

THE IMPACT OF ENVIRONMENTAL, SOCIAL AND GOVERNANCE FACTORS ON INVESTORS' BEHAVIOR - AN EXPERIMENTAL STUDY IN THE REALM OF SUSTAINABLE INVESTMENT

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Abstract: *Sustainability has become in recent years one of the major challenges for society as a whole and for the business world. This study examines the relationship between environmental, social, and governance (ESG) factors, corporate financial performance (CFP), and investing behavior. Using a sequential 2 × 2 between-subjects experiment, the goal is to investigate how various investors incorporate into their judgement and decision-making process, the financial and sustainability information presented to them in four different combinations. Results indicate that integrating sustainability and responsible business behavior into an organization's corporate strategy does not significantly influence investors' stock price assessment or allocation of funds. This conclusion holds irrespective of how the company's financial evolution looks like (improving/declining revenues and earnings). Age and other various demographics do not affect the results, while investors' view on the relevance and the reliability of the ESG material provided to them has a mediating effect on their long-term investment approach.*

Keywords: *ESG; socially responsible investing; sustainable investing; corporate strategy; ESG reporting*
JEL Classification: *M14, G11.*

INTRODUCTION

ESG has emerged at a global level to describe sustainable issues that participants in the international market consider in the context of corporate behavior. No definitive list of ESG issues exists, but ESG typically displays one or more of the following characteristics: issues that have traditionally been considered non-financial, within a medium to long-term horizon, mostly related to climate change, waste and pollution, working conditions and local, national or international communities, governance, executive pay, bribery, and corruption.

Society, in general, has reached a point where carrying for the environment, having concerns for labor, human rights, and corruption is not just good to have, but takes the form of necessity. Sustainability is vital for the survival of our Planet and if future generations are to be around and prosper, corporations must come on board. It is unethical and harmful to have large manufacturing businesses produce at the expense of working conditions and increase pollution. In today's world, there is rising pressure from the public, governments, activists, customers, and employees to act in good faith. In fact, an increasing number of financial professionals as the way forward regards becoming a sustainable company if one expects to improve a firm's bottom-line. In the business environment, sustainability seems

to be the new competitive advantage and investors today are more concerned than ever with the topic when it comes to their investment decision (Gates, 2013). Consequently, in recent years, the number of corporate reporting on ESG has increased, and the topic has gained further attention from the business and the academic world (Hahn and Kühnen, 2013).

In 2017, over 1750 professional investors from over 50 countries and representing a total global assets base of over \$70 trillion, signed the United Nations Principles for Responsible Investment (UN PRI), evidence that the international financial markets are starting to commit towards ESG (United Nations, 2018). Nevertheless, mainstream investors are slow at embracing sustainable investment practices, with just 20% of them considering extra-financial information when deciding on an investment (Ernst & Young, 2018) and fewer than 10% having formally participated into training on how can ESG influence the investment process (CFA Institute, 2019).

Knowledge of the financial effects of implementing ESG initiatives into the long-term strategy of a firm is still fragmented, and thus, moral aside, the business case of strategic and responsible investment is not obvious. There is no clear-cut conclusion on how being ESG responsible impacts corporate financial performance and investors' behavior. The mix of results, coming mostly from analyzing different ESG ratings, financial statements, credit conditions, and stock performances give support both to the Stakeholder and the Shareholder theories. When studies depict that a company's net earnings take a hit due to moving funds into sustainable behavior, the conclusions back-up Friedman's position of always having a fiduciary duty just towards the shareholders and improving their wealth. On the other end, when businesses ranked high on ESG issues outperform the market and results show increasing earnings, stakeholder theory is praised.

In this study, I examine whether there are investing consequences when an organization decides to adopt and report on its ESG activities and plans. The overall purpose of the paper is to shed light on the investment decision when the company in question has a corporate body that, in addition to reaching financial performance, voluntarily integrates into their corporate long-term strategy environmental and social policies.

To the best of my knowledge, there are rather few survey-based decision experiments conducted to show a relationship between corporate financial performance and ESG position, and all I found were carried out in the United States (US).

I conducted my research by opting to use a 2 x 2 between-subjects experimental design. To test the hypothesis, I performed a sequential experiment where participants were presented with a company from the medical technology industry and they were asked to price the company's stock in the short and long run, given different financial positions. In addition, they had to decide how much of their extra funds they would invest in the business. Further, different ESG commitments were provided for the same organization, and participants were asked to repeat their stock price assessment and investment allocation.

The research performed showed that integrating sustainability into a company's corporate strategy has no significant effect on investors' stock price valuations and investment allocations. This is true irrespective of the financial performance trend (improving/declining financial results for business), but there is indeed a moderating effect

in the end. In addition, the results hold across various demographics and the levels of investment knowledge and experience.

LITERATURE REVIEW

Literature shows that the ever-growing discussion on sustainability is almost 70 years old, and there is still no clear consensus on what responsibility should be put on corporations and investors. In 1953, Howard Bowen, considered the father of Corporate Social Responsibility (CSR) mentioned for the first time that there is a moral obligation for all businessmen to give back to society (Bowen, 1953). Bowen and his followers argued that in the long-run socially responsible firms have better financial performance. Milton Friedman publicly disagreed with the idea in 1970. The Nobel laureate believed that a firm's sole objective is to maximize shareholder value. Involving a company into CSR actions destroys shareholder wealth, as in its simplest form, sustainability acts as an agency cost, creating a higher cost structure and reducing competitiveness. While others agreed with the "Friedman doctrine" of management's fiduciary duty only towards its shareholders (Navarro 1988), starting from the ideas of Bowen, Edward Freeman, introduced in 1984 the "stakeholder theory", challenging companies to consider all stakeholders and not just the shareholders. He argued that a business cannot exist in a vacuum, and it should never lose sight of everyone and everything involved in order to get financial success. This idea of good, responsible management is considered desirable, but some as diffuse and confusing perceive the theory. Mansell (2013) argues that without a clear goal, managers will still only target bottom-line increases and their actions will only be in their self-interest. Further, Key (1999) proposes a restructuring of the theory where stakeholders as separate entities are not the pivot elements of corporate behavior. In her view, common interests should dictate the business's sustainable strategy. E.g. less pollution is important to suppliers, employees, governments, clients, and setting it as a common goal would capture the complexity of all stakeholders while uniting forces.

Advocating for the stakeholder theory, in 2004 the United Nations Secretary-General, Kofi Annan, asked the world-leading financial institutions "to develop guidelines and recommendations on how to better integrate environmental, social and corporate governance issues in asset management, securities brokerage services, and associated research functions" (United Nations, 2005). This is how in 2005 the term ESG made its first appearance in the financial sector initiative "Who cares wins: connecting financial markets to a changing world". The report stated that ESG's purpose is to cover a spectrum of issues that traditionally do not make part of a financial analysis but have financial relevance.

The 27 members of the initiative (financial institutions such as international investment companies and global banks), came out with a list of ESG operations and argued that there is a need for both companies and investors to acknowledge that there are financial opportunities and risks arising from the three pillars of ESG. They also pointed out that correct corporate governance and sound risk management are essential for successfully implementing ESG policies and measures to address challenges and benefit the organization (United Nations, 2005).

The global financial crisis took the world by surprise just two years after "Who care wins" initiative, questioning the motives and reliability of the ESG information an

increasing number of businesses and investors were reporting on. Lehman Brothers was one of the financial institutions mentioned in the Acknowledgement section of the Global Compact (GC) document, as it pioneered the idea of ESG portfolio management and advocated for responsible business (United Nations, 2005). However, the simple fact that Lehman Brothers was the first financial institution to fail during the economic meltdown is enough to generally doubt the company's commitment to sustainability and moral practices.

The whole incident raised a question of governance, as, despite the rising number of corporations and financial institutions publishing sustainability reports at a rapid pace, the presented information lacked uniformity, consistency, comparability, and auditing. ESG scores can play a key role in determining the winning stock or even how much firms pay on loans, but with ESG reporting still a matter of voluntary commitment, there is a challenge to overcome "greenwashing" and personal interpretation (Laufer, 2003). It took decades until financial reporting was standardized, and an international audit model was accepted by the market.

Accuracy, completeness, and standardization of ESG information are important factors when considering the sustainable investment (Bailey, 2016). ESG reporting is still in its early days, and consequently, researchers and finance professionals have asked for increased regulation of ESG disclosure, together with investigations on the matter and actions enforcements against deceiving businesses. In 2010, the United States (US) Congress passed the Dodd-Frank Act stipulating a few environmental disclosure requirements, and in 2017 a European Union (EU) directive ruled that ESG matters and results of large public interest companies must be annually reported. In addition, the Global Reporting Initiative (GRI) the leading authority in ESG reporting guidelines, recently published a manual, to ensure international comparability and standardization of corporate sustainability reporting. However, if the United States Securities and Exchange Commission (US SEC), the financial regulator for the world's biggest economy, does not demand standardized and audited corporate disclosure of material ESG data, as in the case of financial results, it is hard to believe that in the world's largest economy consensus will be reached in terms of ESG reporting.

Still, based on the disclosure guidance and regulations currently in place around the world, companies are being evaluated and rated on their ESG performance by various third-party providers of ratings and reports. Most rating agencies such as The Domini 400 Social Index (the first-ever index to measure socially responsible stocks, now MSCI KLD 400 Social Index), Bloomberg ESG Data Service, Dow Jones Sustainability Index, S&P 500 Environmental & Socially Responsible Index or Thomson Reuters ESG Research Data measure the firm's position in the market in terms of sustainability and responsible corporate behavior.

Investors are increasingly relying their judgment calls on ESG information, but ESG ratings are far from perfect. Due to distinct methodologies used in computing the ratings and the lack of explanations behind the results, the same company can be granted divergent grades. One prominent example is the now-bankrupt PG&E Corp, which for its ESG activities and long-term strategies was given by Sustainalytics a 4 (on a scale of 1 to 5, 5 being the highest risk) in 2019, while Opimas Pierron gave it a 1 (Bloomberg, 2020). In goodwill and for political reasons regulators have an increased appetite for information regarding a company's ESG performance, but how this is useful to investors to better grasp

CFP is still under debate. The traditional capitalistic theory of returns is losing ground, facing a legitimacy crisis and reduced acceptability (Gaurav and Gagan, 2019). Available literature provides many examples of a positive relationship between ESG and CFP (Holm and Rikhardsson, 2008; Martin and Moser, 2016). Eccles et al. (2014) found considerable outperformance of ESG responsible firms in comparison to low sustainable ones and draw attention to the fact that such outperformance will further expand, as strategic sustainable companies will be better equipped in terms of efficiencies, costs, knowledge, reputation, and trustworthiness. Other papers, mostly experimental research, concluded that on average there is no difference regarding the expected returns of companies involved in ESG activities and those that do not, and thus an investor's choice of stock should still to a higher extent be based on financial performance (Bello, 2005).

However, even with the world becoming more assertive on the importance of keeping the environment clean, on having a sustainable social behavior and sound governance there is a vast pole of research claiming there is a lack of clear, conclusive quantitative evidence that responsible, sustainable investment delivers alpha and pays dividends. The meta-analysis of Friede, Bush and Bassen (2018) looking at over 2000 empirical studies from 1970s onwards resumes results are inconclusive, somehow ambiguous, but traditional profit-oriented businesses show more interest in grasping and managing the broader impacts of their companies over its stakeholders because it is the new way of doing business stakeholders like and not abiding to the new rules would result in long-term financial losses. Nowadays stakeholders believe in sustainability and firms could destroy shareholder value because of consumer boycotts, the inability to hire the most talented people, and by paying potentially punitive fines to governments.

Promoting a sustainable and responsible behavior is the altruist thing to do, but apart from the feel-good factor whether investors actually consider environmental, social, and governance dimensions when making their investment decision, is still a subject of many research papers and experimental studies.

The practice of considering ESG issues in investing has evolved significantly from its origins in the exclusionary screening of listed equities based on moral values. BlackRock CEO, in its annual 2020 letter to clients, announced that the largest fund manager in the world will analyze firms' ESG areas, with as much rigor and attention to detail, as the one paid in assessing traditional measures such as liquidity and credit risk (BlackRock, 2020). In this view, he stated that the goal of long-term profitability couldn't be achieved if companies and governments do not fundamentally reshape finance by understanding the importance of serving all stakeholders and reallocate capital to address sustainability risks.

Connecting to the idea of long-term profitability, researchers have discovered that an important and recurring theme linked to ESG factors is that they are mostly excluded when opting for short term investing. The culture of financial incentives for one year triggers a lack of attention to long-term sustainable value creation. Most of ESG dimensions do not fit too well with this short view as they mostly influence financial performance over longer periods, as ESG investment increases the bottom-line results in the end (Renneboog et al., 2008). Most often, poor company governance will negatively influence the firm, not in the few months, but most likely over the long term, and investing in alternative green energy will result in lower energy costs, not tomorrow, but in the years to come.

HYPOTHESIS DEVELOPMENT

To draw on the literature review, it is difficult to assign a quantitative value to ESG factors and include them into mathematical models, but investors show an increasing interest on the topic of sustainability and thus they inflict the idea that ESG strategies positively influence investment decision and stock performance. The degree to which ESG information touches on investment decisions can depend on multiple elements such as the financial performance of the company, the publication of an ESG report, the reliability and transparency of the sustainability information provided or the inclusion into an ESG rating top by an independent third-party organization (Brown-Liburd and Zamora, 2015).

Providing credible ESG reporting and eliminating the greenwashing effect of too optimistic marketing communication is crucial in order to positively drive an investor's decision-making process. Most of ESG disclosure is standardized, touching similar topics and using the same embellished language. The credibility arguments must stand for ESG reports to influence investors' perception of the company they are scrutinizing. I expect that a responsible ESG conduct, disclosing on the sustainability issues and being ranked on ESG factors by a respectable third party are all elements, which will have a strong effect on one's investment decision.

In addition, past financial company performance coupled with limited or strong ESG priorities may influence investors' allocation of funds. I believe that when sales and earnings are increasing, a strong integration of ESG factors will result in a higher price revision and increased investment allocation, versus when the company shows a weak ESG strategy. On the other hand, a declining financial performance coupled with ESG priorities would lead to lower negative price revisions and higher investment allocation, as opposed to non-integration.

However, some might have the view that there is a trade-off between sustainable corporate behavior and financial performance, with ESG reducing shareholder value. Investing in alternative sources of energy might raise the quality of the environment and provide the prospect of saving, but in the short run, it will most definitely raise costs. The time horizon of ESG strategies may limit their appeal to investors, as many are short spanned, looking for returns now, and it is my view that investors will have greater faith in the long-term evolution of ESG strategic stock returns versus its immediate progression.

Formally, my hypotheses are as follows:

H1: Investors' stock price valuation will be higher when a company has strong ESG priorities integrated into its corporate strategy versus when it does not focus on them.

H2: Investors' positive reaction to ESG priorities will be stronger when there is an improvement in the firm's financial performance.

H3: Investors' positive reaction to ESG priorities will be stronger in the long run.

H4: Investors will invest higher amounts when a company has strong ESG priorities integrated into its corporate strategy versus when it does not focus on them.

H5: Investors' positive allocation of funds due to ESG priorities will be higher when there is an improvement in the firm's financial performance.

RESEARCH METHOD

Experimental Design, Procedure and Material

The research I performed must be seen as an investigation into behavioral finance and for testing my hypothesis, I decided to use an experimental design. The goal was to investigate how various participants incorporate into their judgement and decision-making process, the financial and sustainability information presented to them in different combinations of financial performance and sustainability strategy. I opted for a 2 x 2 between-subjects design, for which an overview is presented below.

Figure 1. The experiment's design (2 x 2 between-subjects design)

	Positive (improving) financial performance	Negative (declining) financial performance
ESG incorporated into company's strategy	Group A	Group C
ESG not incorporated into company's strategy	Group B	Group D

This figure presents the experiment’s design, which is a 2 x 2 between-subjects structure, where I randomly allocated 10 participants per group, and each group received slightly different material to go through, but the same set of questions to answer to. For example, both Group A and Group B were offered scenarios where the company was doing well financially, with all financial indicators on an improving trend. However, Group A got material which showed that the firm was sustainable with a powerful ESG incorporated in the organization’s strategy, while Group B discovered the business did not have a culture of corporate sustainability, and mainly focused on increasing shareholder value, with no clear involvement in ESG actions.

In the context of Covid-19 and lock-down measures, all participants were involved in a field experiment, eliminating the artificial environment and aiming to enhance the external validity of the actual real-life decision-making process. A completely randomized design was used to assign participants to one of four groups.

As with most experiments, part of the subjects in the experiment were influenced in a certain way, while the others in a quite different matter. All participants received by email study material to go through. The pack included industry, company, and financial information for an information technology business with a favorable/or not ESG report. The company Pentacorp is a fictional one so the participants’ decisions could not be affected by prior knowledge of the business, even if part of the financial information of the company is an excerpt taken from the annual report of a real company from the same medical technology industry.

Following the instructions section, the material received by the participants included three sections. The first section presented a company overview and financial information altered to show increasing or decreasing results for the firm (revenue and profit-wise) the selected hypothetical company (“Pentacorp”) operates in the information technology business. I chose an industry with a positive impact in the world (as opposed to tobacco, weapons, sugar-related, etc.). I decided to not opt for a financial institution as the business model of such an organization is more difficult to comprehend, making the financial information presented to the participants harder to evaluate. Participants were next provided the following financial statements: the balance sheet, profit and loss

statement, and the cash flow statement, each providing a five-year history of the firm's financial results. In order to reduce the effort needed to analyze the financial statements, the statements were aggregated and simplified. As stated in the Experiment's Design, Group A and Group B received positive financial information with increasing sales and earnings, while the last two groups were presented with a negative evolution 2019 vs. 2018, by simply trans positioning the initial data of the two years in question. In addition, I changed the narratives accordingly for Group C and Group D.

To continue, participants were asked to evaluate the business' stock price both in the short and long run. The short-term horizon was intended to measure behavior due to more profit-oriented, speculative motives, while the long-term strategy had the scope of seeing the strategic reaction given the longer spanned ownership of stock. All participants were given a closing stock price of \$100 from the day prior to the assumed publication day of the financial statements, with the scope to decrease the chances that they would incorporate factors into their stock price assessments other than those manipulated in the experiment. Further, they had to decide how much of an additional \$1000 they will be willing to invest in the context in which they already own a perfectly diversified portfolio.

Even if in reality no company has a pure differentiating ESG strategy, in the next section of the material, the participants had to repeat their previous stock price assessment and investment allocation based on a manipulated ESG report, which for two of the groups had sustainability priorities integrated in the company's strategy, while for the other two it did not. Once again, judgement comments were accepted. The ESG factors presented conveyed reliability via the fact that I made three references to international recognized rating agencies (NASDAQ Sustainability World Index, Dividend Channel Socially Responsible Dividend Stock, and Human Rights Campaign Corporate Equity Index). Next, all involved in the experiment were asked to answer a final questionnaire, which apart from requesting demographic details, contained three manipulation questions, with dichotomous answers "True" / "Not true" to test understanding of the material presented. And also included a section asking participants to rank on a 1-5 Likert scale (with 1 being very low and 5 being very high) the company's ESG on a couple of pillars and their investment knowledge and expertise.

The Participants

For the purposes of this study, the definition of a "participant" or "investor", is not that of a real shareholder or professional investor but an individual who possesses the necessary knowledge and skills to evaluate financial statements, ESG information, and investments. Therefore, I included in the experimental control group working finance professionals with more than 10 years' experience, and Finance and Risk Management students from a large Romanian public university at the end of their two years of Master studies. For the experiment, I did not grant any incentives to motivate participation.

Using "students as subjects provides a resource-efficient way to give insights into how practitioners perform sustainability-related judgment and decision-making" (Espahbodi et al., 2018). The finance Master students are characterized by an understanding of both financial and non-financial information for investor decision making, but no actual practical work experience. Espahbodi et al. (2018) argue that there

are no significant differences in between the investment's decisions of students vs. finance professionals.

For the experiment, I sent the material to 56 individuals and 42 replied. Out of these, 2 did not pass the verification questions, so I ended up with 40 questionnaires as a base for my analysis. 60% of all participants are females and 40% are students. The participants' average age is 31.6 years old, with no extreme observations. 30% (48%) of the contributors to this research have above (below) average knowledge of investment, as compared to only 13% (60%) of those who have higher (lower) than average investment experience. Looking at the groups, Group C has the highest number of females 80%, followed by group B with a share of 70%, both presenting much higher levels versus Group D where less than half (40%) are females. Group A is balanced 50-50 in terms of gender but has the youngest participants. In terms of investment knowledge, the self-assessment revealed that on average women are more knowledgeable than men (3.25 points vs. 2.88), but also less experienced (2.25 vs. 2.38 points). I also built a correlation matrix between these characteristics and the ones worth mentioning are a high-positive correlation between investment knowledge and investment experience (76.3%), a moderate positive correlation between age and investment knowledge (66.0%), and age and experience (56.7%).

Considering the above-presented characteristics, I believe the pool of individuals used in this research is a good proxy for non-professional, reasonably informed investors, consequently allowing rigorous testing of this paper's hypothesis.

The Independent and Dependent Variables

I used two manipulated (independent) variables in my experiment. The positive or negative financial evolution of the company was the first independent variable. The second one was the inclusion or exclusion of an ESG commitment in the company's strategy. Manipulation of the above is expected to influence participant's short- and long-term stock price predictions and the amount they are willing to further invest in the corporation on a scale of \$0 to \$1000. I opted for the stock price evolution to be presented in terms of percentage change versus the absolute amount in order to get magnitude information regardless of what the initial stock price level was. The decision to investigate both short- and long-term stock price evolution came as a result of prior research conclusions which state that different time horizons influence future estimates (Rikhardsson and Holm, 2008). Another independent variable in the study is the investment decision of how much of an additional \$1000 would the participants in the study invest in the firm, while already owning a perfectly diversified portfolio. The scale I used of \$0, \$300, \$600, and \$1000, is better suited in experiments with lower numbers of participants, as it provides robustness to results.

DATA, DESCRIPTIVE STATISTICS AND RESULTS

Descriptive Statistics

Relevance, Reliability and Strength of ESG Performance

The conclusions of this study are influenced in great part on whether the participants to the surveys recognize and accept Pentacorp's sustainability information

disclosure as relevant and reliable. These were verified through a manipulation check in Section 3 of each questionnaire where respondents were asked to rate the presentation of the company’s ESG factors along those two dimensions. In two different questions participants had to rank on a Likert scale of 1 to 5 (with 1 being very low and 5 very high) the strengths of the two mentioned attributes. The mean scores of the results range from 3.7 to 4.1 for relevance and 3.9 to also 4.1 in terms of reliability, all being means being lower in the negative financial performance groups versus the ones with improving financial results. This shows that in a positive business evolution, when prospects for the bottom—line are looking good, investors have a slight tendency of being more interested in the other aspects of the business, such as the sustainability strategy of the firm, and not just the financials. In other words, there is a bit more interaction between financial performance and ESG disclosure when revenue and net earnings look better.

Furthermore, also using a 5-point Likert scale I questioned participants regarding the strength of ESG performance. Group A and C have means (3.9 and respectively 4.1) above the midpoint of 3, and Group B and D means (1.7 and respectively 1.6) are below the midpoint, concluding that participants’ perception of the ESG strategy is in line with the objective of each questionnaire.

In general, the results show that participants of this experiment understood the firm’s ESG position, did not consider it subjective, nor did they perceive it to be scoped as a marketing tool. Their stock valuation integrated the ESG factors presented and linked with the next analysis it can be concluded the participants’ investment decisions are consistent with their relevance and reliability assessment.

Table 1 Perceived relevance and reliability of ESG disclosure

Perceived relevance of ESG disclosure	ESG priorities integrated into strategy			ESG priorities not integrated into strategy			ALL		
	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation
Positive financial performance	10	4.10	0.43	10	3.80	0.58	20	3.95	0.50
Negative financial performance	10	4.00	0.47	10	3.70	0.57	20	3.85	0.52
ALL	20	4.05	0.45	20	3.75	0.58	40	3.90	0.51

Perceived reliability of ESG disclosure	ESG priorities integrated into strategy			ESG priorities not integrated into strategy			ALL		
	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation
Positive financial performance	10	4.00	0.47	10	4.10	0.52	20	4.05	0.49
Negative financial performance	10	3.90	0.47	10	3.90	0.53	20	3.90	0.50
ALL	20	3.95	0.47	20	4.00	0.53	40	3.98	0.50

This table presents the perceived relevance and reliability of ESG disclosure in all the four questionnaires. The data for this table was gathered from the answers received on the relevance and reliability questions from Section 3 of the questionnaires. On average, for relevance, the scores are slightly higher when ESG are integrated into the corporate strategy, while for reliability these are almost in line between adopting a shareholder vs. a stakeholder position. All means are above the center point of 3, depicting that investors view ESG disclosure as an important element of their investment decision-making process.

Stock Price and Investment Allocation Revisions

The below stock price revision tables depict the descriptive statistics for my dependent variables, the participants’ stock price assessments and their investment decisions in the short and long run. The tables show in detail the mean percentage changes (pp) from Section 1 of each questionnaire when participants were only presented with Pentacorp’s financial performance, to Section 2 where they were provided with the ESG details. In example, looking at the short-term perspective, in Section 1 of the questionnaire A participants were given material presenting Pentacorp as a firm that is financially healthy and has great bottom-line perspectives. At this stage, the respondents evaluated the firm’s stock price to raise by 2.56% in the next 5 months. Further, participants were offered additional material, which showed that Pentacorp is highly committed to ESG; proof being the fact that it was ranked for many years now, and by various third-party organization as one of the top 10% sustainable businesses of the industry. This time participants answered that on average they expect the firm’s stock price to raise by 2.73%. The difference between the two percentages, this being 0.17pp, is what is presented in the below table as the Mean percent revision for the short-term horizon when Pentacorp is enjoying a positive financial performance and it has ESG priorities integrated into its corporate strategy.

Table 2 Short and long-term stock price revisions

Difference in percent revisions in SHORT-term stock price assessment	ESG priorities integrated into strategy			ESG priorities not integrated into strategy			ALL		
	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation
Positive financial performance	10	0.17pp	0.17pp	10	-0.35pp	0.64pp	20	-0.09pp	0.41pp
Negative financial performance	10	1.75pp	0.82pp	10	-0.59pp	1.28pp	20	0.58pp	1.05pp
ALL	20	0.96pp	0.49pp	20	-0.47pp	0.96pp	40	0.25pp	0.73pp

Difference in percent revisions in LONG-term stock price assessment	ESG priorities integrated into strategy			ESG priorities not integrated into strategy			ALL		
	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation
Positive financial performance	10	0.45pp	0.19pp	10	-0.77pp	-0.11pp	20	-0.16pp	0.04pp
Negative financial performance	10	2.89pp	4.57pp	10	-3.03pp	1.19pp	20	-0.07pp	2.88pp
ALL	20	1.67pp	2.38pp	20	-1.90pp	0.54pp	40	-0.12pp	1.46pp

In Section 1 and 2 of the questionnaire I asked the participants to evaluate, for both the short and the long-term time frame, how they view the stock price level (to go up or down – percentage wise) before they discovered Pentacorp was committed to ESG or not, and after finding out where the company stood from a sustainability point of view. The average differences in the stock price valuation levels are presented above, together with the standard deviations to the mean points. The data in presented in percentage points (pp) as I am presenting percentage differences.

The first hypothesis of this experiment was built on the idea that those stock price assessments will be higher when a company has strong ESG priorities versus when its focus is mainly profit. In addition, hypothesis two and three require further investigation to see if indeed investors’ positive stock price revision mentioned above will higher when the firm’s financial performance is improving and respectively when we are analyzing investor’s reactions in the end.

With improving financial performance and a strong ESG position (Group A), the percentage change from before to after viewing the ESG information is of 0.17pp (from an increase in stock of 2.56% to an increase of 2.73%) in the short term and 0.45pp (from an increase in stock of 3.24% to an increase of 3.69%) in the long run. When ESG is not

embedded into the corporation's strategy even if earnings are increasing (Group B), it determines investors to lower their vote of confidence for the firm's stock evolution by 0.35pp (from an increase in stock of 2.72% to an increase of 2.37%) in the short run and lower it by a slightly higher amount of 0.77pp (from an increase in stock of 4.52% to an increase of 3.75%) over the next two years.

I end up with the same conclusion, after analyzing the cases where Pentacorp is going through financial difficulties. In Group C participants saw Pentacorp's financial performance decreasing, but also saw that Pentacorp is betting on a strategy for further improving the firm's sustainability position. This situation resulted in a short-term stock price revision of +1.75pp (from a decrease in stock of 4.76% to a lower decrease of 3.01%) and a revision of the stock in the end of +2.89p (from a decrease in stock of 1.82% to in fact an increase in stock of 1.07%). It shows that even if financially things are not as expected, investors gained a slight faith things will turn around once they saw Pentacorp is investing in ESG. In Group D where Pentacorp, did not perform neither well in the financial aspects, nor in sustainability, investors lowered their bets from Section 1 to Section 2 of the questionnaire. In the short run their stock price revisions lowered by 0.59pp (from a decrease in stock of 4.09% to an even greater decrease of -4.68%) and in the long run it lowered by 3.03pp (from a decrease in stock of -0.37% to an even greater decrease of -3.4%). The degree of the drop in stock price is slightly higher when ESG is not embedded in the firm's culture and the business is not performing, versus when the business is doing well financially. In terms of standard deviations, these are also higher for Group D and C versus A and B.

As expected, the long-term perspective has better outcomes as investors consider sustainability requires time to translate into financial benefits. The participants to this experiment forecast that a corporation's decision to integrate or not ESG elements into the strategy will cause higher percentage changes in the long-term versus the immediate future (2.89pp vs. 1.75pp or -3.03pp vs. -0.19pp), supporting the theory that ESG factors fit best with a long-term investment strategy. So, it seems that the participants to the questionnaires acted in line with those professional investors from Blackrock I mentioned in the literature review who trust sustainability will in the long-run lower costs, help discover risks in time and reveal business opportunities which otherwise would not have been caught. The reciprocal is also valid.

The above descriptive analysis, helps me prove that revisions of stock prices in Group A and Group C are slightly higher than those in Groups B and D, and also show that in the face of negative finance performance when dealing with a company committed to an ESG strategy, investors have a bit more faith in an improving financial position versus when financials are already great.

Table 3 reveals that the improving/declining financial evolution of Pentacorp impacts the investment decision. Results show that ESG integration has a beneficial effect (a +10pp raise in allocation) even when profit is declining, moderating the effect of the negative financials. Participants in the experiment do not perceive ESG negatively as an additional cost, but rather view it as a competitive long-term advantage.

When the financial trend was ascending and after finding out that Pentacorp has ESG factors integrated into its corporate strategy, on average a participant raised its investment allocation from \$590 to \$840. Next, with ESG still embedded into the company's behavior, but this time with sales declining, the firm also received a positive revision, only this

instance it started from a lower base (from \$180 to \$280). The times that Pentacorp was mainly focused on profit, no matter how the financial statements presented the participants lowered by an average of 30% their investments.

Table 3 Investment allocation revision

Average investment allocation revision	ESG priorities integrated into strategy		ESG priorities not integrated into strategy		ALL	
	No. of observations	Average investment allocation revision	No. of observations	Average investment allocation revision	No. of observations	Average investment allocation revision
Positive financial performance	10	250	10	(220)	20	15
Negative financial performance	10	100	10	(90)	20	5
ALL	20	175	20	(155)	40	10

Difference in percent revisions in investment allocation	ESG priorities integrated into strategy			ESG priorities not integrated into strategy			ALL		
	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation	No. of observations	Mean	Standard deviation
Positive financial performance	10	25.00pp	-4.93pp	10	-22.00pp	6.40pp	20	1.50pp	0.74pp
Negative financial performance	10	10.00pp	11.27pp	10	-9.00pp	1.37pp	20	0.50pp	6.32pp
ALL	20	17.50pp	3.17pp	20	-15.50pp	3.89pp	40	1.00pp	3.53pp

This table presents for both the short and the long-term time frame, how much of their funds would investors like to further invest (out of an allocated amount of \$1000) in the conditions of already owing a perfectly diversified portfolio, before they discovered Pentacorp was committed to ESG or not, and after finding out where the company stood from a sustainability point of view. In example, in the context of Pentacorp’s improving financial position, on average participants to my research want to invest \$250 more in the firm’s stock when they discover that the company is ESG dedicated (in Section 1 of the questionnaire they answered they want to invest \$590 and in Section 2 the amount raised to \$840). This can be translated into a 25-percentage point (pp) increase as \$590 represent 59% out of the allocated \$1000 and \$840 represent 84%.

In general, results reported in Tables 2 and 3 convey the message that ESG influences investors’ decisions, to a higher, but very modest degree in the long-run and with a moderating effect in the case on negative financial performance.

T-test Analysis

The differences presented above seem modest in degree so therefore I decided to perform a T-test on the information gathered from the questionnaires (stock price valuation and investment allocation). The scope of my two-sample t-test is to infer properties of the populations when discussing increasing and decreasing financial performance groups separately.

Table 4 t-Test for Groups A and B

<i>t-Test for Groups A and B</i>	<i>ESG included</i>	<i>ESG excluded</i>
Mean	102.550	102.640
Variance	2.212	1.114
Observations	20.000	20.000
Pooled Variance	1.663	
<i>P(T<=t) two-tail</i>	<i>0.827</i>	
<i>t Critical two-tail</i>	<i>2.024</i>	

The table present the t-Test results when looking into Groups A and B stock-price assessment, as both groups have the firm go through positive financial evolution and just different ESG strategies.

In Groups A and B, with positive financials, when performing the independent t-test (as I use the different participants in the two groups) the means of the two groups turn out to be 102.5 and 102.6, with a p-value of 0.827 high above the significance level of 0.05, we accept the null hypothesis, which states that the population means are the same. This is consistent with the results from the later presented two-way ANOVA analysis, showing that the integration of sustainability information into the strategy of a corporation is not very important for investors, and thus not meaningful enough to their investment decisions.

Table 5 t-Test for Groups C and D

<i>t-Test for Groups C and D</i>	<i>ESG included</i>	<i>ESG excluded</i>
Mean	96.155	95.575
Variance	6.720	4.570
Observations	20.000	20.000
Pooled Variance	5.645	
<i>P(T<=t) two-tail</i>	<i>0.445</i>	
<i>t Critical two-tail</i>	<i>2.024</i>	

The table present the t-Test results when looking into Groups C and D stock-price assessment, as both groups have the firm go through negative financial evolution and just different ESG strategies.

For the other two groups in the experiment, p-value is also higher than the alpha, only this time the value is lower than the one in the first t-test, in line with the argument from the descriptive statistics section that when faced with decreasing financial performance ESG integration moderates to a higher degree investors' negative perception of the stock.

ANOVA Analysis

My research design is a 2 x 2 factorial experiment in which I collected primary data on two continuous quantitative dependent variables (stock price and investment amount) at multiple levels of two categorical independent variables (improving/declining financial results and ESG strategy type). As I want to investigate in the short and long run how my two independent variables, in different combinations, influence my dependent variables, the right choice of a statistical test is the two-way ANOVA with the F-test for statistical significance. F-tests are used at the group level to statistically compare the means and assess the equality of variances. If the variance within groups is smaller than the variance between groups, the F-test will find a higher F-value, and therefore a higher likelihood that the difference observed is real and not due to chance. Moreover, for the two-way ANOVA, I decided to perform the test with replication as for each group I have multiple observations.

In addition, my two-way ANOVA with replication will be balanced as each group contains the answers from exactly 10 questionnaires.

Only after checking that my data meets the following assumptions, I was able to perform the two-way ANOVA. First, my data is homogeneous, as the descriptive analysis and a boxplot show that the means of the groups are within a similar range. Further, the experimental design proves my independent variables are not connected to one another and the dependent ones represent unique observations of a randomize allocation process.

The alpha knew, as the significance level I considered in the two-way ANOVA testing with replication is 0.05, the one common level used in statistics. As shown by the financial performance p-values from the next three tables there is indeed a significant effect of financial performance (increasing or decreasing results) on both the stock price valuation and the investment allocation. P-values are below 0.5% and the F-value is higher than the F critical (83.6 > 2.7, etc.) However, all of the below panels reflect the fact that stock valuation and allocation of funds are not significantly impacted by the integration of ESG factors. This is shown by the p-values which are higher than 0.05 and F-statistics are lower in value versus the F critical.

Table 6 Two-way ANOVA results for the short-term stock assessments

Short-term					
Source of Variation	SS	MS	F-statistics	P-value	F crit
Financial performance	905.858	905.858	247.890	0.000	3.967
ESG integration	1.200	1.200	0.329	0.568	3.967
Interaction	2.245	2.245	0.614	0.436	3.967

This table presents the results of the two-way ANOVA performed on the short-term stock price valuations, by looking at how the two independent variables (financial performance and ESG integration) connects to the stock price assessment. On the columns side financial performance was the dependent variable, why on the row level this was the ESG element. The significant level used of 0.05.

In terms of the short-term interaction of the financial performance and ESG factors, the results of the two-way ANOVA indicate that with a p-value of 0.436 considerably above the significance level of 0.05, and with a F-statistics of 0.614 lower than the F critical, no matter if the financial performance of the company is improving or declining, integrating or not ESG factors into the corporate strategy of a company does not significantly affect the stock assessment. Not the same thing can be said about the financial performance which with a p-value of 0 most definitely has a significant effect on the investors' behavior.

Table 7 Two-way ANOVA results for the long-term stock assessments

Long-term					
Source of Variation	SS	MS	F-statistics	P-value	F crit
Financial performance	486.098	486.098	31.960	0.000	3.967
ESG integration	0.264	0.264	0.017	0.495	3.967
Interaction	0.040	0.040	0.003	0.359	3.967

The above table depicts the conclusions of the two-way ANOVA performed on the long-term stock price valuations, by looking at how the two independent variables

(financial performance and ESG integration) connects to the stock price assessment. On the columns side financial performance was the dependent variable, why on the row level this was the ESG element. The significant level used of 0.05.

When looking at the long-term interaction of the two dependent variables, once again the stock price valuation is shown to not be influenced by them. The statistics show a p-value of 0.359 higher than the alpha used in this paper. Still, the no significance level is lower than the one we discovered in the short-run (p-value of 0.359 versus 0.436).

Table 8 Two-way ANOVA results for investment allocation

<i>Source of Variation</i>	<i>SS</i>	<i>MS</i>	<i>F-statistics</i>	<i>P-value</i>	<i>F crit</i>
Financial performance	3,052,500	1,017,500	12.583	0.000	2.732
ESG integration	2,000	2,000	0.025	0.875	3.974
Interaction	643,000	214,333	2.651	0.055	2.732

This snapshot presents the conclusions of the two-way ANOVA performed on investment allocation, by looking at how the two independent variables (financial performance and ESG integration) connect to what participants to the research plan to further invest in the company when already owning a perfectly diversified portfolio. On the columns side financial performance was the dependent variable, why on the row level this was the ESG element. The significant level used of 0.05.

The short and long-term stock price assessments were not significantly impacted by the integration of financial performance and the ESG position of Pentacorp, and investment allocation follows the same lines, but to a much lower degree as the p-value of 0.055 is just slightly higher than the alpha level and the F-statistics almost the same to the F critical.

The analysis conducted on the interaction element of Tables 4, 5, and 6, help me conclude that I have to reject all of the hypotheses of this research. The conclusion is that, although there are differences in respondents' answers to short and long-term stock valuation and investment allocation, due to the different mix of the two dependent variables, these differences are not significant. This is somehow inconsistent with the participants' self-reflection on the perceived relevance and reliability of the ESG information.

SUMMARY AND CONCLUSIONS

The scope of this research was to advance knowledge on ESG by examining the investment effects of adopting a sustainable business position when dealing with different financial performances and time horizons. The scope was to see which of the two theories the study's findings will support (the stakeholder or the shareholder doctrines) and see if they can bring some clarity throughout the contradictory conclusions available in the literature today.

I used a sequential 2 × 2 between-subjects experiment, where both graduate students and finance professionals acted as respondents. The participants in the research were provided with reading material that presented a company operating in the medical technology industry in combinations of positive or negative earnings, with ESG integration

or exclusion. They were asked to answer the same set of questions in two different moments of the study in order to capture their view when dealing with distinct levels of information.

The results show that while there is an investment impact, mostly in the long run, being a sustainable organization is not significantly influencing investors' decisions. This is not the conclusion I was expecting, as I believe sustainability has considerable benefits for a company's profit and loss statement, but it does back Friedman's theory of maximizing wealth for the company's owners.

This study backs-up the findings of Espahbodi et al. (2018) and other experimental studies on this topic, but contradicts the survey findings of the CFA Institute 2015 research. The difference between my research and CFA's one is the fact that CFA only questioned investors if ESG is consistently present in their investment decision-making process, versus the questionnaires I built where in addition participants were asked to quantitatively evaluate their decisions. This underlines the distinction between wishes and actions, between perceived relevance and reliability of what is sustainable and correct responsible business and what we actually do in that respect.

LIMITATIONS AND OUTLOOK

In terms of limitations, my experimental research is not without them. It most definitely is an over-simplification of the real decision-making process; it is limited in the number of participants and most definitely was performed during a stressful Covid-19 lockdown environment. Moreover, although the approach of using students is common and even if the finance professionals who acted as participants are all ACCA accredited professionals, the results may not be generalizable, as these are not perfect substitutes for investors.

Further research could complement my paper by testing investors' behavior, when faced with outside of the organization ESG negative information or in the context of different financial and ESG performances, in other developing countries as Romania and on larger numbers of participants.

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