ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor Thesis International Economics and Business (IBEB)

The Impact of ESG Performance on Firm Profitability: Evidence from the Fashion Industry

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Date Final Version: 08/07/2024

Abstract

The purpose of this paper is examining the impact of ESG performance on the profitability of companies within the fashion industry. The study covers a sample selection of the 50 most profitable fashion companies for the business years 2012-2022. A fixed effect regression analysis is conducted to evaluate the possible link between fashion companies' profitability, measured using Return on Assets (ROA) as a proxy, and their ESG performance. Our findings suggest that ESG rating has negative significant effect on fashion firms' profitability. Moreover, we find that luxury brands experience a higher decrease in profitability compared to fast-fashion companies when investing in ESG practices.

Keywords: ESG criteria; Profitability; Fashion Industry; ROA; Fixed Effect.

Table of Contents

1. Introduction

Sustainable Investing is defined as an investment process that seeks to achieve social and environmental objectives alongside financial objectives, utilizing both values-driven and risk and return screening (Fulton et al., 2012). This approach finds the "Environmental, Social, Governance" (ESG) criteria as a key investment methodology (Fulton et al., 2012). ESG criteria describe the environmental, social, and corporate governance issues that investors consider in the context of corporate behavior (Matos, 2020), ultimately aiming for a sustained competitive advantage and financial outperformance derived from both non-financial risk mitigation and long-term sustainable value creation. By screening companies as investments, ESG looks at how business is affected by environmental and social issues, together with considerations about companies' governance (Winston, 2023).

The societal relevance of sustainable investing lies in the increasing awareness that consumers are developing concerning the environmental and social impacts of their consumption choices, consequently demanding more transparency and responsibility from the companies they support (Escrig-Olmedo et al., 2012). Producers, in turn, are under pressure to adopt sustainable practices not only to meet consumer expectations but also to comply with stricter regulations and to improve their brand reputation (Zhu and Sarkis, 2010). The fashion industry, in particular, has been a focal point of discussion regarding sustainable practices due to its substantial environmental and social impact (Pal and Gander, 2018). From water usage and chemical pollution to labor rights and working conditions, the industry faces numerous challenges that call for more responsible business models (Centobelli et al., 2022).

From an investor perspective, ESG ratings are relevant as they can influence stock prices and reflect a company's long-term viability and ethical standing (Landi and Sciarelli, 2019). High ESG ratings can attract more investors who are looking to minimize risks associated with environmental and social factors and who value corporate governance (Cerqueti et al, 2021). This trend is evident in the growing inclusion of ESG metrics among S&P500 companies, which rose to 70% in 2022 from 57% in the previous year (Winston, 2023). However, despite its wide adoption across different sectors and countries, the ultimate impact of this investment methodology on financial performance remains uncertain. Economists and investors have

extensively explored this topic, yet a definitive answer remains elusive as findings from the literature yield mixed and inconclusive results.

Given the increasing reliance on ESG criteria, it has relevance to examine how they can impact the profitability of companies in highly scrutinized and polluting sectors like the fashion one. This industry has been pushed towards higher standards of information disclosure and ethical practices by investors, shareholders, and customers who demand greater transparency and responsibility (Pal and Gander, 2018). Giant fast-fashion companies, together with luxury brands, are actively committing to more sustainable practices, addressing ESG impacts (Centobelli et al., 2022).

The increasing trend in ESG considerations has inspired the objective of this paper: to address the existing gap in literature by taking a sector-specific approach exclusively focused on the Fashion Industry. This study specifically focuses on the 50 fashion companies with highest market capitalization worldwide, spanning both the luxury and fast fashion segments, over the period from 2012 to 2022. By utilizing a fixed effect regression analysis, the study aims to explore the potential relationship between ESG performance and profitability within this dynamic industry. The research question that this paper will aim to answer is:

"What is the impact of ESG performance on the profitability of fashion companies?"

Our findings reveal a significant negative relationship between ESG performance and firm profitability. Furthermore, when investigating differences among fashion market segments, our results indicate that luxury companies experience a greater decline in profitability compared to fast-fashion companies when they achieve higher ESG scores.

As the fashion industry increasingly adopts responsible and socially conscious investing, the immediate results of such investments don't point at a favourable effect on profitability. However, investors are increasingly valuing the positive social impact alongside traditional financial gains, suggesting a readiness to accept lower returns in exchange for ethical satisfaction (Barber et al., 2020). This willingness can indicate a shift in investment priorities where ethical considerations can weigh as heavily as financial outcomes.

5

Furthermore, the benefits of investing in ESG criteria often require time to manifest and may not be immediately apparent in short-term profitability. Instead, these investments in sustainability and ethics are seen as long-term strategies. Initially, redirecting funds towards sustainable practices introduces additional costs that might temporarily reduce profitability. However, over the long term, these investments can yield not only financial returns but also enhance the overall value and reputation of the firm.

The structure of this paper is as follows: Section 3 discusses prior research, ultimately leading to the hypothesis formulation. Section 4 looks at the data and variables used to conduct the analysis. Section 5 discusses the employed methodology. Section 6 presents the retrieved results. Section 7 provides concluding remarks, and Section 8 looks at the limitations of the paper.

2. Theoretical Framework

2.1 Why ESG Investing?

Analysing how ESG ratings affect companies' financial profiles is a necessary starting point for our analysis. The first key concept to pin is the difference between systematic and idiosyncratic risk of equities. If the systematic risk describes the general market risk all companies are exposed to, the idiosyncratic one is firm-specific and therefore it can be diversified away (Gregory et al, 2014). By choosing long-term strategies and making investment decisions that prioritize sustainable practices rather than immediate financial gains, ESG investing is associated with a reducion of stakeholder risk (Cerqueti et al, 2021). Becchetti et al. (2018) show that firms disclosing lower ESG scores are more exposed to risk for future litigation with stakeholders, leading to higher idiosyncratic risk. In line with these findings, Kim et al. (2014) find that companies that maintain a higher level of transparency tend to withhold damaging news less frequently, thereby reducing their risk of experiencing sudden financial declines. Similarly, Boubaker et al. (2020) demonstrate that companies with better ESG ratings face a reduced risk of financial troubles and are thus less prone to defaulting financially.

2.2 Existing Literature on the relationship between ESG rating and Firm Performance

Given its potential benefits on risk minimization, ESG investing evolved to a mainstream market aiming for a superior financial performance (Fulton et al., 2012). The topic emerged as a wide research field, especially investigating how ESG consideration can create long-term value for both companies and investors (Friede at al., 2015). Given the broad adoption of ESG disclosures among firms, capturing the extent to which ESG scores can directly affect companies' performances has been a topic of interest for both academia and the asset management industry, aiming to investigate whether a high ESG rating would lead to higher firms' profitability. In fact, research on this topic has been so plentiful that several meta studies have summarized their findings in more than 1000 reports, ultimately obtaining contrasting and inconclusive results (Giese et al., 2019).

The search for such a relationship can be traced back to the beginning of 1970s, fostering an increasing interest among scholars and investors (Friede et al., 2015). According to the recent study by Aydogmus et al. (2022), investing in high ESG performances ultimately leads firms to have higher returns in terms of value and profitability. On this same line, Bhaskaran et al. (2019) investigate the effects of ESG on market-based and accounting-based performance of global firms, finding that companies with high intensity of environment, governance, and social pillars tend to create more market value. Studies such as the ones conducted by Velte (2017) and Yoon et al. (2018) propose a country-specific analysis, focusing respectively on Germany and South Korea and reporting a positive link between ESG rating and profitability. De Lucia et al. (2020) directs attention to public companies only, finding the existence of a positive relationship between financial indicators such as Return on Assets (ROA) and Return on Equity (ROE) and ESG practices.

The existing literature doesn't consistently point at a positive relationship between Environmental, Social, Governance indicators and financial performances. According to Brammer et al. (2006), low social score firms in UK perform better than the market. Focusing on a longer time span, Nollet et al. (2016) look at the relationship between social and financial performance of S&P500 companies and find a negative relationship between the indicators. By looking at the Italian market, Landi and Sciarelli (2019) empirically demonstrates how the

growing interest in corporate social responsibility (CRS) and sustainability practices by managers doesn't lead to higher financial performances. Following a multi-country approach, Duque-Grisales and Aguilera-Caracuel (2019) investigate the impact of ESG scores on firms' financial performances with a sample of 104 multinationals throughout Latin America. Their results suggest a statistically significant negative relationship. Lastly, Raghunandan and Rajgopal (2022) suggest that ESG investment funds underperform financially relative to other funds within the same asset manager and year.

It arises that further research is needed to clarify what is the actual impact of engaging in environmental, social and governance practices on companies' financial performances.

2.3 Why the Fashion Industry?

By following an industry-specific approach focused on fashion companies, this paper aims at exploring how ESG ratings can influence financial performances of a sector characterized by heavy environmental impact, high brand visibility, and significant social chores. These features make the Fashion Industry an interesting case to analyse broader implications of ESG investing.

2.3.1 Environmental Impact and Supply Chains

In the last few decades, pressure linked to business transparency and engagement in sustainable practices has been very high in industries with a significant environmental impact (Caniato et al, 2011), and the Fashion Industry is positioned as one of the most polluting sectors globally. It encompasses several stages of activities, from the production of raw materials to their manufacturing, distribution and final disposal of garments. Each of the stages produces negative externalities and contributes to the eventual environmental degradation the industry is responsible for. One major problem is constituted by the massive water usage that the textile sector requires: approximately 79 billion cubic meters of water are consumed annually by the apparel industry (Centobelli et al., 2022). Another important factor of degradation is linked to substantial chemical pollution due to the dyes and treatments used in fabric processing (Pal and Gander, 2018). Additionally, the production of

synthetic fabric, daily practiced employed by the fashion industry, massively includes the deployment of non-renewable resources (Pal and Gander, 2018), and the carbon footprint the fashion industry is responsible for up to 10% of total global carbon emissions (Niinimaki et al., 2020). Another aspect playing a crucial role in the environmental impact of the fashion industry is linked to the waste disposal: only the 20% of clothing is recycled, leading to millions of tons of textiles being discarded on landfills or being incinerated each year (Niinimaki et al., 2020). UK alone collects approximately 350000 tons of clothing in landfills annually (Niinimaki et al. 2020). The presented issues are exacerbated by the growth in apparel consumption, predicted to increase by 63% from 62 million tons today to 102 million tons by 2030 (Niinimaki et al. 2020).

The garment industry's significant environmental footprint has led to growing regulatory pressure on fashion companies to adopt sustainable practices, increase transparency in information disclosure, and engage in greener supply chain management. This is particularly challenging given the reliance on external partners for production, sourcing raw materials from distant locations, and outsourcing various production stages globally (Jacobs, 2006). Supply chain management is crucial for efficient production and environmental responsibility, requiring a careful balance between management and the natural environment, alongside reducing packaging, waste, and carbon emissions (Caniato et al., 2011).

Investing in sustainable materials, advanced technologies, and compliance with eco-friendly standards, inevitably lead companies to incur in higher initial costs. However, from an investor perspective, these are considered as strategic investments into a sustainable business model (Leonidou et al., 2019). If these costs can impact short-term financial performance by increasing production expenses and potentially reducing profit margins, long-term benefits may arise from such a cost management policy, reducing environmental footprints, preserving ecosystems, and improving public health by reducing pollution (Albertini, 2013). Despite the potential delayed financial benefits, these practices position companies to thrive in an increasingly environmentally conscious market, ensuring sustainability environmentally and economically in the long run.

Firms proactively working on reducing their environmental impact, consequently performing better on the scale of ESG parameters, might ultimately financially benefit for such a conduct, achieving a balance between environmental and business needs (Clarke and Clegg, 2000).

2.3.2 Consumer Awareness and Brand Reputation

Brand Reputation refers to all those factors that relate to the brand image of a company, from customers' memories to values the brand wants to share with its community (Aaker, 2012). Brand reputation has a significant influence on customers' inclination to buy a certain good. Therefore, companies need to pay attention to assess the effectiveness of existing marketing strategies and consider what customers are looking for when shaping the ethic of a brand (Kim and Wha Oh, 2020). In this context, fashion companies are facing an increasing portion of consumers interested in the so-called "responsible consumerism", meaning in brands and companies that can help them make responsible choices when purchasing (Kim and Wha Oh, 2020). This tendency, reflecting a shift in consumers' interest towards a more sustainable approach, needs to be considered by managers in the industry, as it can influence brand reputation and ultimately financial goals. This is particularly true for brand-owning companies whose names are closest to the public consciousness and that face a threaten to brand reputation and its attractiveness on the market (Seuring et al., 2002). Indeed, in this perspective brands are required to take responsibility for their suppliers and production practices in front of all stakeholders, such as media and non-governmental organizations (Caniato et al., 2011). Consequently, companies need to incorporate sustainable considerations in their business models and decision-making process.

On this track, strong fashion brands such as H&M, Zara and Uniqlo have targeted customers' increasing awareness and launched sustainable clothing collections (Kim and Wha Oh, 2020). Specifically, H&M, Swedish multinational fast fashion company, has announced a plan to convert all materials to sustainable alternatives by 2030 through its Conscious Collection (Masunaga, 2019). Zara, Spanish fast fashion giant, has also launched Join Life, a sustainable product line using organic cotton and recycled wool and reducing packaging waste (Holgate,

2019). The Japanese fashion company, Uniqlo, identified five sustainable missions to commit to, such as energy efficiency, waste management and resource efficiency (Dewan, 2019).

Despite the apparent commitment to sustainable practices, general scepticism still prevails when thinking about fast-fashion and the apparel industry. However, fashion brands with strong ESG practices, internalizing customers' growing interest to sustainable practices, can enhance their reputation and potentially lead to higher sales and financial performances.

2.3.3 Social Impact

In many industries, outsourcing has become a very frequent practice in firms' business value chain, as competitive advantage might be achieved when production is moved to cheaper outside suppliers (Kotabe et al., 2008). Outsourcing possibilities have expanded in the last decades because of the strong globalization phenomenon leading to huge low-cost manpower and natural resources, especially emerging from developing countries (Javalgi et al., 2009).
The garment manufacturing is an excellent example of such a practice, as it is a labour-intensive industry that employs mainly low-skilled workers. To cut costs and increase their competitiveness in Western countries, many fashion companies outsource garment manufacturing to developing countries, where labour is cheaper and regulations eased (Russell, 2020). The main production hubs are China, India and Bangladesh. The latter has experienced a massive growth in export related to the apparel industry, with clothes and footwear representing a massive 89% of total export, with its 56% going to Europe (Russell, 2020). If outsourcing has been a profitable practice conducted by Western companies throughout the last decades (according to the European Parliament Textile Industry Report, over the past 20 years in Germany, clothing and footwear became 16% cheaper compared to the average basket of consumer goods and the fall in prices as brought Europeans to buy more), there is a darker side of this picture that falls on the side of developing countries, and particularly on labourers' working conditions.

The apparel industry has come under attack for human rights abuse because of "sweatshop" conditions linked to the manufacture and distribution of merchandise (Emmelhainz and

Adams, 1999). Long-hours shifts with wages that barely enable subsistence and dangerous working conditions make garment employees the ultimate victims of the fashion companies' outsourcing tendency. A dramatic example of the lack of safety measures and respect of workers' rights is tracked back to 2013 with the Rana Plaza disaster in Bangladesh. The tragic Rana Plaza incident, resulted in over a thousand dead garment workers due to poor safety conditions, brought global attention to social conditions in the fashion industry, ultimately leading to re-evaluation of corporate social responsibility practices (CSR) in the industry. In response to the Rana Plaza collapse, two major initiatives were launched: the Accord on Fire and Building Safety in Bangladesh and the Sustainability Compact for the Bangladesh Ready-Made Garment Sector. The Accord, signed by over 200 mostly European companies, is a legally binding agreement between brands, retailers, and trade unions, focuses on improving fire and building safety in Bangladeshi garment factories (Russell, 2020). It conducts independent safety inspections and mandates corrective actions. The Sustainability Compact, on the other hand, is a coalition of the Government of Bangladesh, the European Commission, the US, Canada and the International Labour Organization (ILO), accompanied by employers, trade unions and other stakeholders, that aims to improve safety standards and labour rights in the ready-made garment industry (ILO Report, 2018). It focuses on promoting responsible business conduct with particular attention to structural integrity of buildings and occupational safety. These initiatives have significantly influenced the fast fashion segment, driving brands to adopt more rigorous safety and labour standards, together with a more sustainable approach to the industry management.

When deciding to adhere to new policies and to invest in sustainable social practices, from improving worker safety to promote fair labour conditions, fashion companies face several costs that could impact their short-term profitability (Wu and Pagell, 2011). These additional costs include higher wages to ensure fair compensation, investment in safer working conditions, and training for employees on safety practices (Wu and Pagell, 2011). Additionally, companies might need to spend on auditing and certifying their supply chains to ensure compliance with ethical standards, which involves regular inspections and possibly higher costs for sourcing materials from ethical suppliers (Wu and Pagell, 2011). While these expenditures might reduce immediate profits, they can lead to positive externalities in the long term. For example, investing in worker welfare can lead to a more motivated and

productive workforce, which can improve the quality of the products and reduce turnover rates (Sirota and Klein, 2013). Enhanced brand reputation can be another potential benefit, as consumers are increasingly favouring brands that demonstrate social responsibility (Kim and Wha Oh, 2020). This shift in consumer preference can lead to increased customer loyalty and potentially higher sales volumes over time. Moreover, adhering to social sustainability practices can help fashion companies reduce risks of legal penalties and negative publicity associated with poor labour practices (Rahim, 2016).

Although the initial costs can be substantial, the long-term benefits arising from engaging in social sustainable practices often justify these investments, promoting a more ethically responsible business model.

2.4 Hypothesis

Considering the existing literature and the increasing commitment of fashion companies to sustainable practices, coupled with the growing interest of investors and stakeholders in enhancing brand image, reputation, and financial performance, we expect that a higher ESG score will positively correlate with the financial success of firms within the fashion industry. The hypothesis that will be tested is the following:

ESG scores have positive and significant impact on firms' profitability in the fashion industry.

3. Data

In this section, the sample data and a description of variables and descriptive statistics used in the analysis will be presented.

3.1 Sample Data

A selection of the 50 most profitable fashion companies based on their market capitalization has been made using the Refinitiv DataStream. A panel data with firm-year observations has been built using the Refinitiv Database, comprehensive of financial information and ESG scores for the 50 selected companies throughout the 10 years period between 2012 and 2022. Yearly updated, Refinitiv provides one of the most extensive ESG datasets available in the market, assessing firms' ESG performance across 3 different pillars: the Environment, Social and Governance one.

Among the 50 selected companies, 25 of them are categorized as luxury fashion companies, while 25 fall in the fast-fashion category. The distinction has been made looking at firm-specific reports and categorizing fashion firms depending on their price point, brand targets and quality and exclusivity of garments. Specifically, luxury brands present higher prices, targeting higher-income consumers, and emphasize superior craftmanship in their marketing operations (Halwani, 2020). Appendix B offers the list of the selected companies.

3.1.1 Dependent Variable

Return on Assets (ROA) has been selected as measure for profitability. ROA shows how successfully a firm uses its assets to generate profit (Aydogmus et al., 2022). Many existing papers propose ROA as a proxy for profitability, such as the one by Xie et al. (2018), investigating the relationship between corporate efficiency and corporate sustainability using ROA as a proxy for financial efficiency, or the research conducted by Giannopolous et al. (2022), looking at the impact of ESG disclosure on financial performances with a country-specific approach.

Particularly efficient measure for asset-intensive industries (Penman, 2013), ROA can be an effective measure of financial performance in the context of the fashion industry, considered an asset-intensive sector because of the required investments for inventories, supply chain infrastructures and manufacturing facilities (Wu et al., 2022). Moreover, ROA allows for comparability across different companies within the fashion sector, irrespective of their size, facilitating meaningful benchmarking against industry peers and enabling global comparisons.

The selected sample of 50 companies encompasses fashion companies differentiating for business strategy, target and production capacity. A measurement that allows for direct comparison is in favour of reliable results.

The following formula calculates ROA:

$$ROA = Net\ Income/Total\ Assets$$

3.1.2 Independent Variables

The analysis uses four different independent variables retrieved from the Refinitiv Database: the ESG combined score and the three pillars that ultimately determine the ESG score: Environmental, Social and Governance Pillar. Specifically, the Environmental Pillar is estimated considering firms' disclosures about emissions, resource usage and innovation. The Social Pillar looks at human rights, workforce and product responsibility. Lastly, the Governance Pillar considers shareholders and Corporate Social Responsibility practices promoted by the companies. Table 1 provides the description of Refinitiv ESG score range (Refinitiv, 2022).

Table 1

Refinitiv ESG score range

Score Range	Description
From 0 to 25	Poor ESG performance and insufficient transparency in the public disclosure of relevant ESG data.
From 26 to 50	Satisfactory ESG performance and moderate transparency in the public disclosure of relevant ESG data.
From 51 to 75	Good ESG performance and above average transparency in the public disclosure of relevant ESG data.
From 76 to 100	Excellent ESG performance and high degree transparency in the public disclosure of relevant ESG data.

Source: Refinitiv

3.1.3 Interaction Effect

The addition of an interaction effect analysis can provide valuable insights by using a dummy variable to differentiate between luxury and fast-fashion brands. This approach acknowledges the substantial differences in the two business models: luxury brands prioritize a strong brand image, quality, and exclusivity, while fast-fashion brands focus on rapid production and cost efficiency. By exploring how sustainable practices influence the profitability of these distinct segments, we can gain a deeper understanding of the diverse dynamics within the fashion industry.

3.1.4 Control Variables

Four control variables retrieved from the Refinitiv DataStream are included in the model: Firm Size, Leverage, Capital Expenditure and Operating Expenses.

Firm Size is estimated using the number of employees as a proxy. We expect a positive correlation between Firm Size and ROA. Moreover, we expect larger firms to face higher pressure from regulators and investors, consequently expecting a positive association between ESG score and the size of a firm, as retrieved in findings by Gavana et al. (2017) and the study conducted by Drempetic et al. (2019). In Appendix A, Table 8 presents the correlation matrix that confirms a positive correlation between ESG score and firm size in our sample. Moreover, Table 7.1 in Appendix A shows how controlling for firm size leads to a change in the coefficient of interest (ESG combined score).

Leverage indicates the proportion of a company's assets that is financed by debt (Refinitiv DataStream), and it directly impacts profitability metrics and risks. It has been included in the model as some fashion companies might rely heavily on debt to finance inventory, expansion, or marketing efforts. Controlling for leverage accounts for these industry-specific financial strategies, providing a clearer picture of how ESG ratings affect profitability. In Appendix A, Table 8 shows a positive correlation between firms' leverage and ESG score in our sample. Moreover, Table 7.1 (Appendix A) shows that the main coefficient of interest (ESG combined

score) changes when controlling for leverage, indicating the presence of omitted variable bias when exluding the control variable from the model.

The Capital Expenditure measure refers to funds used by companies to acquire and maintain physical assets and involves investing in long-term assets that help generating future revenue. This indicator is often associated with future profitability, as it can lead to increased production capacity, improvements in efficiency and revenue growth (Barth, 1994). In the context of fashion companies, capital expenditure is generally invested in new stores and manufacturing facilities. When controlling for Capital Expenditure, we see a decrease in the coefficient of the main independent variable (Appendix A, Table 7.1). Moreover, when checking for the correlation between ESG score and Capital Expenditure, we find a positive and significant value (Appendix A, Table 8).

Operating Expenses refer to the costs that a firm bears in normal business activities to generate revenue. We expect operating expenses to have a negative effect on profitability, as they represent cost of production, marketing and retail operations (Anderson et al., 2003), all relevant aspects when analysing business administration of fashion companies. When checking for the relationship between operating expenses and ESG score (Appendix A, Table 8), we find a positive and significant correlation. Moreover, in Table 7.1 of Appendix A, we see the main coefficient of interest changing when controlling for operating expenses.

All data collected has been converted to US dollar currency using exchange rate data collected by the World Bank database (World Bank, 2023). In Appendix A, Table 1.2 offers a summary of the variables and the respective abbreviations that will be used to carry the analysis.

3.2 Descriptive Statistics

Table 2 provides details on the descriptive statistics.

Table 2

Descriptive Statistics

Variable	N	Mean	St. Dev	Min	Max
Dependent Variable					
ROA	538	8.314	8.980	-39.37	45.65
Independent Variables					
ESGCB	504	53.048	18.913	6.45	91.14
ENV	504	52.791	26.908	0	98.46
SOC	504	58.542	22.806	0.82	98.19
GOV	504	53.356	22.104	8.69	92.18
Control Variables					
SIZE	538	95587	321038.6	134	2300000
LEV	538	16.218	14.026	0	76.32
CAPEXP	538	2.30e+08	1.07e+09	57.23	1.02e+10
OPEREXP	538	7.81e+09	3.19e+10	17706.98	2.85e+11

Note: this table provides the descriptive statistics for the variables used in Model (1), Model (2), Model (3) and Model (4). Column 1 shows the variables, column 2 the number of observations, column 3 their mean value, column 4 their standard deviation, column 5 and 6 the lowest and highest value.

The descriptive statistics in Table 2 provide a comprehensive overview of the variables used in the analysis. The first dependent variable, Return on Assets (ROA), shows an average value of 8.3%, with a notable standard deviation of 8.980, indicating considerable variation in profitability among the firms. Normally, a ROA above 5% is a desirable achievement, meaning that the firms composing our sample are overall generating profit (Aydogmus et al., 2022).

Looking at the independent variables, the ESG combined score averages 53.048 with a standard deviation of 18.913, reflecting a moderate level of ESG performance with significant differences across firms. The environmental score, with a mean of 52.791 and a high standard deviation of 26.908, highlights substantial disparity in environmental practices. The Social and Governance scores present a mean of respectively 58.542 and 53.356, with the social score being the highest one presented by the firms selected in the sample.

4. Methodology

In this section, all methods and test performed to ultimately select the best model for our dataset are shown. The final model is then presented.

4.1 Check for Multicollinearity

To decide whether to include the four independent variables in the same model, a Pearson correlation Matrix is retrieved. Indeed, when a set of independent variables result highly correlated to each other, the proposed analysis suffers of the phenomenon of multicollinearity, responsible of misleading, biased and uninterpretable results (Marsh and Dowson, 2004). In Appendix A, Table 1.3 reports correlation results among the four independent variables. ESG scores result highly and significantly correlated. This result is comprehensive as Refinitiv uses the three different pillars (Environment, Social and Governance) to calculate the ultimate ESG combined score. We conclude that four different models will be needed to conduct our analysis.

As a final test to check that our final models will not risk multicollinearity, a Variance Inflation Factor (VIF) Test is conduced. It shows by what amount will the variance of an estimated regression coefficient rise when predictors are correlated (Akinwande, 2015). In Appendix A, Table 1.4 reports the result of the four VIF.

4.2 Variable transformation

To improve the statistical power of the model, this paper suggests the use of logarithmic transformation of four of the employed variables, namely ROA, Capital Expenditure, Operating expenses and Firm Size. By employing this method, the impact of outliers on the results is significantly reduced with the variability of the data being lower and closer to the mean (Wooldridge, 2012).

4.3 Addressing Reverse Causality

Lastly, we focus on addressing the threat of reverse causality affecting our model. As mentioned in the paper by Behl et al.(2022), a lot of the existing literature shows correlation -instead of causality - when analyzing the relationship between ESG and companies' financial performances. Correlation can be mistakenly translated as ESG scoring causing an increase or decrease in financial performance. However, the transmission could easily be reversed: it could be that companies with high ESG scores are better at managing their financial risks, ultimately presenting higher profit. On the other hand, it could be that companies with a higher market value might be better in profiting and therefore have more resources to invest more in measure that improve their ESG rating (Giese et al., 2019).

One method to address reverse causality, broadly presented in the existing econometric and statistical literature, is using a fixed effect regression model with lagged independent variables (Allison, 2009). By including the lagged ESG scores, it is possible to mitigate the immediate reverse causality concern, since past values of ESG scores are less likely to be influenced by the current ROA of fashion firms.

4.4 Fixed Effect Regression Model

To conduct the proposed analysis, we exploit a panel model as it allows the exploitation of change within units over time (e.g., individual change) to eliminate unobserved time-invariant heterogeneity, which considerably reduces the risk of confounding (Wooldridge, 2012). There are three different methods to implement panel data: the pooled ordinary least squares regression (OLS) model, the fixed effects model and the random effects model. Each method presents its own advantages and disadvantages. According to findings by Dougherty (2011), if the retrieved observations cannot be described as randomly selected from a given population, the fixed effects model is the most suitable method for the dataset. Given that the 50 fashion companies that make up our sample were not randomly selected but chosen as the most successful ones in the industry, the fixed effect model will be used to analyse the panel dataset.

Fixed effect regressions are used to handle multiple observations for the same firm over a certain time span by controlling for all time-invariant characteristics of the individual firms, reducing the risk of omitted variable bias in the analysis (Bruderl and Ludwig, 2015). In our specific case, when assessing the impact of the ESG scoring, the risk of the scores being influenced by firm-specific characteristics would be considered in the coefficient estimation.

A firm fixed effect is also included in the model. In this way, many firm-specific, time invariant aspects are accounted for over our 10 years sample period, sensibly reducing omitted variable bias. For instance, aspects such as business conduct, companies' targets, organizational structure, market positioning can be assumed to stay constant in a 10-year timespan, and therefore accounted for in the proposed analysis.

The three final model specifications will be as follows:

(1) $logROA_{it} = \beta_0 + \beta_1 LaggedESGindicator_{it} + \gamma_t + \sigma_t + \varepsilon_{it}$

(2) $logROA_{it} = \beta_0 + \beta_1 LaggedESGindicator_{it} + \beta_2 logSIZE_{it} +$
$+\beta_3 LEV_{it} + \beta_4 logOPEREXP_{it} + \beta_3 logCAPEXP_{it} + \gamma_t + \sigma_t + \varepsilon_{it}$

(3) $logROA_{it} = \beta_0 + \beta_1 LaggedESGindicator_{it} + \beta_2 logSIZE_{it} +$
$+\beta_3 LEV_{it} + \beta_4 logOPEREXP_{it} + \beta_5 logCAPEXP_{it} + \beta_6 ESGindicator * Luxury + \gamma_t +$
$\sigma_t + \varepsilon_{it}$

Model (1) looks at the impact of the four lagged ESG indicators on the logarithm of ROA of firm i at time t. Model (2) controls for the four selected control variables: the logarithm of Firm Size ($logSIZE_{it}$), Leverage (LEV_{it}), the logarithm of Operational Expenses ($logOPEREXP_{it}$) and the logarithm of Capital Expenditure ($logCAPEXP_{it}$). Model (3) adds the interaction effect between the independent variable, namely the ESG indicator, and a binary dummy indicating whether the company is categorized as luxury fashion company or fast fashion company ($ESGindicator * Luxury$). Throughout the three models, γ_t, σ_t and ε_{it} represent respectively time fixed effect, firm fixed effect, and the error term for firm i at time t.

5. Results

Table 6.1

Regression Results with ESG combined score as Independent Variable

	Dependent Variable: logROA		
	(1)	**(2)**	**(3)**
LaggedESGCB	-0.012***	-0.010***	-0.002
	(0.003)	(0.002)	(0.004)
logSIZE		0.309	-0.317
		(0.206)	(0.209)
LEV		-0.009*	-0.009*
		(0.005)	(0.004)
logCAPEXP		0.272***	0.264***
		(0.097)	(0.097)
logOPEREXP		0.029	0.029
		(0.121)	(0.108)
LaggedESGCB*LUXURY			-0.012**
			(0.005)
Observations	407	407	407
R-Squared	0.123	0.175	0.218

*Notes: Table indicates fixed effect regression results for Model (1) in column 1, Model (2) in column 2 and Model (3) in column 3. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.*

Table 6.1 shows results of the Model (1), Model (2) and Model (3) for the independent variable ESG combined score. In the first column, we find a significant negative effect of ESG combined score on the Return on Assets of fashion firms. Specifically, a one-unit increase in the ESG combined is associated with a 1.2% decrease in profitability. When controlling for firms' size, leverage, capital expenditure and operating expenses we see a slightly decrease in the magnitude of the coefficient, moving from 1.2% to 1%, still presenting a significant negative effect on Return on Assets. All the control variables are not consistently significant across the three models, made exception for the Capital Expenditure one. In Model 3, we see how the model changes when inserting the interaction effect that looks at the relationship between

ESG combined score and ROA based on whether a firm is categorized as luxury or fast-fashion. We notice that when including the interaction effect in the model, the main coefficient becomes insignificant, implying that the effect of the independent variable on the dependent one is conditional to the interacting variable. The coefficient of the interaction effect, reporting a 5% significance level, reveals a more pronounced negative effect of ESG combined score for luxury firms' profitability, compared to fast-fashion firms. Specifically, luxury firms experience a 1.2% decrease in ROA compared to fast-fashion firms, absorbing most of the negative impact that ESG score has on fashion firms' profitability.

Table 6.2, 6.3 and 6.4 in Appendix A depicts the regression results for the singular ESG pillars. Looking at the results reported in the tables, we see that all the singular pillars present a very similar negative significant coefficient. Specifically, in Model (1), all the three pillars present a coefficient of -0,9%. All coefficients are significant at 1% significance level. According to our results, the Environmental, Social and Governance score seem to have equal weight on the ultimate negative impact on ROA.

Looking at Model (2), for the three pillars we see a consistent decrease in the magnitude of the coefficient of interest when the control variables are included. Coefficients keep similar values, with Environmental, Social and Governance score reporting respectively 0,78%, 0,5% and 0,6% decrease in ROA when a one-unit increase in ROA is recorded.

When including the interaction effect in Model (3), we see differences across the three pillars. In table 6.2, the Environmental Score interaction term presents a negative coefficient of 0,8%, highlighting a heavier burden for luxury companies engaging in ESG investments. In Table 6.3, the Social Score presents the highest interaction coefficient, recording a decrease by 1.4% of ROA for luxury fashion companies compared to fast fashion ones when the Social Score increases by one unit. In Table 6.4, the interaction coefficient of the governance pillar doesn't present significance, while its main independent variable, Governance Score, keeps a 5% significance level, reporting a 0,7% decrease in ROA.

6. Conclusions

This paper has investigated the relation between ESG rating and financial performance within the global Fashion Industry. The sample data covers the 50 most profitable fashion companies in the timespan from 2012 to 2022. Panel data fixed effect has been used to analyze the impact of ESG rating on profitability throughout four different models, one for each ESG indicator.

Based on the results of the four models, we find that firms with a higher ESG rating, namely firms that tend to engage in positive and sustainable practices concerning the Environment, Social and Governance areas, tend to achieve lower ROA. This finding might reflect the comprehensive financial impacts of sustainability investments. These investments span various initiatives, including reducing carbon footprints, implementing fair labor practices, ensuring worker safety, and enhancing transparency and governance to reduce corruption. According to our findings, investments in sustainable social practices result as the most costly ones, ultimately weighing more on financial losses. In general, these efforts involve significant upfront costs: environmental upgrades demand new technologies and practices, social improvements may require higher wages and better working conditions, and governance enhancements might necessitate funds allocation for greater accountability and compliance.

In the short term, these investments can put pressure on financial performance due to significant capital outlays and operational changes without immediate financial returns. This can temporarily reduce profitability, as seen in metrics like ROA. However, this initial financial dip is part of a long-term strategy. Over time, the benefits of these investments are expected to become evident. Environmentally sustainable practices can lead to cost savings through efficiencies and potentially lower regulatory fines. Social responsibility can boost company reputation and employee satisfaction, reducing turnover and increasing productivity. Strong governance can foster more stable business practices and attract investors seeking lower-risk opportunities.

Thus, while high ESG investments might lead to lower ROA in the short term, the long-term outlook is likely more favorable. As markets increasingly value sustainability, the early financial burdens may transform into strategic advantages, positioning these firms for

sustainable long-term growth and profitability. This perspective aligns with a broader business view where initial investments are seen as essential for future gains, especially in a world where consumers and investors are increasingly inclined to support responsible businesses.

Another key finding looks at the category of the selected fashion companies. Indeed, from our results it emerges that luxury companies experience a heavier burden on profitability when investing in ESG practices compared to fast-fashion companies. One reason could lie in the higher marginal costs that luxury brands face when investing in sustainable practices, as their business model, prioritizing exclusivity and lower production volumes, focuses on quality of materials and craftsmanship rather than quantity and speed in production (Hennings et al., 2013). This kind of business model makes it harder for luxury brand to achieve economies of scale in the production and make it less easy to distribute costs of ESG investing. Moreover, luxury brands experience higher consumer expectations and brand image scrutiny, and meeting these expectations can lead to companies forgoing some profit in exchange for engagement in corporate social responsibility and the consequent benefits for brand reputation (Kapferer and Michaut-Denizeau, 2017).

In general, the demand for responsible and social investing is growing rapidly (Bialkowski and Starks, 2016), but performance in stock markets of those investments remain controversial, and ultimately risky on financial performance. Economists are therefore considering the possibility that, in their decision making process, investors might value positive social value together with wealth (Barber et al., 2020). Consequently, our results point at the fact that managers and investors within the fashion industry might be willing to pay for impact holds. In other words, given the huge negative impact that the apparel industry has on many levels, from the environmental to the social one, private or institutional shareholders might be willing to forgo returns in order to feel morally at ease with the stocks they hold (Brammer et al., 2006). This last explenation, linked to behavioural aspects of shareholders, could be interpret as the result of the campain of awareness carried on by the industry itself and non-governmental organizations. These campaigns often stimulate a sense of guilt among shareholders, leading them to support investments in ESG practices. On the other hand, it is plausible that, in some cases, funds are directed towards ESG initiatives more for enhancing

brand image than for a sincere commitment to the principles underlying ESG. This approach can serve to alleviate shareholder concerns and improve public perception, even if potentially at the expense of genuine sustainability and social responsibility.

Our findings, by indicating that ESG practices have a negative impact on profitability, point at a complex challenge for the industry, balancing the demands of sustainability and profitability. Given this dynamic, this paper points at a significant opportunity for policymakers to craft incentives that can encourage fashion firms to adopt ESG practices that do not just meet compliance or superficial branding goals but are instead deeply integrated into their business models. This approach will ensure that the fashion industry moves toward sustainability, generating substantial environmental and social benefits while also promoting the economic progress of the involved firms.

7. Limitations

This study, while providing valuable insights into the relationship between ESG practices and profitability, is subject to several limitations that should be carefully considered. Firstly, the possibility of omitted variable bias is a concern, as not all potential factors influencing both ESG scores and profitability have been included in our model. Furthermore, our research focuses on the 50 most profitable fashion companies, introducing a potential selection bias. This sample, comprising only successful firms, may not adequately represent the broader industry, thus limiting the generalizability of our findings across the entire sector.

It's important to recognize that the positive effects of ESG practices may take longer to become evident than the duration of this study allows. This could lead to an underestimation of the long-term benefits of these practices. Existing literature suggests that ESG funds, which tend to avoid divesting based on short-term risk/return assessments, reflect a growing investor preference for ESG assets. These investors are likely to maintain their investments even during periods of crisis, driven by a multi-attribute utility function that integrates their ethical values into their investment decisions.

Given these insights, future research would greatly benefit from a more detailed cost-benefit analysis of investing in ESG practices. An analytical approach that thoroughly evaluates both the costs and the benefits could provide greater clarity and help refine our understanding of the long-term financial impacts of ESG initiatives.

APPENDIX A

Table 1.2

Summary of Variables

Variable	Abbreviation	Source
Return on Assets	ROA	Refinitiv Database
ESG combined score	ESGCB	Refinitiv Database
Environmental Score	ENV	Refinitiv Database
Social Score	SOC	Refinitiv Database
Governance Score	GOV	Refinitiv Database
Firm Size	SIZE	Refinitiv Database
Leverage	LEV	Refinitiv Database
Capital Expenditure	CAPEXP	Refinitiv Database
Operating Expenses	OPEREXP	Refinitiv Database

Note: the table provides information on the variables used in Model (1), Model (2), Model (3) and Model (4). Column 1 provides the name of the variable, column 2 the respective abbreviation and column 3 the source of the retrieved variables.

Table 1.3
Pearson Correlation Matrix

	ESGCB	ENV	SOC	GOV
ESGCB	1.000			
ENV	0.7470***	1.000		
SOC	0.8117***	0.7719***	1.000	
GOV	0.6405***	0.3793***	0.4139***	1.000

Note: * Indicates 10% significance level; ** indicates 5% significance level; *** indicates 1% significance level.

Table 1.4

Variance Inflation Factor (VIF) Test

Variable	VIF (1)	VIF (2)	VIF (3)	VIF (4)
ESGCB	1.23			
ENV		1.17		
SOC			1.22	
GOV				1.20
SIZE	1.03	1.04	1.04	1.04
LEV	1.22	1.14	1.19	1.14
CAPEXP	4.00	3.96	3.98	4.03
OPEREXP	3.97	3.96	3.97	3.97
Mean VIF	2.29	2.26	2.28	2.28

Note: this table shows the VIF test for multicollinearity to detect whether there is any multicollinearity between variables used in Model (1), Model (2), Model (3) and Model (4).

If the VIF is 1, there is no correlation. A VIF of 1-5 shows a moderate correlation; however, it is not a significant issue for the result validity. A VIF of 5-10 shows a high correlation, which may be a problem (Akinwande, 2015). After running the test for each model, a range value of VIF between 2.26 and 2.29 has been retrieved. We can therefore exclude risk of multicollinearity.

Table 6.2

Fixed effect Regression Results with Environmental score as Independent Variable

	Dependent Variable: logROA		
	(1)	**(2)**	**(3)**
LaggedENV	-0.009***	-0.0078***	-0.003
	(0.003)	(0.002)	(0.004)
logSIZE		-0.291	-0.309
		(0.005)	(0.215)
LEV		-0.009*	-0.009**
		(0.005)	(0.004)
logCAPEXP		0.286***	0.270***
		(0.097)	(0.096)
logOPEREXP		0.003	-0.002
		(0.105)	(0.097)
LaggedENV*LUXURY			-0.008*
			(0.005)
Observations	407	407	407
R-Squared	0.118	0.149	0.197

*Notes: Table indicates fixed effect regression results for Model (1) in column 1, Model (2) in column 2 and Model (3) in column 3. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.*

Table 6.3

Regression Results with Social score as Independent Variable

	Dependent Variable: logROA		
	(1)	**(2)**	**(3)**
LaggedSOC	-0.009***	-0.005*	0.002
	(0.003)	(0.003)	(0.004)
logSIZE		-0.340**	-0.326**
		(0.137)	(0.137)
LEV		-0.011***	-0.012***
		(0.003)	(0.003)
logCAPEXP		0.290***	0.279***
		(0.074)	(0.073)
logOPEREXP		-0.053	-0.057
		(0.110)	(0.109)
LaggedSOC*LUXURY			-0.014**
			(0.006)
Observations	407	407	407
R-Squared	0.119	0.145	0.198

Notes: Table indicates fixed effect regression results for Model (1) in column 1, Model (2) in column 2 and Model (3) in column 3. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.

Table 6.4

Regression Results with Governance Score as Independent Variable

	Dependent Variable: logROA		
	(1)	**(2)**	**(3)**
LaggedGOV	-0.009***	-0.006***	-0.007**
	(0.002)	(0.002)	(0.003)
logSIZE		-0.335**	-0.333**
		(0.136)	(0.136)
LEV		-0.011***	-0.011***
		(0.003)	(0.003)
logCAPEXP		0.270***	0.270***
		(0.073)	(0.073)
logOPEREXP		-0.107	0.108
		(0.096)	(0.096)
LaggedGOV*LUXURY			0.002
			(0.004)
Observations	407	407	407
R-Squared	0.117	0.148	0.195

*Notes: Table indicates fixed effect regression results for Model (1) in column 1, Model (2) in column 2 and Model (3) in column 3. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.*

Table 7.1

Check for Control Variables for ESG combined score

Dependent variable: logROA

	(1)	(2)	(3)	(4)	(5)
LaggedESGCB	-0.013***	-0.015***	-0.009***	-0.011***	-0.010***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
logSIZE		-0.182			
		(0.123)			
LEV			-0.009***		
			(0.003)		
logCAPEXP				0.156**	
				(0.069)	
logOPEREXP					-0.167
					(0.126)
Observations	407	407	407	407	407

Notes: Table indicates fixed effect regression results for the addition of each control variable to the model in column 1, reporting only the coefficient of interest. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.

We follow the same procedure to assess how control variables affect the coefficient of the other three selected independent variables, namely the single pillars that ultimately determine the ESG combined score.

Table 7.2

Check for Control Variables for Environmental Score

Dependent variable: logROA

	(1)	(2)	(3)	(4)	(5)
LaggedENV	-0.009***	-0.010***	-0.006***	-0.010***	-0.007***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
logSIZE		-0.156			
		(0.123)			
LEV			-0.009**		
			(0.004)		
logCAPEXP				0.176**	
				(0.069)	
logOPEREXP					-0.043
					(0.110)
Observations	407	407	407	407	407

Notes: Table indicates fixed effect regression results for the addition of each control variable to the model in column 1, reporting only the coefficient of interest. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.

Table 7.3

Check for Control Variables for Social Score

Dependent variable: logROA

	(1)	(2)	(3)	(4)	(5)
LaggedSOC	-0.009***	-0.010***	-0.005***	-0.010***	-0.007**
	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)
logSIZE		-0.236**			
		(0.003)			
LEV			-0.011***		
			(0.003)		
logCAPEXP				0.169***	
				(0.070)	
logOPEREXP					-0.105
					(0.118)
Observations	407	407	407	407	407

*Notes: Table indicates fixed effect regression results for the addition of each control variable to the model in column 1, reporting only the coefficient of interest. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.*

Table 7.4

Check for Control Variables for Governance Score

Dependent variable: logROA

	(1)	(2)	(3)	(4)	(5)
LaggedGOV	-0.008***	-0.009***	-0.006***	-0.009***	-0.007***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
logSIZE		-0.257**			
		(0.122)			
LEV			-0.011**		
			(0.003)		
logCAPEXP				0.141**	
				(0.069)	
logOPEREXP					-0.170*
					(0.110)
Observations	407	407	407	407	407

*Notes: Table indicates fixed effect regression results for the addition of each control variable to the model in column 1, reporting only the coefficient of interest. *p< 0.1; **p<0.05; p***<0.01. Robust standard errors are specified in brackets under the coefficients.*

As we can notice from Table 7.1-7.4, the main coefficient changes adding each control variables.

Table 8

Pearson Correlation Matrix

	ESGCB	SIZE	CAPEXP	OPEREXP	LEV
ESGCB	1.000	0.3334***	0.2567***	0.2678***	0.3856***

Note: Table 8 shows how each control variable is correlated to the main variable of interest, ESG score. * Indicates 10% significance level; ** indicates 5% significance level; *** indicates 1% significance level.

Appendix B

List of the 50 selected companies:

1. AMER.EAG.OUTFITTERS
2. ABERCROMBIE & FITCH
3. ADIDAS
4. ASICS
5. ASOS
6. BOOHOO GROUP
7. BURBERRY GROUP
8. CAPRI HOLD
9. CARTER'S
10. CINTAS
11. COLUMBIA SPORTSWEAR
12. DIOR
13. ESPRIT HOLDINGS
14. FAST RETAILING
15. FOOT LOCKER
16. FOSSIL GROUP
17. GAP
18. GUESS
19. HERMES INTL
20. HUGO BOSS
21. INDITEX
22. JD SPORTS FASHION
23. KERING
24. LI NING
25. LOBLAW
26. LVMH
27. MACY'S INC
28. MONCLER
29. NORDSTROM
30. OTB GROUP
31. PRADA GROUP
32. PVH
33. RALPH LAUREN
34. REITMANS
35. RICHEMONT
36. ROSS STORES
37. SHIMAMURA
38. SHISEIDO COMPANY
39. STEVEN MADDEN
40. SUPERDRY
41. SWATCH GROUP
42. TAPESTRY INC
43. THE FOSCHINI GROUP

44. TJX
45. TOD'S
46. UNDER ARMOUR
47. VIPSHOP HOLDINGS SPONSORED
48. WALMART
49. YUE YUEN INDL.HDG
50. ZALANDO

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