Towards a more ethical market: the impact of ESG rating on corporate financial performance

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Abstract

Purpose – *This paper fits in a research field dealing with the impact of Corporate Ethics Assessment on Financial Performance. The authors argue how environmental, social and governance (ESG) paradigm, meant to measure corporate social performance by rating issuance, can impact on abnormal returns of Italian firms listed on Financial Times Stock Exchange Milano Indice di Borsa (FTSE MIB) Index, developing a panel data analysis which runs from 2007 to 2015.*

Design/methodology/approach – *This study aims at exploring whether socially responsible investors outperform an excess market return on Italian Stock Exchange because of their investment behavior, testing statistically the relationship between the yearly ESG assessment issued by Standard Ethics Agency on FTSE MIB's companies and their abnormal returns. To verify the impact of an ESG Rating on a company's abnormal return, the authors developed a panel data analysis through a Fixed Effects Model. They measured abnormal returns via Fama–French approach, running a yearly Jensen's Performance Index for each company under investigation.*

Findings – *The empirical results denote in Italy both a growing interest to corporate social responsibility (CSR) and sustainability by managers over the past decade, as well as an improving quality in ESG assessments because of a reliable corporate disclosure. Thus, despite investors have been applying ESG criteria in their stock – picking operations, the authors found a not positive and statistically significant impact in terms of market premium, when they have been undertaking a socially responsible investment (SRI).*

Practical implications – *The findings described above show that ethics is not yet a reliable fundraising tool for Italian-listed companies, despite SRIs having a positive growth rate over past decade. Investors seem to be not pricing CSR on Stock Exchange Market; therefore, listed companies cannot be rewarded with a premium price because of their highly stakeholder oriented behavior.*

Originality/value – *This paper explores, for the first time in Italy, when market extra-returns (if any) are related to corporate social performance and how managers leverage ethics to build capital added value.*

Keywords *Corporate financial performance, Socially responsible investments, Impact investing, Corporate social performance, Environmental, social and governance (ESG), Jensen's alpha*

Paper type *Research paper*

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1. Introduction

1.1 Background of the problem

In the past several decades, the interest from academia in social issues applied to investment decision-making has experienced a strong growth. Additionally, renowned rating agencies have paid much attention to the formulation of innovative indicators capable of reporting the social responsibility of a company (Tomo and Landi, 2017).

Increasing interest has been focused on the impact of corporate social responsibility (CSR) on the economic and financial performance (FP) of listed companies. Many economists have abandoned the axioms of classical economics, self-regulation and market efficiency

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(Fama, 1970, 1976; Sen, 1988), recognizing the corrective function that CSR can have on a market less sustainable and characterized by strong information asymmetries (Moskowitz, 1972, 1975). The growing awareness top managers are developing towards the different categories of stakeholders has produced a positive impact on medium and long-term profitability of the managed entities. Such profitability is attributable to several factors whose nature and scope are not always grasped by the stock exchange market, namely, variables that are not typical of technical or fundamental analysis. Hence, the investors' myopia in their ability to detect such variables has led some rating agencies to specialize in the formulation of indicators that express the degree of social and environmental responsibility of a listed company's decisions.

Moreover, the pandemic instability of international financial markets and their close relationship has turned the spotlight on other non-financial parameters (e.g. ethics rating, corporate sustainability assessment), as typical instruments of stock market analysis have not been able to prevent several latent risks.

1.2 Purpose and significance of the study

This research embraces themes from management sciences, empirical corporate finance and behavioral finance, through investigating the correspondence between socially responsible strategies of major listed Italian companies and their market performance. In other words, it analyzes how the issuance of ratings involving the environmental, social and governance dimensions (ESG rating from here forward) of listed Italian companies may influence their FPs on stock exchange markets. A marked focus will also be addressed to the attention that investors have focused in recent years to the usage of more than mere technical variables in their investment portfolios, such as sustainability and CSR.

The study also highlights how listed Italian companies have reacted to the bearing wave of the subprime mortgages crisis and the Italian Sovereign Debt crisis, opting for a socially responsible and sustainable investment policy; and whether market efficiency has been verified over past years according to sustainability issues.

The purpose consists in extending empirical research by investigating potential relationships between corporate social performances (CSP) of listed Italian companies and their FPs (FP), measured respectively by ESG ratings and abnormal returns. The ability to test both composite and individual component ratings of CSP is important to understand more about what management and, in particular, business ethics can learn from recent research in corporate finance.

Historically, CSP has been considered as economic responsibility to investors and consumers, ethical responsibilities to society, legal responsibility to the government or the law and discretionary responsibility to the community (Carroll, 1979). According to Wartick and Cochran (1985), this multiple construct incorporates the interaction between the principles of social responsibility, the process of social responsiveness, and the strategies deployed by corporations to address social issues. Even though in existing literature there is not an agreed definition, CSP is generally conceptualized as a broad construct comprised of social issues and stakeholder management (Clarkson, 1995; Hillman and Keim, 2001; Swanson, 1995; Wood, 1991).

The potential managerial implications identified in existing literature show how the sustainable management of an enterprise can positively affect the stock exchange value, crossing the sustainable securities demand to investors with a strong vocation for impact investing.

This study also aims to investigate whether harmful and dangerous market concepts, such as short-termism and profit maximization, still take place after the last world economic recession.

There is a debate about the perceptions and interpretations that investors have regarding this type of information, because investors do not always manage the added value in terms of extra-market return.

One of the salient aspects of this work concerns whether observed abnormal returns of Italian companies are affected by the issuance of an ESG rating and how these returns are conditioned by any upgrade or downgrade

2. Prior literature

It could be useful for readers to highlight the evolution of studies related to the relationship between CSR and market investor behavior, for understanding the need of an ethical and behavioral approach to finance.

In doing so, we can follow a triple approach: first, overviewing the evolution of social responsibility concept in corporate strategy and the need to recognize its role in managerial science; second, presenting a frame of studies dealing with how a company can account externally its commitment in social responsibility and discussing what kind of measurements have been used in literature to develop research works on this topic; finally exploring value relevance of impact investing on FP, that is the meaning of socially responsible investments (SRI) and what are the advantages of a firm undertaking this kind of investments.

2.1 Corporate social responsibility and corporate social performance

In the 1980s, CSR research focused upon the acceptance of the notion of CSP as a theory. For instance, Cochran and Wood (1984) framed the evolution of the CSR model across three dimensions: responsibility, responsiveness and social issues. CSR research during the 1990s was characterized by studies of topics such as CSP, stakeholder theory, business ethics theory and corporate citizenship. In 1990s, CSR began to be seen within the framework of CSP: social issues, environmental pressures and stakeholder concerns started to affect corporate decision-making (Donna J. Wood, 1991). Business ethics, toward the end of the 1990s, constituted a field of study with a substantive knowledge base and with some theories unique to the field, rather than only theories borrowed from other fields such as philosophy (Robertson, 1993).

Recent literature has focused on the impacts of environmental, social and ethical behaviors on corporate governance and competitive strategies. Clarkson *et al.* (2011) showed that companies with social disclosures tended to have better environmental performance. Instead, Barnea and Rubin (2010) demonstrated that CEOs in controversial industry sectors were immoral managers that used CSR as a mean of enhancing their own private reputation, building benefits as social citizens at the cost of shareholder wealth.

Cai *et al.* (2012) pointed out that the CSR concept has been described in several ways over time, ranging from the narrow economic perspective of increasing shareholder wealth (Friedman, 1970) to broader economic, legal, ethical and discretionary aspects of responsibility (Carroll, 1979). This has made the CSR concept very complex to be shared.

2.2 Measuring corporate social performance

Regarding empirical studies developed over last decades on CSP measuring, Shane and Spicer (1983) was one of the first published works to rely on externally produced ratings of CSP, gathering data from the USA Council on Economic Priorities. At that time, they concluded that in absence of mandated disclosure and reporting standards, voluntary disclosures tend to be inconsistent and non-comparable from firm to firm, even in the same industry (Shane and Spicer, 1983).

In 1994, several US researchers tried to solve the major problems in CSP measurements by using the Kinder, Lydenberg, Domini (KLD) database as a measurement of CSP. KLD rates over 650 corporations traded on the USA stock exchanges using various dimensions considered important to social performance. Because the KLD database was developed and maintained by an independent rating service that assessed CSP across a range of

dimensions related to stakeholder concerns, researchers argued that the KLD database brought a new, improved and consistent measurement of CSP for US companies (Waddock and Graves, 1997) with researchers starting to adopt this new measurement assessment in their research (Albinger and Freeman, 2000; Bendheim *et al.*, 1998; Berman *et al.*, 1999; Graves and Waddock, 1994; Greening and Turban, 2000; Griffin and Mahon, 1997; Johnson and Greening, 1999; Ruf, Muralidhar *et al.*, 2001; Waddock and Graves, 1997). The KLD database has been considered as the best information available for researchers studying CSP in the USA (Hillman and Keim, 2001).

Similar to the KLD database, a CSP database for Canadian firms, the Canadian Social Investment Database (CSID) was developed in 1992 by Michael Jantzi Research Associates, Inc. (MJRA). The CSID database specializes in the assessment of CSP for Canadian corporations and contains social profiles of over 400 publicly traded Canadian companies, including companies on the Toronto Stock Exchange (TSE) 300 Index. These measures are making their way into CSR research (Mahoney and Roberts, 2004; Mahoney and Thorne, 2005).

The CSID issues a set of ratings for each firm from eight perspectives of social performance: community, diversity, employee relations, environment, international, product, business practices and other. These dimensions reflect key stakeholder relationships that are important emerging influences on corporate strategy (Prahalad and Hamel, 1994).

The CSID ratings appear to be subject to the similar benefits and limitations as KLD ratings (Griffin and Mahon, 1997; Waddock and Graves, 1997; Wood and Jones, 1995). The CSID index offers comprehensive social responsibility ratings by using largely objective screening criteria applied consistently across a wide range of companies. It also has the benefit of third party, independent rankings of all TSE 300 companies with data gathered from a range of sources, both internal and external to the firm, but similar to the KLD (Graves and Waddock, 1994), the CSID index does not weight the different dimensions of CSP.

Another assessment issued according to ESG paradigm is Dow Jones Sustainability Index, whose ratings are carried out by *Robeco SAM*, an agency located in Zurich and meant to provide investors a weighted corporate sustainability assessment about securities they are going to trade. Toward a questionnaire submission, it measures a yearly score which includes corporate governance items, media and stakeholder analysis, risk and crisis management, codes of conduct/compliance/corruption and bribery, supply chain management, tax strategy, environmental and social reporting, operational eco-efficiency, labor practice indicators and human rights, human capital development, talent attraction and retention, corporate citizenship and philanthropy and a GRI mapping – index reporting GRI indicators relevant for the various questions in the corporate sustainability assessment.

2.3 The value relevance of impact investing on financial performance

The term Impact Investing was first coined in 2007, when the *Rockefeller Foundation* held a conference to discuss philanthropy, development and the need for building a global industry striving for investments with a positive social and environmental impact with financial leaders (Jackson and Harji, 2012). Ziegler and Schröder (2009) defined SRIs as an investment strategy characterized by the practice of choosing stocks via environmental and social screening methods. Sauer (1997) stated that socially responsible investors set their investment criteria in accordance with their personal value systems and beliefs. SRIs also involves one or more of the following selection and monitoring practices: negative screening of companies or sectors; positive investment in sustainable industries; analysis of companies for their environmental; social or governance performance; investing in the most sustainable companies within all sectors; and the engagement of companies regarding environmental, social or governance issues (Bilbao-Terol *et al.*, 2012).

SRI assets have experienced strong growth around the world (Ziegler and Schröder, 2009). For example, a 1200 per cent growth in SRI assets occurred between 1995 and 2005 in the

USA with this growth leading to SRI assets comprising approximately 10 per cent of the total US management assets and over 10 per cent of European funds (Ziegler and Schröder, 2009). According to the European Sustainable Investment Forum (EUROSIF) in Europe, all SRI strategies recorded high growth rates when compared with a growth of 21.7 per cent of the European investment market. These strategies reported growths ranging from +22.6 per cent for thematic investments to 132 per cent for Impact Investing (EUROSIF, 2013).

Investigations about the FP of sustainable firms have produced discordant conclusions, as certain studies (Graves and Waddock, 1994; Griffin and Mahon, 1997; Margolis and Walsh, 2001; Petersen and Vredenburg, 2009; Lee and Faff, 2009; Alonso-Almeida *et al.*, 2012) found superior FP from investments into CSR issues and projects, whereas other analyses concluded that CSR-related investments exhibit lower FP than traditional funds (Hamilton, Jo and Statman,1993; Lima Crisóstomo *et al.*, 2011; Statman, 2000;). Moreover, several studies, such as Bauer *et al.* (2005), Goldreyer and Diltz (1999), Sauer (1997) and Schroder (2007), have concluded that no statistically significant difference exists between the returns of ethically screened investments when compared to unscreened investments.

Graves and Waddock (1994) demonstrated that institutional investors prefer to promote CSR practices, choosing to invest in socially responsible organizations even if they are not socially responsible themselves. Griffin and Mahon (1997) explored the social and FP of six firms in the petrochemical industry between 1990 and 1992 and discovered that their quantifiable metrics indicated a positive relationship between the KLD and Fortune indices. Margolis and Walsh (2001) found 122 studies published between 1971 and 2001 and used these investigations to empirically examine the positive relationship between CSR and FP screening. By developing different portfolios of high-ranked and low-ranked equities, these authors found that SRI screening produces a highly significant increase in asset performance.

Petersen and Vredenburg (2009) investigated the oil sector in Canada, revealing evidence of economic value added by CSR practices and showing that investment efforts in CSR projects are recognized and rewarded in capital markets by a higher economic profitability. In addition, Lee and Faff (2009) found that European and American investors bet upon the success of CSR firms. In the Mexican case, del Mar Alonso-Almeida *et al.* (2012) showed that Mexican firms evinced a large, positive relationship between social responsibility and FP, as evaluated by the return on equity (ROE), return on asset (ROA), earnings per share and price over book value (P/VL) variables.

However, negative results of CSR evaluations do exist, as Mueller (1991), Hamilton *et al.* (1993), Statman (2000) and Lima Crisóstomo *et al.* (2011) all demonstrated that socially responsible mutual funds have lower performance than conventional mutual funds. Mueller (1991) examined the risk-adjusted returns of ten SRIs from 1984 to 1988 and found that socially responsible mutual funds earned an average of 1.03 per cent less in annual returns than comparable, unrestricted investments. Hamilton *et al.* (1993) used estimates of Jensen sAlpha¨ to examine the risk-adjusted performance of all the socially responsible mutual funds listed in the Lipper Analytical databank as of December 1990 and discovered that socially responsible mutual funds tend to exhibit similar or lower performance relative to comparable unrestricted mutual funds on a risk adjusted basis. Statman (2000) reported that the Domini Social Index, an index of socially responsible stocks, performed as well as the S&P 500 index during the 1990-1998 period. Finally, Lima Crisóstomo *et al.* (2011) discovered an inverse relationship between CSR and FP for 78 Brazilian firms from 2001 to 2006, conjecturing that this relationship was caused by the role of traditional cultural beliefs in producing a lack of motivation for investments into responsible firms.

In Europe, CSR rating announcements released by *Vigeo* Agency from January 2004 through December 2009 on European markets showed that willingness to trade depends mainly on prior private information and the content of the announcement. Resulting effects from disaggregated scores highlight that human resources and human rights significantly

influence investor trades, while environmental risk does not have an impact on trading behavior (Chollet *et al.*, 2015).

As mentioned above, other studies found no significant difference between the performance of socially responsible firm indices and the returns of unrestricted indices. For instance, Sauer (1997) compared the DSI with two unrestricted indices and concluded that the application of social responsibility screens does not necessarily produce an adverse impact on investment performance.

The empirical evidence presented in his paper clearly indicates that investors can choose SRIs that are consistent with their value system and beliefs without being forced into financial sacrifices. Goldreyer and Diltz (1999) considered an extended sample of ethical funds, including equity, bond, and balanced funds, using Jensen s¨alpha estimates, Sharpe ratios and Treynor ratios and concluded that social screening does not affect the investment performance of ethical mutual funds in any systematic way. Bauer *et al.* (2005) used an international database containing 103 German, UK and US ethical mutual funds and found no significant statistically difference in performance between ethical and conventional mutual fund returns after controlling for common factors, such as size, book-to-market and momentum. Schroder (2007) analyzed 29 SRI stock indices and found that these indices lead to neither a significant outperformance nor an underperformance compared with their benchmark indices.

Neo-classical economists argue that positive social performance causes a firm to incur costs that reduce profits and shareholder wealth (Friedman, 2002). This is consistent with a negative relationship between CSP and (Preston and O'Bannon, 1997; Waddock and Graves, 1997). The rationale for this linkage, labeled the managerial opportunism hypothesis, suggests that when FP is strong, managers will reduce expenditures on social performance because they can increase short-term profitability and increase any personal compensation tied to short-term profitability (Preston and O'Bannon, 1997). Conversely, managers will attempt to divert attention by expenditures on conspicuous social programs when FP is poor.

The neutral relationship is supported by the argument that the environment in which firms and society operate is so complex that a simple, direct, relationship between CSP and FP does not exist (Waddock and Graves, 1997). In addition, McWilliams and Siegel (2000) argue a non-existent relationship based upon a supply and demand theory of the firm. They assume shareholder wealth is maximized when firms produce at a profit-maximizing level, including the production of social performance. As a result, each firm will supply a different amount of social performance based on the unique demand for CSP that each firm experiences (McWilliams and Siegel, 2000). At equilibrium, profitability will be maximized and equal for each firm and the amount of CSP produced by each will be different (McWilliams and Siegel, 2000).

While some empirical works indicate an ambiguous relationship (Alexander and Buchholz, 1978; Aupperle *et al.*, 1985; Cochran and Wood, 1984; Shane and Spicer, 1983; Ullmann, 1985), the largest number of investigations found a positive relationship (McGuire, Schneeweis, and Branch, 1990; McGuire *et al.*, 1988; Simpson and Kohers, 2002; Waddock and Graves, 1997; Wokutch and Spencer, 1987). Waddock and Graves (1997) argue that the fundamental reason for the uncertainty between the CSP and FP relationship is the problem of measuring CSP.

Hence, Waddock and Graves (1997) used the KLD database as an improved measure of USA CSP and found a significant relationship. While no single accepted theoretical foundation with clear empirical predictions exists regarding the relationship between CSP and FP, it is believed that using the new measure of Canadian CSP will result in a significant relationship.

On this ground, it is clear that the European financial market has not yet been overviewed for comparing the listed FPs of companies to their CSPs. Moreover, until now the most used proxies to express the FP of a listed company have been variables that include earning

components such as ROA, ROE or other market multiples (Jain *et al.*, 2016). Thus, it could be inconsistent adopting measures which discount different accounting procedures and managerial manipulation, so market-based variables as abnormal returns are less susceptible to them because they refer to investors' evaluations and expectations of firm performance.

As follows, and considering the gap above described, this study tries to highlight the impact of ESG ratings issued by standard ethics agency on abnormal returns of Italian Blue Chips companies over the post-crisis period.

The purpose consists of exploring whether sustainable and socially responsible firms are awarded by investors' community and whether the Italian financial market has complete agreement with regards to ESG information.

3. Methodology of the study

When computing abnormal return as proxy of FPs, we have to know that it highlights the difference between the real return of a company and its expected return from the market. Such value, also known as Alpha or Excess Return, may assume positive or negative values, on the basis that the firm overcomes, or not, investor's expectations. Moreover, it denotes some risk factors unmet in investors' asset pricing.

As pointed out by Jensen (1967), in evaluating the performance of a risky security there are two distinct dimensions to be considered:

1. the ability of the portfolio manager or security analyst to increase returns on the portfolio through successful prediction of future security prices; and
2. the ability of the portfolio manager to minimize (through efficient diversification) the amount of insurable risk born by the portfolio's holders.

In capital assets pricing theory, Sharpe (1964), Lintner (1965) and Treynor (1962) formulated explicit measures of a portfolio's performance including the dimensions mentioned above. However, we shall focus on the problem of evaluating a portfolio manager's predictive ability to earn extra-returns from the market through a successful ESG analysis. In other words, we are going to show whether abnormal market returns are significantly related to the CSP of listed Italian companies, as well as whether sustainable asset management has a positive marginal effect on stock exchange trend.

In this work, we have developed Fama–French's three-factor model (1996) to quantify the abnormal stock returns (Chi and Gupta, 2009), using Jensen Alphas of Italian Blue Chips as the measure of difference in FP (Mallin *et al.*, 1995; Statman, 2000).

The statistical estimator meant to measure the abnormal returns is a multiple linear regression ordinary least squares (OLS):

$$(R_i - Rf_i) = \text{Alpha} + \beta_1(MRP_i) + \beta_2(SML_i) + \beta_3(HLM_i) + e_i$$

In this study, we measured the companies' daily log-returns belonging to the *Financial Times Stock Exchange Milano Indice di Borsa* (FTSE MIB) market basket from 2007 to 2015. Daily measurements were retrieved from Thomson Reuters database. The choice of using the logarithmic operator to express a security market yield is very common in financial practice, as the price daily change of a stock follows a log-normal distribution (Black and Scholes, 1973). This property, moreover, allows us to implement further quantitative analysis models with parametric assumptions.

The market price log-returns were chosen instead of the Total log-returns for two reasons. First, it is a common practice and shared in literature to analyze the price fluctuations regardless of the dividends' distribution policy of the corresponding company, and second,

it makes the rate of return neutral to phenomena like extraordinary dividend distribution which can bias the market estimation.

3.1 Analysis assumptions

Before proceeding with the discussion of the constant term "Alpha", the assumptions underlying expected return assessments are clarified. In particular, the capital asset pricing theory is based on the following assumptions:

- Individuals are rational decision-makers in building investment portfolios, with the objective of expected utility maximization from their capital allocation.
- Investors, being risk averse, choose efficient portfolios on the basis of the mean and variance estimation.
- Information circulates freely among investors.
- Investors have homogeneous expectations about the future trend of the companies' returns.
- There is a risk-free rate at which individuals can give and borrow any amount of capital.
- There are no taxes or transaction costs and also the costs of failure are negligible, and all assets are liquid, perfectly divisible and therefore marketable.

In an equilibrium market condition, investors cannot influence the prices of individual assets.

On the basis of these assumptions, it is possible to calculate the expected return that investors require as compensation for bearing any systematic risk level, i.e. not furtherly diversifiable through the inclusion of new securities in the investment portfolio.

Coming back to the Alpha calculation, and taking into account the above assumptions, if these values are not zero there is a market inefficiency condition because of the presence of abnormal returns that investors are no longer able to identify by the traditional tools of quantitative finance.

In this case, the goal was to verify if the Italian financial market has registered the presence of abnormal returns from the aftermath of the of the USA 2007 sub-prime mortgage crisis to an apparent quiet condition that occurred in 2015. In Alpha computation, there can be three situations:

1. Negative values which mean that the risk-adjusted return of a company is less than the investors' expectations.
2. Null values which imply a perfect alignment with market expectations.
3. Positive values which feature a higher return compared to risk-adjusted expected returns.

The intercept Alpha should be zero according to Sharpe and Lintner capital asset pricing model (multi-factor CAPM model in our study); hence, there are alpha values when investors do not have complete agreement on asset returns (Sharpe, 1964; Lintner, 1965).

Once the zero-diversity of the abnormal returns is certified by applying the Fama and French model, the following research questions were posed:

RQ1. Are Italian responsible companies outperforming investors' expectations?

RQ2. Could there be a reverse causation between CSP e CFP?

To measure the corporate sustainability performance of the 40 major Italian companies, we got the ESG assessment released by STANDARD ETHICS Agency.

Standard Ethics differs from its peers and other companies since it does not give an own interpretation to the definition of CSR and Corporate Governance. Its model is exclusively inspired by the principles and guidelines of the European Union, OECD and United Nations. This approach, adopted in 2001, is referred to by Standard Ethics as the Institutional approach, because it is based on Institutional guidelines and is not stakeholder-oriented.

Following, in Figure 1, the yearly trend of ESG Ratings from 2007 to 2015, using as official source the press releases published each year by Standards Ethics Agency. It is important to highlight that there might be companies accounted for only a fraction of that period as a result of mergers, acquisitions or delisting procedures. In fact, seven companies that have been merged or delisted from the first 40 companies over the timeline considered were included.

4. Data collection and analysis

To verify the extent of the impact of an ESG Rating on a company's abnormal return, a panel data analysis was developed using STATA statistical software.

Statistically, fixed effects panel analysis is always a reasonable thing to do with panel data, but it may not be the most efficient model to run. Random effects panel analysis will give us better *p*-values, as they are a more efficient estimator, so we should run random effects if it is statistically justifiable to do so.

Before running a specific H-test (Hausman, 1978), it was carried out the *Breusch and Pagan Lagrangian multiplier test for Random Effects*, for understanding if Random Effects Analysis is the most appropriate to the study. In this case study, the test shows the presence of the random effects, being the *P-value* equal to zero[1]. According to *H-test* results, is possible to assert that a Fixed Effects OLS Analysis is more appropriate in this case, being the null hypothesis to be rejected[2].

It should be pointed out that, despite the FTSE MIB is a sample which reflects the performance of about 80 per cent of Italian stock market fluctuations; in this case, it is representative of the whole Italian financial market, as the 40 most highly capitalized companies are also all of the companies on which Standard Ethics issues a Rating. Therefore, the empirical study of this research work considers the 40 companies as all Italian entities observable and susceptible to an ESG rating.

Summarizing the steps followed above, an *F-test* was first developed by applying a *fixed effects panel analysis* for identifying the nature of the estimators, these are *pooled OLS* estimators or *within* estimators. The significance of this test shows that the panel structure has individual effects, so it is better to develop a *within* estimation.

Afterwards, it was run a *random effects panel analysis* for testing whether the variance of each random intercept or slope is significantly different from zero.

Once verified the correlation above, it is important to test if individual effects variance is equal to zero over the timeframe, and the *Lagrangian multiplier test* is meant to solve this matter.

The *Hausman test* instead clarifies which model between fixed and random effects has to be chosen. According to the results coming out from this test, null hypothesis has to be rejected and the more appropriate and consistent analysis approach to be used is an *OLS fixed effects (within) regression*.

4.1 Dependent variable

In developing the model for this study and regarding the dependent variable, we used *compound abnormal log-returns* values (CALR) yearly calculated up to 2015. The annual values of abnormal log-return (ALR), as explained in the methodology, are the constant

Figure 1 Yearly trend of ESG ratings from 2007 to 2015

COMPANY	2007	2008	2009	2010	2011	2012	2013	2014	2015
A2A	NOT INCLUDED	NOT INCLUDED	EE-	EE-	EE-	EE-	EE-	EE-	EE-
ANSALDO	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	E+	E+	E+	SOS	E+
ASSICURAZIONI GENERALI	EE-	EE-	EE-	EE-	EE-	EE	EE	EE	EE
ATLANTIA	E-	E-	E-	E	E	E	E	E	E
AUTOGRILL	E	E	E	E	E	E	E	E	E
AZIMUT HOLDING	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE-	EE	EE	EE	EE
BANCA MPS	EE-	EE-	EE-	EE-	EE-	EE-	EE-	EE-	E+
BANCA POPOLARE EMILIA ROMAGNA	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE	EE	EE	EE
BANCO POPOLARE	EE+	EE+	EE+	EE	EE	EE	EE	EE	EE
BANCO POPOLARE DI MILANO	EE	EE	EE	EE	EE	SOS	SOS	EE-	EE-
BUZZI UNICEM	E	E	E	E	E	E	E	E	E
CAMPARI	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE-	EE-	EE-	EE-	EE-	EE-
CIR - Compagnie Industriali Riunite S.p.A.	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	SOS	SOS	SOS	SOS	SOS
CNH Industrial N.V.	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E	EE-	E+	E	E
DIASORIN	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	E+	EE-	NOT INCLUDED	NOT INCLUDED
ENEL	EE	EE	EE	EE	EE	EE+	EE+	EE+	EE+
ENEL GREEN POWER	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE-	EE	EE	EE	EE
ENI	EE+	EE+	EE+	EE+	EE+	EEE-	EEE-	EEE-	EEE-
EXOR	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E	E	E	E	E	E
Fiat Chrysler Automobiles N.V.	EE-	EE-	EE-	EE	EE	EE-	E+	E	E
FINMECCANICA	EE-	EE-	EE-	EE-	SOS	SOS	SOS	EE-	EE-
GEOX	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE-	SOS	SOS	SOS	SOS	SOS
IMPREGILO	SOS	SOS	SOS	E-	E-	E-	E-	NOT INCLUDED	NOT INCLUDED
INTESA SAN PAOLO	E	E	E	E+	E+	EE-	EE-	EE-	EE-
ITALCEMENTI	E	E	E	E+	SOS	SOS	SOS	SOS	SOS
LUXOTTICA	EE-	EE-	EE-	EE-	EE-	EE-	EE-	EE-	EE-
MEDIASET	E-	E-	E-	E	E-	E-	E-	E-	E-
MEDIOBANCA	E	E	E	E	E	E+	E+	E+	E+
MEDIOLANUM	E-	E-	E-	E-	E-	E-	E-	E-	E-
MONCLER	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	PEN	E
MONDADORI	E+	SOS	SOS	E	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED
PARMALAT	EE+	EE+	EE+	EEE-	E+	E	SOS	NOT INCLUDED	NOT INCLUDED
PIRELLI&C.	E+	E+	E+	E+	E+	E+	E+	E+	EE
PRYSMIAN	SOS	SOS	SOS	E+	E+	EE-	EE	EE	EE
S. FERRAGAMO	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E	E	E	E
SAIPEM	EE+	EE+	EE+	EE+	EE+	EE+	EE+	EE	EE
SNAM	EE	EE	EE	EE-	EE-	EE-	EE-	EE-	EE-
STmicroelectronics	EE	EE	EE	EE	EE	EE	EE	EE	EE
TELECOM ITALIA	E	E	EE-	EE-	EE-	EE-	EE-	EE-	EE-
TENARIS	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	E+	E+	E+	E+	E+
TERNA	E	NOT INCLUDED	NOT INCLUDED	E	E	E	E	E	E
TOD'S	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	E+	E+	E+	E+
UBI BANCA	EE	EE	EE	EE	EE	EE	EE	EE	EE
UNICREDIT	EE	EE	EE	EE-	EE-	EE	EE	EE+	EE+
UNIPOL SAI	E-	E-	E-	E-	SOS	SOS	SOS	E	E+
WORLD DUTY FREE	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	E+	E+
YOOX	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	NOT INCLUDED	EE-	EE-

Source: Standard ethics

terms of a multiple regression analysis, well known in literature as Fama and French's three-factor model (1976).

The compound approach is aligned with "buy and hold" investor horizon (Mitchell and Stafford, 2000), because if an investor holds a security over a long timeline it is reasonable to capitalize the annual abnormal returns without considering them as stand-alone yearly data. Therefore, the annual dependent variable of this panel model is obtained by capitalizing continuously the previous yearly abnormal return to the current one over the research timeframe; since the yearly long term extra-return of a security is affected by its preceding yearly extra-returns.

From 2008 to 2015 (the year 2007 is not continuously compounded being the first term), the annual buy and hold compound abnormal log-return (BHCALR) for each company under investigation was calculated using the following formula:

The compound abnormal return is used to determine the effects that events, such as lawsuits or buyouts, have on stock prices as well as for determining how accurate the asset pricing model is in calculating the expected return (Barber and Lyon, 1997).

4.2 Independent and control variables

For the years 2007 through 2015, the CSP of Italian Blue Chip companies was measured using ESG ratings issued by Standard Ethics, for the reasons previously mentioned in the methodology. Being expressed by a composite order of letters (EEE, EE+, EE, etc.), these ratings were converted into numbers using an ordinal scale. In meeting the need to quantify these ESG evaluations, a hierarchical approach was adopted giving a number to each rating as follows:

- EEE = 9
- EEE- = 8
- EE+ = 7
- EE = 6
- EE- = 5
- E+ = 4
- E = 3
- E- = 2
- F = 1
- Pending/Suspended/Not Included = 0

These measures are used in BHCALR and CSP multi-year regressions to answer the research question regarding the impact of sustainability issues on investment capital.

For isolating the effect of the ESG ratings on compound abnormal returns for other factors, some control variables typical of fundamental analysis were included in the Panel Model. These variables are derived from the data of the individual company's financial statements and are expression of a dimension that investors monitor in building an investment portfolio. In this analysis, the following sizes are referenced:

- Earnings before interest, taxes, depreciation and amortization (EBITDA)/Tot. equity ratio;
- Debt/Equity ratio;
- Total Asset; and
- Reinvestment rate.

The industry sectors are not considered because they are the same over the timeframe taken into consideration; hence, it is useless considering variables which do not change over time.

4.3 Descriptive statistics and empirical results

In this section, the number of companies getting an ESG evaluation from 2007 to 2015 is analyzed. As follows, in Figure 2, there is one histogram for each year under observation having on the *x*-axis all ESG Ratings categories and on the *y*-axis the number of companies receiving those ratings.

What clearly results from the Figure 2, is that over the observation timeframe the number of sustainability companies has been increasing continuously. At the same time, ESG factors have been gradually integrated by Italian listed companies in their corporate strategies, showing also a qualitative improvement in ESG scoring up to 2015.

As mentioned initially, we chose a *FIXED EFFECTS OLS* approach according to Hausman test results, and the reader can observe in Table I that both in default and White–Huber standard error the coefficients related to ESG Ratings are not significant.

To test *RQ2*, we run the same longitudinal estimation after testing according to Hausman model. In the same table, the reader can find also the parameters about the reverse causation between CSP and CFP.

Figure 2 Companies receiving an ESG rating (STATA software elaboration)

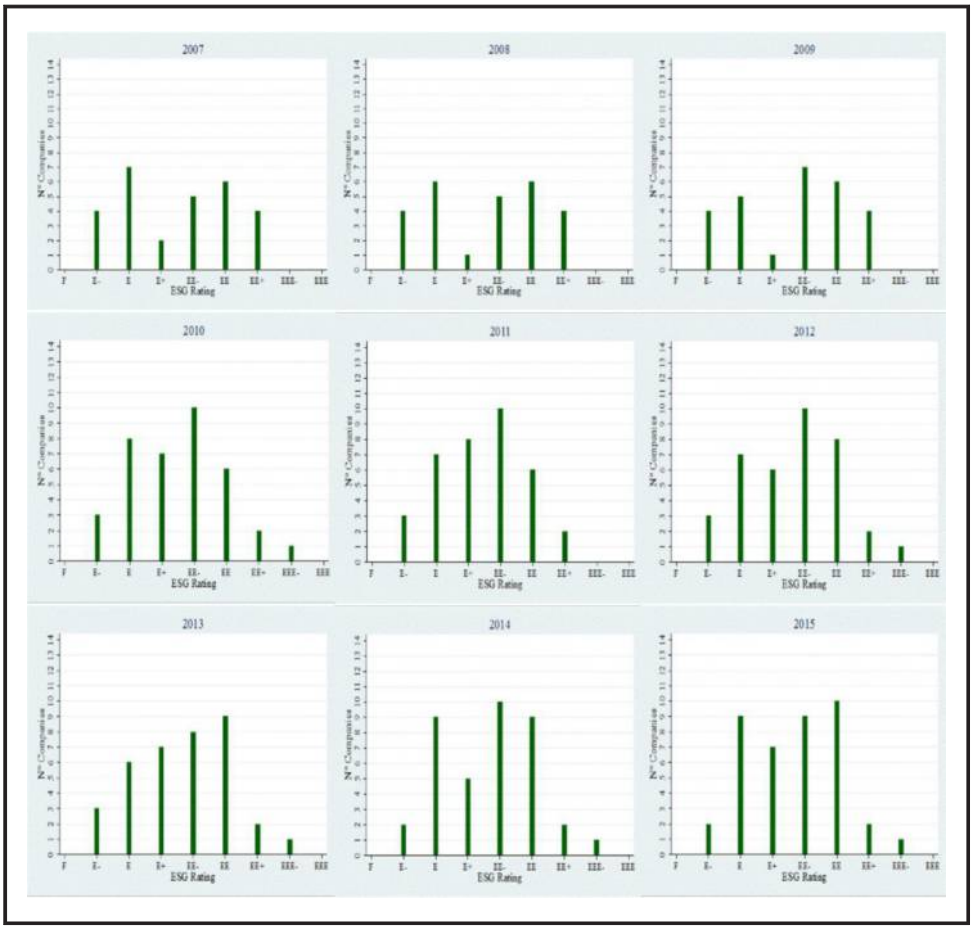

Table I

Panel data model	*Dependent variable: Jensen's alpha (*RQ1*)*	*Dependent variable: Jensen's alpha (*RQ1*)*	*Dependent variable: ESG rating (*RQ2*)*	*Dependent variable: ESG rating (*RQ2*)*
Statistical approach	Fixed effects OLS (Default standard error)	Fixed effects OLS (White–Huber standard error)	Fixed effects OLS (Default standard error)	Fixed effects OLS (White–Huber standard error)
Independent variables				
ESG rating	−0.00029	−0.00029		
Jensen's alpha			−61.30837	−61.30837
Control variables				
EBITDA to EQUITY	0.0006869*	0.0006869*	−1.350567**	−1.350567**
DEBT to EQUITY	−0.000053	−0.000053**	−0.0703254	−0.0703254
Total asset (*ln*)	−0.0003479	−0.0003479	3.381877***	3.381877***
ReinvestmentRate	−0.0005467	−0.0005467	1.42053**	1.42053**
F(Fisher-Snedecor)	1.72	3.78***	15.98***	6.95***
Chi^2	–	–	–	–

Notes: ***; **; * indicate statistical significance at the 0.01, 0.05, and 0.10 level, respectively

Finally, for testing the significance of the findings, we developed the research analysis on *STATA* software using the dataset collected whose parameters are the following:

5. Limits and suggestions for future research

The results came out from the research work, mainly concern the measurement of CSP and measurement error that follows. The ethical rating issued by the agency standard ethics and used in the analysis as expression of the sustainability degrees of the major Italian companies listed may not include all the variables that can influence the social performance of a listed company.

As widely explained in the methodological part, the choice of standard ethics is related to the regulatory approach that it follows in sustainability scoring and to the lack of subjective interpretations concerning CSR and corporate sustainability definitions. In addition, the analysis only shows how price market returns of Italian Blue Chips depend on their social performance, but does not point out the where the CSR fails.

Instead, regarding future research ideas, it might be interesting to evaluate the impact of ESG rating on the risk profile of a sustainable investment portfolio using specific tools such as value at risk, as well as to evaluate the trade-off "Risk-Return" of high ranking ESG securities compared to those securities gathering low/no ESG evaluation.

The goal would be verifying whether an ESG corporate strategy could be a useful tool on the one hand to recognize a long extra-return and on the other hand, to lower the idiosyncratic risk exposure.

In addition, the operational risk reduction because of high standards of CSR could have an impact on cost of capital. In other words, it would be interesting to explore whether any down (up)-grade according to the ESG paradigm can reduce the cost of financial obligations of a listed company.

6. Conclusion

As Figure 2 shows, there has been an increasing number of ESG evaluated firms and an improvement, over time, of ESG Rating quality. Moreover, as the readers can see in Figure 2, in the aftermath of USA sub-prime mortgages crisis, Italian firms have been appearing more socially responsible and sustainable, as if managers had considered the socially responsible corporate strategies a reliable therapy against global contagion.

Using a publicly accessible dataset from standard ethics agency, we tried to evidence the effect of CSP on the abnormal FP, which classical market analysis tools sometimes are not able to meet.

We found no statistically significant evidence of ESG assessment on Italian Blue Chips' abnormal returns (Table I – *RQ1*). Additionally, we found that market investors pay attention anyway to typical risk factors such as EBITDA and financial leverage, implying that the other variables could be considered under control and risk manageable.

Our results therefore support the hypothesis that CSP does not have a systematic and significant effect, either positive or negative, on FTSE MIB's abnormal returns; hence, investors do not leverage on corporate sustainability and social responsibility in their stock – picking skills.

Basing on parameters carried out in this study, we conclude that over our sample period, Italian stock exchange market does not seem to be rewarding in regard to socially responsible companies, given that the abnormal return values are not related to ESG rating.

As we investigated whether ESG factors have been loading significantly, at some levels we can say that social responsibility should not be considered a reliable financial leverage for Italian blue chips deploying an ESG corporate strategy.

Moreover, well-performing companies on stock exchange market have a low willingness to invest in CSR concern; therefore, managers do not consider ethics an asset meant to build a lasting reputational value even when they are financially able to undertake SRIs (Table I – *RQ2*).

Notes

1. Results are available upon request.
2. Results are available upon request.

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