

Master's degree  
in Corporate Finance

Chair in Asset Pricing

**ESG scores and corporate financial performance**  
*An empirical study of the luxury industry*

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## **ABSTRACT**

Due to the lack of uniformity across the literature regarding the effects of socially responsible investment and due to the continued interest of key actors in sustainability, this paper investigates the effect of the sustainability performance of luxury industry companies on their financial performance. Sustainability performance is measured by ESG indicators obtained from Bloomberg's ESG database. ESG assesses sustainability performance from an environmental, social and governance perspective. Financial performance is represented by average excess returns from January 2008 to December 2019. To assess the significance of the effect of ESG ratings on financial performance, regression analyses are conducted based on the multifactorial model offered by Fama and MacBeth (1973) with the three Fama-French factors (1993). In addition, a portfolio is created based on ESG scores which is used in the multifactorial model. The main result of the analysis shows that the ESG score has a significant and negative influence on the financial performance of luxury industry companies.

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## **LIST OF ABBREVIATIONS**

BM: Book to Market ratio  
CAPM: Capital Asset Pricing Model  
CFP: Corporate Financial Performance  
CSP: Corporate Social Performance  
CSR: Corporate Social Responsibility  
E-score: Environmental score  
ESG: Environmental, Social, and Governance  
ECCP: European Climate Change Program  
FM: Fama-MacBeth  
FSC: Forest Stewardship Council  
G-score: Governance score  
HML: High Minus Low  
ICAPM: Intertemporal Capital Asset Pricing Model  
IDV: Industry Dummy Variable  
LEED: Leadership in Energy and Environmental Design  
LuxInd: Luxury Industry  
Mkt-Rf: Market risk premium  
MOM: Momentum  
OLS: Ordinary Least Squares  
PRI: Principles for Responsible Investment  
S-score: Social score  
SRI: Socially Responsible Investment  
SMB: Small Minus Big  
TMB: Top Minus Bottom

## 1. INTRODUCTION

Every month the world in which we live witnesses new climatic events proves that climate change is there and is moving faster and faster. Extreme weather events are occurring as temperatures rise and ice melts rapidly. Droughts are increasing, making our oceans hotter and more acidic. I think humanity is looking at climate change as if it is something that is happening on another planet, as if pretending that climate change does not exist makes it disappear. But it is not like that. We only have one planet and we have to protect our future on this planet. However, in recent years there has been a growing, but still not sufficient, awareness of the challenges facing society and the planet. The main actors, such as government and society as a whole, are increasingly working towards solutions to these issues. Examples are the launch of the European Climate Change Program (ECCP) in 2002 and the UN Principles for Responsible Investment (PRI) in 2006 (Annér & Jakobsson van Stam, 2018). An important role is played by companies and investors, who are called upon to distribute capital in the best and most sustainable way (Generation, 2012). The goal is to invest capital in a sustainable way by maximizing long-term economic value and shareholder value while preserving environmental and social welfare. This global trend has led to a detailed assessment of corporate sustainability performance, in particular environmental, social and governance (ESG) aspects. As the ESG concept offers a deeper definition of Socially Responsible Investment (SRI) (MSCI, 2018), investors are increasingly publicly committing to consider ESG data in their investment analysis. These indicators are created to capture additional dimensions of corporate performance that are not reflected in accounting data (Bassen & Kovacs, 2008), so this type of information is rapidly being included in corporate communications (Arvidsson, 2010). Consistently, fellowships around the world have begun to meet market demand for ESG dissemination and research. In 2019, many of the world's leading institutional investors and CEOs of stock exchanges met to discuss how stock exchanges could work with investors, authorities, regulators and businesses to encourage responsible approaches to long-term investment, considering both environmental and social risks and opportunities (Xiao, Faff, Gharghori, & Lee, 2013). On the other hand, companies are focusing on sustainable activities to reduce their social and environmental impact and at the same time to improve relationships with both employees and investors. A sustainable attitude allows companies to improve their reputation and have easier access to capital (EY & Boston College Center for Corporate Citizenship, 2013). This growing interest in sustainability, which leads to considering ESG factors in investment decision-making, has overcome an initial obstacle. This obstacle was represented by a large number of investors and managers who argued that their fiduciary duty required them to focus exclusively on maximizing profits for beneficiaries (Richardson, 2007). However, despite this continued focus on environmental, social and governance issues, the main debate concerns the relationship between the corporate social performance (CSP) and the corporate financial performance (CFP). Thus, on the one hand, there is an increased importance of ESG ratings worldwide and, on the other hand, there is the question of their effect on the economic value of companies. Both positive and negative effects can be added to these ESG scores. Highly sustainable companies can have positive consequences such as

reputation management, saving energy costs, developing new technologies and gaining market share. While negative consequences can be the costs of implementing sustainable activities and low expectations towards market premiums (Jang, 2019). In this regard, Aupperle, Carroll and Hatfield (1985) argue that socially responsible companies suffer a competitive disadvantage by incurring costs that are not necessary or should be borne by other agents, such as the government.

Given this growing awareness among investors and academia about the effect of environmental, social and governance performance on companies' financial performance, this paper aims to complement previous research on the link between ESG and CFP, focusing on a sample of companies in the luxury industry. The aim is to investigate whether there is a relationship between company performance, in terms of stock performance, and ESG performance, and to investigate the extent to which ESG is systematically compensated in the market, due to the growing interest of many investors in trying to integrate ESG data into their portfolios. It is therefore extremely important to investigate whether stocks with high ESGs are systematically compensated by the market. Although there is already much literature on the company's financial performance in relation to socially responsible aspects, existing empirical studies lack "uniqueness" or "consistency" in the results concluded. In many studies the central question has been whether ESGs influence the value of a company. Despite all these studies, there is no consensus on the relationship between ESGs and the value of the company. Indeed, some studies conclude that there is a positive correlation between ESG performance and the financial performance of firms, with firms with high ESG scores tending to offer significantly better financial performance than firms with lower ESG scores (Yamashita, Sen, & Roberts, 1999). In contrast, other studies are far from conclusive that the best ESG firms enjoy higher future returns, with some studies documenting lower future returns for the best ESG firms and others documenting no significant differences in returns (Henriksson, Livnat, Pfeifer, & Stumpp, 2018). Finally, many studies take into account the individual dimensions of the ESG, without providing a broad picture of the overall impact of the ESG score (Galbreath, 2013). There are other studies that focus on aspects of SRI, which include social and environmental aspects, neglecting the governance factor. In fact, the following paper will use aggregate ESG scores for a better understanding of the concept. In addition, this study focuses on a specific industry, the luxury industry, as opposed to past research that seems to lack studies that focus on a single industry (Soana, 2011). The choice to focus on a single industry is based on the idea of reducing the possible "rumors" that could affect the results, resulting from the different environmental impact, regulatory environment, macroeconomic trends or the different level of corporate governance engagement among industries. This is important because of the different influences that strategies based on environmental, social and governance scores have between one industry and another (Moura-Leite, Padgett, & Galan, 2012). The luxury industry has been chosen because it is a highly competitive industry that, over the years, has led major leaders to behave unethically, through more aggressive and morally limited behavior to achieve their ambitious goals. Despite these unethical aspects,

recent years have been characterized by a high focus on sustainability and ethical conduct. This is also the result of the continuing increase in public concern about widespread abuses of labor standards and unethical and sustainable practices. Therefore, the expectation of industry stakeholders is to gain a competitive advantage through the focus on environmental, social and governance issues.

A portfolio based on ESG scores will be created in the paper, which will be used in regression analysis. The study will investigate through a two-step procedure of Fama and MacBeth (1973), estimating the beta factors of a large sample of stocks through time-series regression. Subsequently, the study estimates the average reward earned per unit of exposure to risk factors through cross-sectional regression. This two-step procedure is applied to the returns of 594 companies, including listed companies belonging to the S&P 500 index, for the period January 2008 to December 2019. The study provides a practical approach to building a portfolio that is geared towards better ESG companies. In addition, the quality of research in the area of Socially Responsible Investment (SRI) is dependent on the quality of the database providing the ESG information. Therefore, it is extremely important to stress that the results of any empirical SRI analysis are also linked to the information extracted from the ESG score database used. For the following reason, this paper uses Bloomberg's ESG database. The structure of the paper is organized as follows. Section 2 aims to provide the theoretical framework with a first exposition of conceptual definitions and continues with a review of the relevant academic contribution in the area of this thesis topic. Subsequently, an overview of industry and recent developments in the area of investment in relation to the objective of this thesis is offered. It concludes with the construction of the hypotheses. While, Section 3 provides the quantitative research methods that are used to test the assumptions outlined in the previous section. The first part presents a detailed description of the data and variables used. The second part explains the formation of ESG portfolios and the process of regression analysis. Finally, the robustness test is described to ensure that the results generated by the model are robust and not spurious. Section 4 aims to offer and describe the empirical results of the regression analysis. In the first part, the descriptive statistics of the data used are explained and then the key regression results are highlighted and interpreted to investigate the assumptions presented above. Section 5 presents the analysis of the empirical results highlighting their contribution to the existing literature, as well as the implications for practitioners and investors and indications for possible future research.

## 2. THEORY

This section provides the theoretical framework with a first exposition of conceptual definitions and continues with a review of the relevant academic contribution in the area of this thesis topic. Subsequently, the section provides an overview of industry and recent developments in the area of investment in relation to the objective of this thesis. It concludes with the construction of the hypotheses.

### 2.1. Definitions and Literature Review

#### 2.1.1. Corporate social performance

Although Socially Responsible Investment (SRI) is a relatively new area, interest in this area is growing rapidly. Today, companies are increasingly judged not only on their financial performance, but also on the ways in which their decisions stand out in relation to a broader set of social and responsible expectations. Changing customer expectations, regulatory changes and environmental concerns are becoming important drivers for corporate and investor strategies (Prahalad & Hamel, 1994). Increasingly more investors are choosing to invest responsibly, following a tendency to shift from short-term to long-term investments. The main objective of responsible investment today is sustainability. However, the low regulatory and legal framework makes the interchangeable use of the different terms involved common. One of these is the concept of corporate social performance (CSP) which incorporates socially responsible investment and its impact. Over time, different definitions have been given on CSP. The scholar Carroll (1979) avoided a concise definition in favor of a three-dimensional model, which consisted of categories of social responsibility, social issues and philosophies of social response. The researcher also provides areas where the principles of social responsibility are implemented. According to Carroll, corporate social responsibility includes the economic, legal and ethical expectations of society towards organizations in a given historical period. Scholars Wartick and Cochran (1985), based on the work of Carroll (1979), have tried to provide a general model of corporate social performance. In their document it is clear that the CSP is *“the underlying interaction among the principles of social responsibility, the process of social responsiveness, and the policies developed to address social issues”*. Wartick and Cochran (1985) also showed how different competing perspectives, such as ecological responsibility, public responsibility and social responsiveness, could be incorporated into this framework. The definition of the two scholars, despite leaving some problems unexplored, represented a conceptual advance in the thinking of researchers on business and society. The definition allows to consider the CSP as a static snapshot or as a dynamic sequence full of changes, depending on the ongoing research. Moreover, it does not isolate the social performance of the company as something completely distinct from the company's results.

Subsequently, the concept of corporate social performance paid tribute to serious theoretical and empirical attention. Miles (1987) offered an important attempt to develop a general theory of corporate social performance, based on the strategic theory of management and organization to explain corporate



responsiveness. The effort to develop a general theory failed because reactivity is only one aspect of social performance. Over the years, another challenge for scholars has been to define what the social responsibilities of a company are. Frederick (1986) gave a more synthetic position than Carroll's previous one (1979). He argues that: *“The fundamental idea of 'corporate social responsibility' is that business corporations have an obligation to work for social betterment”*. The scholar Wood (1991) also contributed to the study. Following the version provided, corporate social performance (CSP) is defined as *“a business organization’s configuration of principles of social responsibility, processes of social responsiveness and policies programs and observable outcomes as they relate to the firm’s societal relationships”*. This definition leads to the conclusion that the main feeling that drives a company to engage in social responsibility (CSR) lies in the concern to improve society itself. Subsequently, the scholar Wood (2016) provided an updated version of the previous definition in which CSP refers to the principles, practices and results of business relationships with individuals, organizations, institutions, communities, societies and the earth, in terms of the deliberate actions of enterprises towards these stakeholders as well as the unwanted externalities of business activity.

Despite the clear link between companies and corporations, there is still uncertainty about the relationship between CSPs and financial results. One of the main reasons for this is that researchers have so far been affected by the problem of measuring the social performance of companies. Many measures do not adequately reflect the overall level of CSPs. Others are difficult to apply uniformly across different industry sectors and in all the companies under study. As a result, the results of previous empirical studies on the relationship between social performance of enterprises and profitability have been mixed. Some researchers find clear positive relationships (Cochran & Wood, 1984), whereas others document negative links and others still do not find a significant correlation. Therefore, it is not yet entirely clear whether there are links between financial performance and social performance of enterprises.

### **2.1.2. Corporate social responsibility**

The impact of social investment is compounded by another aspect of the responsible industry, Corporate Social Responsibility (CSR). CSR refers to the concept of companies taking responsibility for their effects on the environment and society, so the term CSR commonly joins the term SRI in the literature. In contrast to SRI where a positive investment impact is expected, CSR refrains from looking for the impact created by business activities and rather pursues responsible behavior of companies during and alongside their business activities (Pokorna, 2017). As corporate social responsibility has been studied for more than four decades, there are multiple definitions in academic publications and the concept of CSR is constantly evolving. One of the first contributions is that of Carroll (1979) which describes CSR as: *“The social responsibility of business encompasses the economic, legal, ethical, discretionary (philanthropic) expectations that society has of organizations at a given point in time”*. In its vision, a socially responsible company encompasses the philanthropic, ethical, legal and economic industries within its culture, values

and daily activities (Chandler, 2017). The United Nations Brundtland Commission (1987) also contributes to the definition: “*Sustainable growth is that which allows the economic, environmental and social needs of the present generations to be satisfied without compromising the development of future generations*” (ISEA, 1999). This definition invites entrepreneurs to contribute voluntarily to the progress of civil society and environmental protection by including social and ecological assessments in their business transformation and in their governance relationship with stakeholders. Therefore, as also argued by Schmidheiny and Zorraquin (2000), companies have to take into account the conditions that respect sustainability in their technical and managerial transformations and, subsequently, inform social groups about this responsibility. The importance of a greater focus on meeting stakeholders' expectations is due to the changes that are taking place in the economic and social context. This careful attention will have a positive impact on the company's success in facing new challenges (Gazzola & Mella, 2006). The same thesis was already put forward a few years earlier by scholars Freeman and Evan (1990) on the positive effect of good CSR on companies' adaptation to changes in external demand, which is essential for supporting financial performance. Other scholars, such as Porter and Kramer (2006), support the correlation between CRS and CSP, arguing that social responsibility is an important driver for maximizing shareholder value. Scholars argue that proactive CSR management is a tool that can increase a company's competitive position and therefore has a positive impact on its operational and financial performance. The researcher Chandler (2017) suggests that responsibility is a tool for both the company and its stakeholders. Since the company can use it to meet the needs of its stakeholders and the latter can use CSR to empower companies for their actions.

Therefore, corporate social responsibility can be translated into transparent corporate behavior based on ethical values and respect for employees, society and the environment. In this vision, the company has the ethical obligation to use methods and precautionary measures aimed at not harming the community, in compliance with the law, enhancing the social culture. The company should be committed to playing an active role in cultural and political life. The final aim has to be the safeguard of the environment through systems that preserve natural resources and support recycling activities and investment in projects that preserve and enhance the environment (Mucelli, 2000). In order to achieve this goal, companies have to encourage managers to commit themselves to the creation of sustainable value for the company itself, for the shareholders, for the social community and for the territory, considering both the economic and the environmental and social impact (Gazzola & Mella, 2006). The concept of socially responsible behavior can be interesting to distinguish from an internal and an external point of view. The internal viewpoint aims to consider: human resources management, introducing measures that meet the needs of employees (Zadek, 2001); health and safety at work, more than legislation already regulates; adequacy to changes in corporate reorganization, taking into account the interests and concerns of all stakeholders; and management of effects on the environment and natural resources, considering that responsible actions

towards the environment are beneficial not only to nature but also to the company (Christmann, 2000). Externally, CSR involves a range of stakeholders such as customers, suppliers, public authorities and NGOs representing the local community and the environment. By integrating the company into the community in which it operates, it can help create jobs and tax revenues. The socially responsible company should pay attention to the way its suppliers and subcontractors operate, as bad behavior would be detrimental to the company's image. Furthermore, the company should adopt codes of conduct on working conditions, taking into account human rights and environmental protection as provided for in the legislation. More than ever, the responsibility of the company is not limited to the area in which it carries out its production activities. Many activities, such as the supply of natural resources and the emission of polluting gases, have a much wider impact (Walden & Schwartz, 1997).

This shows that the costs of social responsibility are often difficult to quantify and, in particular, to predict precisely. In the same way, these difficulties increase in determining the benefits of CSR and the direct correlation with economic performance. These problems are even more important in the theories and studies that highlight a negative relationship between CSR and CSP. An example is the vision of the scholar Milton Friedman (1970), who defines CSR as a source of costs related to the implementation of CSR activities at the expense of social welfare. Specifically, it reduces shareholder welfare by reducing financial performance and would therefore run counter to corporate social responsibility based on the theory of maximizing shareholder wealth. The study conducted by Friedman just takes into account the initial costs of responsible activities, ignoring the potential commercial benefits arising from such initiatives. Necessarily, the decision to adopt specific CSR policies could be a consequence of cash flows and financing costs, which are important factors in the concept of maximizing wealth for shareholders (Derwall, 2007). Friedman's perspective is shared by the work of Pokorna (2017). His work concludes that CSR is harmful to shareholders but is pursued by managers for achieving private benefits such as rewards and other appreciation by promoters of social responsibility. However, the scholar Friedman addressing investors states that if they can not achieve a desirable financial return with CSR activities directly, they could indirectly pursue their ethical values by investing in diversified portfolios and then use part of the financial returns to invest in projects that represent those values.

In conclusion, corporate social responsibility implies that business and society are intertwined rather than considered as separate entities. Therefore, society has certain expectations about corporate behavior.

### **2.1.3. ESG concept**

The concept of measuring CSR is also an important term. Usually it refers to the environmental, social and governance (ESG) characteristics of a company. Over the last few years, there has been a growing use of ESG indicators by stakeholders, particularly investors. Companies have also seen an opportunity

in terms of competitiveness, which is a consequence of increasing stakeholder pressures on environmental issues such as climate change, pollution and waste. In order to quantify ESG concepts, companies are assessed with ESG ratings following the three different pillars: environmental, social and governance (Gazzola & Mella, 2006). Staub-Bisnang (2012) defines them as the three pillars of sustainability. These indicators were introduced to measure extra-financial information and to illustrate a part of the company's value that can not be explained by traditional financial reporting. Environmental scores mainly cover problems related to CO<sub>2</sub> emissions and water consumption (Dolique, 2007). Social issues are related to the company's relationship with internal and external stakeholders, focusing on issues such as corporate social policies and human rights, such as the prohibition of underage labor and forced labor, but also the regulation of wages and working hours (Laville, 2009). Whereas, governance concerns all the characteristics of the board of directors, therefore the compensation and independence as well. An advantage of good ESG performance is its correlation with operational performance by reducing costs and risks, to the extent the benefits are greater. Although some studies show that companies with low ESG scores are not associated with lower operating performance than companies with higher ESG scores (Soana, 2011). The Principles for Responsible Investment define that responsible investment aims to incorporate ESG factors into investment decisions to better manage risk and generate long-term sustainable returns (Pokorna, 2017). Thus, these ESG measures can direct the capital of sophisticated sustainability investors towards companies with better CSR. Reputation benefits are another advantage of ESGs. ESG indicators, through philanthropic activities for example, can be a powerful marketing tool for a company as they can help increase a company's turnover by building a brand in a socially responsible dimension. Supporting this theory are scholars Godfrey, Merrill and Hansen (2009), who compare investment in the environment, in social and good governance, to insurance against reputational risks. Today more than ever, companies are aware that the disclosure of ESG scores is critical to representing their good reputation and image. However, scholars Koelher and Hespeneide (2013) identify ESG disadvantages that can have a direct impact on corporate financial performance. Negative impacts can be product uncertainties such as the presence of toxic and chemical substances or irregularities along the supply chain such as underage exploitation and over-exploitation of natural resources or operational risks such as fines and penalties for irregularities and strikes by employees dissatisfied with governance. There are also studies that criticize the fact that ESG scores are not fully related to the impact of products and thus their attractiveness to investors. The results, actually, show how companies with low ESG scores have high sales volumes (Pokorna, 2017). These contradictions, which have emerged from the previous literature, could be the result of two important aspects. On the one hand, there is the construction of indicators, since the criteria that make up the ESG scores, may not be those of greatest interest to investors (Ullman, 1985). On the other hand, many companies and investors ignore ESG indicators and ignore the fact that they are an untapped source to remain competitive (Tarmuji, Maelah, & Tarmuji, 2016).

Therefore, in conclusion, it should be specified that it has not yet been clarified to what extent ESG scores contribute to the risk and return trade-off in the investment strategy.

The presence of a universal framework, which is gaining momentum in the financial community by identifying environmental, social and governance areas as primary constituents of CSR, makes it necessary to make a distinction between the three areas. Recently, stakeholders have been showing an increasing interest in the environmental performance of corporate organizations due to the impact of the pollution that is being created. The result is a commitment by companies to use best management practices to reduce air emissions such as greenhouse gases and carbon dioxide, waste with a focus on hazardous waste, water discharges and more generally their impact on biodiversity. Several studies suggest that environmental governance is positively correlated with performance measures based on market value and this can attract different investors. These contributions include those offered by Matsumura, Prakash and Vera-Muñoz (2014), which show that a worse environmental impact results in a lower market valuation. However, some studies, such as those of Derwall (2007), suggest that environmental information is slowly incorporated into stock prices. In this respect, an important question is whether environmental information is accurately assessed and disseminated. Regarding disclosure, the difference in disclosure tools between companies could be a determining factor. Whereas, for the assessment of environmental information, the main difficulty lies in the creation of the criteria that make up the E scores. Construction is complicated in two respects. Firstly, the difficulty of quantifying an impact, especially for those related to future forecasts. Secondly, because there are environmental components for which assessment is complicated by the inherent complexity. Predictably, a better environmental scan would correspond to a better financial performance for companies (Newgren, Rasher, LaRoe, & Szabo, 1985). Overcoming the problem of correct assessment of environmental information, the concept of eco-efficiency can be an important tool for companies to measure and monitor their environmental impact (Derwall, 2007). From a social point of view, previous studies show that companies with better employee satisfaction and a stronger sense of corporate goals among employees have better financial performance (Edmans 2011; Gartenberg, Prat, & Serafeim, 2018). The strategy is based on the consideration of employees as important organizational assets for the company. Therefore, companies with high social performance can generate greater trust and loyalty to the workforce, customers and society. Additionally, studies prove that social benefits of enterprises seem to associate positively with economic benefits only through advertising. Therefore, it is extremely important for companies to communicate their social activities to consumers, suppliers, non-governmental groups and regulatory agencies (Tarmuji, Maelah, & Tarmuji, 2016). However, there are other studies that show otherwise. For example, Derwall (2007) concludes in its study that companies with high social benefits have a higher cost of equity because rational investors associate social benefits with higher costs and financial benefits. The phenomenon of hostility towards social benefits may occur because, in some cases, the S scores might not adequately reflect the criteria that most capture the attention

of investors. This problem arises because the construction of S scores is mainly based on internal and external social aspects. Internal social aspects include quality of work and health, diversity, training, safety and development. Whereas, the external aspects are more related to community social and ethical matters, such as prevention policies of developing countries (Ullman, 1985).

#### **2.1.4. Corporate governance**

As discussed in the previous paragraphs, CSR practices cover mainly two of the three pillars of the ESG concept: environmental and social matters. The third pillar, governance, is not yet included in the concept of sustainability, although institutional investors are paying increasing attention to corporate governance criteria in their SRI analyses (US SIF Foundation, 2012). Corporate governance is commonly seen as the set of structural mechanisms or safeguards that protect the interests of shareholders (Shleifer & Vishny, 1997). Therefore, good governance can be an essential tool to optimize performance and increase the value of a company. Studies conclude that weak corporate governance corresponds to significantly lower corporate value and lower stock returns (Gompers, Ishii, & Metrick, 2003). Over the last few years, the term governance of corporate responsibility has become increasingly widespread, with reference to the availability of specific systems for managing sustainability on the part of the company. This is in line with the conclusions of recent studies proving that good corporate governance and sustainability can not be dealt with separately (Galbreath, 2013; Saltaji, 2013).

Importantly, the strength of corporate governance varies from one country to another. The main reason for this is changes in global ownership structure. In US companies, share ownership tends to be more dispersed. Whereas, international corporations tend to be more concentrated in the hands of a controlling shareholder, such as a founder or family (Aminadav & Papaioannou, 2018). Expended property causes a governance problem, i.e. conflicts of interest between shareholders and company managers (Berle & Means, 1932). Whereas, in the more concentrated structures, governance presents a problem of a different nature, which is the presence of conflicts of interest between minority shareholders and majority shareholders represented by the controlling shareholders (Bebchuk & Hamdani, 2009). Another factor that may hinder the creation of good governance of responsibility is the misalignment between the interests of the various stakeholders. The latter may assess corporate social performance differently, depending on their interests, their different perceptions of the principles of social responsibility and their relationship with the CSPs themselves. An example is a controlling shareholder who is interested in raising the share price in the short term rather than in raising the reputation in the long term. Therefore, a shareholder may not be motivated by the principle of public responsibility or managerial discretion and consequently may not share excessive social policies and programs of a company that is heavily involved in such initiatives. On the other hand, these practices can be shared by stakeholders who have a long-term view. Despite these changes related to ownership structure and the interests of different stakeholders, the

importance of good governance is widely shared globally (Galbreath, 2013; Saltaji, 2013). Companies are behaving consistently with the results of these studies and are changing practices to manage reputational, legal and regulatory risks. A reason is that bad governance is costly for both shareholders and stakeholders. As a result, an increasing number of companies are appointing women to the board for diversity and in order to improve the governance process. A clear example is the presence of women on the boards of directors of S&P 500, which was 21.2% in 2016 compared to 15.7% in 2010 and 13.6% in 2003 (Catalyst, 2017). Further mechanisms used to mitigate corporate governance problems are the alignment of managers and shareholders through the proper design of remuneration contracts, the monitoring of managers through independent auditors and the voting rights granted to shareholders.

### **2.1.5. Connection between ESG e corporate social performance**

Extensive academic literature has examined the effect of ESG performance on the financial performance of enterprises. However, one problem that prevents research from analyzing the financial performance of investments in the area of environmental, social and governmental impact is the difficulty of measuring and quantifying the non-financial impact and value created. Another obstacle to research as a whole is the presence of conflicting results between existing empirical studies. Most of the studies have been conducted on portfolio studies generally composed of portfolios that are mutually exclusive on the basis of various ESG criteria and analyze differences in portfolio performance over certain investment horizons. Some studies show a positive correlation between ESG performance and companies' financial performance, with companies with high ESG scores tending to offer significantly better financial performance than companies with lower ESG scores (Yamashita et al., 1999). By contrast, other studies are far from conclusive that the best ESG companies enjoy higher future returns, with some studies documenting lower future returns for the best ESG companies and others not documenting significant differences in returns (Henriksson et al., 2018). Annér and Jakobsson van Stam (2018) contributed by examining the effects of ESG scores on stock returns for the Swedish equity market through a regression of Fama-MacBeth. Halbritter and Dorfleitner (2015) also conclude that the anomalous returns produced by the strategy of going long in companies with better ESG positioning and going short in those with worse ESG positioning are statistically insignificant. The researchers Auer and Schuhmacher (2016), have been keen to use a new database that more frequently re-evaluates ESG scores, but the results have been in line with Halbritter and Dorfleitner (2015).

Previous literature also discusses how investors have moved from an “*agency perspective*”, in which they view sustainability activities negatively, to a “*value perspective*”. According to the agency perspective, of which Friedman (1970) is the promoter, there is a negative relationship between ESG and company returns characterized by the loss of maximizing shareholder value (Khan, 2019). The conclusion of the studies, which highlight a negative relationship, is that the high costs of implementing CSR are likely to

outweigh the financial benefits and managers are the only ones to benefit through building reputation in the society or in the company itself. However, this motivation is not empirically proven yet. An empirical study of the agency perspective is the study conducted by Jang (2019). His analysis indicates that ESG indicators have a significant and negative impact on average stock returns for the European equity market through cross-sectional regressions and portfolio analysis. This could potentially indicate that the market punishes companies with better ESG results. Documents that have helped to conclude a positive relationship between environmental and social performance and financial performance, consistent with the value perspective, include those offered by scholars Busch and Friede (2017).

Scholars conclude a highly significant, positive and bidirectional report in their study sample comprising 1214 preliminary empirical studies on the same report. Other studies show that, in the long run, companies that improve ESG performance outperform those that remain at lower levels (Khan, Serafeim, & Yoon, 2016). Clark, Feiner and Viehs (2015) argue that superior sustainability quality, in its entirety of meaning, is valued by the stock market. Thus, more sustainable companies generally outperform less sustainable companies. The value perspective is also supported by older studies, such as the work of Tsoutoura (2004) which argues that the social performance of the enterprise (CSP) can help the company to improve the image and reputation of the brand. As a result, this could result in improvements in the company's financial performance. Konar and Cohen (2001) suggest that companies that voluntarily over comply with environmental regulations and create an environmental reputation are rewarded in the marketplace. However, the two scholars have not been able to understand whether this relationship is casual. Another important contribution from past literature is the study on public sentiment regarding sustainability performance conducted by Serafeim (2018). Harvard professor argues that companies with good ESG performance, but with occasional social disputes, could be judged weak by investors. Similarly, companies with weak ESG performance, which have strong marketing campaigns and advertise their ESG activities, could be judged as companies with strong ESG performance. Moreover, having a good ESG-rated portfolio can increase the confidence of value-oriented investors (Avril, 2018). Other studies have analyzed the effects of ESG scores on the company's operational performance and market value. Derwall (2007) concludes from his study a positive and meaningful relationship between environmental management policies and the market value of companies. But at the same time, the scholar finds little evidence to support the conjecture that there is a clear and meaningful association between ESG scores and operational performance.

Contrasting results in the literature and the resulting mispricing can occur for several reasons related to ESG data, as ESG data are provided on a voluntary basis by companies and the score of these data varies considerably between ESG data agencies (Henriksson et al., 2018). Thus, scores favor large companies because they may be able to disclose information more efficiently and therefore it is easier for the rating



agency to find this information and create ESG scores (Pokorna, 2017). Even if the responsibility of small businesses is considerable, it may not be reflected in the scores. In addition, the literature is enriched by studies that have tried to make a deeper analysis by treating separately the three pillars in relation to the financial performance of companies. These works also show mixed results. However, this paper argues that a comprehensive measure of sustainability should consider all ESG dimensions in an aggregate project. As the paper is intended to support that each company can achieve its sustainability goals from different dimensions. In conclusion, despite the amount of contributions from previous studies, the factors and circumstances influencing this report are not yet clear. Moreover, the literature is poor in studies on a single industry and the focus on the industry chosen for this research is completely absent.

## **2.2. The Luxury Industry**

The focus of this study is on the luxury industry. The target industry of the study includes brands mainly dealing with personal luxury goods. Accordingly, the industry includes companies in clothing and footwear, jewelry and watches, cosmetics and fragrances, bags and accessories and multiple luxury goods (Deloitte, 2019). The main drivers of customer value perception, which influence consumer behavior in the luxury industry, are high desirability, limited accessibility, excellent quality, refined aesthetics, high price and heritage (Hennings, Wiedmann, Klarmann, & Behrens, 2015). These drivers make the industry highly competitive. As a result, over the years, multinationals have engaged in the so-called "race to the bottom", to procure their products at the lowest possible cost within certain quality limits. This high level of competition, which characterizes the industry, has led companies to behave unethically, through more aggressive and morally limited behaviors to achieve their ambitious targets. This strategy offers opportunities in terms of cost savings but has exposed companies to specific accusations. Such as underpaid work in developing countries and the creation of luxury clothes and accessories with low quality and low sustainability. The companies have also been criticized for unethical and unsustainable disposal processes, trade in wildlife products and procurement of raw materials at the expense of the environment (Kapferer & Michaut-Denizeaut, 2014).

Despite unethical aspects, sustainability and ethical conduct have become important in the industry over the last few years. It is also a consequence of the increasing public concern about widespread abuses of labor standards and unethical and sustainable practices. Thus, as already stated in the paper, CSR policies can be a competitive advantage for the company. In line with this, major brands are seeking to create more ethical production chains. Their sustainability efforts are increasing as they sell rare, and therefore resource-dependent, products (Kale & Öztürk, 2016). Big brands are starting to include the "sustainability" section on their official websites, where they show customers their ethical procedures and eco-sustainable materials. The aim is to optimize the use of green, biodegradable and recyclable materials, produced with natural components that are free of toxicity and not harmful to the environment. Beyond

the indirect pressure represented by social norms, the industry is exerting direct pressure on the main players. Therefore, companies are encouraged to create an economic, social and environmental framework dedicated to the development of a healthy and sustainable global economy that ensures everyone has the opportunity to share the benefits. However, leaders in this industry go beyond mere compliance with the law and seek to enrich management choices with ethical, social and environmental considerations. Companies take responsibility for their impact on society by focusing primarily on environmental standards, product safety and working conditions. The fashion subsector has recently shown an ethical fashion where clothing is made from eco-friendly materials such as recycled materials and organic fibers and made under fair trade conditions. Leaders are reacting to industry pressures. Many luxury brands are already making ecologically sustainable clothing and fashion accessories. They are committed to not testing animals and making packaging environmentally friendly. Examples of brands that make a difference in this industry are the French luxury conglomerate LVMH, which has conducted a comprehensive lifecycle analysis of their business lines, and Veuve Cliquot Champagne and Tiffany & Co., which are using certified packaging materials (Verde Nieto, 2017). The famous Kering Group, which owns brands such as Gucci, Stella McCartney and Saint Laurent, is also increasing the share of its renewable raw materials in its commitment to the environment to improve its sustainability. The group was one of the first to implement a Code of Ethics, Kering Standards, and set up a foundation, the Kering Foundation, to combat violence against women (Deloitte, 2019). Its brands take on the role of protagonists in the industry. Gucci has not used furs in the collections 2018 (De Klerk, Kearns, & Redwood, 2019). Stella McCartney is committed to using fabrics with tree fibres that do not come from endangered forests and are FSC certified. The certificate is issued by the Forest Stewardship Council, a global not-for-profit organization that sets the standard for environmentally and socially responsible forest management (Pattberg, 2005). Whereas, Saint Laurent implements sustainable and at the same time innovative solutions such as minimizing water consumption, heating and air conditioning systems and optimizing energy efficiency through the use of solar panels. Three of the company's flagship stores in Paris, London and Beverly Hills have been awarded LEED Platinum certification (Szmydke, 2015). Among the brands that are aware of the phenomenon of the "crisis of resources" that is impacting our planet are Prada and L'Oréal. L'Oréal is a world leader in climate change and renewable energy. The company has already reduced greenhouse gases by 50% and has new targets for carbon neutrality by 2020 (Winston, 2016). Prada has contributed to the "Guidelines on Ecotoxicological Requirements for Clothing, Leather Goods, Footwear and Accessories". These guidelines introduce more stringent parameters concerning the use of chemicals in order to reduce pollution and increase product safety (Deloitte, 2019). This severe reality of biophysical limitations seriously compromises the ability of these companies to procure their products and the research, growth and processing of materials along the entire value chain that characterizes luxury goods. Climate change is changing water availability and agricultural production worldwide. This not just affects cotton, cashmere and angora products that require a large

amount of water for processing, but also affects the luxury jewelry subsector. Most of the players in our sample underline the importance of the environment and society. In the jewelry sector, the focus should be on the conditions under which raw materials are extracted (Jamal & Goode, 2001). Tiffany was one of the first brands to choose to purchase metals and diamonds from responsible mining companies. The company has a policy of non-tolerance for the purchase of diamonds from countries with human rights abuses (Deloitte, 2019). The Cartier Group is one of the founders of the “Responsible Jewellery Council” and is committed to using only diamonds and gold mined in good environmental and social conditions (Achabou & Dekhili, 2013). Despite the efforts of the leaders, the industry has a difficult history. “*Blood diamonds*”, besides being an activist slogan, embody a history of slavery, which is still a problem (Winston, 2016).

In addition to the personal luxury goods industry, our study also includes luxury brands from the tourism industry such as hotels & resorts, airlines, cruise lines and luxury automotive and vehicle industry brands. The choice to analyze brands from different luxury industries was based on the idea that all different industries have the power to contribute both to improve and preserve natural and cultural goods as well as to destroy them. As recently shown, global tourism is more closely linked to climate change. The brands under study are adopting international standards. Most of them emphasize the importance of the environment and society and studies show that CSR motivation is aimed at supporting their operations (Holcomb, Upchurch, & Okumus, 2007). Many professionals and managers have ethical standards and they are committed to their companies contributing to more sustainable development. However, a common concern is that companies engage in socially responsible activities for purely economic reasons, mainly improving the firm's reputation (Cherapanukorn & Focken, 2014). The main global hotel groups, such as Hilton, Intercontinental and Marriott, have been committed to ensuring high standards of work, promoting environmental sustainability and supporting local communities over the past years. They integrate social and environmental objectives into their operations in order to develop competitive advantages (Bohdanowisz & Zientara, 2008). Leading players in the tourism and hospitality industry are supporting the community and preserving the environment and they are also engaging in relationships with their stakeholder groups such as investors, suppliers, employees and customers. Airlines play an equally important role in the tourism industry. The airline industry has negative environmental impacts such as water pollution, waste generation and climate change due to CO<sub>2</sub> and other greenhouse gas emissions from high fuel consumption (Cowper-Smith & de Grosbois, 2011). These negative environmental impacts have caused high social pressures on environmental sustainability. As a result, CSR concerns on the part of the major players have increased. The challenge is to provide a high-quality service whereas adopting social responsibility in an economic way (Seo, Moon, & Lee, 2015). For example, Delta Air Lines has provided various community services, including the participation of a significant number of its employees in volunteer activities and the company itself has donated \$38 million

to charity. Whereas, JetBlue has consistently invested in green initiatives, such as using greener fuel (Lee, Kim, & Ham, 2018). Another important contribution in terms of CSR is made by the cruise industry. This specific type of tourism is characterized by past bad environmental and labor practices and limited positive impacts on destinations. For example, cruise lines operate in fragile ecosystems that are home to great biodiversity to reach different destinations. In addition, they impact on cultural and social resources and city attractions and they may cause irreparable damages (De Grosbois, 2016). For this reason, cruise tourism is called upon to demonstrate an extremely important commitment to social responsibility. Some cruise brands, such as Royal Caribbean and Carnival Cruise Lines, have developed systems to manage their impacts and report their practices (Bonilla-Priego, Font, & Pacheco-Olivares, 2014). Finally, the automotive industry is also concerned about CSR practices. These activities mainly focus on labor codes of conduct, end-of-life-vehicles, green supply chain management and environmental management systems (Martinuzzi, Kudlak, Faber, & Wiman, 2011). The most important topic is that of alternative technologies and fuels. Brands in the industry have been active for years in using the variety of possible alternative fuels such as LPG, methane and biofuels. In addition, new technology vehicles such as electric and hybrid vehicles are increasingly present on the market. An example of commitment in this direction is the Toyota automotive manufacturer that presented the first hybrid car (Zapata & Nieuwenhuis, 2010). Volkswagen is also one of the major players and has been setting regulatory requirements in its dealings with business partners for over several years. The objectives of the German automotive brand are the early identification of supply-related risks and the implementation of supply and monitoring processes (Martinuzzi et al., 2011).

An important aspect that luxury brands are focusing on is transparency. Transparency has become an important matter along the supply chain, with consumers increasingly concerned about issues such as fair work, sustainable resources and the environment (Amed, Balchandani, Beltrami, Berg, Hedrich, & Rölkens, 2019). An example is the Modern Slavery Act in the UK, published in 2015, which requires large companies doing business in the UK to publish an annual public declaration approved by the board of directors on slavery and human trafficking (Winston, 2016). The companies, other than publishing the results of CSR in their annual reports and through their websites, like Norwegian Cruise Line (Bonilla-Priego et al., 2014), also begin to do so implicitly through their advertisements. This is the case with advertisements of two large brands such as Louis Vuitton and Hermès. In the communications, they underline the semiotic importance of the language of images and the identities of each label. The brands also include the implicit identity values of luxury by linking them to the various principles of CSR (Anido Freire & Loussaïef, 2018). However, despite this consistent industry approach, the understanding of CSR is still far from the level of involvement of more developed industries such as the food or automotive industries, and it is obvious that if the leading brands do not continue and improve these CSR activities they will miss the opportunity to create added value.

### 2.3. Hypotheses' Construction

The paper argued extensively that companies in the industry are committed to CSR. The reasons are economic, mainly to improve the brand image. Over the past four decades, studies focusing on the financial impact of socially responsible activities, and thus the link between CSR and CSP, have concluded mixed results. There are also several studies supporting the incompatibility between responsibility and luxury (Cervellon & Shammas, 2013). This study could be of interest to all types of investors. On the one hand, the study may be of interest to investors who invest on the basis of their values and are sometimes willing to sacrifice financial return in favor of the values themselves. On the other hand, even investors who do not have extra-financial interests could take advantage of the potential positive eco-efficiency ratio.

The paper intends to test the relationship between CSR and CSP by taking into account the overall impact of ESG indicators, rather than taking into account ESG size separately. It also aims to be a supporter of the positive correlation between CSR and the financial returns of companies engaged in these activities. Therefore, the paper aims to find that responsibility and luxury can be reconciled. The construction of the hypotheses follows a deductive approach, referring to previous research and studies on financial performance in the context of the social performance of companies.

A first analysis will be conducted on 594 companies including the 500 in the S&P 500 index and the remaining luxury industry representatives. The aim is to investigate whether there is a long-term relationship between environmental, social and corporate governance responsibility and stock performance, *ceteris paribus*. So, the hypotheses are:

- Hypothesis 1.0: ESG scores refer positively to stock returns.
- Hypothesis 1.1: Companies with high ESG scores are associated with higher stock returns than companies with lower ESG scores.

A second analysis, representing the main study of the paper, will be conducted in the luxury industry. In line with what emerged in the previous section on the luxury industry, a positive relationship between ESG scores and stock performance in the luxury industry is expected, *ceteris paribus*. So, the hypotheses are:

- Hypothesis 2.0: ESG scores refer positively to stock returns, in the luxury industry.
- Hypothesis 2.1: Luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores.

### **3. METHODOLOGY AND MODEL**

The following section provides the quantitative research methods that are used to test the hypotheses outlined in the previous section. The first part presents a detailed description of the data and variables used. The second part will explain the formation of ESG portfolios and the process of regression analysis. Finally, the robustness test will be described to ensure that the results generated by the model are robust and not spurious.

#### **3.1. Data**

##### **3.1.1. Sample**

The starting idea of creating a sample within a single industry was based on the idea of reducing the possible "rumors" that could affect the results, resulting from the different environmental impact, regulatory environment, macroeconomic trends or the different level of corporate governance engagement among industries (Renneboog, Ter Horst, & Zhang, 2008). The choice to study an industry is consistent with the Soana scholar (2011) who argues the relevance of studies at the industry level because of the differences that may emerge between different industries. The same scholar conducted an empirical study with the same purpose as this paper for the US banking sector. This choice is also supported by Barnett's theory (2007) which points out that the empirical results have so far failed to generalize the arguments in favor of CSR. Therefore, a first step can be taken by studies at industry level. However, in-depth research that crossed listed luxury companies with ESG scores showed limited sampling. Indeed, the sample is reduced to companies for which ESG data are available for the period 2007 to 2019 and to companies listed before 2007. As a result, the companies in the S&P 500 index have been integrated into the initial luxury industry companies (110) with an initial sample of 594 companies. Excluding 21 companies for which no ESG scores are available, this study is based on a final sample of 573 companies. The S&P 500 Index was developed by Standard & Poor's in 1957 and follows the trend of a stock market basket of the 500 largest capitalization US companies (Kenton, 2019). The shares of large companies listed on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) and the NASDAQ are part of this basket. The index chosen for the study is the most significant index of the entire American market. In addition, it outperformed the Dow Jones itself, which includes the top 30 U.S. stocks.

##### **3.1.2. Variables**

Several professionals and scholars are constantly looking for extra-financial indicators that are able to price environmental, social and governance performance. Their need arises from the idea that ESG performance is still an intangible asset for a company. For example, socially responsible performance translates into increased reputation. This study was also created to contribute to research. Stock returns have been chosen as a dependent variable to price socially responsible investments supported by companies and more generally to test how the ESG can create or destroy shareholder wealth. Whereas,

market risk premium, size, book to market (BM) ratio and ESG scores are the study's independent variables. Market risk premium is the difference between the expected market return and the risk-free rate. It provides an investor with an excess return as compensation for the additional volatility of returns beyond the risk-free rate. Size is a relevant variable, as there is evidence that smaller companies may not show as much socially responsible behavior as larger companies. As companies grow, they attract more attention from external stakeholders and must respond more openly to stakeholder demands (Burke, Logsdon, Mitchell, Reiner, & Vogel, 1986). In addition, the size factor derived from Fama and French's observation that over time small companies have tended to outgrow large companies (Fama & French, 1993). Whereas, the book to market ratio (BM) separates value-oriented companies from growth-oriented companies. A high ratio indicates a value business and a low ratio indicates growing businesses. The variable was chosen because of the tendency to overestimate the performance of value firms compared to growth firms (Fama & French, 1993). Finally, consistent with Mănescu (2011), industry effects should be corrected separately to control ESG performance at industry level due to the characteristics of ESG data. Consistently, the final part of the analysis will include the introduction of an industry dummy variable (IDV). The aim of the IDV is to investigate how the luxury industry values ESG performance. All variables are constructed on the basis of data retrieved from Bloomberg. A limitation to this study comes from the use of secondary data, although they are useful in cross-sectional studies. The use of these secondary data presents a major criticality. It is the lack of control over the quality of the available data (Saunders, Lewis, & Thornhill, 2009). However, Bloomberg is a database widely used by professionals and academics and this is an indicator of good data quality.

### **3.1.3. Time horizon**

The time horizon over which the analysis is to be carried out is the period after the global financial crisis. Therefore, the time horizon is from 2008 to 2019. The choice is also conditioned by the significant availability of ESG data starting in December 2007, since that is when ESG data begin to cover a large panel of companies. The period of time studied is particularly interesting as the financial crisis has increased companies' focus on environmental, social and governance policies. This increased concern is a consequence of the growing belief that ESG performance and long-term value creation are correlated (KPMG, 2011).

### **3.1.4. Financial data**

All financial data used in the empirical study are downloaded from the Bloomberg Terminal using the ISIN codes of the sample companies. Time series data are retrieved on a monthly basis for the period January 2008 to December 2019. First, the study uses the stock performance for a solid measure of financial performance. Last price of the shares on a monthly basis is obtained from the Bloomberg platform through the Bloomberg platform function (PX\_LAST). Next, the monthly average price index

is transformed into logarithmic returns. As far as market capitalization is concerned, the current market capitalization function (CUR\_MKT\_CAP) in Terminal Bloomberg is used and the same happens for the price to book ratio (PX\_TO\_BOOK\_RATIO). The latter is divided by 1 so as to obtain the book to price ratio (BM). The value-weighted market proxy and the risk-free rate for the sample period were provided by the Kenneth French Data Library. The data in the online data library are in the form of time series stock returns in percentage format and for further analysis will be divided by 100 to match the e stock returns format. In addition, all data such as stock returns, market capitalization and other relevant variables have been denominated in dollars, reflecting the perspective of a US investor. The choice of currency was influenced by the significant and massive presence of US companies in the sample.

### **3.1.5. ESG data**

Companies are so far not required by any regulation to disclose data for a wide range of ESG criteria. Therefore, the databases to be used for the analysis of socially responsible investments are not available for the entire stock universe. Several rating agencies have contributed to the development of ESG data. However, the different ESG rating schemes vary and are subjective in terms of lack of credible data. Different ESG rating providers, such as credit ratings or product ratings, use different methodologies to assign scores. Generally, agencies collect and evaluate data from different sources, such as corporate annual reports, corporate websites, NGO reports, CSR reports and even media reports. All relevant information collected is analyzed and a final ESG score is produced for a particular company. Similarly, to stock analysts, a specialist analyst issues a rating for ESG data for all ESG categories each year, but there are exceptions as some companies have significant news that changes their rating. The complex and discretionary methodology used by the various agencies causes the presence of different final scores associated with the same company. This lack of agreement between rating providers is understandable due to the particular multi-dimensionality of the scores in question. The difficult comparability of the indicators between the various industries is a further drawback related to the ESG issue. The components may differ from one industry to another. For example, the environmental impact of the energy industry is different from that of the service sector (Bertoletti, 2010). With regard to performance governance, the level of business management may be affected by industry-specific factors (Johnson, Moorman, & Sorescu, 2009). Although companies' interest in sustainability has increased, most ESG reports and ratings have been developed and disseminated mainly after the global financial crisis. Companies have different approaches to publishing their data due to the lack of standards for ESG indicators and sustainability reports. Therefore, there is no widely accepted independent third party to confirm the correctness of these scores. This makes it difficult to compare company performance. Therefore, disclosure standards and framework are extremely important (Eccles, Krzus, Rogers, & Serafeim, 2012).



Consequently, several researchers have questioned the ambiguity, inconclusiveness and prevalence of the same data (Friede, Busch, & Bassen, 2015). Therefore, the choice of robust ESG data for the representation of sustainability is extremely important. To ensure relevant and transparent data, the following paper uses the company's ESG scores offered by Bloomberg. The data is collected for each company in the sample for each year through the Bloomberg Terminal platform, where the significantly available ESG scores start in 2007. The platform is able to provide relevant scores for financial market participants through the collection, verification and sharing of this data from more than 11,500 companies in 83 countries. ESG data is fully integrated with all of the platform's analysis. Bloomberg offers key reports and highlights the most important performance indicators, as well as key financial indicators, allowing investors to incorporate ESG data into their financial analysis. The platform provides users with critical information about the opportunities and risks of the global economy. It allows to compare ESG scores and financial performance across companies. The data has been provided on the Bloomberg Terminal for about ten years and since the beginning of its dissemination, interest in this data set has been growing. This is because investors have realized that these areas can generate value within their portfolios. Since 2018, given this important development, Bloomberg has been offering ESG data outside the Terminal as well. The platform delivers a daily data feed to organizations that is designed to be used by multiple applications and people. The rating data covers three pillars: environmental, social and governance. The environmental pillar measures a company's impact on natural systems and complete ecosystems. In addition, environmental performance is about how companies respond to climate change. The social pillar measures the company's ability to generate trust in employees, customers and society. The pillar also measures the quality of health and safety policy management towards employees. Finally, the governance pillar measures the quality of a company's processes and systems. The aim is to ensure that, in the long term, managers and board members act in the best interests of shareholders.

The score used in the report is the overall annual ESG score in Terminal Bloomberg (ESG\_DISCLOSURE\_SCORE), which provides a numerical value between 0 and 100, with the highest score indicating the best performance. The study uses the ESG scores available in December each year to rank stocks from the following year. For example, the scores given in December 2007 will be used to rank stocks in 2008. Since, as discussed above, the availability of ESG data is precarious, there is a possibility that some companies may not be included in the analysis in some years. For example, 422 companies are available for December 2007 and 573 for December 2019. Finally, the management, regression and analysis of all data is performed in the Matlab statistical software, version R2019b.

### **3.2. Methodology Approach**

Past literature has shown, as discussed in the previous section, that portfolio studies have been conducted that found clear correlations between ESG factors and financial performance. Most studies have

documented that positive (negative) ESG events are associated with positive (negative) subsequent abnormal returns (Klassen & McLaughlin, 1996). Specifically, scholars have found that ESG-weighted portfolios offer significantly better financial performance than their counterparts (Blank & Daniel, 2002). The same portfolio studies generally compose portfolios that are mutually exclusive on the basis of various ESG criteria and analyze differences in portfolio returns over certain investment horizons. The following study examines the financial impact, using market returns, to assess the possible sustainability risk premium in a standard asset pricing models context.

Firstly, a portfolio analysis is conducted. The analysis consists of the creation of two exclusive portfolios based on ESG scores. Then an “*outcome*” portfolio will be obtained by subtracting the stock returns of the portfolio containing stocks with worst ESG scores from the stock returns of the portfolio containing stocks with better scores. Secondly, the study analyzes whether a risk premium is associated with a sustainability factor after control for Fama-MacBeth (FM) factors. Both time series and cross-sectional tests are formulated and applied. Both data analyses will be started in December 2007 and will be repeated until December 2019 for the sample companies universe. Finally, this last regression analysis will be repeated by introducing an industry dummy variable (IDV) to analyze how the luxury industry values ESG performance and then verify the hypotheses made in the section 2.3.

### **3.3. Portfolio Analysis**

Portfolio analysis is one of the most commonly used statistical methodologies in empirical asset valuation. Its objective is to examine the cross-sectional relationship between two or more variables. The most frequent application of portfolio analysis is to examine the ability of one or more variables to predict future stock returns. The general approach is to form portfolios of securities, which are mutually exclusive on the basis of the variables set (Derwall, 2007). Subsequently, the risk-adjusted average returns between portfolios are compared to predict the cross-sectional change in future returns. Therefore, portfolio analysis is useful to understand the cross-sectional relationship between a variable (outcome variable) and combinations of other variables (sort variables). The most important advantage of portfolio analysis is that it is a non-parametric technique as it does not make any assumptions about the nature of the cross-sectional relationships between the underlying variables investigated (Bali, Engle, & Murray, 2016). A univariate portfolio analysis will be performed in the current study. This type of analysis evaluates the cross-sectional relationship between a single sorting variable, ESG scores in our case, with the result variable, future stock returns.

#### **3.3.1. ESG portfolio construction**

The portfolio construction based on ESG scores is a simple trading strategy that will be used in this empirical analysis. In addition, the portfolio is called a self-financed portfolio because it is built by

financing a long position on some stocks through a short position on others. For each month of year  $t$  the shares are sorted in descending order based on the available score in year  $t-1$ . It is useful to note that the study uses the ESG scores available in December of each year to rank stocks from the following year. For example, the scores awarded in December 2007 will be used to rank stocks for the year 2008. Subsequently, monthly portfolio returns are calculated over the next 12 months of year  $t$  (2008), before the portfolio allocation process is repeated when the ESG scores for the following year become available. It is important to note that each company belongs to a different portfolio grade in each month, as its ESG rating changes over time. For portfolio construction, companies are placed each year in two exclusive portfolios based on their ESG scores over the past year. The first equally weighted portfolio will be formed by the shares of companies representing 20% of the total sample ordered in a descending way. Whereas, the second equally weighted portfolio will include the shares of companies representing 20% of the total sample ordered in an increasing way. The portfolios will be identified as high-ranked portfolio and low-ranked portfolio respectively. The sample order is based on ESG scores. The logic behind the construction is to provide a level of heterogeneity to the study. This procedure should give an indication of the difference in average returns of strategies based on different levels of ESG scores. The first approach is to purchase the shares with the best ranking (high-ranked portfolio) and then follows the purchase of the shares with the worst results in the ranking (low-ranked portfolio). The last portfolio, top-minus-bottom portfolio (TMB), is the difference between the and lower portfolios and simulates the long position on top-performers and the short position on bottom-performers. The latter strategy is referred to as the long-short strategy (Pokorna, 2017). Once the two portfolios have been created, the methodology involves calculating the average future stock (alpha) returns for each month for each of the two portfolios. This is also done for the TMB portfolio by calculating the difference between the average alpha yields of the two portfolios, high-ranked and low-ranked, for each month. The difference between the alphas emphasizes the influence of ESG screening on investment performance (Derwall, 2007). The difference between the alpha of the high-level portfolio and the alpha of the low-level portfolio is the influence of ESG screening on stock performance.

### **3.4. Regression Analysis**

An interesting aspect of pooling securities into portfolios is the aggregation process inherent in the portfolio valuation approach but can sacrifice some information for simplicity. This section presents a further testing of the soundness by relating the alpha of securities with specific attributes in a cross-sectional analysis. In addition, the current section reports the cross-sectional analysis based on the multifactorial performance model used by Fama and MacBeth (1973). The approach involves a two-step regression methodology. Firstly, the 4-factor model inspired by the two scholars is implemented to estimate the monthly alpha values for each title in our sample. The use of independent variables will mitigate potentially significant biases that could arise from style bias in stock portfolios. This check is

significant as returns on style investment strategies increasingly constitute a substantial part of the performance of SRI portfolios (Bauer, Koedijk, & Otten, 2005). In the second step, the averages of the time series of cross-sectional regression coefficients will be researched. Finally, an IDV is introduced to calculate the specific effects of the luxury industry.

### 3.4.1. Regression procedure

The purpose of the procedure inspired by Fama and MacBeth (1973) is to estimate the relationship between different variables. The regression allows to examine the variable of interest, the ESG scores, whereas controlling many other variables (Bali et al., 2016). In the FM procedure, the analysis can correctly adapt to unbalanced panels because equal weights are used for each month. Thus, for an unbalanced data set, the model weighs all observations in proportion to the number of holdings for the month considered. In the analysis of this empirical study, excess future stock returns are used as a dependent variable, whereas market risk premium, size, book-to-market ratio and ESG scores are used as independent variables. The size variable is created as the natural log of market capitalization, because the cross-distribution of the market capitalization makes it potentially problematic for use in regression analysis (Bali et al., 2016). In addition, regression requires the beta values of securities that are calculated using the pooling technique proposed by Fama and MacBeth (1973). FM regression analysis requires a two-step procedure.

The first step involves periodic cross-sectional regressions of the dependent variable of interest, the stock returns of the companies, on the independent variables mentioned using the data of each period of time. The result of this first step is a time series of slope coefficients and an intercept coefficient of each regressor for each period. These resulting coefficients will be saved and used in the next step. In each time period, the analysis will also produce regression statistics such as R-squared, Adjusted R-squared and the number of observations used in the regression. Note that the cross-sectional regression used in the implementation of the FM regression procedure is the standard ordinary least squares regression (OLS) that is run on all companies and over all time periods of the chosen time horizon. The model is:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,Mkt}(R_{m,t} - R_{f,t}) + \beta_{i,SMB}SMB_{i,t} + \beta_{i,HML}HML_{i,t} + \beta_{i,TMB}TMB_{i,t} + \varepsilon_{i,t} \quad (1)$$

where  $R_{i,t} - R_{f,t}$  is the expected stock return for the company  $i$  and  $R_m - R_f$  is the market risk premium. The construction of the factor portfolios is based on the methodology proposed by Fama and French (1993) and further extended by Mănescu (2011) and it will be presented in the next paragraph.

In the second step of the FM regression procedure, the averages of the time series of the periodic cross-sectional regression coefficients and the averages of the other regression results will be calculated. The aim of this second step of the analysis is to examine whether the average coefficients are statistically different from zero (Bali et al., 2016). The presence of a significant difference would indicate an equally significant relationship between the regressor and the dependent variable over the average time period (Annér & Jakobsson van Stam, 2018). Therefore, the standard errors and associated t-statistics and p-values are calculated as a further confirmation. In addition, standard errors will be corrected following the statistical technique of Newey and West (1987), if deemed appropriate.

### 3.4.2. Regression procedure with an industry dummy variable

As pointed out in past literature, several empirical studies have stressed that the influence of ESGs on stock returns can vary from one industry to another. Therefore, in order to confirm how the characteristics of the industry can influence the main findings of this empirical study, a dummy industry variable (LuxInd) is constructed and included as an independent variable in the 4-factor model. The methodology used in this section follows Mănescu (2011). The revised model is:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,Mkt}(R_{m,t} - R_{f,t}) + \beta_{i,SMB}SMB_{i,t} + \beta_{i,HML}HML_{i,t} + \beta_{i,TMB}TMB_{i,t} + \sum_{i=1}^N \beta_{i,LuxInd}LuxInd_{i,t} + \varepsilon_{i,t} \quad (2)$$

where  $LuxInd_i$  will be equal to value 1 if the stock  $i$  comes from the luxury industry and 0 if it does not come from the studied industry.

### 3.4.3. Factor portfolios construction

The creation of the factor portfolios is based on the multifactorial model of the scholars Fama and French (1993) further extended by Mănescu (2011). The multifactorial model is based on the idea that an efficient portfolio can be built from the collection of several well diversified portfolios. Moreover, the portfolio created following the Fama-French methodology (1993) is defined as a self-financed portfolio because it is built by financing a long position on some securities through a short position on others, with equal market value. Thus, the cost of building the portfolios is zero. The first portfolio of funding to be built is the market portfolio. The choice of scholars is conveyed by the fact that the market portfolio has historically achieved a high premium over short-term risk-free investments. Whereas, the market portfolio is not efficient, it is able to capture many components of systemic risk. The portfolio in question consists of a long position in the market portfolio financed by a short position in the risk-free security (Mkt-Rf).

Portfolios that implement trading strategies based on size (market capitalization) and book-to-market ratios have historically been alpha positive and therefore capture the risk that is omitted from the market portfolio. Therefore, portfolios that implement these trading strategies are good candidates for the multifactorial model (Berk & DeMarzo, 2017). A first trading strategy selects stocks based on their market capitalization. Whereas, in a second, the chosen factor is the book-to-market ratio. In the portfolio with a size strategy, companies are placed each year in two portfolios based on their market capitalization. The first portfolio consists of companies with market values below the median of NYSE companies, forming an equally weighted portfolio called Small. Whereas, the second portfolio will include companies with market values above the median of NYSE companies, forming an equally weighted portfolio called Big. The strategy will be to purchase Portfolio S each year through short selling of Portfolio B. The self-financed portfolio is called the small-minus-big (SMB) portfolio and has historically produced positive risk-adjusted returns. The second strategy includes the book-to-market ratio as a discriminating variable. For each year, an equally weighted first portfolio is created containing companies with a book-to-market ratio below the 30th percentile of NYSE companies. This portfolio will be identified as L. Whereas, the second equally weighted portfolio, H, consists of companies with a book-to-market ratio greater than the 70th percentile of NYSE companies. This time, the trading strategy consists of a long position in the H portfolio financed with a short position in the L portfolio for each year. This strategy has also historically produced positive risk-adjusted returns. The self-financed portfolio will be called high-minus-low (HML) and will be added to the collection. For the Mkt-Rf, SMB and HML factor portfolios the firm uses the content offered by Kenneth French's data library. Finally, an additional self-financed, top-minus-bottom (TMB) portfolio will be added to the current paper. Regarding the creation of the last portfolio, TMB, which simulates the long position on top-performers and the short position on bottom-performers based on the ESG variable, see the previous section “3.3.1. ESG portfolio construction”.

### **3.5. Robustness Test**

The following study is conducted using Bloomberg ESG data. In order to check the differences between ESG data providers and ensure that our results are not due to the data provider, a robustness test will be carried out. Consistent with the robustness analysis conducted by Dyck, Lins, Roth and Wagner (2016), the analysis will be repeated using ESG data from Thomson Reuters. The test is aimed at assessing whether the new findings are consistent with the findings based on the Bloomberg database. Underlying this robustness test are two concerns. Firstly, the accuracy of the data collection process is not possible to evaluate. The second concern is the lack of a standardized methodology to calculate ESG scores.

## 4. EMPIRICAL FINDINGS

This section aims to offer and describe the empirical results of regression analysis. In the first part, the descriptive statistics of the data used are explained and then the key regression results are highlighted and interpreted to investigate the hypotheses presented above.

### 4.1. Descriptive Statistics of the Sample

Before discussing the estimated coefficients, it is important to focus on the characteristics of each variable in the applied models. Therefore, the following section provides the descriptive statistics. The objective of the presentation of the summary statistics, in the first place, is to allow the reader a simple interpretation of the data used. They aim to provide a basic overview of the cross-sectional properties of the variables that have been used in the empirical study. It is useful to understand the types of entities that make up the sample. Secondly, the summary statistics can be used by researchers and readers to identify any potential problems that may arise when using these variables in statistical analyses.

#### 4.1.1. Excess returns and risk factors

Table A below presents the statistics describing the dependent variable, the excess returns of the sample stocks, to better understand the characteristics of the sample. For each period of time  $t$ , the transverse mean, median, standard deviation, excess kurtosis, skewness and the Sharpe ratio are calculated. Each of these statistics is calculated on all available values of Excess Returns in period  $t$ .

	Mean	Median	SD	Kurtosis	Skewness	Sharpe ratio	nt
2019	0,0095	0,0096	0,0047	1,0940	-0,8749	1,6319	573
2018	0,0023	0,0030	0,0067	0,6627	0,2168	0,1183	573
2017	0,0087	0,0067	0,0063	-0,1469	0,7176	1,2603	573
2016	0,0052	0,0080	0,0090	7,1127	-2,5009	0,5546	573
2015	0,0065	0,0081	0,0069	2,6883	-1,3996	0,9507	573
2014	0,0044	0,0056	0,0069	-0,3028	-0,4633	0,6299	573
2013	0,0050	0,0055	0,0045	-1,0517	0,0364	1,1005	573
2012	0,0076	0,0059	0,0067	0,0298	0,7303	1,1167	573
2011	0,0033	0,0027	0,0039	0,6153	-0,0113	0,8394	573
2010	0,0062	0,0069	0,0066	0,9474	-0,8839	0,9217	573
2009	0,0061	0,0061	0,0067	-0,8464	-0,0282	-0,0007	573
2008	0,0043	0,0037	0,0052	4,5792	-1,7018	0,5692	573

**Table A:** Annual summary excess returns statistics

The table above presents the annual summary statistics for the excess returns of the sample. For each year  $t$ , the mean (*Mean*), median (*Median*), standard deviation (*SD*), kurtosis excess (*Kurtosis*), skewness (*Skewness*) and Sharpe ratio (*Sharpe ratio*) of the distribution of Excess Returns over all stocks in the sample are calculated. The sample covers the years 2008 to 2019. The column labelled *nt* indicates the

number of observations for which the value of excess returns is available in the year in question. The results show that, for example, in 2010, the mean excess returns of the sample stocks is 0,0062; the median is 0,0069; the cross-sectional standard deviation of excess returns values is 0,0066; the excess kurtosis is 0,9474; the skewness of the excess returns sample is -0,8839; and the Sharpe ratio, useful for investors to assess the relationship between risk and return of an asset, is 0,9217. Finally, there are 573 shares with a valid excess returns value in 2010.

Below are the summary statistics of all the variables used in the empirical study. The first column indicates the variable whose summary statistics are presented in the date line. The following columns present the averages of the time series of the cross-sectional summary statistics.

	Mean	Median	SD	Kurtosis	Skewness	Sharpe ratio	nt
Excess Return	0,0057	0,0058	0,0064	1,7430	-0,6280	0,8216	573
Mkt-Rf	0,0118	0,0149	0,0437	1,0763	-0,0263	0,2596	573
SMB	0,0008	0,0024	0,0233	-0,3883	0,1998	0,0145	573
HML	-0,0021	-0,0032	0,0278	2,0206	0,1744	-0,0920	573
TMB	-0,0037	-0,0052	0,0155	0,2855	0,2592	-0,2686	573

**Table B:** Summary statistics of time-series averages

The values in Table B describe the averages cross-section for all variables used. The values, shown above, are obtained by making the average of the time series of the selected synthetic cross-sectional statistics. Therefore, the table numbers represent the cross-section distribution of the excess returns for the sample average time period. For example, following the first row of the table, the mean value of the excess returns is 0,0057 and the median value is 0,0058. The mean value is lower than the median value and consistently the skewness of the distribution of excess returns of -0,6280 is negative. The average standard deviation of the cross-section is 0,0064. The cross-sectional distribution of excess yields over the average time period is leptokurtic because the average excess kurtosis of 1,7430 is positive. In addition, the Sharpe ratio is 0,8216, which means that the investment generates a risk premium of 0,8216 additional return for every 1 of volatility. According to the theory, the higher the Sharpe ratio of a portfolio, the better its risk-adjusted performance. If the ratio is negative, as in the case of HML and TMB portfolios, it indicates a lower return than the risk-free return. Finally, over the average time period, there are 573 shares for which there is a valid excess return value. The same reading should be given for all other variables in the table.



#### 4.1.2. ESG scores

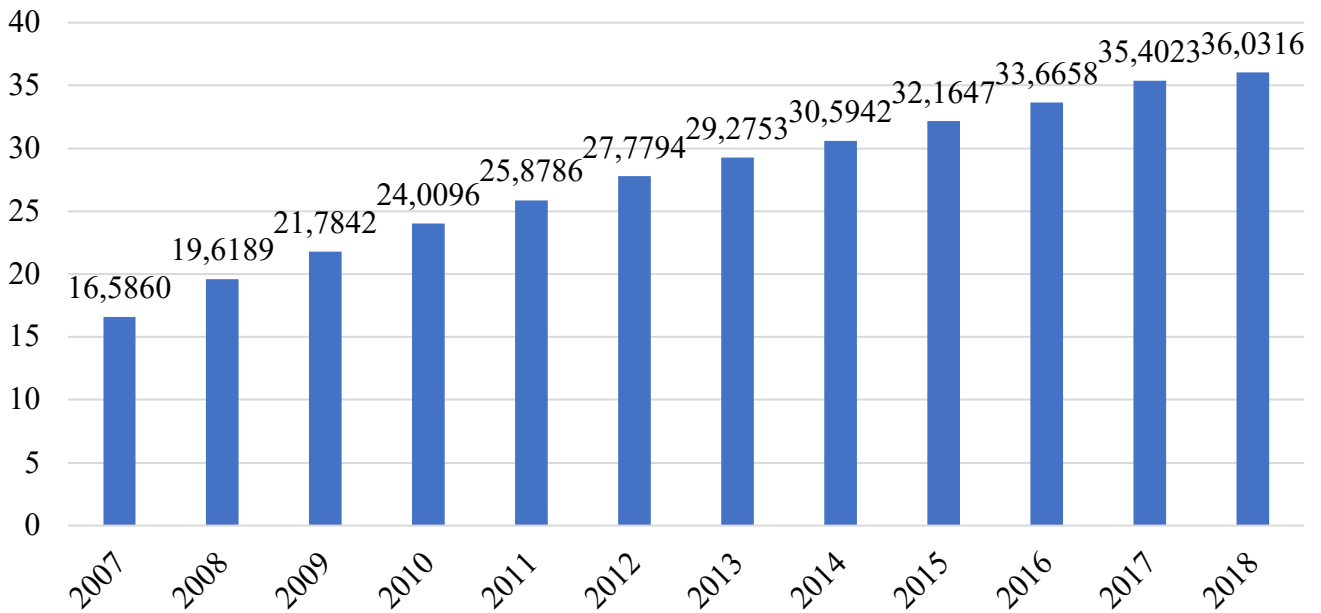
Once the statistics describing excess returns and risk factors have been reported, the same attention should be paid to ESG scores for their importance in this study. The following table presents the descriptive statistics of the ESG scores of the sample stocks. As for the previous data, for each period of time  $t$ , the transversal mean, the median, the standard deviation, the excess kurtosis and the skewness are calculated. Each of these statistics is calculated on all available values of the ESG scores in period  $t$ .

Mean	Mediana	SD	Kurtosis	Skewness	nt
26,7521	23,5537	16,9298	-0,7441	0,3012	573

**Table C:** Summary statistics of time-series averages

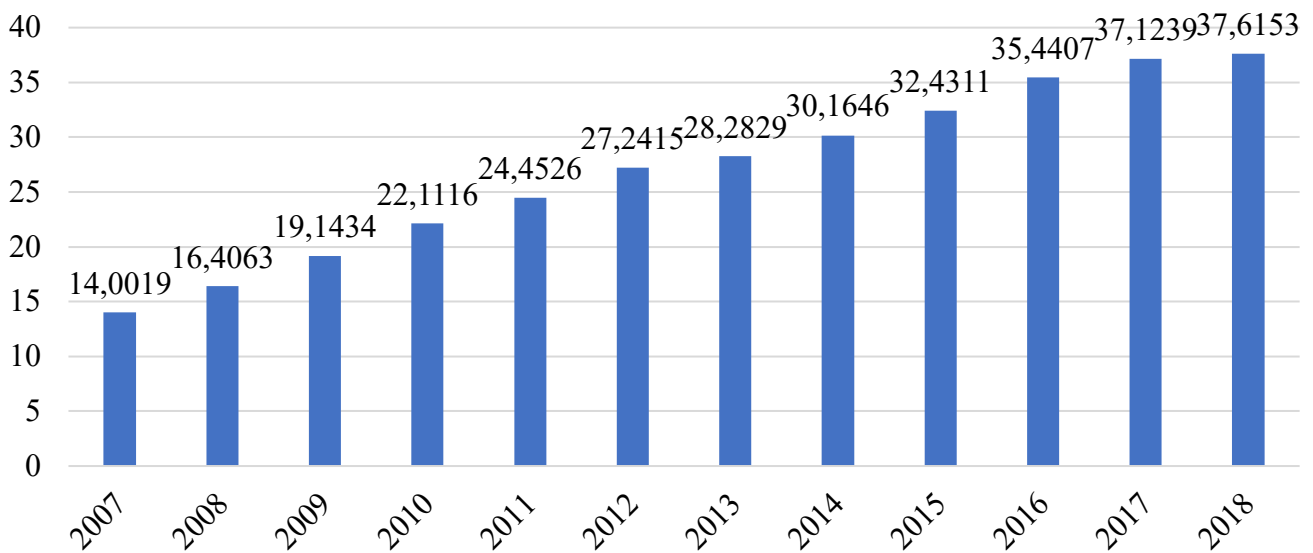
The above values are obtained by making the average of the time series of the selected cross-sectional summary statistics. Therefore, the numbers in the table represent the cross-sectional distribution of ESG scores over the sample average time period. The mean value of the scores is 26,7521 and the median value is 23,5537. The skewness of the distribution of scores is positive, with a value of 0,3012, in fact the value of the mean is higher than the median value. The average standard deviation of the cross-section is 16,9298. The cross-sectional distribution of scores, over the average time period, is platykurtic as the average kurtosis is greater than -0,7441. Finally, over the average time period, there are 573 actions for which there is a valid ESG score value.

In addition, in order to investigate the main objective of the following elaboration, it is also appropriate to observe the development of ESG scores throughout the period under study. The following figure (Figure 1) shows the annual time variation of the ESG scores of the stocks of the entire sample. The rationale behind the annual average is based on the availability of ESG scores by the data provider. Consistent with what is highlighted in the literature overview section, the figure shows the increasing commitment of companies to environmental, social and governance matters. In fact, the figure shows the increase in average ESG scores over the years studied, from a score of almost 17 in December 2007 to 36 in December 2018.



**Figure 1:** Annual time-variation in ESG scores of the entire sample

This growing trend that concerns the sample as a whole, observable in the previous figure, is consistent with the luxury industry trend shown in Figure 2. The figure below shows the annual time variation in ESG scores of luxury industry stocks. The scores increase from a score of 14 in December 2007 to almost 38 in December 2018. The two figures compared show that the luxury industry average score is lower than that of the sample as a whole until the year 2014. While from 2015 onwards the trend is reversed and luxury industry companies have higher ESG scores and are therefore more involved in environmental, social and governance matters. This trend reversal could be linked to the increasing focus on disclosure characteristic of those years. For example, cruise brands such as Royal Caribbean and Carnival Cruise Lines have developed systems to manage their environmental and social impacts and report their practices (Bonilla-Priego, Font, & Pacheco-Olivares, 2014). In the personal luxury goods subsector, the Saint Laurent brand in those years implemented sustainable solutions aimed at minimizing water consumption, implementing heating and air conditioning systems and optimizing energy efficiency through the use of solar panels. In fact, the brand has obtained awards and certifications for its approach to sustainability (Szymdke, 2015). Another example that has probably caused a reversal of the positive trend is the Modern Slavery Act in the UK, published in 2015, which requires large companies doing business in the UK to publish an annual public and board approved statement on slavery and human trafficking (Winston, 2016). The companies, first and foremost Louis Vuitton and Hermès, not only published the results of sustainable activities in their annual reports and through their websites, they also began to do so implicitly through their advertisements (Anido Freire & Loussaïef, 2018).



**Figure 2:** Annual time-variation in ESG scores of the luxury industry

## 4.2. Regression Results

### 4.2.1. Excess returns

The current section presents the results of the regression analysis using the average excess returns as a dependent variable and the risk factors Mkt-Rf, SMB and HML as independent variables. The time horizon is always the period from 2008 to 2019.

Before the presentation of the results it is necessary to make some clarifications. Coherently with most of the researchers also in this study a statistical significance at the level of 5% to reach the conclusion of a transversal relationship between the dependent variable and the independent variable is required. Therefore, the p-value must be less than 0,05 or equivalently the t-statistics must be greater than about 1,96. The transverse relationship between the variables over the average time period, mentioned above, is indicated by the average slope coefficient which must be statistically significant (Bali et al., 2016). The estimated coefficients indicate the relationship between the individual independent variable and the dependent variable or how much the dependent variable varies when one unit of the independent variable changes. In addition, R-squared and Adjusted R-squared averages are used to determine the quality of total variation of the dependent variable that is explained by the independent variables over the average time period. The average number of observations is self-explanatory.

The results of the regression analysis of time series with portfolios that mimic risk factors are presented in the table below. Table D presents the regression results for the complete sample and therefore without the dummy variable that studies the luxury industry.

	Coefficient	Standard Error	t-statistic	p-value
Alpha	0,0057	0,0005	11,6585	2,61E-28
Mkt-Rf	0,0004	0,0008	0,4974	0,6191
SMB	0,0003	0,0003	1,0884	0,2769
HML	-0,0052	0,0005	-11,0590	6,99E-26
TMB	-0,0033	0,0004	-8,2916	8,12E-16

**Table D:** Estimation results of portfolio cross-sectional regression

The result of the regression has a statistical significance at the level of 5%, with p-value below 0,05, and therefore there is a relationship between the variables. The R-squared and Adjusted R-squared averages are 0,1993 and 0,1937 respectively, so it follows that the risk factors explain about 20% of the total cross-sectional variation in excess returns. The average number of observations used is 573. The alpha indicates that 0,57% of the returns are abnormal returns, which means that they are not explained by the model. Moreover, according to the p-values of the individual variables, the market (Mkt-Rf) and size (SMB) are not significant at the 5% level and are positively correlated to the average excess returns. While, a significance at the 5% level is found for equity value (HML) and ESG scores (TMB), which are negatively correlated to average excess returns. Precisely, the study shows that if the HML and TMB factors increase by 1 the excess returns decrease by 0,0052 and 0,0033 respectively. Therefore, the results conclude that companies with high ESG performance have worse average stock performance in the market. In light of the results concluded and presented in Table D, assumptions 1.0 and 1.1 are rejected. The 1.0 hypothesis assumes that ESG scores refer positively to stock returns while the 1.1 hypothesis that companies with high ESG scores are associated with higher stock returns than companies with lower ESG scores. Moreover, as highlighted in the previous sections, the influence of ESG scores on stock returns can vary from one industry to another, therefore, an industry dummy variable (LuxInd) is introduced as an independent variable in the 4-factor model. Table E shows the results of the regression analysis conducted for the luxury industry.

	Coefficient	Standard Error	t-statistic	p-value
Alpha	0,0064	0,0005	13,5691	1,60E-36
Mkt-Rf	0,0006	0,0008	0,7689	0,4423
SMB	0,0003	0,0003	1,1351	0,2568
HML	-0,0052	0,0004	-11,7604	1,00E-28
TMB	-0,0034	0,0004	-8,9309	5,88E-18
LuxInd	-0,0050	0,0006	-7,9965	7,23E-15

**Table E:** Estimation results of portfolio cross-sectional regression for the luxury industry

This second regression also has a statistical significance at the level of 5% with a p-value of approximately 0,0000. According to the average R-squared value, the risk factors explain about 28% of the total cross-sectional variation in excess returns. The average number of observations used is 573. Looking at the individual variables, the market-based risk factor (Mkt-Rf) and the size-based risk factor (SMB) do not prove statistically significant at the 5% level in contrast to the other risk factors (HML, TMB and LuxInd). Focusing on risk factors that are significant at the 5% level, the book-to-market ratio has a negative correlation with average excess returns as well as risk factors based on ESG scores and industry dummy variable. If there is an increase of 1 in risk factors, excess returns decrease by 0,0052, 0,0034 and 0,0050 respectively. The results conclude that, consistent with the full sample study, luxury industry companies with high ESG performance have worse average stock performance in the market. Also, in this second analysis the previously constructed 2.0 and 2.1 assumptions are rejected. Respectively they advance that ESG scores refer positively to stock returns, in the luxury industry and that luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores.

#### 4.2.2. ESG scores factor

It was also appropriate to verify through empirical study the correlation between the TMB factor, based on ESG scores, and other risk factors. I also introduce the Carhart MOM risk factor (1997) for greater accuracy in the investigation. Thus, in the regression analysis conducted the TMB factor was used as a dependent variable and the risk factors Mkt-Rf, SMB, HML and MOM as independent variables. The time horizon is always the period from 2008 to 2019. In Table F, empirical results of the regression of time series with portfolios that mimic risk factors are presented. The result has a significance (p-value) of 0,0042, so the risk factors explain the TMB factor studied.

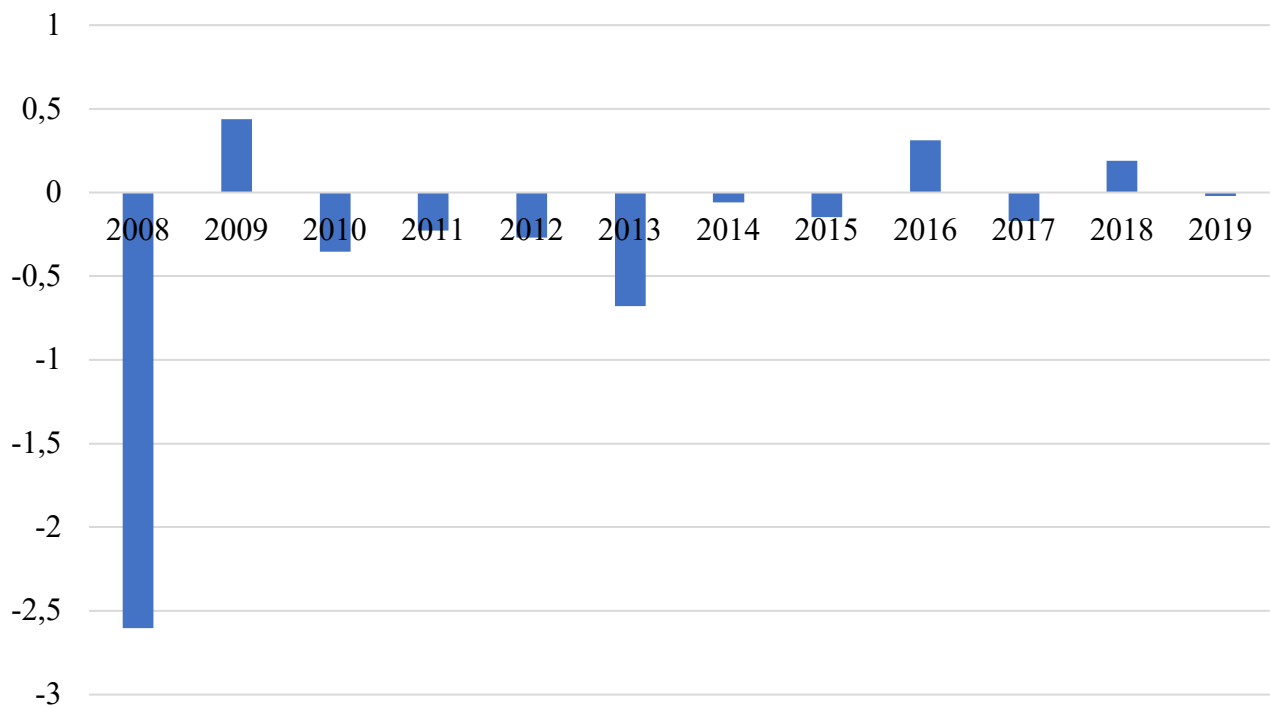
	Coefficient	Standard Error	t-statistic	p-value
Alpha	-0,0038	0,0013	-2,9322	0,0039
Mkt-Rf	0,0304	0,0308	0,9874	0,3252
SMB	-0,2244	0,0564	-3,9754	0,0001
HML	0,0382	0,0507	0,7531	0,4527
MOM	-0,0036	0,0299	-0,1211	0,9038

**Table F:** Estimated results of ESG portfolio (TMB) cross-sectional regression

The result has a negative alpha which indicates that the equity portfolio based on ESG scores has risk-adjusted returns. This indicates that the market is penalizing the ESG's high level of performance. The table shows that the burden on the SMB factor is statistically significant and negative, suggesting that differences in returns on upper and lower ESG equities have common characteristics such as differences

in returns on large and small equities. The same reasoning can be made for the MOM factor. In addition, the average R-squared and Adjusted R-squared values of the regressions, which include all four variables, are 0,1034 and 0,0776, respectively. The R-squared value found indicates that only slightly more than 10% of the total cross-sectional variation in the TMB factor, based on ESG scores, is explained by the Mkt-Rf, SMB, HML and MOM factors. This underlines that the factors just mentioned do not explain everything in the TMB factor studied. The conclusion is that there is a significant average return that survives. Therefore, the negative yield found in the first analysis (Table D) is not fully explained by the study of the risk factors used in the regression analysis.

Finally, the annual average values of the ESG coefficients are plotted in Figure 3 to understand how the ESG effect has been historically modified. The coefficients are significant at the 5% level.



**Figure 3:** Annual time-variation in estimated ESG coefficients

The figure above shows that the ESG coefficients have their lowest values in the years between 2008 and 2013 which coincides with the years of the financial crisis and post-crisis, with the exception of the year 2009 where the coefficients are positive. From 2014 onwards, the coefficients are not too low and in the years 2016 and 2018 they assume positive values.

### 4.2.3. Robustness test

In order to control the impartiality of the explanatory and predictive power of the score, the impartiality of the data needs to be checked, as differences in the creation of ESG scores between data providers could affect the results. Therefore, a robustness test has been conducted. The regression analysis was repeated using ESG data from Thomson Reuters. The test is intended to verify whether the results are consistent with results based on the Bloomberg database.

	Coefficient	Standard Error	t-statistic	p-value
Alpha	0,0064	0,0005	11,8732	3,42E-29
Mkt-Rf	0,0015	0,0008	0,0604	0,5001
SMB	0,0003	0,0007	0,9447	0,1119
HML	-0,0036	0,0004	-8,3972	3,68E-16
TMB	-0,0028	0,0002	-1,1587	6,24E-22
LuxInd	-0,0049	0,0007	-7,2569	1,31E-12

**Table G:** Estimation results of portfolio cross-sectional regression for the luxury industry

The new analysis with the new data produced results similar to those reported in the analysis illustrated in paragraph 4.2.1. Therefore, in this specific case, the concerns raised in section 2 related to the accuracy of the data collection process which is difficult to assess and the lack of a standardized methodology for calculating ESG scores are rejected.

### 4.3. Economic Interpretation

In the previous part the descriptive statistics of the variables and the results obtained from the regressions implemented have been highlighted. An important data highlighted was the statistical and negative significance of the relationship between excess returns and ESG scores. However, it is extremely important to give the reader an understanding of the economic entity of the relationship.

The economic interpretation of the relationship between the TMB factor and returns can also be obtained by investigating how a company's expected return will react to the occurrence of a shock in the factor. Multiplying the beta of a single firm by the general standard deviation results in the firm's exposure. Doing this for each individual enterprise in the sample and calculating the sample mean gives a value that explains how much the mean sample return would change if the factor were to decrease by one standard deviation. Then the impact on the economy, in relation to the chosen sample, can be perceived. In the case study a mean of -0,0052. Therefore, if the TMB factor decreases by a standard deviation, the average yield of the sample would decrease by 0,52%. The variance assumes an extremely low value of 0,01%.

In addition, the regression results, visible in the previous section, show that bottom-performers have higher yields than top-performers. This conclusion is related to the fact that the TMB factor, based on ESG scores, commands a negative premium. Therefore, in order to achieve a positive abnormal return, the strategy to be implemented would be the opposite strategy to that offered by this study for the creation of the ESG portfolio. A long position should be maintained on the lower portfolios and a short position on the upper portfolios. With the latter strategy an investor is encouraged to use ESG as a tool to improve returns.



## 5. CONCLUSION

The introduction to this document has highlighted the environmental, social and governance performance of companies, which has attracted increasing attention from a variety of stakeholders, including customers, employees, government regulators and public interest groups. Recently, investors have increasingly begun to look at the companies in which they invest by investigating the positive or negative impacts that their activities may have on the environment and society. This approach is an alternative to the classic risk-return approach, where the expected return is maximized for a given level of risk. The emergence of this new approach, which focuses on business impact, is subordinate to the growing perception that the world is changing. It is therefore plausible that the new and future nature of investments may not be purely profit-driven.

This document aims to improve the knowledge of the ESG concept and provides a couple of keys to reading from a professional's point of view. The paper investigated the effects of environmental, social and governance (ESG) scores on action returns and whether these effects can be explained by risk. The study is carried out on a final sample of 573 companies including listed companies belonging to the S&P 500 index to ensure a relatively large sample size. The focus is the luxury industry for the period January 2008 to December 2019. Therefore, this work contributes to previous studies as it provides results in a sub-area, the luxury industry, which has no empirical coverage. The main assumptions made were the following: ESG scores refer positively to stock returns, in the luxury industry; luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores. To verify the hypotheses and therefore the effects of ESG scores on stock returns, a Fama-MacBeth regression is performed with the three factors of Fama-French (1993) extended with ESG scores and an industry dummy variable to control the effects on the luxury industry. A second regression is implemented to study the factor based on ESG scores (TMB), where Carhart's MOM factor (1997) is introduced to improve accuracy in understanding the relationships between variables. An aggregate environmental, social and governance score provided by the Bloomberg platform (2020) is used in the regressions.

The main results of the analysis, which emerged in the previous section, indicate that the ESG scores have a significant impact and are negatively correlated with the average yields of the sample stocks. As a result, it can be inferred that companies with lower ESG scores have a better stock performance in the market than those with higher scores. The same evidence was obtained in the luxury industry. The results of this paper and their interpretations can be associated with investor motivation. In fact, value-oriented investors can use ESG criteria to assess companies based on their perception of corporate responsibility and sustainability. While the results may discourage environmentally and socially conscious investors, they can continue to invest in sustainability by diversifying their portfolio to cover negative returns and relying on the expectation that ESG-related effects will be seen in the long term. Therefore, the question is whether

these investments are aimed exclusively at ethically and environmentally conscious investors, who are likely to forego some of their financial returns in order to follow their values. From a macro-financial point of view, one could justify the strategy used in this study, and therefore try to associate such investments also to investors not conditioned by specific values, through the Intertemporal CAPM theory offered by Merton (1973). According to this theory, investors adopt a hedging strategy by including in their portfolio assets whose performance is negatively correlated to the economic cycle. Therefore, during economic recessions these assets will perform above the market average. Following this theory, the representative agent is risk-averse and will hopefully give a lot of value to a company that behaves in this way. It will be willing to pay more to have a positive payoff from these companies in times of economic recession. The expected return of the company will be dictated by the inverse relationship between price and return. The sample stocks are consequently expensive. In addition, having a good ESG-rated portfolio can be evidence of a certain non-financial interest, which can result in increased confidence of value-driven investors.

As already highlighted, investors tend to choose socially responsible investments driven by their personal values, so the scenario in which they invest in portfolios with negative premiums is possible to avoid industries incompatible with their values. In this scenario, the issue shifts to the possibility that these environmentally and socially conscious investors will give up a good financial performance of their portfolio in exchange for investments in companies that are in line with their values. However, to date, the financial benefits associated with sustainable investments seem to be limited and probably when a sufficient market share, estimated by Hong and Kacperczyk (2009) at around 10-15%, will select the shares to hold in the portfolio according to ESG criteria, investors who already own sustainable companies can achieve abnormal returns as the price of these assets is pushed upwards. A more corporate interpretation could be sought in the concept of the agency perspective, of which Father Friedman (1970) is the author. This perspective underlines a negative relationship between ESG and corporate returns characterized by the loss of shareholder value maximization. The conclusion could be that the high costs of implementing sustainable activities are likely to outweigh the financial benefits. This could potentially lead to market punishment for companies that are virtuous in environmental, social and governance terms. Finally, from a purely speculative perspective, an investor seeking only profit could use ESG scores to build long-term strategies, going long in low ESG stocks and short in high ESG stocks. Given all considerations regarding exposure to the factors highlighted, ESG scoring requirements, tolerance to reduced financial performance with hedging targets, or an inclination towards speculative strategy, a potential investor will or will not choose to implement the ESG-based low volatility TMB portfolio that has been built for this document. However, in light of the results, the study concludes that a stock portfolio with high ESG scores has negative risk-adjusted returns. The hypotheses previously made are rejected by the empirical results. The significant and negative relationship between ESG and CFP indicates that the involvement and focus of luxury industry leaders on environmental, social and governance issues is probably still in its infancy, even

if growing. Furthermore, companies should consider social responsibility practices as a long-term investment to justify sustainable investments in the eyes of stakeholders. Indeed, it is obvious that if industry actors do not continue and improve their sustainable activities, they will lose the opportunity to create added value. As a limitation of this article, it should be noted that the analyses conducted investigate the effect of the S&P 500 index from 2008 to 2019 on the average monthly returns of predominantly US companies, so the results may be affected by these selected regional and periodic approaches. Furthermore, the main results are not consistent with previous studies conducted by Ziegler et al (2007) and Mănescu (2011), which used a methodological approach similar to that proposed in this paper. This could be due to the use of different stock performance or ESG scores compared to previous studies. However, the methodological approach has been modified to be adapted to the chosen data and this may indicate an aspect that does not make the results directly comparable. This study provides a basis for future research on the ESG concept in the luxury industry. The results have both theoretical and practical implications. However, due to data limitations, these results are based on a relatively small sample of time series and cross-sectional regressions. Therefore, an important direction for future research could be sought in integrating more data to measure the relationship between ESG and stock returns. This data could be constructed by the researchers themselves. The following study carries out the analysis over 12 years, it would be interesting to carry out the same study over a longer period in order to reinforce the findings. The extension of the sampling period is consistent with the perspective that ESG aspects are considered important for long-term value creation and sustainability (Khan et al., 2016). In addition, it may be useful for investors to break down the scores into the three pillars to understand the crucial aspects of individual ESG indicators related to the CFP. A final aspect that should be considered in future research is that this paper investigates the effect of ESGs on stock returns and not the possible relationship, suggested by Ziegler et al (2007), that returns could have on ESG scores. Finally, in light of the negative and significant report that emerges from the analysis of this document, it may be extremely important to quantify the costs of implementing environmental, social and governance activities incurred by the most virtuous companies in these terms.

## 6. APPENDIX

### APPENDIX A: ESG Framework

#### ENVIRONMENTAL SCORE

##### Emission Reduction:

CO2 Equivalents Emission Total  
CO2 Reduction  
Commercial Risks and/or Opportunities Due to Climate Change  
Emissions Reduction Policy  
Environmental Expenditures  
Environmental Management System Certified  
NOx and SOx Emissions Reduction  
NOx Emissions  
Ozone-Depleting Substances Reduction  
SOx Emissions  
Sustainable Transportation  
VOC Emissions  
VOC Emissions Reduction  
Waste Recycling Ratio  
Waste Reduction Initiatives  
Waste Total  
Water Pollutant Emissions

##### Resource Reduction:

Direct Energy Produced  
Direct Energy Purchased  
Electricity Produced  
Electricity Purchased  
Energy Efficiency Policy  
Energy Use Total  
Environmental Supply Chain Management  
Green Buildings  
Natural Gas Energy Produced  
Natural Gas Energy Purchased  
Oil Energy Produced  
Oil Energy Purchased  
Renewable Energy Use  
Toxic Chemicals or Substances Reduction  
Water Efficiency Policy  
Water Recycled  
Water Use Total

##### Product Innovation:

Energy Footprint Reduction  
Environmental R&D Expenditures  
Product Innovation/ Product Impact Minimization  
Renewable/Clean Energy Products  
Water Technologies

#### SOCIAL SCORE

##### Employment Quality:

Bonus Plan for Employees  
Employee Satisfaction  
Employees Leaving  
Employment Quality/ Employment Awards  
Employment Quality/ Policy  
Employment Quality/ Salaries  
Employment Quality/ Salaries Distribution  
Fringe Benefits  
Trade Union Representation  
Turnover of Employees

##### Health & Safety:

Health & Safety / Policy  
Lost Days  
Total Injury Rate

##### Training & Development:

Average Training Hours  
Internal Promotion  
Management Training  
Training and Development/ Policy  
Training Costs Total

##### Diversity:

Day Care Services  
Diversity and Opportunity/ Policy  
Flexible Working Hours  
Positive Discrimination  
Women Employees  
Women Managers

##### Human Rights:

Human Rights Breaches Contractor  
Human Rights/ Policy

##### Community:

Community/ Policy Donations Total  
Crisis Management Systems  
Donations

##### Product Responsibility:

Customer Satisfaction  
Healthy Food or Products  
Product Access Low Price  
Product Responsibility/ Policy

## CORPORATE GOVERNANCE SCORE

### Board Structure:

Board Structure/ Background and Skills  
Board Structure/Size of Board  
Board Structure/ Experienced Board  
Board Structure/ Non-Executive Board Members  
Board Structure/ Percentage of Independent Board Members  
Board Structure/ CEO-Chairman Separation  
Board Structure/ Policy  
Board Structure/Board Diversity

### Board Function:

Board Functions/ Audit Committee Expertise  
Board Functions/ Audit Committee Independence  
Board Functions/ Compensation Committee Independence  
Board Functions/ Nomination Committee Independence  
Board Meeting Attendance Average  
Number of Board Meetings

### Compensation Policy:

Compensation Policy/ Board Member Compensation  
Compensation Policy/ Highest Remuneration Package  
Compensation Policy/ Policy  
Compensation Policy/ Stock Option Program  
Senior Executive Long-term Compensation incentives  
Vesting of Stock Options/Restricted Stock

### Shareholder Rights:

Classified Board Structure  
Ownership  
Shareholder Rights/ Policy  
Voting Rights

### Vision & Strategy:

CSR Sustainability Committee  
CSR Sustainability External Audit  
CSR Sustainability Report Global Activities  
GRI Report Guidelines  
Integrated Vision and Strategy Challenges and Opportunities

## APPENDIX B: Sample Companies in the Luxury Industry

Accor SA	Luk Fook Holdings (International) Limited
adidas AG	Luxottica Group SpA
Air China	LVMH Moët Hennessy Louis Vuitton SE
Air France-KLM	Mandarin Oriental Hotels
Air New Zealand	Marriott International
Alaska Air Group, Inc.	MGM Resorts International
American Airlines	Capri Holdings Limited
Asiana Airlines	Moncler SpA
Audemars Piguet & Cie	Movado Group, Inc.
Audi AG	Mulberry Group plc
Bayerische Motoren Werke AG	Nike INC
British Airways	Norwegian Cruise Line
Brunello Cucinelli SpA	Onward Holdings Co., Ltd
Bulgari SpA	Pandora A/S
Burberry Group PLC	PC Jeweller Ltd.
Canada Goose Holdings Inc.	Pola Orbis Holdings Inc
Carnival PLC	Porsche Automobil Holding SE
Cathay Pacific Airways	Prada Group
Chow Sang Sang Holdings International	PVH Corp.
Chow Tai Fook Jewellery Group Limited	Qantas Airways Limited
Compagnie Financière Richemont SA	Ralph Lauren Corporation
Coty Luxury	Restoque Comércio e Confecções de Roupas
Daimler AG	Revlon, Inc/Elizabeth Arden segment
De Rigo SpA	Rolls-Royce Holdings PLC
Delta Air Lines, Inc.	Rolls-Royce Power Systems AG
Deutsche Lufthansa AG	Royal Caribbean Cruises Ltd.
Eastern Gold Jade Co., Ltd	Safilo Group SpA
Etihad Airways	Salvatore Ferragamo SpA
EVA Airways Corp.	Samsonite International S.A.
Ferrari N.V.	Sanyo Shokai Ltd.
Fossil Group, Inc.	Shiseido Prestige & Fragrance
Garuda Indonesia	Singapore Airlines Limited
Gefin SpA	SMCP SAS
General Motors Company	Swiss International Air Lines
Graff Diamonds International Limited	Tapestry Inc.
Hainan Airlines Holding Co., Ltd.	Tata Motors Limited
Hermes International	Ted Baker plc
Hilton Worldwide Holdings Inc.	Tesla, Inc.
Hugo Boss AG	Thai Airways International Public Co., ltd.
Inter Parfums, Inc	The Estée Lauder Companies Inc.
InterContinental Hotels Group PLC	The Swatch Group Ltd.
Japan Airlines Co., Ltd.	Tiffany & Co.
JetBlue Airways Corporation	Titan Company Limited
Kalyan Jewellers India Pvt. Limited	Tod's SpA
Kenya Airways PLC	Toyota Motor Corporation
Kering SA	Tribhovandas Bhimji Zaveri Limited
Korean Air Lines Co., Ltd.	Trinity Limited
Kosé Corporation	Tse Sui Luen Jewellery
L'Occitane International SA	Turkish Airlines (Turk Hava Yollari)
L'Oreal SA	Under Armour Class A
Lao Feng Xiang Co., Ltd	Under Armour Class C
Las Vegas Sands Corp	United Airlines Holdings, Inc.

Van de Velde NV  
Vera Bradley, Inc.  
Virgin Atlantic Airways  
Volkswagen AG  
Wynn Resorts Ltd  
Zhejiang Ming Jewelry Co., Ltd

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## APPENDIX C: Fama-MacBeth Regression on MATLAB R2019b.

After importing table Y (dependent variable matrix) and X (independent variable matrix) on software, follow:

```
T = 144;
N = 573;
K = 4;
BETA = zeros(N,K);

for n= 1:N;
    y= Y(:,n);

    constant = ones(T,1);
    X1 = [constant X];

    bhat = inv(X1.'*X1)*(X1.'*y);
    BETA(n,:) = bhat(2:K+1).';

end

constant1 = ones(N,1);
BETA1 = [constant1 BETA];
Yexpected = zeros(N,1);
for n= 1:N;
    Yexpected(n) = mean(Y(:,n));
end

LAMBDA = inv(BETA1.'*BETA1)*(BETA1.'*Yexpected);
lambda = zeros(K+1,T);
for t= 1:T;
    lambda(:,t)= inv(BETA1.'*BETA1)*(BETA1.'*(Y(t,:)).');
end

covariancelambda = zeros(K+1,K+1);
for t= 1:T;
    C = (1/T)*(lambda(:,t)-LAMBDA)*(lambda(:,t)-LAMBDA).';
    covariancelambda = covariancelambda+C;
end

t_stat_lambda = zeros(K+1,1);
for i= 1:K+1;
    t_stat_LAMBDA(i) = LAMBDA(i)/sqrt(covariancelambda(i,i)/T);
end

fitlm(BETA1,Yexpected);
```

The Matlab codes are the same for all regressions, whereas the matrix variables have been modified according to the specific data of the different regressions carried out (entire sample regression - luxury industry regression - TMB factor regression).



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# Summary Report

## Abstract

<b>Title:</b>	ESG scores and corporate financial performance – <i>An empirical study of the luxury industry</i>
<b>Academic year:</b>	2019-2020
<b>Course:</b>	[LM19W] Corporate Finance – Chair in Asset Pricing
<b>Authors:</b>	Francesco Lavorini – Matr. 700911
<b>Supervisor</b>	Prof. Paolo Porchia
<b>Co-Supervisor:</b>	Prof. Marco Pirra
<b>Key words:</b>	ESG, corporate social performance, corporate financial performance, regression analysis, luxury industry
<b>Purpose:</b>	The purpose of this research is to investigate the link between ESG performance and corporate financial performance for the luxury industry. Focusing on one industry leads to more conclusive results than previous research conducted across all industries. The approach used also helps to give a broad picture of the relationship between the overall ESG performance and corporate financial performance.
<b>Methodology:</b>	Regression analyses based on the Fama-MacBeth multifactorial model.
<b>Statistical Software:</b>	MATLAB R2019b.
<b>Literature review:</b>	This study is based on theories of corporate social performance, corporate social responsibility and ESG concept, as well as on previous findings about their relationship with corporate financial performance.
<b>Empirical framework:</b>	The quantitative study is based on a sample of 573 listed companies, including the S&P 500 index, over the period 2008-2019.
<b>Findings:</b>	The study concludes that the overall ESG performance has a significant and negatively correlated impact with the average excess returns of the sample stocks. As a result, luxury industry companies with lower ESG scores have better stock performance in the market than those with higher scores.

## 1. INTRODUCTION

Every month the world in which we live witnesses new climatic events proves that climate change is there and is moving faster and faster. Extreme weather events are occurring as temperatures rise and ice melts rapidly. Droughts are increasing, making our oceans hotter and more acidic. I think humanity is looking at climate change as if it is something that is happening on another planet, as if pretending that climate change does not exist makes it disappear. But it is not like that. We only have one planet and we have to protect our future on this planet. However, in recent years there has been a growing, but still not sufficient, awareness of the challenges facing society and the planet. The main actors, such as government and society as a whole, are increasingly working towards solutions to these issues. Examples are the launch of the European Climate Change Program (ECCP) in 2002 and the UN Principles for Responsible Investment (PRI) in 2006 (Annér & Jakobsson van Stam, 2018). An important role is played by companies and investors, who are called upon to distribute capital in the best and most sustainable way (Generation, 2012). The goal is to invest capital in a sustainable way by maximizing long-term economic value and shareholder value while preserving environmental and social welfare. This global trend has led to a detailed assessment of corporate sustainability performance, in particular environmental, social and governance (ESG) aspects. As the ESG concept offers a deeper definition of Socially Responsible Investment (SRI) (MSCI, 2018), investors are increasingly publicly committing to consider ESG data in their investment analysis. These indicators are created to capture additional dimensions of corporate performance that are not reflected in accounting data (Bassen & Kovacs, 2008), so this type of information is rapidly being included in corporate communications (Arvidsson, 2010). Consistently, fellowships around the world have begun to meet market demand for ESG dissemination and research. In 2019, many of the world's leading institutional investors and CEOs of stock exchanges met to discuss how stock exchanges could work with investors, authorities, regulators and businesses to encourage responsible approaches to long-term investment, considering both environmental and social risks and opportunities (Xiao, Faff, Gharghori, & Lee, 2013). On the other hand, companies are focusing on sustainable activities to reduce their social and environmental impact and at the same time to improve relationships with both employees and investors. However, despite this continued focus on environmental, social and governance issues, the main debate concerns the relationship between the corporate social performance (CSP) and the corporate financial performance (CFP). Thus, on the one hand, there is an increased importance of ESG ratings worldwide and, on the other hand, there is the question of their effect on the economic value of companies. Both positive and negative effects can be added to these ESG scores. Highly sustainable companies can have positive consequences such as reputation management, saving energy costs, developing new technologies and gaining market share. While negative consequences can be the costs of implementing sustainable activities and low expectations towards market premiums (Jang, 2019). In this regard, Aupperle, Carroll and Hatfield (1985) argue that socially responsible companies suffer a competitive disadvantage by incurring costs that are not necessary or should be borne by other agents, such as the government.

Given this growing awareness among investors and academia about the effect of environmental, social and governance performance on companies' financial performance, this paper aims to complement previous research on the link between ESG and CFP, focusing on a sample of companies in the luxury industry. The aim is to investigate whether there is a relationship between company performance, in terms of equity performance, and ESG performance, and to investigate the extent to which ESG is systematically compensated in the market, due to the growing interest of many investors in trying to integrate ESG data into their portfolios. It is therefore extremely important to investigate whether stocks with high ESGs are systematically compensated by the market. Although there is already much literature on the company's financial performance in relation to socially responsible aspects, existing empirical studies lack "uniqueness" or "consistency" in the results concluded. There is no consensus on the relationship between ESGs and the value of the company. Finally, many studies take into account the individual dimensions of the ESG, without providing a broad picture of the overall impact of the ESG score (Galbreath, 2013). In fact, the following paper will use aggregate ESG scores for a better understanding of the concept. In addition, this study focuses on a specific industry, the luxury industry, unlike past literature which is scarce of studies conducted on a single industry and completely absent is the attention to the industry chosen for this work. The choice to focus on a single industry is based on the idea of reducing the possible "rumors" that could affect the results, resulting from the different environmental impact, regulatory environment, macroeconomic trends or the different level of corporate governance engagement among industries. The luxury industry has been chosen because it is a highly competitive industry that, over the years, has led major leaders to behave unethically, through more aggressive and morally limited behavior to achieve their ambitious goals. Despite these unethical aspects, recent years have been characterized by a high focus on sustainability and ethical conduct. This is also the result of the continuing increase in public concern about widespread abuses of labor standards and unethical and sustainable practices. Therefore, the expectation of industry stakeholders is to gain a competitive advantage through the focus on environmental, social and governance issues.

A portfolio based on ESG scores will be created in the paper, which will be used in regression analysis. The study will investigate through a two-step procedure of Fama and MacBeth (1973), estimating the beta factors of a large sample of stocks through time-series regression. Subsequently, the study estimates the average reward earned per unit of exposure to risk factors through cross-sectional regression. This two-step procedure is applied to the returns of 594 companies, including listed companies belonging to the S&P 500 index, for the period January 2008 to December 2019. The study provides a practical approach to building a portfolio that is geared towards better ESG companies. In addition, the quality of research in the area of Socially Responsible Investment (SRI) is dependent on the quality of the database providing the ESG information. Therefore, it is extremely important to stress that the results of any empirical SRI analysis are also linked to the information extracted from the ESG score database used. For the following reason, this paper uses Bloomberg's ESG database.

## **2. THEORY**

This section provides the theoretical framework with a first exposition of conceptual definitions and continues with a review of the relevant academic contribution in the area of this thesis topic. Subsequently, the section provides an overview of industry and recent developments in the area of investment in relation to the objective of this thesis. It concludes with the construction of the hypotheses.

### **2.1. Definitions and Literature Review**

#### **2.1.1. Corporate social performance**

Today, companies are increasingly judged not only on financial performance, but also on how their decisions stand out in relation to a broader set of social and responsible expectations. However, the low regulatory and legal framework makes the interchangeable use of the different terms involved common. One of these is the concept of corporate social performance (CSP), which incorporates socially responsible investment and its impact. Over time, several definitions have been given on CSPs. Over the years, a challenge for scholars has been to define what a company's social responsibilities were. According to the scholar Carroll (1979) the corporate social responsibility includes the economic, legal and ethical expectations of society towards organizations in a given historical period. The scholar Wood (1991:693) also contributed to the study. Following his vision, the main feeling that drives a company to engage in corporate social responsibility (CSR) must lie in the concern to improve society itself.

#### **2.1.2. Corporate social responsibility**

Alongside the impact of social investment, we find another branch of the responsible industry, which is Corporate Social Responsibility (CSR). CSR refers to the concept in which companies take responsibility for their effects on the environment and society. Scholars such as Porter and Kramer (2006), support the correlation between CSR and CSP, arguing that proactive CSR management is a tool that increases a company's competitive position and thus has a positive impact on its financial performance. The ultimate goal of corporate social responsibility must be to protect the environment through systems that preserve natural resources and support recycling activity and investment in projects that preserve and enhance the environment (Mucelli, 2000). Finally, in line with the vision of the scholar Milton Friedman (1970), it is important to stress that the costs attributable to social responsibility are often difficult to quantify and, above all, to predict precisely. Moreover, these difficulties increase in determining the benefits of CSR and the direct correlation with CFPs' corporate financial performance.

#### **2.1.3. ESG concept**

Another important term is the concept of CSR measurement. It usually refers to a company's environmental, social and governance (ESG) characteristics. In recent years, there has been an increasing use of ESG indicators by stakeholders, in particular investors. Companies have also seen an opportunity in terms of competitiveness, which is a consequence of increasing stakeholder pressure on environmental

issues such as climate change, pollution and waste. In order to quantify ESG concepts, companies are rated with ESG ratings following the three different pillars: environmental, social and governance (Gazzola & Mella, 2006). These indicators have been introduced to measure extra-financial information and to illustrate a part of the company's value that cannot be explained by traditional financial reporting. The environmental scores mainly concern problems related to CO<sub>2</sub> emissions and water consumption. Social issues relate to issues such as corporate social policies and human rights. While governance concerns all the characteristics of the board of directors, i.e. remuneration and independence. An advantage is that these ESG measures can direct the capital of sophisticated investors, from a sustainability point of view, towards companies with a better CSR and therefore a better reputation. However, there are disadvantages related to the ESG concept highlighted by several scholars, such as Koelher and Hespenheide (2013). In conclusion, it should be noted that the relationship between the ESG scores and the CFPs has not yet been clarified.

#### **2.1.4. Corporate governance**

CSR practices mainly cover two of the three pillars of the ESG concept: environmental and social issues. The third pillar, governance, is not yet included in the concept of sustainability even though institutional investors are paying more and more attention to corporate governance criteria in their SRI analyses.

#### **2.1.5. Connection between ESG e corporate social performance**

An extensive academic literature has examined the effect of ESG performance on companies' financial performance. However, one problem that prevents research from analyzing the financial performance of investments in the area of environmental, social and governmental impact is the difficulty of measuring and quantifying the non-financial impact and the value created. The main obstacle for research is the presence of conflicting results among existing empirical studies, resulting in incorrect pricing. One reason may be that ESGs are provided voluntarily by companies and the score of these data varies considerably between ESG data agencies. We conclude that despite the amount of contributions from previous studies, the factors and circumstances influencing this report are not yet clear. In addition, the literature is scarce of studies conducted on a single industry and completely absent is the attention to the industry chosen for this work.

## **2.2. The Luxury Industry**

The focus of this study is on the luxury industry because it is highly competitive, which has led companies to behave unethically to achieve their ambitious goals. Due to the scandals and public criticism that have characterized the industry, sustainability and ethical conduct have begun to take on greater importance in recent years. Leading brands are seeking to create increasingly ethical production chains through the use of green, biodegradable and recyclable materials that are produced with natural, non-toxic and environmentally friendly components. In addition, leaders in this industry go beyond mere compliance

with the law, focusing primarily on environmental impacts, product safety and working conditions. Transparency, made by brands through their websites and advertisements, has become an important issue along the supply chain. Despite this consistent industry approach, the understanding of CSR is still far from the level of involvement of more developed industries such as the food or automotive industry.

### **2.3. Hypotheses' Construction**

In previous sections, it has been widely argued that companies in the industry are engaged in sustainable and ethical activities. This paper aims to support the positive correlation between CSR and PCP, researching whether there is a long-term relationship between environmental, social and corporate governance responsibility and fairness performance, *ceteris paribus*. Therefore, the assumptions are:

- Hypothesis 2.0: ESG scores refer positively to stock returns, in the luxury industry.
- Hypothesis 2.1: Luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores.

## **3. METHODOLOGY AND MODEL**

The following section provides the quantitative research methods that are used to test the assumptions outlined in the previous section. It presents the data and variables used and explains the formation of ESG portfolios and the regression analysis process. Finally, the robustness test will be described.

### **3.1. Data**

#### **3.1.1. Sample**

In-depth research that crossed listed luxury companies and ESG scores showed limited sampling. In fact, the sample is reduced to listed companies for which ESG data is available for the period 2007-2019. As a result, the companies in the S&P 500 index were integrated into the initial luxury industry companies (110) to arrive at a first sample of 594 companies. Excluding 21 companies for which ESG scores are not available, this research is based on a final sample of 573 companies.

#### **3.1.2. Variables**

Stock returns have been chosen as a dependent variable to price socially responsible investments supported by companies and more generally to test how the ESG can create or destroy shareholder wealth. Whereas market risk premium, size, book to market ratio and ESG scores are the study's independent variables. The final part of the analysis will include the introduction of an industry dummy variable (IDV) for the luxury industry study. All variables are constructed based on data retrieved from Bloomberg.

#### **3.1.3. Time horizon**

The time horizon is from 2008 to 2019. The choice is also conditioned by the significant availability of ESG data starting in December 2007, since that is when ESG data starts to cover a large panel of

companies. The period of time studied is particularly interesting as the financial crisis has increased companies' focus on environmental, social and governance policies.

#### **3.1.4. Financial data**

All financial data used in the empirical study are downloaded from the Bloomberg Terminal. Last price of shares on a monthly basis is obtained through the corresponding Bloomberg function (PX\_LAST). Subsequently, the monthly average price index is transformed into logarithmic returns. The market capitalization and the price to book ratio are also derived via the respective Bloomberg functions (CUR\_MKT\_CAP and PX\_TO\_BOOK\_RATIO). The price to book ratio is divided by 1 to obtain the book to price ratio (BM). The value weighted market proxy and the risk-free rate for the sample period were provided by the Kenneth French Data Library.

#### **3.1.5. ESG data**

To date, companies are not required by any regulation to disclose data for a wide range of ESG criteria. Therefore, the databases to be used for the analysis of socially responsible investments are not available for the entire stock universe. Several rating agencies have contributed to the development of ESG data. Like equity analysts, a specialist analyst issues a rating for all ESG categories each year for ESG data. The complex and discretionary methodology used by the various agencies results in different final scores associated with the same company. This lack of agreement between rating providers is understandable due to the particular multidimensionality of the scores in question and the lack of standards for the publication of ESG data by companies. In order to ensure relevant and transparent data, the following paper uses the company ESG scores offered by Bloomberg. The score used in the report is the overall annual ESG score in Terminal Bloomberg (ESG\_DISCLOSURE\_SCORE), which provides a numerical value between 0 and 100, with the highest score indicating the best performance. The study uses the ESG scores available in December each year to rank stocks from the following year. Finally, management, regression and analysis of all data is performed in the statistical software MATLAB R2019b.

### **3.2. Methodology Approach**

The following study examines the financial impact, using market returns, to assess the possible sustainability risk premium in a standard asset pricing models context. First, a portfolio analysis is conducted. Second, the study analyses whether a risk premium is associated with a sustainability factor after checking for Fama-MacBeth (FM) factors.

### **3.3. Portfolio Analysis**

Portfolio analysis is one of the most commonly used statistical methodologies in empirical asset valuation. Its objective is to examine the cross-sectional relationship between two or more variables. The most frequent application of portfolio analysis is to examine the ability of one or more sorting variables to



predict future stock returns. The general approach is to form portfolios of stocks, which are mutually exclusive on the basis of the variables set (Derwall, 2007). Subsequently, the risk-adjusted average returns between portfolios are compared to predict the cross-sectional change in future returns.

### **3.3.1. ESG portfolio construction**

The portfolio is called a self-financed portfolio because it is built by financing a long position on some stocks through a short position on others. For each month of year  $t$ , the shares are sorted in descending order according to the score available in year  $t-1$ . It should be noted that the study uses the ESG scores available in December of each year to rank stocks from the following year. Subsequently, monthly portfolio returns are calculated over the next 12 months of year  $t$ , before the portfolio allocation procedure is repeated when the ESG scores for the following year become available. For portfolio construction, companies are placed each year in two exclusive portfolios based on their ESG scores in the last year. The first equally weighted portfolio will consist of the shares of the companies (top-performers) representing 20% of the total sample ordered in a descending order. While, the second equally weighted portfolio will include the shares of the companies (bottom-performers) representing 20% of the total sample ordered incrementally. The portfolios will be identified as high-ranked portfolio and low-ranked portfolio respectively. The last portfolio, top-minus-bottom portfolio (TMB), is the difference between the upper and lower portfolios and simulates the long position on top-performers and the short position on bottom-performers.

## **3.4. Regression Analysis**

This section presents a further verification of robustness by linking the alphas of stocks with specific attributes in a cross-cutting analysis. In addition, the current section reports the cross-sectional analysis based on the multifactorial performance model used by Fama and MacBeth (1973).

### **3.4.1. Regression procedure**

The purpose of the procedure inspired by Fama and MacBeth (1973) is to estimate the relationship between different variables. The following analysis uses excess future stock returns as a dependent variable, while market risk premium, size, book-to-market ratio and ESG scores as independent variables. The FM regression analysis requires a two-step procedure. The first step involves periodic cross-sectional regressions of the dependent variable of interest, the company's stock returns, on the independent variables mentioned using data from each time period. The result of this first phase is a time series of slope coefficients and an intercept coefficient of each regressor for each period. These obtained coefficients will be saved and used in the next phase. It should be noted that the cross-sectional regression used in the implementation of the FM regression procedure is the standard ordinary-square regression (OLS) that is performed on all enterprises and for all time periods of the selected time horizon. In the second step of the FM regression procedure, the averages of the time series of the periodic cross-sectional regression

coefficients and the averages of the other regression results shall be calculated. The objective of this second step of the analysis is to examine whether the mean coefficients are statistically different from zero (Bali et al, 2016). The presence of a significant difference would indicate an equally significant relationship between the regressor and the dependent variable over the average time period. Therefore, the standard errors and the associated t-statistics and p-values are calculated as a further confirmation.

### 3.4.2. Regression procedure with an industry dummy variable

As highlighted in the literature, several empirical studies have shown that the influence of ESGs on stock returns can vary from one industry to another. Therefore, an industry dummy variable (LuxInd) is built and included as an independent variable in the 4-factor model. The model is:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_{i,Mkt}(R_{m,t} - R_{f,t}) + \beta_{i,SMB}SMB_{i,t} + \beta_{i,HML}HML_{i,t} + \beta_{i,TMB}TMB_{i,t} + \sum_{i=1}^N \beta_{i,LuxInd}LuxInd_{i,t} + \varepsilon_{i,t}$$

where  $R_{i,t} - R_{f,t}$  is the expected stock return for the company  $i$  and  $R_m - R_f$  is the market risk premium. Whereas  $LuxInd_i$  will be equal to value 1 if the stock  $i$  comes from the luxury industry and 0 if it does not come from the studied industry.

### 3.4.3. Factor portfolios construction

The creation of factor portfolios is based on the multifactorial model of the Fama and French scholars (1993). Portfolios are defined as self-financed portfolios because they are built by financing a long position on some securities through a short position on others, with equal market value. Thus, the cost of building the portfolios is zero. The first portfolio built is the market portfolio (Mkt-Rf). The second portfolio is called small-minus-big (SMB) based on the discriminating size. The third portfolio, called high-minus-low (HML), is based on the discriminating book to market ratio. Finally, in the current paper a further self-financed portfolio, top-minus-bottom (TMB), will be created (in section 3.3.1.) and added.

## 3.5. Robustness Test

The following study is conducted using Bloomberg ESG data. In order to check the differences between ESG data providers and ensure that our results are not due to the data provider, a robustness test will be carried out. The analysis will be repeated using ESG data from Thomson Reuters.

## 4. EMPIRICAL FINDINGS

This section aims to offer and describe the empirical results of regression analysis. In the first part, the descriptive statistics of the data used are explained and then the key regression results are highlighted and interpreted to investigate the hypotheses presented above.

### 4.1. Descriptive Statistics of the Sample

Before discussing the estimated coefficients, it is important to focus on the characteristics of each variable in the applied models. Therefore, the following section provides the descriptive statistics. The objective of the presentation of the summary statistics, in the first place, is to allow the reader a simple interpretation of the data used. Secondly, the summary statistics can be used by researchers and readers to identify any potential problems that may arise when using these variables in statistical analyses.

#### 4.1.1. Excess returns and risk factors

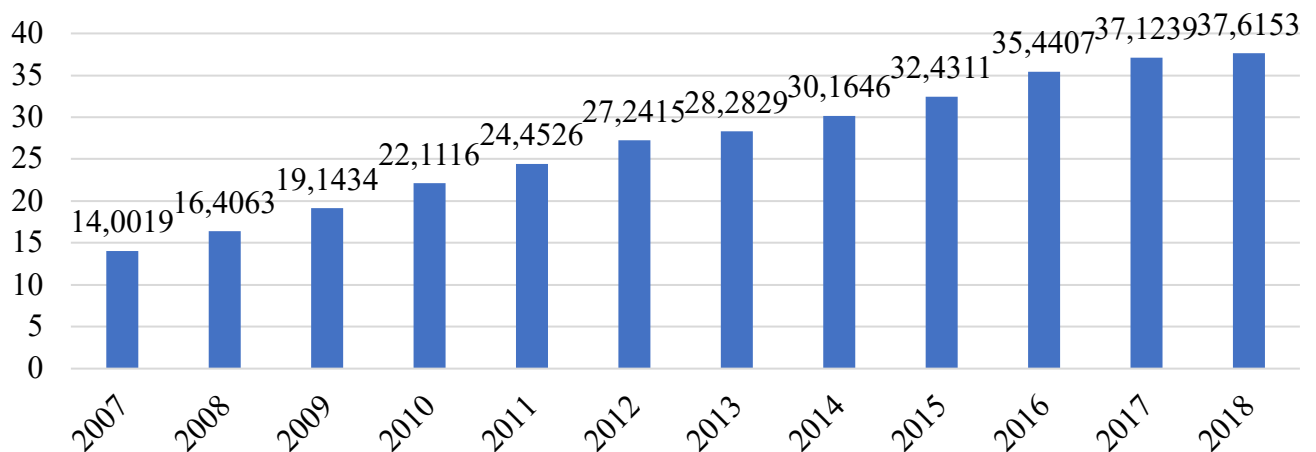
The Table B presents the annual summary statistics for the excess returns of the sample. The first column indicates the variable whose summary statistics are presented in the date line. The following columns present the averages of the time series of the cross-sectional summary statistics. For each year  $t$ , the mean (*Mean*), median (*Median*), standard deviation (*SD*), kurtosis excess (*Kurtosis*), skewness (*Skewness*) and Sharpe ratio (*Sharpe ratio*) of the distribution of Excess Returns over all stocks in the sample are calculated. The sample covers the years 2008 to 2019. The column labelled  $nt$  indicates the number of observations for which the value of variable is available in the year in question.

	Mean	Median	SD	Kurtosis	Skewness	Sharpe ratio	nt
Excess Return	0,0057	0,0058	0,0064	1,7430	-0,6280	0,8216	573
Mkt-Rf	0,0118	0,0149	0,0437	1,0763	-0,0263	0,2596	573
SMB	0,0008	0,0024	0,0233	-0,3883	0,1998	0,0145	573
HML	-0,0021	-0,0032	0,0278	2,0206	0,1744	-0,0920	573
TMB	-0,0037	-0,0052	0,0155	0,2855	0,2592	-0,2686	573

**Table B:** Summary statistics of time-series averages

#### 4.1.2. ESG scores

The following table presents the descriptive statistics of the ESG scores of the sample stocks. In order to investigate the main objective of the following elaboration, it is also appropriate to observe the development of ESG scores throughout the period under study.



**Figure 2:** Annual time-variation in ESG scores of the luxury industry

The Figure 2 shows the annual time variation of the ESG scores of luxury industry stocks. The scores increase from a score of 14 in December 2007 to almost 38 in December 2018. Comparing the luxury industry trend with the trend of the entire sample shows that from 2015 onwards, luxury industry companies have higher ESG scores and are therefore more involved in environmental, social and governance issues. A reversed trend compared to the years before 2015. This trend reversal could be linked to the increasing focus on disclosure characteristic of those years. For example, cruise brands such as Royal Caribbean and Carnival Cruise Lines have developed systems to manage their environmental and social impacts and report their practices (Bonilla-Priego, Font, & Pacheco-Olivares, 2014). In the personal luxury goods subsector, the Saint Laurent brand in those years implemented sustainable solutions aimed at minimizing water consumption, implementing heating and air conditioning systems and optimizing energy efficiency through the use of solar panels. In fact, the brand has obtained awards and certifications for its approach to sustainability (Szmydke, 2015). Another example that has probably caused a reversal of the positive trend is the Modern Slavery Act in the UK, published in 2015, which requires large companies doing business in the UK to publish an annual public and board approved statement on slavery and human trafficking (Winston, 2016). The companies, first and foremost Louis Vuitton and Hermès, not only published the results of sustainable activities in their annual reports and through their websites, they also began to do so implicitly through their advertisements (Anido Freire & Loussaïef, 2018).

## 4.2. Regression Results

### 4.2.1. Excess returns

The current section presents the results of the regression analysis using the average excess returns as a dependent variable and the risk factors Mkt-Rf, SMB and HML as independent variables. The time horizon is always the period 2008-2019. Coherently with most of the researchers also in this study a statistical significance at the level of 5% to reach the conclusion of a transversal relationship between the dependent variable and the independent variable is required. Therefore, the p-value must be less than 0,05 or equivalently the t-statistics must be greater than about 1,96. The transverse relationship between the variables is indicated by the average slope coefficient which must be statistically significant.

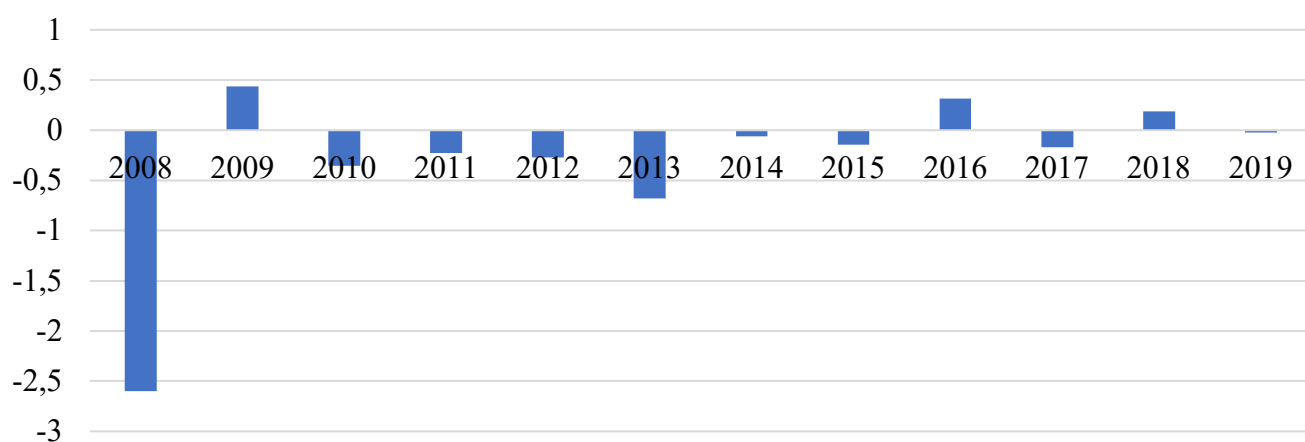
	Coefficient	Standard Error	t-statistic	p-value
Alpha	0,0064	0,0005	13,5691	1,60E-36
Mkt-Rf	0,0006	0,0008	0,7689	0,4423
SMB	0,0003	0,0003	1,1351	0,2568
HML	-0,0052	0,0004	-11,7604	1,00E-28
TMB	-0,0034	0,0004	-8,9309	5,88E-18
LuxInd	-0,0050	0,0006	-7,9965	7,23E-15

**Table E:** Estimation results of portfolio cross-sectional regression for the luxury industry

Table E shows the results of the regression analysis conducted for the luxury industry. The regression has a statistical significance at the level of 5% with a p-value of approximately 0,0000. According to the average R-squared value, the risk factors explain about 28% of the total cross-sectional variation in excess returns. The average number of observations used is 573. Looking at the individual variables, the market-based risk factor (Mkt-Rf) and the size-based risk factor (SMB) do not prove statistically significant at the 5% level in contrast to the other risk factors (HML, TMB and LuxInd). Focusing on risk factors that are significant at the 5% level, the book-to-market ratio has a negative correlation with average excess returns as well as risk factors based on ESG scores and industry dummy variable. If there is an increase of 1 in risk factors, excess returns decrease by 0,0052, 0,0034 and 0,0050 respectively. The results conclude that, consistent with the full sample study, luxury industry companies with high ESG performance have worse average equity performance in the market. Also, in this second analysis the previously constructed 2.0 and 2.1 assumptions are rejected. Respectively they advance that ESG scores refer positively to stock returns, in the luxury industry and that luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores.

#### 4.2.2. ESG scores factor

It was also appropriate to verify through empirical study the correlation between the TMB factor, based on ESG scores, and other risk factors. I also introduce the Carhart MOM risk factor (1997) for greater accuracy in the investigation. Thus, in the regression analysis conducted the TMB factor was used as a dependent variable and the risk factors Mkt-Rf, SMB, HML and MOM as independent variables. The empirical results of the regression showed a significance (p-value) of 0,0042, so the risk factors explain the TMB factor studied. The R-squared value found indicates that only slightly more than 10% of the total cross-sectional variation in the TMB factor, based on ESG scores, is explained by the Mkt-Rf, SMB, HML and MOM factors. This underlines that the factors just mentioned do not explain everything in the TMB factor studied. The conclusion is that there is a significant average return that survives. Therefore, the negative yield found in the previous analysis (Table E) is not fully explained by the study of the risk factors used in the regression analysis.



**Figure 3:** Annual time-variation in estimated ESG coefficients

Finally, the annual average values of the ESG coefficients are plotted in Figure 3 to understand how the ESG effect has been historically modified. The coefficients are significant at the 5% level with lower values in the years between 2008 and 2013 which coincides with the years of the financial crisis and post-crisis, with the exception of the year 2009 where the coefficients are positive. From 2014 onwards, the coefficients are not too low and in the years 2016 and 2018 they assume positive values.

#### **4.2.3. Robustness test**

In order to control the impartiality of the explanatory and predictive power of the score, the impartiality of the data needs to be checked. The regression analysis was repeated using ESG data from Thomson Reuters. The test is intended to verify whether the results are consistent with results based on the Bloomberg database. The new analysis with the new data produced results similar to those reported in the analysis illustrated in paragraph 4.2.1. Therefore, in this specific case, the concerns raised in section 2 related to the accuracy of the data collection process which is difficult to assess and the lack of a standardized methodology for calculating ESG scores are rejected.

#### **4.3. Economic Interpretation**

It is extremely important to give the reader an understanding of the economic entity of the relationship. The economic interpretation of the relationship between the TMB factor and returns can also be obtained by investigating how a company's expected return will react to the occurrence of a shock in the factor. Multiplying the beta of a single firm by the general standard deviation results in the firm's exposure. Then the impact on the economy, in relation to the chosen sample, can be perceived. In the case study a mean of -0,0052. Therefore, if the TMB factor decreases by a standard deviation, the average yield of the sample would decrease by 0,525. The variance assumes an extremely low value of 0,01%. In addition, the regression results show that the TMB factor, based on ESG scores, commands a negative premium. Therefore, in order to achieve a positive abnormal return, the strategy to be implemented would be the opposite strategy to that offered by this study for the creation of the ESG portfolio. A long position should be maintained on the lower portfolios and a short position on the upper portfolios.

### **5. CONCLUSION**

The introduction to this document has highlighted the environmental, social and governance performance of companies, which has attracted increasing attention from a variety of stakeholders, including customers, employees, government regulators and public interest groups. Recently, investors have increasingly begun to look at the companies in which they invest by investigating the positive or negative impacts that their activities may have on the environment and society. This approach is an alternative to the classic risk-return approach, where the expected return is maximized for a given level of risk. The emergence of this new approach, which focuses on business impact, is subordinate to the growing perception that the world is changing. This document aims to improve the knowledge of the ESG concept and provides a couple of

keys to reading from a professional's point of view. The paper investigated the effects of environmental, social and governance (ESG) scores on action returns and whether these effects can be explained by risk. The study is carried out on a final sample of 573 companies including listed companies belonging to the S&P 500 index to ensure a relatively large sample size. The focus is the luxury industry for the period January 2008 to December 2019. Therefore, this work contributes to previous studies as it provides results in a sub-area, the luxury industry, which has no empirical coverage. The main assumptions made were the following: ESG scores refer positively to stock returns, in the luxury industry; luxury companies with high ESG scores are associated with higher stock returns than luxury companies with lower ESG scores. To verify the hypotheses and therefore the effects of ESG scores on stock returns, a Fama-MacBeth regression is performed with the three factors of Fama-French (1993) extended with ESG scores and an industry dummy variable to control the effects on the luxury industry. A second regression is implemented to study the factor based on ESG scores (TMB), where Carhart's MOM factor (1997) is introduced to improve accuracy in understanding the relationships between variables. An aggregate environmental, social and governance score provided by the Bloomberg platform (2020) is used in the regressions.

The main results of the analysis, which emerged in the previous section, indicate that the ESG scores have a significant impact and are negatively correlated with the average yields of the sample stocks. As a result, it can be inferred that companies with lower ESG scores have a better equity performance in the market than those with higher scores. The same evidence was obtained in the luxury industry. The results of this paper and their interpretations can be associated with investor motivation. In fact, value-oriented investors can use ESG criteria to assess companies based on their perception of corporate responsibility and sustainability. While the results may discourage environmentally and socially conscious investors, they can continue to invest in sustainability by diversifying their portfolio to cover negative returns and relying on the expectation that ESG-related effects will be seen in the long term. Therefore, the question is whether these investments are aimed exclusively at ethically and environmentally conscious investors, who are likely to forego some of their financial returns in order to follow their values. From a macro-financial point of view, one could justify the strategy used in this study, and therefore try to associate such investments also to investors not conditioned by specific values, through the Intertemporal CAPM theory offered by Merton (1973). According to this theory, investors adopt a hedging strategy by including in their portfolio assets whose performance is negatively correlated to the economic cycle. Therefore, during economic recessions these assets will perform above the market average. Following this theory, the representative agent is risk-averse and will hopefully give a lot of value to a company that behaves in this way. It will be willing to pay more to have a positive payoff from these companies in times of economic recession. The expected return of the company will be dictated by the inverse relationship between price and return. The sample stocks are consequently expensive. In addition, having a good ESG-rated portfolio can be evidence of a certain non-financial interest, which can result in increased confidence of value-driven investors. As already highlighted, investors tend to choose socially responsible investments driven by their personal

values, so the scenario in which they invest in portfolios with negative premiums is possible to avoid industries incompatible with their values. In this scenario, the issue shifts to the possibility that these environmentally and socially conscious investors will give up a good financial performance of their portfolio in exchange for investments in companies that are in line with their values. However, to date, the financial benefits associated with sustainable investments seem to be limited and probably when a sufficient market share, estimated by Hong and Kacperczyk (2009) at around 10-15%, will select the shares to hold in the portfolio according to ESG criteria, investors who already own sustainable companies can achieve abnormal returns as the price of these assets is pushed upwards. A more corporate interpretation could be sought in the concept of the agency perspective, of which Father Friedman (1970) is the author. This perspective underlines a negative relationship between ESG and corporate returns characterized by the loss of shareholder value maximization. The conclusion could be that the high costs of implementing sustainable activities are likely to outweigh the financial benefits. This could potentially lead to market punishment for companies that are virtuous in environmental, social and governance terms. Finally, from a purely speculative perspective, an investor seeking only profit could use ESG scores to build long-term strategies, going long in low ESG stocks and short in high ESG stocks. Given all considerations regarding exposure to the factors highlighted, ESG scoring requirements, tolerance to reduced financial performance with hedging targets, or an inclination towards speculative strategy, a potential investor will or will not choose to implement the ESG-based low volatility TMB portfolio that has been built for this document.

However, in light of the results, the study concludes that an equity portfolio with high ESG scores has negative risk-adjusted returns. The hypotheses previously made are rejected by the empirical results. The significant and negative relationship between ESG and CFP indicates that the involvement and focus of luxury industry leaders on environmental, social and governance issues is probably still in its infancy, even if growing. Furthermore, companies should consider social responsibility practices as a long-term investment to justify sustainable investments in the eyes of stakeholders. Indeed, it is obvious that if industry actors do not continue and improve their sustainable activities, they will lose the opportunity to create added value. This study provides a basis for future research on the ESG concept in the luxury industry. An important direction could be sought in integrating more data to measure the relationship between ESG and stock returns. In addition, it may be useful for investors to break down the scores into the three pillars to understand the crucial aspects of individual ESG indicators related to the CFP. Finally, in light of the negative and significant report that emerges from the analysis of this document, it may be extremely important to quantify the costs of implementing environmental, social and governance activities incurred by the most virtuous companies in these terms.