EXECUTIVE SUMMARY OF THE THESIS

The Impact of ESG Ratings on Stocks' Performance: An Empirical Analysis

TESI MAGISTRALE IN MANAGEMENT ENGINEERING – INGEGNERIA GESTIONALE

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1. Introduction

Sustainable development is defined in the Brundtland Report [1] as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In the financial world, it translates into the term ESG, which was coined in 2004 with the publication of the report "Who Cares Wins" by the UN Global Compact Initiative [2]. According to this acronym, companies should care about three pillars while conducting their businesses:

- The *environmental pillar*: it evaluates the sustainability of those companies' activities carrying a direct and indirect impact on the environment.
- The *social pillar*: it evaluates the sustainability of the corporations by looking at the way they are able to manage the impact of business activities on the social dimension.
- The *governance pillar*: it is related to the way in which a firm is managed by its top

management, and it focuses on the alignment between the interests of the executive management and the ones of the company's stakeholders.

According to the well-known Shareholder Theory by Friedman (1970) [3], the maximization of the shareholders' returns was perceived as the main objective of a company since the beginning of the industrial revolution. In those years, environmental, social and governance (ESG) contents were not considered by most managers for two main reasons: on the one hand, investments in sustainability were not considered as positively correlated to financial performances; on the contrary, they were perceived as leading to an increase of firms' costs. However, in the last years an inversion of this trend has been observed due to a higher consciousness of sustainability issues. This fact has its roots in the higher frequency of extreme weather events, social scandals affecting some of the biggest players in the market, and the financial crisis affecting the financial markets in 2008 (which had a huge

negative impact on the wealth of the consumers). All these events led to a higher attention towards sustainability themes by some relevant stakeholders, as policymakers, NGOs, citizens and corporations. Furthermore, in the last years financial actors have realised that investing in sustainable companies leads to higher returns, as demonstrated by several studies investigating the relationship between the ESG pillars and corporate performances; among them, the most comprehensive is the one by Friede et al (2015) [4]. As result, as reported by the Global Sustainable Investment Alliance (2020) [5], the sustainable investing assets under management are continuing to increase worldwide. The largest increase (48% of sustainable assets growth) over the past two years has been observed in Canada, followed by The United States (42%) and Japan (34%). This trend, in turn, led to a call for objective metrics able to provide a comprehensive picture of the sustainability performances achieved by the target companies. As a result, a number of rating agencies developed their own approach to ESG performance appraisal. More specifically, the ESG risk ratings assess the extent to which a company's economic value is at risk due to ESG factors. However, differently from credit ratings, ESG measurement is affected by two main issues: the heterogeneity among the different measurement methodologies and the absence of disclosure about them. These two problems are due to a lack of regulations and standards among the different rating providers, both in terms of relevance of the different E, S and G dimensions and of criteria used to measure risk on each dimension. For this reason, rating agencies are proposing several different metrics derived from alternative and competing definitions, making the sustainability performances of a company very difficult to assess from the investors' standpoint. Starting from this rating divergence, the study by Billio et al (2020) [6] challenges the above-mentioned positive relationship between financial and ESG performances, demonstrating that it does not hold true. In this context, the aim of the present work is to investigate the reaction of financial investors to the updates of the corporate sustainability ratings, in order to understand how financial markets price sustainability performances.

2. Literature Review

In the growing literature concerning the ESG, two fundamental topics are the relationship between sustainability and financial performances on the one hand, and the ESG ratings divergence phenomenon on the other. In this regard, this section presents the existing literature, trying to understand which could be the possible impact of the ratings divergence on the corporate financial performances. In doing so, the starting point consists in analysing the papers that relate firms' value to the three main constituents of the ESG finance world, namely environment, society and governance. In the financial literature there are several contributions demonstrating the positive correlation between the three ESG pillars and the financial performances of the corporations. Among them, the papers by Derwall et al. (2004) [7] and Manrique and Martí-Ballester (2017) [8] demonstrate that "eco-friendly" portfolios are the ones experiencing higher financial performances, especially in financial crisis periods. Moving to the social pillar, the most relevant study to be cited is the one by Edmans (2011) [9], which investigates the impact that a high level of employee satisfaction could have on long-run stock returns. This paper shows that the socially sustainable portfolio presents an extra-return of 3.5% with respect to the non-socially sustainable ones. Finally, referring to the governance pillar, the studies by Gompers et al. (2003) [10] and by Velte (2017) [11] show the existence of a positive correlation between the corporate governance performances and the financial performances of companies. The next step aims at investigating the most relevant papers that study in a comprehensive way the impact of ESG performance on the firms' ones, considering the three pillars at the same time. In this regard, the most exhaustive paper to be cited is the one by Friede et al. (2015) [4], which is a recapitulatory work that provides a comprehensive of more than 2000 studies' findings, demonstrating that most of these papers agree on the positive correlation between ESG and firms' value and performances. Beside the above-cited studies, another relevant part of the literature shows that this positive relationship is enhanced during the crisis periods. This evidence is due to a systematic reduction of the risk, which is caused by the inclusion of sustainability pillars inside the decision-making

process. The two most relevant papers treating this topic are the ones by Nofsinger and Varma (2014) [12] and by Henke (2016) [13]. From these studies it emerges that the sustainable funds experience better performances during the periods of financial crisis, which are attributable to the mitigation of the ESG-related risks.

The second topic treated in the literature section is the one related to the ESG ratings divergence phenomenon: with the aim of studying this thematic, the first part of this section is focused on the study conducted by Berg et al (2020) [14]. This paper investigates the divergence of ESG ratings, stating that this phenomenon exists and can be explained by looking at three principal constituents, namely scopes of categories, measurement of categories and weight of categories.

- *Scope divergence*: it happens when the ratings are based on different sets of attributes.
- *Measurement divergence*: in this case, the rating agencies measure the same attribute using different indicators.
- *Weights divergence*: the rating agencies give different relative importance to the attributes.

A similar analysis is conducted by Capizzi et al (2021) [15], who investigate why ESG ratings diverge, focusing on a sample of Italian listed companies. After having analysed the topic of the ESG rating divergence, the study by Billio et al (2020) [6] demonstrates a lack of ESG portfolio's performances with respect to a non-ESG portfolio; in this regard, the rating divergence is proposed by the authors as a possible explanation for their finding. Going more in depth, the authors of the paper create two different types of portfolios:

- *ESG agreement*: it is the portfolio composed by the stocks of those companies that are considered as ESG leaders by all the rating agencies.
- *NonESG portfolio*: it is the one built through a negative screening approach, including all the stocks of those companies that are excluded by the investment universe.

What emerges from this study is that, differently from what was stated by most of the previous literature, there are not relevant differences in the performances of the two types of portfolios.

According to the authors, these results can be explained by the frequent divergence in ESG evaluations on the same company by different agencies, which disperses the effect of the ESG investors' preferences on stocks' prices, so that, even when there is agreement, the ESG effect is attenuated and its impact on performances is neutralised.

3. Objectives of the Work

Having explained the state of the art of the existing literature, the present work started from this context with the aim of investigating the reaction of financial markets to rating agencies' ESG grade updates, understanding whether possible variations in the sustainability ratings of the corporations have a direct impact on their value. In doing so, the purpose of this work was to try to answer to the following research questions:

I.   Does a sustainability rating update have an impact on the market value of a company?

II. Has the reaction of the financial market to the sustainability ratings updates become stronger in the last years, due to a higher consciousness of the investors about the ESG-related topics? This research question started from the evidence that sustainable investment is gaining more and more relevance in the preferences of retail and institutional investors, as reported by the Global Sustainable Investment Alliance (2021) [5].

Furthermore, this study tried also to investigate whether the financial markets' reaction to the ESG rating updates is different for two specific rating providers, namely MSCI and Refinitiv. To accomplish these objectives, the methodology adopted was the Event Study, which is a model used in order to evaluate the impact of an economic event on the valuation of the corporations through the assessment of their Cumulated Average Abnormal Returns (CAAR). This quantitative approach is built on one fundamental pillar: the efficiency of financial markets, meaning that every single economic event

is incorporated in the price of financial assets. Hence, the effects of an economic event can be assessed by observing the company's price in a specific short time window.

4. Input Data

The data that was used in order to feed the model and run the analysis can be classified into two clusters:

- The pool of companies analysed.
- The selected rating agencies and their evaluations.

The first step of the analysis consists in the choice of the pool of companies that were at the centre of the study. More in depth, the choices made in this regard were taken according to three main drivers, namely the pool dimension, the reference financial markets and, eventually, the sectors the selected companies belong to. For what concerns the size of the sample, the main constraint for this important decision was represented by the trade-off between the statistical significance of the analysis and the amount of data to be processed in the model. Indeed, the higher the number of companies forming the testing cluster, the higher is the robustness of the analysis' results but, on the other hand, also the volume of the data to be collected and managed increases exponentially, requiring a higher processing effort. For these reasons, the choice was the one of selecting a set of 75 firms in order to have a good balance between these two constraining needs. Furthermore, the selection of the companies was done trying to preserve as much as possible the heterogeneity at the world level, including companies belonging to the main worldwide financial markets. At this stage, in order to choose the list of the firms, the criteria used for the selection was the one of picking the companies reporting the highest market capitalization, trying to keep a good level of heterogeneity in terms of industry mix. Moving to the explanation of the criteria used to select the rating agencies, the main constraint was represented by the availability of data: indeed, in order to have access to the ESG ratings, it is necessary either to pay a subscription fee to the rating provider or to be licensed to access to this confidential data. For these reasons, among the

several ESG rating providers, the choice fell on the selection of Refinitiv and MSCI:

- *Refinitiv*: the data about the ESG ratings provided by Refinitiv was taken from the proprietary platform Refinitiv Eikon.
- *MSCI*: these ESG ratings provided by Morgan Stanley Capital International were taken from the proprietary database of the MIP Graduate School of Business.

At this stage, it is necessary to explain the decision about the time-horizon selected for the analysis. Considering that the attention to the ESG themes has increased exponentially in the last years, and keeping in mind the existing trade-off between the amount of data and the effort required to manage it, the decision was to consider a time period going from the 2016 to the 2020. As a consequence, given the fact that the updating frequency of the ESG ratings was annual, for each company there was a set of 5 events available.

5. Methodology

After having introduced the main data gathered in other to do the analysis, this chapter is dedicated to the presentation of the Event Study conducted. The starting point is to define the analysis, which is divided into two different Event Studies, each one corresponding to the two ESG rating providers selected. In order to implement the analysis, the present work refers to the typical Event Studies' phases presented by Campbell and Mackinlay (1997) [16]:

- *Event definition*: the first phase consists in the definition of the event of interest and of the event-window's length. The focal event of the present work was represented by the sustainability ratings publications by the two selected ESG rating providers: this may lead to three possible events, which are upgrading, downgrading or confirmation of the evaluations; these sub-categories were investigated through three distinct and independent Event Studies. As a consequence, the total number of event typologies was equal to 6. In the table below is represented the number of events for each type of grade update.

Rating agencies	Announcement	Number of events
	Upgrade	80
MSCI	Confirmation	304
	Downgrade	27
	Upgrade	94
Refinitiv	Confirmation	108
	Downgrade	89

Table 1: Number of events for update typology

To study these events, the event-window was represented by a 12 market days time-horizon, and it started two days before the arising of the focal event in order to avoid possible insider trading behaviours.

- *Selection criteria*: this phase of the methodology refers to the choice of the selection criteria adopted in order to define the sample of companies to be used in the Event Study methodology. In particular, the main steps for the companies' selection were the following three: the first screening was done according to the reference stock exchange markets; after this choice, the companies experiencing the highest market capitalizations were selected, not forgetting to take into account as third driver also the industry sectors the firms belong to.

- *Normal and abnormal return*: to evaluate the effect of an event, the Event Study methodology recurs to the measurement of the abnormal returns. The abnormal return is defined as the actual ex-post return experienced by the company over the event-window minus the normal return of the security over the same time period. The normal return, instead, is the return expected in a normal condition, without the occurrence of the specific economic event. In order to compute the normal returns, the Market Model was selected; this statistical model derives the returns of a specific stock from the return of its belonging market through the formulation presented below:

$$R_{it} = \alpha_i + \beta_i R_m + \epsilon_{it}$$

Starting from this formula, after having estimated the parameters of the Market Model, it is possible to compute the abnormal returns by subtracting the expected returns (that are the ones of the market) from the actual returns of the stock.

$$\epsilon_{it} = R_{it} - (\alpha_i + \beta_i R_m)$$

- *Estimation procedure*: after having chosen the methodology that was used to compute both the normal and the abnormal returns, this phase consists in the estimation of the Market Model's parameters. In order to implement this step, it was necessary to define the estimation window, which is the time period prior to the arising of the event and used to assess the value of the parameters characterizing the Market Model's equation. Even for this decision, as in the case of the event-window, there was a trade-off; in particular, as the length of the estimation window increases, so does the amount of the effort needed to manage the available data, but on the other hand the robustness of the estimated model will increase too. All the mentioned elements drove to the decision of setting the length of the estimation window equal to 30 market days, until 2 market days before the focal event.

- *Testing procedure*: having estimated the set of all the needed parameters, the abnormal returns can be computed for each ESG rating update event. In particular, in order to detect if the event of interest has an impact on the security's price, it was necessary to perform the aggregation of the abnormal return observations. This aggregation was conducted along two dimensions, namely through time and across securities. The first step consisted in aggregating through time for a specific security; after this process was completed, it was then possible to proceed with the aggregation both across securities and through time. From the cumulation process described above it was possible to derive the Cumulated Average Abnormal Returns (CAARs) associated to each event typology, which were necessary to test the impact of the rating agencies' announcements on the stocks' prices.

6. Results

The first research question was tested on all the events regarding the entire pool of companies. The outcome of this first step shows that ESG ratings updates do not affect the companies' market value, regardless of the sustainability grade update typology and of the rating agency making the announcement. Furthermore, the same analysis was conducted also on the events belonging exclusively to the Italian stock exchange, and it led to the same results of the overall previous analysis. The fact that the CAAR results not significant for any considered case leads to the conclusion that nowadays the impact of ESG ratings is not associated to creation of value both for the corporations and the financial investors. One possible explanation for this result could be found by referring to the ratings divergence phenomenon: in particular, as demonstrated in the study by Billio et al (2020) [6], this divergence between rating providers' methodologies and, consequently, between their ESG assessments, disperses the preferences of financial investors, who are then disincentivised by looking at sustainability grades during their asset allocation processes. As a consequence, the trend of the ESG ratings updates could not be reflected by the market evaluation of the subject companies. On the other hand, the second research question was investigated by comparing the market reactions to the events belonging to the period 2016-2018 versus the ones belonging to the period 2019-2020. The CAAR does not show a significant change in its trend passing from the first time interval to the second one. So, looking at the results of this empirical analysis, it seems like financial markets' reaction to ESG ratings did not change to a significant extent in the last two years compared to the previous three. A possible explanation for this evidence could be the following one: even if sustainability-related topics are gaining increasing importance in the financial world, the ESG finance is not mature yet, still being in a transition phase. For sure, an inversion of the trend toward sustainability has been observed in the last years. However, this process is not discrete, but it is characterised by a gradual and continuous nature, so more time is needed in order to observe a concrete switch of the financial investors' preferences toward sustainability.

7. Conclusion

The main outcome of this work are the following ones:

I. The change in the ESG ratings of the corporations does not have any impact on their market value.

II. The reaction of the financial market to the sustainability ratings updates has not become stronger in the last two years.

These two results contribute to increment the value of the existing literature showing that nowadays the ESG finance is far from being mature, with most of the financial investors not looking at ESG ratings in their investment processes. As a result, the companies' market capitalizations are not impacted by changes in their sustainability performances.

At the end, the main limits and the possible further improvements of the present work are presented. The limitations of this work are mainly related to the data gathering process. Indeed, the study was conducted on 2 rating providers, 75 companies and considering a 5-years time period, for a total of 702 ESG ratings updates events. In order to make the analysis more robust, it should be considered a higher number of rating providers and companies, enlarging the temporal horizon and, consequently, increasing the number of events feeding the Event Study methodology. Future developments of this study may include possible improvements that could be undertaken in order to complement the contribution provided by this study. In particular, a possible variation may regard the adopted approach: the temporal horizon of the analysis could be changed, looking at the medium-long term companies' performances instead of focusing only on the short-term. Furthermore, recalling the results found through the investigation of the second research question, it emerges that the transition towards a complete ESG integration into financial investments is still on going. Hence, the analysis conducted in the present work could be replicated in the future, with the aim of understanding if the sustainability trend will have reached the mature phase or, on the other hand, if it will present the same profile shown by the present analysis.

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