	0.575640	0.463750	0.634595	0.652222
INV	0.763817	0.548857	0.787432	0.507500	0.724324	0.446667
~INV	0.236183	0.495000	0.212568	0.391429	0.275676	0.510000
TRAIN	0.792048	0.510769	**0.882079**	0.473750	0.615135	0.379333
~TRAIN	0.207952	0.653750	0.117921	0.506667	0.384865	0.712000
FAIR	0.755865	0.543143	0.666408	0.452105	**0.890811**	0.515000
~FAIR	0.244135	0.511667	0.333592	0.537500	0.109189	0.252500

Note: ~ represents absence of the condition. Bold represents quasi-necessary conditions.

TABLE 3 Analysis of sufficient conditions (Outcome: Stock returns).

	M_utilities		M_elect			M_noelect	
	1	**2**	**3**	**4**	**5**	**6**	**7**
CO_2	○	○	○	○	●	○	◦
INCEN	○	○	●		◦	○	●
INV	●	●		●	●	●	◦
TRAIN	•		•	•	○		○
FAIR		•	○	○	•	•	•
Consistency (incl.)	0.8526	0.8798	0.8075	0.8687	0.8034	0.9105	0.9011
Raw coverage (cov.r)	0.2437	0.2561	0.1171	0.1746	0.0729	0.3081	0.0886
Unique coverage (cov.u)	0.0604	0.0728	0.0590	0.1164	0.0729	0.3081	0.0886
Solution coverage	0.3165		0.3064			0.3968	
Solution consistency	0.8825		0.8386			0.9084	

Note: '●' Denotes the presence of the condition while '○' denotes the absence of the condition. Small circles denote peripheral conditions while large circles denote core conditions (Fiss, 2011). Consistency cutoff, M_utilities: 0.8397; M_elect: 0.8000; M_noelect: 0.8692. Frequency cutoff: 1. Vector of expected directions (0, 1, 1, 1, 1) (Ragin & Davey, 2016).

incentives and the presence of a policy fair competition leads to the presence of the outcome, even if environmental investments and environment management training are absent. So, the results obtained in M_elect and M_noelect support proposition P6.

5 | DISCUSSION

Through an fsQCA analysis this study highlights the importance of some ESG aspects towards the goal of achieving sustainable business models and successful financial market performance. Consistent with the results obtained in M_utilities, combating GHG emissions has been and continues to be a major concern in the fight against climate change in the EU. In fact, the subsample of non-electricity companies shows a strong commitment to low emissions, with the CO_2 condition absent in the two possible configurations. This is also predominant among electricity companies, with CO_2 as a core condition absent in two and present in one of the three paths leading to the presence of stock returns. This strong climate concern has been reflected in investors' decisions, making decarbonisation one of their ESG priorities. These findings are in line with previous studies that point to a penalisation in stock markets for higher levels of GHG emissions (Choi & Luo, 2021; Griffin et al., 2017). This negative relationship is more pronounced in emissions-intensive industries such as utilities. Consequently, this commitment to carbon and equivalent emissions neutrality allows companies to achieve financial improvements by managing an unwanted output in the business value generation process (Nguyen et al., 2021). No less important is the role of environmental investments. The results show that INV condition is present as core in the two causal configurations of M_utilities. In M_elect, INV is present as a core condition in two of the three possible configurations, and in M_noelect in one of the configurations, while it is absent as a peripheral condition in the other one. Climate change and the emergence of extreme weather phenomena are forcing utilities to

make proactive environmental investments that allow them to mitigate current and future risks or even take advantage of potential future opportunities. The high exposure of this industry to multiple risks, such as those arising from the scarcity of natural resources like water—an essential commodity for the production process and proper functioning of these companies as well as for the human consumption—requires an urgent response to ensure the protection and preservation of the natural environment and the surrounding context in which these companies operate. To this end, utilities should implement environmental management systems that allocate adequate financial resources for activities and projects aimed to cause positive environmental impacts. This includes spending and investing in systems and equipment to treat GHG emissions, waste, soil and water pollution, but also investing in environmental prevention and environmental R&D and innovation (Seles et al., 2018), since, according to study results, both strategies lead to improve stock returns. Indeed, investment in R&D encourages the emergence of environmental practices through which the organisation's environmental commitment is demonstrated to shareholders (Uyar et al., 2022). The results obtained are in line with previous research that positively relates investments in environmental protection and environmental R&D to market performance and business valuation (Grassmann, 2021; Hoang et al., 2020; Puertas et al., 2022). The absence of this condition in one of the configurations of M_noelect can be aligned with the findings of Bénabou and Tirole (2010), who consider that high environmental investment efforts of an organisation can represent a high cost for the company which, if not sufficiently rewarded, can lead to worsen its financial performance.

According to M_utilities results, the absence of sustainability compensation incentives for senior executives is also an important variable for the presence of stock returns, although this seems to be less clear in the subsample models. For electricity utilities, compensation incentives are present as a core condition in one of the three configurations and absent as a peripheral condition in other one. For non-electricity utilities, compensation incentives are present as a core condition in one path and absent in the other. These mixed results show that only for some companies and investors, linking sustainable performance targets to executive incentives can be positive for firm performance. These results partially support those obtained by previous research (Abdelmotaal & Abdel-Kader, 2016; Bachmann et al., 2020). In view of these results, several questions could be raised. Do companies have reliable tools and measures available to quantify the achievement of sustainability objectives? Is known the relationship between what is measured and what is rewarded? Are these criteria standardised and comparable across companies? And above all, are these criteria transparently disclosed to stakeholders? If criteria and targets on the same issue differ substantially between firms, investors may find it difficult to assess and quantify the company's performance. As Berg et al. (2019) point out, the heterogeneity and disparity of criteria used by ESG rating agencies is a drawback for investors, that may hinder any variable remuneration scheme linked to ESG criteria. In addition, Bebchuk and Tallarita (2022) argue that ESG-based compensation has several problems, particularly in terms of ESG metrics focused on narrow and partial measures, and agency problems related to executive compensations, all of which makes these practices of no interest to stakeholders. This can justify the results obtained and the need to continue exploring.

In M_utilities the commitment to TRAIN or FAIR diverge depending on the configurations. Employee training on environmental issues is one of the conditions that can contribute to the presence of stock returns. Environmental training has proven to have a higher acceptance among electricity companies compared to non-electricity companies, as it is present in two of the three configurations and it is also a quasi-necessary condition. This argument is supported by previous research that highlight the positive impact of GHRM practices on the organisational financial performance (Renwick et al., 2013). Conversely, in M_noelect, environmental training only appears as absent in one of the two causal configurations, suggesting that for these firms training is not currently a relevant variable. Nonetheless, environmental education of the organisation's staff can act as a decisive vehicle for strengthening future ESG actions. According to Marrucci, Iannone, et al. (2022) and Yong et al. (2020), the company's commitment to green training leads to increase employees' awareness and engagement to green practices while improving environmental performance. The fact that companies work with limited resources whose scarcity is becoming a major issue for today's societies, underlines the significance of supporting environmental training both inside and outside the company.

The condition related to fair competition policies is other possible way to reach the presence of stock returns in M_utilities. Specifically, non-electricity companies show a clear commitment to establish a 'code of conduct' that demonstrates their loyal behaviour towards competitors. In M_noelect, this is a quasi-necessary condition for the presence of stock returns, present in the two causal configurations leading to the outcome. This supports the idea that anti-competitive behaviours can have a negative impact on the company's share price (Bittlingmayer & Hazlett, 2000; De Vany & McMillan, 2004), so it is necessary to promote and publicise the establishment of fair competition policies. In contrast, in M_elect fair competition policy condition is only present in one of the configurations, while it is absent as a core condition in the other two. This widespread behaviour among electricity companies, which sometimes involves attitudes such as price fixing or the implementation of different monopolistic tactics, is not being penalised in the stock market. This result is in line with the study by Le Roy et al. (2017), which notes that investors consider that the future earnings of larger firms are less affected by convictions for anti-competitive practices than those of smaller ones, affecting also their stock returns in a lesser way. Given the increasing importance of ESG information in investment decision-making, such unethical behaviours may not lead to the presence of stock returns in the near future. Geopolitical interests and events such as the energy crisis in Europe or the war in Ukraine in 2022 could accelerate social unrest and change the investors' perspective around the management of electricity companies.

6 | THEORETICAL AND MANAGERIAL IMPLICATIONS

The study results allow concluding both theoretical and practical implications. From a theoretical point of view, the novel use of the fsQCA methodology allows to carry out a combined analysis of different variables on the basis of the equifinality principle to define different paths that can lead to the proposed outcome. Hence, the inclusion of conditions belonging to the three ESG pillars is useful to understand how they can complement each other to lead to stock market performance.

The findings also provide relevant information for practitioners and managers of utility companies who can make decisions oriented to ensure higher levels of market profitability without neglecting the commitment to ESG issues. Deconstructing the three ESG pillars provides a better understanding of the specific areas for improvement in organisations, allowing investors to assess companies more accurately and make more informed decisions. Moreover, considering the relevance of the sectors under study for the transition to green economies, adopt sustainability improvements can contribute to companies' sustainable development and provoke ecological benefits for all society.

The paths suggested by the results mostly emphasise the relevance of the absence of CO_2 equivalent emissions and the presence of environmental investments. While in the short term some investors may find it economically attractive to invest in sectors and companies which employ highly polluting technologies and production processes, in the long-term fossil fuels will drastically reduce their weight in the national energy mixes, making room for renewable and low-emission technologies in a transition towards sustainable energy economies. Therefore, managers of utility companies, both electricity and non-electricity utilities, should continue to allocate resources to reduce GHGs to ensure compliance with the EU's climate neutrality goals. These decarbonisation efforts will be supported to some extent by proactive environmental investments. In this sense, companies should strengthen their investment in activities and projects with positive environmental impacts that go beyond regulatory requirements. The objective should be to reduce the occurrence and impact of current and future risks and allow the exploitation of emerging opportunities related to new products, services and ways of doing business focused on sustainable and responsible principles. Although training on environmental issues seems to be less relevant for some utility companies, CEOs of companies in the electricity sector should continue to prioritise and support green training of their staff. It is expected that training will instil in employees an awareness about the management of sustainable natural resources, which in turn will contribute to promoting responsible environmental behaviours for all society. For this reason, this practice could also be relevant for non-electricity companies.

Non-electricity companies show a greater awareness of keeping fair competitive behaviours than electricity utilities. This situation could change in the short term because the socio-economic and geopolitical situation in Europe is changing as are investors' ESG demands and priorities; so, electricity companies should remain very attentive to the needs of the stakeholders. To date, sustainability compensation incentives for senior executives do not seem to be a decisive factor for the presence of stock returns among utility companies; however, they should strive to improve the quality of non-financial ESG reporting as well as the measurement, standardisation, and disclosure of the variable part of the executives' compensation, which could contribute to greater company transparency and help decide on the strategic prioritisation of this practice. Finally, for all these good practices to have a positive impact on companies' stock market performance, adequate disclosure of information is needed to allow all investors to assess and reward companies based on their ESG performance.

7 | CONCLUSIONS

This study examines the possible configurations that lead to stock returns in the utilities industry through a combination of environmental, social and corporate governance conditions. The results suggest different paths to achieve sustainable and profitable performance among utility companies. Most of these pathways have in common the absence of CO_2 equivalent emissions and the presence of environmental investments. The absence of executive compensation incentives linked to sustainability targets also stands out in the general model. In turn, environmental training and fair competition policies show the largest discrepancies between electricity and non-electricity utilities.

ESG criteria have become an invaluable tool for analysing the performance and contribution of organisations to environmental, human, and corporate governance challenges. The findings of this study provide insights for the improvement and development of business strategies that integrate ESG practices capable of creating value for stakeholders and society, favouring business continuity and company reputation. Specifically, the study reports on the effects of different combinations of ESG practices on the stock market performance of companies in the utilities industry. This knowledge can help managers choose and assess which combination of companies' ESG efforts is most beneficial to meet the expectations and demands of stakeholders and the needs of the organisation itself, prioritising those ESG practices that best contribute to the creation of sustainable value. The study also contributes to investors' decision-making by providing relevant information that allows them to carry out a more detailed ESG assessment of the assets in which they intend to invest, thus identifying sustainability-driven companies and projects towards which to channel their funds.

As any empirical study, this research has some limitations that need to be considered and that provide avenues for future research. Firstly, the non-financial ESG information currently provided by companies is rather limited. The growing importance of measuring sustainable performance, expressed in new regulations like the EU Corporate Sustainability Reporting Directive, and the increasing demand of investors for higher quality, quantifiable and comparable information, leads future research to be able to use quantitative sustainable data that can further enrich the analysis of the results obtained. A second

limitation lies in the periodicity and temporal frame of the data. Sustainability reports have usually an annual periodicity which implies working on the basis of annual data for all variables. Furthermore, the year 2020 has been strongly affected at all levels by the COVID-19 pandemic, so it would be interesting to repeat this study to try to isolate the possible effects of this event. A third limitation refers to the sample size, derived from the lack of other utility industry indices comprising more companies at the European level. Future research could consider companies from countries not included in the index or even from other continents in order to compare the results and evaluate their generalisation. Finally, future research could consider new ESG indicators, such as the use of water resources or the waste generation, to continue supporting the deconstruction of the ESG pillars for better decision-making by investors and CEOs.

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