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# Financial Market Reactions to Variations in Corporate Social Performance

## CAHIER DE RECHERCHE

par

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## Préambule

La gestion financière responsable vise la maximisation de la richesse relative au risque dans le respect du bien commun des diverses parties prenantes, actuelles et futures, tant de l'entreprise que de l'économie en général. Bien que ce concept ne soit pas en contradiction avec la définition de la théorie financière moderne, les applications qui en découlent exigent un comportement à la fois financièrement et socialement responsable. La gestion responsable des risques financiers, le cadre réglementaire et les mécanismes de saine gouvernance doivent pallier aux lacunes d'un système parfois trop permissif et naïf à l'égard des actions des intervenants de la libre entreprise.

Or, certaines pratiques de l'industrie de la finance et de dirigeants d'entreprises ont été sévèrement critiquées depuis le début des années 2000. De la bulle technologique (2000) jusqu'à la mise en lumière de crimes financiers [Enron (2001) et Worldcom (2002)], en passant par la mauvaise évaluation des titres toxiques lors de la crise des subprimes (2007), la fragilité du secteur financier américain (2008) et le lourd endettement de certains pays souverains, la dernière décennie a été marquée par plusieurs événements qui font ressortir plusieurs éléments inadéquats de la gestion financière. Une gestion de risque plus responsable, une meilleure compréhension des comportements des gestionnaires, des modèles d'évaluation plus performants et complets intégrant des critères extra-financiers, l'établissement d'un cadre réglementaire axé sur la pérennité du bien commun d'une société constituent autant de pistes de solution auxquels doivent s'intéresser tant les académiciens que les professionnels de l'industrie. C'est en mettant à contribution tant le savoir scientifique et pratique que nous pourrons faire passer la finance responsable d'un positionnement en périphérie de la finance fondamentale à une place plus centrale. Le développement des connaissances en finance responsable est au cœur de la mission et des intérêts de recherche des membres du Groupe de Recherche en Finance Appliquée (GReFA) de l'Université de Sherbrooke.

À ce jour, la littérature financière académique généralement suggère que les meilleures entreprises dans la prise en compte des critères Environnement, Société et de saine Gouvernance (critères ESG) dans leur gestion ne semblent pas offrir des performances supérieures à celles qui à l'opposé négligent ces critères. Ce constat a souvent été considéré comme étant contre intuitif sinon décevant par les adeptes de la finance responsable. La présente étude apporte toutefois un éclairage nouveau sur l'importance des critères ESG dans l'entreprise et sur la prise en compte de ceux-ci par les marchés boursiers. Nos résultats suggèrent en effet que si la prise en compte de ces critères n'affecte pas directement la performance des entreprises, elle affecte néanmoins leur risque. Ainsi, les entreprises qui négligent ces critères ESG sont pénalisées par les investisseurs, en étant jugées plus risquées.

# FINANCIAL MARKET REACTIONS TO VARIATIONS IN CORPORATE SOCIAL PERFORMANCE<sup>±</sup>

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## First Draft Version

This study examines the differential impacts of social performance rating upgrades and downgrades on the financial performance and risk levels of 242 Canadian firms from 2010 to 2011. The use of a conditional model allows for consideration of changes in the economic context, a factor frequently ignored in event studies. The results show that a rating downgrade positively affects systematic risk. The market therefore appears to penalize socially irresponsible firms with a higher financial risk level yet fails to reward the performance of firms that cultivate their social image. There is limited evidence that downgraded firms, i.e. those considered to be less socially responsible, have higher positive abnormal returns. The results support the risk/performance relationship, whereby irresponsible firms must deliver better financial performance as a result of their higher risk rating.

**Key words:** conditional model, corporate social responsibility, event study, financial performance, risk, social performance.

JEL G10, G14, M14

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# **Financial market reactions to variations on corporate social performance**

## **1. Introduction**

Although the concept of socially responsible investing (hereafter SRI) originated in the US in the 17<sup>th</sup> century with the Quaker religious movement, it did not take hold institutionally until the late 1920s, when the first “ethical” investment funds were created. The funds gained momentum during the protest movement against so-called sin stocks, when investors spurned firms that produced alcohol and tobacco or supported the gambling industry. However, the movement did not firmly take hold until the second half of the 1990s, when the number of ethical funds rose dramatically. According to the US Social Investment Forum, there were 250 socially responsible mutual funds in the United States in 2010, with assets totalling \$316.1 billion; by contrast, only 55 such funds existed in 1995, with assets of \$12 billion. The number of ethical funds thus rose by more than 350% in the intervening period, their assets growing exponentially by more than 2,500%. Currently, more than 10% of all assets under management are in socially responsible funds.

Growing enthusiasm for SRI has led to a surge of new rating agencies specializing in social and environmental rating and scoring (e.g. KLD, Thompson Reuter’s ASSET4, MSCI, EIRIS, Jantzi-Sustainalytics, etc.). In addition to their main role of providing investors with information on corporate social responsibility (CSR) strategies, some agencies also publish extra-financial corporate social performance scores. Based on this growing interest, it may be appropriate to ask whether stock prices (or financial markets in general) react to the ethical and social concerns of

firms. In other words, do the social and environmental scores assigned by extra-financial rating agencies really carry any weight?

The current investigation attempts to answer this question in the form of an event study that examines whether variations in extra-financial scores (for social and environmental reporting) affect financial markets, much as changes in credit ratings do (Jorion and Zhang, 2007; Holthausen and Leftwic, 1986; and Weinstein, 1977).

This topic is important for two reasons. Firstly, big banks like JPMorgan Chase and Deutsche Bank and institutional investors have demonstrated a growing interest in ethical, social and environmental issues over the past few years.<sup>1,2</sup> Since institutional investors are the main clients of extra-financial rating agencies, and in view of the importance of such agencies on the financial markets, extra-financial scores may play a role in the market valuation of securities.<sup>3</sup> Secondly, given the variety of CSR definitions, performance measurements and methodology issues, there is no consensus in the literature on the relationship between corporate social and financial performance (Benson et al., 2011; Edmans, 2011; Galema et al., 2008). Some studies found a positive relationship (Hillman and Keim, 2001), while others noted the opposite (Brammer et al., 2006.), or no relationship at all (Renneboog et al., 2008). Some conclusions about the existence of a negative relationship between social and financial performance are based on neoclassical thinking. Specifically, CSR investments divert the firm's precious resources away from shareholders, and, as Milton Friedman (1970) argued, "...insofar as the firm's actions [are] in accord with their "social responsibility" [and] reduce returns to stockholders, [it] is spending

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<sup>1</sup> Cobley (2009), "Banks cut back analysis on social responsibility," *The Wall Street Journal*, 11 June, 2009.

<sup>2</sup> "Big investors want SRI research," *Financial Times Fund Management Supplement*, 18 October 2004, p. 1.

<sup>3</sup> About 64% of investments in the US are held by institutional investors. Their presence on the corporate bond market is even stronger, at 86% of total investments (Oikonomou, et al. [2011]).

their money.” Proponents of a positive relationship between corporate social and financial performance base their views on stakeholder theory (Freeman, 1984), which states that the strategic management of a firm’s relationship with its stakeholders can lead to improved performance. Conversely, lack of social or environmental responsibility can increase a firm’s exposure to different types of risk (operational, market, liquidity, default and so on).

The current study proposes an innovative method for investigating the impact of social corporate performance and may shed new light on the fairly controversial issue of whether CSR strategies affect corporate financial performance. It also examines the question of whether changes in scoring affect risk without necessarily generating abnormal performance.

The study’s main contributions to the literature are the following. First, rather than analyzing the impact of scores on corporate financial performance as most previous empirical studies have done (frequently with mitigated results), we examine the effect of changes in social performance scores on corporate financial performance and risk assessment. To this end, a data sample is collected from extra-financial rating agency Jantzi-Sustainalytics,<sup>4</sup> and impacts on Canadian firms are analyzed. Although using information from Canada’s leading agency would be useful for studying the effect of CSR criteria on firms, the goal of this research is rather to determine the ability of Jantzi-Sustainalytics scores’ changes to predict returns and risk in the Canadian stock market. To analyze the effect of score variations on firm performance (alpha) and systematic risk (beta), the conditional model framework by Ferson and Schadt (1996) and

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<sup>4</sup> Jantzi-Sustainalytics is the leading social and environmental performance rating agency in Canada and counts most of Canada’s institutional investors among its clients. It was created in January 2010 from the merger of Sustainalytics with Michael Jantzi Research Associates, Inc. (MJRA), which had been developing the Canadian Social Investment Database (CSID) since 1992. In January 2010, after merging with Sustainalytics, Jantzi changed its method of computing ratings. To avoid any methodological bias, we focus on the period between January 2010 and December 2011.

Christopherson, Ferson and Glassman (1998) is adopted, allowing the study to condition performance and risk factors on pre-determined macroeconomic variables and variations in firms' social performance scores. The advantage of this particular approach is that the respective impacts of the economic context and events (in this case, changes in scores) on corporate financial performance and risk can be assessed separately.<sup>5</sup> By comparing the results of conditional and classical modeling, potential biases resulting from the absence of macroeconomic variables in unconditional models are identified. The use of conditional models may help avoid the mistake of wrongly attributing the abnormal returns, related to a specific economic context, to social performance scores. By distinguishing events by scoring type (i.e. environmental, social and governance) , the study also highlights differential impacts of upgrades and downgrades of social performance scores on corporate firm financial performance and risk.

The main results show that the impact of variations in social performance scores on abnormal returns is both wide-ranging and fairly mitigated, and its explanatory power is generally quite weak. In contrast, results for the impact on risk are quite clear and with higher significance levels. Specifically, the impact of variations in corporate social performance scores on systematic risk is asymmetrical. Although downgrades in performance seem to increase long-term risk, the impact of improved social performance is less obvious. It appears that the market penalizes social irresponsible firms by assessing their risk higher, yet does not reward those that cultivate their social image. However, improvements in governance performance seem to reduce firms'

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<sup>5</sup> In fact, social performance results measured using ESG criteria and macro-economic factors may co-vary. Given the cost of fulfilling ESG criteria during difficult economic times, firms may reduce their investments in CSR projects and thereby appear to be less observant of CSR criteria. This may negatively affect their social rating by extra-financial rating agencies. It has also been said, to the contrary, that a higher social performance rating should be expected during periods of economic uncertainty (Oikonomou, 2012) when firms may be more inclined to implement practices, including socially responsible ones, to reduce risk (Chen et al, 2010).

systematic risk in the long term. This trend is not duplicated in regard to environmental or social performance, where only bad performance elicits a (negative) reaction.

When the impact of corporate performance is differentiated by firm scores, the effect is more pronounced for firms that have higher scores. This effect is observed for almost every estimation window. Conversely, the effect is less pronounced for firms with lower scores (mainly small cap firms). These results may be explained by the fact that highly rated firms, which are usually large enterprises, are more sensitive to information about their reputation, and financial stakes are greater.

The rest of the study is structured as follows. Section 2 presents a summary of the literature on the impact of social performance on shareholder wealth (return and risk). Section 3 describes the data used, and sections 4 and 5 present the model used and the empirical results obtained. The conclusions are presented in section 6.

## **2. Social performance and shareholder wealth: a literature review**

### **2.1 Agency theory and stakeholder theory**

Studies on the relationship between corporate social and financial performance are based mainly on agency and stakeholder theory. Drawing on agency theory, neo-classical economists maintain that CSR projects usually have a negative effect on shareholders. According to the economic “Friedman-esque” view, “shareholders entrust managers with their investment solely to maximize long-term returns, not so that managers can use the proceeds to underwrite their urge to better the world” (Luo and Bhattacharya (2009)). According to this school of thought, CRS investments are expensive and can divert financial resources from, more useful, areas like advertising or research and development. Some researchers describe the discontinuation of

activities or ethically detrimental product lines (e.g. Wright & Ferris, 1997) or projects that involve promoting community development plans or investments in environmental protection technology (e.g. Klassen and McLaughlin, 1996), as costly sacrifices for shareholders. Lastly, agency theory authors (e.g. McWilliams and Siegel, 2001) claim that social performance does not improve firm wealth in the long run.

Contrary to liberal economics, stakeholder theory (Freeman, 1984; Porter and van der Linde, 1995) argues that improvements in economic and financial performance, and even reduction of financial risk, are in the interest of stakeholders. For example, good relations with employees, suppliers and clients are necessary for the firm's viability and economic success (Jones, 1995) since they create sustainable competitive advantages (Hillman and Keim, 2001; Branco and Rodrigues, 2006). For stakeholder theory proponents, firms that identify and manage their relationships with principal stakeholders are more likely to have the following benefits in the long term:

- Elicit client loyalty and even attract new socially responsible customers, thus increasing sales (Hillman and Keim, 2001; Luo and Bhattacharya, 2006); Attract competent employees, increase retention rates in the firm and thereby improve firm productivity (Varadarajan and Menon, 1988; Turban and Greening, 1997).;
- Attract financial resources from socially responsible investors, and even gain access to more capital compared to firms that fail to pay attention to their social image (Kapstein, 2001);
- Lessen the likelihood of negative regulatory, legislative or fiscal action (Freeman, 1984; Berman et al, 1999; Ullman, 1985). . In addition, good CSR references make for efficient government lobbying for tax breaks (Hillman and Keim, 2001);

- Improve firm reputation by way of positive moral capital (Godfrey, 2005), potentially softening judgments against the firm in challenging situations such as the discontinuation of a product (due to deleterious effects, etc.) and enhance protection from the negative effects of major systemic shocks in the economy, and thereby maintain its financial results (Fombrun, 2005; Peloza, 2006; Freeman et al, 2008).

## **2.2 Empirical literature**

The empirical literature on the impact of social performance is abundant and can be classified into two categories: studies on the impact on financial performance and those on the effect on risk. A few studies have dealt with both aspects simultaneously. Across the literature, there are wide disparities among the proxy variables used to measure social performance, financial performance and financial risk, making it difficult to compare studies that examine relationships among these variables.

In the Canadian context, Makni et al. (2009) examined the causality (Granger) between corporate social and financial performance (ROA, ROE and stock returns), using annual scores from the Jantzi database to measure the social performance of 179 firms between 2004 and 2005. Like Mahoney and Roberts (2007), they found no significant link between overall social performance results and corporate financial performance, with the exception of market returns, for which they found a negative relationship. However, in examining individual social performance factors, they note that environmental factors have a significant one-directional negative impact on each of the three financial performance measures (ROA, ROE and stock prices). This result seems to corroborate, at least in the short term, neoclassical thinking whereby corporate socially

responsible behavior increases costs and reduces shareholder wealth (Vance, 1975, Waddock and Graves, 1997).

Studies in the U.S. , evidently more numerous, use a wide range of proxy variables to measure social performance. Edmans (2011) applies Fortune magazine's annual rankings of the 100 best companies to work for in the US to examine the relationship between employee satisfaction and long-term stock returns. Using Carhart's (1997) four-factor model, the author observes that a portfolio consisting of these 100 firms would have yielded an average annual return (alpha) of 3.5% between 1984 and 2009, i.e. 2.1% above the benchmark. In addition, these firms are more likely to release good quarterly results.

Filbeck and Preece (2003) perform a similar study from 1987 to 1999. In investigating market reactions to Fortune rankings, they obtain significant average abnormal returns of 4% on the publication date and 11.8% one year later. The positive results of these two studies may explain the importance of firm reputation or could also be due to the wide readership of Fortune magazine. The main conclusion to draw from both empirical studies is that investors' expectations of firm performance and employee satisfaction are significantly and positively correlated. Therefore, investing in socially responsible firms (or at least in the employee satisfaction aspect) leads to expectations of improved returns.

In the same vein, McGuire et al. (1988) use rankings from a sample of Fortune magazine's list of America's most admired companies (MAC), along with other financial performance measures (total returns, asset growth, unconditional alpha, etc.) and risk measures (debt leverage and unconditional beta), as proxy variables for measuring corporate social responsibility. They note that social performance is positively (and strongly) related to financial performance and negatively (and less strongly) related to risk factors.

Luo and Bhattacharya (2009) examine the effect of social performance on firm idiosyncratic and systematic risk from 2002 to 2003, using the Fortune-MAC social performance measure which individually scores firms based on their CSR activities relative to those of their major competitors. Social performance is found to be negatively correlated to risk factors.

Oikonomou et al. (2012) arrive at the same conclusions using the KLD database. Drawing on panel data on more than 760 US firms between 1992 and 2009, corresponding to about 7,000 firm/year observations, the authors conclude that being irresponsible in areas such as the environment, employment and the community increases a firm's systematic risk (positive correlation). Conversely, systematic risk is significantly and negatively affected when firms demonstrate a high level of responsibility in areas such as the community, diversity, employment, quality and product safety. Oikonomou et al. (2012) also examine the impact of ESG criteria on firm risk, looking separately at periods of strong and weak financial market volatility. They conclude that during times of economic uncertainty (high financial market volatility), firms with poor employment and environmental records experience high share price volatility. They also find that the market does not particularly reward those with sound social practices. Finally, during periods of relative financial stability characterized by weak volatility, firms with good diversity and employment practices experience lower stock risk, yet those with poor social and environmental records do not appear to be particularly penalized.

In sum, a large proportion of studies note that social performance has a positive impact on financial performance and a negative impact on financial risk, whether systematic or idiosyncratic. These results are confirmed by Orlitzky and Benjamin's (2001) meta-analysis. To our knowledge, there is no study that examines simultaneously the impact of score changes on

firm performance and risk in conditions of risk variances triggered by economic and financial conditions. The present study attempts to fill that gap.

### **3. Research hypotheses and methodology**

#### **3.1 Research hypotheses**

From the literature review in the preceding section, we anticipate the effect of score changes on short term performance to be either positive or negative since positive and negative consequences of CSR should cancel out. Specifically, liberal economic theory (negative effects) and stakeholder theory (positive effects) should neutralize investors' expectations. This is highlighted in the first hypothesis:

*H1: Variations in social corporate performance should have no effect on financial performance.*

However, while the conflicting expectations imply a null impact on performance, we anticipate a significant impact on risk. Specifically, we expect firms' betas to vary according to their CSR. A firm that experiences an increase (decrease) in social performance should show significantly lower (higher) betas since the risk of being associated with a socially negative event is diminished (enhanced), thereby reducing (increasing) operational and reputational risks. This is summarized in the second research hypothesis:

*H2: Positive (negative) variations in social corporate performance should have a negative (positive) effect on risk.*

This implies that an increase (decrease) in social performance should be negatively (positively) correlated with shareholders' required return and, consequently, with the firm's cost of capital. This also suggests that it would be counter-intuitive to associate an increase in social performance with an abnormally positive long-term performance. Specifically, such a

relationship would imply that, in the long run, the expected return of more socially responsible firm should be superior to a less socially responsible firm. On the contrary, the expected stock return (or cost) must be lower for socially responsible firms than for socially irresponsible firms since the former are less risky.

### 3.2 Methodology

The research question is to determine if variations in extra-financial scores affect the equity market as credit rating variations do on the bond market. The effects of changes in the aggregate score and in its components—environmental, social and governance—are examined separately in order to distinguish the different impacts on returns and risk (Mahoney and Thorne, 2005).

An event study methodology is selected to simultaneously test the two research hypotheses address the question, where the event is defined as a change in a firm’s social performance scoring. More specifically, we compare conditional and classical event study models. Kothari and Warner (1997) argue that the standard practice of using forecasts based on a market model is not reliable for long-term event studies. Conditional models can therefore offer a robust alternative. In addition, the use of conditional models in event studies can help to distinguish the impact of economic, financial and corporate information from data related to the event under study. The approach selected is based on the models of Ferson and Schadt (1996) and Christopherson, Ferson and Glassman (1998), which separately condition performance ( $\alpha$ ) and systematic risk ( $\beta$ ) parameters on macroeconomic contexts and events. After integrating Fama-French’s factors, and using a model based on Malatesta (1986), the return diffusion process for firm  $i$  is defined as follows:

$$r_{it} = \alpha_{it}(Z_{t-1}) + \beta_{1it}(Z_{t-1})r_{mt} + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}Jan_t + \beta_{5i}Mon_t + \varepsilon_{i,t} \quad (1)$$

where  $r_{it} = R_{it} - R_{ft}$  is the excess daily return of firm  $i$  on day  $t$  and  $R_{it}$  and  $R_{ft}$  respectively designate the return of  $i$  and the risk-free rate, i.e. the daily yield on a 90-day maturity government bond. Return  $r_{mt}$  is the market risk premium on day  $t$ , or  $(R_{mt} - R_{ft})$ , while market portfolio return  $R_{mt}$  is the weighted return of securities on the S&P-TSX index. Risk factors  $HML_t$  and  $SMB_t$  respectively represent the book-to-market ratio effect and the size effect (Fama and French, 1993).  $Jan_t$  and  $Mon_t$ , binary variables controlling for the January and Monday effects, equal 1 for the control period, and 0 otherwise. Vector  $Z_{t-1}$  includes the  $N$  pre-determined macroeconomic information variables that condition both the alpha,  $\alpha_i(Z_{t-1})$ , and the beta,  $\beta_i(Z_{t-1})$ . Finally,  $\varepsilon_{it}$  is the error term for firm  $i$  following a normal distribution such that  $\varepsilon_{it} \sim N(0, \sigma_\varepsilon^2)$ .

In equation (1), the conditional alpha is measured as follows:

$$\alpha_{it}(Z_{t-1}) = a_{0,i} + a_{E,i}\delta_{E,t} + \sum_{n=1}^{N_m} a_{n,i}Z_{n,t-1} \quad (2)$$

where,  $\delta_{E,t}$  is a dummy variable that equals 1 if day  $t$  is included in the event window (in our case, when we observe an upgrade or downgrade of the firm's social performance score), and 0 otherwise;  $a_{E,i}$  is the average abnormal daily return due to changes in firm  $i$ 's score, and  $a_{0,i}$  is the average conditional abnormal return unrelated to score variations and macroeconomic information variables. Parameters  $a_{n,i}$  (for  $n = 1, \dots, N_m$ ) measure conditional alpha's sensitivity to various macroeconomic information variables  $Z_{n,t-1}$ , recognized as having predictive power on financial returns (Ferson and Schadt (1996) and Jagannathan and Wang,

1996). These variables are the 3-month yield, the slope of the term structure, defined as the difference between 10-year and 3-month government bond yields, and the credit spread, measured by the difference between BAA- and AAA-rated corporate bond yields by Moody's. Vector of demeaned variables  $z_{t-1}$  is measured by  $z_{t-1} = Z_{t-1} - E(Z)$ , where  $Z_{t-1}$  represents the vector of lagged information variables, and  $E(Z)$  is the vector of their sample mean.

Similarly, the conditional beta of firm  $i$  in equation (1) is defined as follows:

$$\beta_{it}(Z_{t-1}) = b_{0,i} + b_{E,i}\delta_{E,t} + \sum_{n=1}^{N_m} b_{n,i}Z_{n,t-1} \quad (3)$$

Parameter  $b_{0,i}$  is the conditional mean beta of firm  $i$ , while  $b_{E,i}$  measures the effect of changes in firm  $i$ 's social performance score on its conditional beta. Parameters  $b_{n,i}$  in (3) measure the sensitivity of the conditional beta to  $Z_{n,t-1}$ , for  $n = 1$  to  $N_m$ .

#### 4. Data: Jantzi-Sustainalytics social performance scores

Daily returns and macro-economic variables used for the current study are collected from the Canadian Financial Markets Research Center (CFMRC) and Bloomberg databases. Social performance scores between January 2010 and December 2011 are culled from Jantzi-Sustainalytics, the leading social and environmental performance scoring agency in Canada. The sample collected from the database for the period under study consists of 242 firms for which we have a sufficiently long history of returns. . In the end, 970 overall performance scoring changes are studied, consisting of 567 upgrades and 403 downgrades.

Table 1 presents descriptive statistics about the size (% TSX) of the sample firms and their social performance score by level and variance, relative to the overall score and the score for each dimension (environmental, social and governance).

**[Insert Table 1 here]**

Average score and firm size is higher for firms that improved their social performance, both on an aggregate level and for each score dimension. Interestingly, the firms with the best results, mainly large businesses, experienced significant upgrades in their scores (positive rating variations). However, those with lower scores, generally small firm, experienced higher downgrades (negative variations).

Jantzi-Sustainalytics' database is updated monthly, on the last business day of the month. Therefore, changes in scores during a given month are accounted for only at month's end. The event date ( $t=0$ ) is therefore on the last business day of a given month. To examine the short- and long-term effects of variations in Jantzi-Sustainalytics' social performance scores on returns and risk, different event windows are considered:  $[-20; 0]$ ,  $[0; +20]$ ,  $[0; +60]$ ,  $[0; 120]$ , and  $[0; +250]$ . The estimation period for the model parameters extends over  $[-500; +250]$  to increase the quality of our parameters' estimates.

## **5. Empirical Results**

To test the two research hypothesis, we estimate model (1) and analyze results for the evaluation of alpha (equation 2) and beta (3) to assess the impact of credit score changes on performance and risk, respectively.

### **5.1 Impact of variations in social performance scores on financial performance**

Table 2 presents the results for the estimation of the impact of variations in firms' social performance on their financial performance, measured with alpha. Results indicate disparity and mitigated results with regards to the impact of variations in social performance scores on unexpected returns. Panel A shows that, although a decline in corporate social performance seems to be penalized by a temporary downturn in financial performance over the short term,

consistent with Mahoney and Roberts (2007), the relationship between social and financial performance appears to be negative in the long term. In fact, improvements in social performance scores appear to lead to a drop in corporate financial performance for the [0; +250] event window. Corporate social initiatives in Canada, particularly with respect to the environment, appear to lead to a decrease in firms' long-term financial performance. On the other hand, a decline in scoring, both with respect to the aggregate score and individual components (environmental, social and governance), appears to increase corporate financial performance for event windows up to +120 days, notably for the social component.

**[Insert Table 2 here]**

Corporations that engage more (less) in social responsibility activities thus appear to be penalized (rewarded) by financial markets in the long term. These results are consistent with those of Makni et al. (2009), who also worked in the Canadian context using the same database (Jantzi), but with a different methodology (Granger causality) and study period (2004–2005). Note that Canadian corporations are relatively smaller than large US corporations, and their social and environmental initiatives appear to be too costly and do not seem to be considered as sound investments by the Canadian market.

These results also agree with other studies from the United Kingdom (Brammer et al., 2006) and the United States (Vance, 1975; Klassen and McLaughlin, 1996; Waddock and Graves, 1997), suggesting that, under certain conditions, corporate spending on social activities can be value-destructive for firms (Navarro, 1988).

Some authors (e.g. McWilliams and Siegel, 2001; and Smith, 2003) believe that performance improvements by highly rated firms appear to work against their long-term financial performance. To verify this assertion, we re-estimate our model by differentiating firms with

above-average social performance from those with below-average social performance. Results are presented in Panels B and C of Table 2. For firms that are already highly rated, improving social responsibility performance appears to be more detrimental to their long-term financial performance. Corporations with the lowest scores are not rewarded either (in terms of financial performance) when they improve their social performance. On the contrary, their social *irresponsibility* appears to lead to better financial performance. For corporations that already have a higher social performance score, putting more effort into improvements appears to be counterproductive and can even damage their long-term financial performance, most likely because of costs that market investors feel are too high.

These results corroborate those of previous studies, including McWilliams and Siegel (2001), who determine that an optimal level of social performance exists beyond which it exerts a negative effect on a firm's future returns. At extremely high levels of social performance, the drawbacks (costs) of CSR programs may outweigh the advantages (Handelman and Arnold, 1999; Smith, 2003), leading eventually to a decline in returns for those corporations. However, in general, the explanatory power is relatively weak and our results must therefore be viewed critically. On the other hand, with respect to the impact on risk, the results appear more straightforward, with higher levels of significance.

## **5.2 Impact of variations in social performance scores on systematic risk**

Table 3 presents the mean values of estimated coefficients measuring the impact of variations in firm social performance on their systematic risk (beta). Panel A for the entire sample shows that variations in social performance scores have an asymmetrical impact on the systematic risk of firms. In fact, while declines in the social performance of firms for the aggregate score and its individual components seem to quasi-systematically increase long-term risk, improvements

appear to have a weaker impact. However, improvements in governance performance appear to reduce risk over the long run (Drobetz, et al. 2004; La Porta, et al., 2000; and Shleifer and Vishny, 1997). This effect does not occur with environmental or social performance, for example, for which only recalcitrant behaviour (drops in performance) appears to be penalized by an increase in financial risk.

Overall, downgrades in all three components of social performance (aggregate, environment, social and governance) increase firms' systematic risk but upgrades These results mirror the conclusions of Salama et al. (2009) in their study on UK firms and agree with previous research in the US that use a variety of methodologies and measures of social performance and risk; for example, Oikonomou et al. (2012), Orlitzky and Benjamin (2001), McGuire et al. (1985) and Spicer (1978).

Differentiating the impact according to firm performance scoring demonstrates that the impact is greater on corporations with higher scores, especially with respect to negative variations. The impact can be seen in almost every event window, up to 250 days after the event. On the other hand, for the lowest-scored corporations (generally small businesses), the effect appears to be very short-lived and is specifically concentrated in the [0; 20] window. These results can be explained by the fact that, in general, very highly-scored corporations are large corporations for which the slightest negative information regarding their reputation is rapidly viewed by the markets as bad news and has greater repercussions with respect to risk compared to small businesses, which are less well-known, and for which the financial stakes are often less significant.

## **6. Conclusion and implications**

This study verifies whether firms are financially compensated or penalized by the equity market when their social performance scoring vary. Proponents of stakeholder theory believe that corporations that adopt CSR programs attract increasingly socially responsible consumers and gain better reputations, benefits that positively affect future performance and reduce risk. Critics of these proponents, referring to agency theory, simply state that the goal of a corporation is to generate profits and that CSR programs take away from shareholders and have negative long-term effects on the financial performance of the corporations that implement them.

This event study adds to the debate by examining the impact of variations in the social performance of 242 Canadian corporations on their financial performance and systematic risk from 2010 to 2011. The conditional model adopted allows for the inclusion of the economic context in the analysis, often ignored in event studies. The main results reveal that the impact of variations in social performance scores on the financial performance of firms is mixed and explanatory power is generally quite weak. Also, we find that the impact on systematic risk is asymmetrical. In fact, although declining corporate social performance appears to increase systematic risk over the long term, the impact of improvements to social performance is less clear-cut. However, improvements in governance performance appear to reduce systematic risk over the long term. By differentiating the impact according to firms' scores, we note a more significant effect for top-scored corporations. Conversely, the effect on corporations with the lowest scores (smaller businesses on average) is less evident. This study can be useful to managers in their portfolio allocation and risk management strategies. For example, in periods of low market volatility, when risks are minimal, it could be advantageous to invest in corporations that do not pay much attention to their social position. On the other hand, during periods of

market uncertainty, or when there is very high volatility (in periods of financial crisis, for example) investment in socially responsible corporations, especially those that perform well with respect to governance, would limit exposure to risk but would not guarantee better returns. In this respect, as Orlitzky and Benjamin (2001) remark, during financially difficult periods, investors are more concerned about reducing their risk than with seeking financial performance.

In any case, results should be interpreted with care, because there are at least two limits to this study. First, Jantzi-Sustainalytics, from which the scores are collected, may be one of the largest providers of corporate social responsibility intelligence in Canada, but is nonetheless only one agency among many. Second, the analysis takes into account only the recent credit rating period and was limited to two years, from the beginning of 2010 to the end of 2011.

Further research could be conducted on the study of specific risk. . In fact, although systematic risk is the primary measure of market risk, specific risk should pertain more to corporate strategy (e.g. CSR).

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**Table 1: Descriptive statistics on social performance scoring**

Jantzi-Sustainalytics descriptive statistics are presented by level and variance for the 242 Canadian corporations examined from 2010 to 2011. Firms with positive variations (Panel A) in ratings are differentiated from those that were downgraded (Panel B). Aggregate scores and individual scores for each component (environment, social and governance) are presented. Descriptive statistics on the size of corporations (% TSX) that experience rating variations in each social performance component are also presented.

<b>Panel A: Firms that experienced positive variations</b>																
	Aggregate scores				Environmental performance scores				Social performance scores				Governance performance scores			
	Mean	Std. dev.	Min.	Max.	Mean	St. dev.	Min.	Max.	Mean	Std. dev.	Min.	Max.	Mean	Std.. dev.	Min.	Max.
Level (/10)	5.78	0.74	3.90	7.95	5.44	0.95	3.04	8.44	5.78	0.82	3.21	8.42	6.90	0.96	4.29	9.69
Variance	0.18	0.23	0.00	1.42	0.55	0.63	0.00	3.55	0.69	0.65	0.00	5.17	0.82	0.72	0.00	4.36
% TSX Index	0.70	1.03	0.03	6.43	0.61	0.93	0.03	5.97	0.67	1.03	0.03	6.43	0.65	0.93	0.03	4.97
<b>Panel B: Firms that experienced negative variations</b>																
Level (/10)	5.56	0.74	3.83	7.93	4.90	0.94	2.93	8.08	5.17	0.75	3.21	7.35	5.86	0.91	3.74	8.90
Variance	-0.11	0.15	-1.07	0.00	-0.50	0.65	-5.03	-0.01	-0.63	0.62	-3.09	0.00	-0.95	0.85	-4.36	0.00
% TSX index	0.58	0.74	0.03	4.55	0.52	0.75	0.03	6.43	0.54	0.85	0.03	4.72	0.58	1.02	0.03	6.43

**Table 2: Impact of variations in corporate social performance on firms' financial performance (alpha)**

Results are presented of different estimates of the impact of variations in firm social performance on their financial performance (alpha) using the Fama-French (FF) conditional and unconditional three-factor models that are detailed in section 3. The positive and negative variations in aggregate (agg.) social performance scores, as well as each individual component (environment (envir.), social and governance (gov.)) are presented for 242 Canadian corporations, using Jantzi-Sustainalytics social performance scores from January 2010 to the end of December 2011. Data on returns are taken from the Canadian Financial Markets Research Center database and Bloomberg. Different event windows are considered. For the event windows [-20; 0], [0; +20], [0; +60], [0; 120] and [0; +250], the estimation windows are respectively [-500; 0], [-500; +20], [-500; +60], [-500; 120] and [-500; +250]. For each window, the estimated coefficients' mean values are presented, with t-statistics in parentheses. Numbers in bold indicate that the coefficients are significant at the 10% level. While Panel A presents results for all corporations in the sample, Panels B and C present results for firms with above-average social performance and firms with below-average social performance, respectively.

<b>Panel A: Entire sample</b>																
Event window	Positive Variations								Negative Variations							
	FF unconditional model				FF conditional model				FF unconditional model				FF conditional model			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.
[-20; 0]	-0.0002 (-0.52)	-0.0003 (-0.83)	0.0004 (1.14)	0.0004 (0.86)	-0.0001 (-0.37)	-0.0002 (-0.56)	0.0004 (0.97)	0.0004 (0.93)	<b>-0.0010</b> (-2.79)	-0.0001 (-0.20)	0.0003 (0.55)	0.0000 (-0.05)	<b>0.0010</b> (-2.59)	0.0000 (0.02)	0.0006 (1.06)	-0.0002 (-0.33)
[0; +20]	0.0001 (0.30)	0.0001 (0.47)	0.0005 (1.34)	0.0005 (1.09)	0.0001 (0.35)	0.0002 (0.64)	0.0005 (1.21)	0.0005 (1.16)	<b>0.0006</b> (1.66)	<b>0.0006</b> (1.96)	<b>0.0009</b> (1.72)	<b>0.0009</b> (1.94)	<b>0.0006</b> (1.65)	<b>0.0007</b> (1.98)	<b>0.0012</b> (2.26)	<b>0.0009</b> (1.80)
[0; +60]	0.0000 (-0.10)	0.0001 (0.49)	0.0002 (0.99)	0.0002 (0.63)	0.0000 (0.22)	0.0002 (0.88)	0.0002 (0.86)	0.0002 (0.86)	0.0001 (0.56)	0.0002 (0.78)	<b>0.0006</b> (1.82)	<b>0.0005</b> (1.82)	0.0001 (0.59)	0.0002 (0.86)	<b>0.0008</b> (2.55)	<b>0.0005</b> (1.69)
[0; +120]	-0.0002 (-1.35)	-0.0001 (-0.52)	0.0000 (-0.15)	-0.0002 (-0.98)	-0.0001 (-0.83)	0.0000 (0.15)	0.0000 (0.04)	-0.0001 (-0.36)	0.0000 (-0.01)	0.0000 (-0.08)	<b>0.0004</b> (1.73)	0.0001 (0.59)	0.0000 (-0.20)	0.0000 (0.13)	<b>0.0005</b> (1.89)	0.0001 (0.55)
[0; +250]	<b>-0.0002</b> (-1.69)	<b>-0.0002</b> (-1.77)	0.0001 (0.60)	-0.0001 (-0.53)	<b>-0.0003</b> (-1.93)	<b>-0.0002</b> (-1.70)	0.0001 (0.43)	-0.0001 (-0.50)	0.0002 (1.09)	0.0002 (1.24)	-0.0003 (-1.16)	-0.0002 (-1.21)	0.0001 (-0.27)	0.0000 (-0.05)	-0.0002 (-1.01)	-0.0002 (-0.76)

**Panel B: Sub-sample of firms with above-average scores**

Event window	Positive Variations								Negative Variations							
	FF unconditional model				FF conditional model				FF unconditional model				FF conditional model			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.
[-20; 0]	-0.0002 (-0.42)	-0.0004 (-0.89)	0.0007 (1.36)	0.0005 (0.92)	0.0000 (-0.07)	-0.0002 (-0.43)	0.0009 (1.64)	0.0005 (0.99)	<b>-0.0011</b> (-2.02)	-0.0003 (-0.46)	-0.0001 (-0.09)	-0.0001 (-0.16)	<b>0.0008</b> (-1.65)	-0.0001 (-0.13)	0.0004 (0.42)	-0.0007 (-0.92)
[0; +20]	0.0001 (0.23)	0.0003 (0.87)	0.0005 (0.89)	0.0005 (0.90)	0.0002 (0.50)	0.0005 (1.26)	0.0006 (1.12)	0.0005 (1.07)	0.0006 (1.14)	<b>0.0010</b> (1.83)	0.0005 (0.51)	0.0009 (1.18)	0.0008 (1.52)	<b>0.0011</b> (1.98)	0.0012 (1.19)	0.0005 (0.67)
[0; +60]	-0.0001 (-0.54)	0.0001 (0.61)	0.0001 (0.29)	0.0000 (0.00)	0.0000 (0.13)	0.0003 (1.29)	0.0003 (0.74)	0.0002 (0.51)	<b>0.0006</b> (1.70)	0.0002 (0.70)	0.0004 (0.71)	<b>0.0007</b> (1.69)	<b>0.0008</b> (2.22)	0.0003 (0.99)	<b>0.0013</b> (2.04)	0.0004 (0.96)
[0; +120]	-0.0003 (-1.56)	0.0000 (0.09)	-0.0001 (-0.34)	-0.0002 (-0.94)	-0.0001 (-0.53)	0.0002 (1.01)	0.0001 (0.25)	0.0000 (-0.05)	0.0002 (0.75)	0.0001 (0.29)	0.0007 (1.48)	0.0002 (0.75)	0.0003 (1.14)	0.0002 (0.63)	<b>0.0014</b> (2.68)	0.0001 (0.18)
[0; +250]	<b>-0.0003</b> (-2.15)	-0.0002 (-1.23)	0.0001 (0.36)	-0.0003 (-1.58)	<b>-0.0003</b> (-1.66)	-0.0002 (-1.21)	0.0002 (0.68)	-0.0002 (-0.97)	0.0001 (0.60)	<b>0.0004</b> (1.84)	-0.0001 (-0.23)	-0.0003 (-0.92)	0.0001 (0.34)	0.0002 (0.74)	0.0006 (1.26)	-0.0002 (-0.51)

**Panel C: Sub-sample of firms with below-average scores**

Event window	Positive Variations								Negative Variations							
	FF unconditional model				FF conditional model				FF unconditional model				FF conditional model			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.
[-20; 0]	-0.0001 (-0.27)	-0.0002 (-0.26)	0.0002 (0.30)	0.0003 (0.36)	-0.0002 (-0.33)	-0.0001 (-0.21)	-0.0001 (-0.11)	0.0005 (0.56)	<b>-0.0012</b> (-2.25)	-0.0001 (-0.16)	0.0002 (0.24)	0.0000 (-0.02)	<b>-0.0012</b> (-2.27)	0.0000 (-0.05)	0.0005 (0.71)	0.0002 (0.26)
[0; +20]	0.0000 (-0.03)	-0.0005 (-0.93)	0.0006 (0.87)	-0.0001 (-0.13)	-0.0001 (-0.14)	-0.0005 (-0.86)	0.0004 (0.59)	0.0000 (-0.04)	0.0005 (1.04)	0.0004 (0.98)	<b>0.0012</b> (1.77)	0.0009 (1.48)	0.0004 (0.85)	0.0004 (0.92)	<b>0.0014</b> (2.14)	0.0011 (1.32)
[0; +60]	0.0001 (0.40)	-0.0003 (-0.97)	0.0002 (0.53)	0.0003 (0.62)	0.0001 (0.29)	-0.0003 (-0.83)	0.0000 (0.12)	0.0003 (0.58)	-0.0002 (-0.81)	0.0001 (0.48)	<b>0.0006</b> (1.88)	0.0004 (0.97)	-0.0003 (-1.01)	0.0001 (0.30)	<b>0.0007</b> (1.82)	0.0005 (1.26)
[0; +120]	-0.0001 (-0.24)	-0.0004 (-1.34)	-0.0001 (-0.32)	-0.0003 (-0.80)	-0.0001 (-0.41)	-0.0003 (-0.96)	-0.0001 (-0.26)	-0.0003 (-0.67)	-0.0001 (-0.60)	0.0000 (0.05)	0.0001 (0.46)	0.0001 (0.32)	-0.0002 (-0.95)	0.0000 (-0.18)	0.0002 (0.57)	0.0002 (0.64)
[0; +250]	0.0000 (0.23)	-0.0003 (-1.21)	0.0003 (1.05)	0.0005 (1.50)	-0.0002 (-0.89)	-0.0002 (-0.98)	0.0001 (0.47)	0.0003 (0.63)	0.0002 (0.84)	0.0001 (0.32)	-0.0005 (-0.97)	-0.0002 (-0.77)	-0.0002 (-0.73)	-0.0001 (-0.67)	-0.0005 (-0.80)	-0.0001 (-0.55)

**Table 3: Impact of variations in corporate social performance on firm systematic risk (beta)**

Results are presented of different estimates of the impact of variations in the social performance of firms on their systematic risk (beta) using the Fama-French (FF) conditional and unconditional three-factor models which are defined in section 3. The positive and negative variations in aggregate (agg.) social performance scores, as well as each individual component (environment (envir.), social and governance (gov.)) are presented for 242 Canadian corporations, using Jantzi-Sustainalytics social performance scores from January 2010 to the end of December 2011. Data on returns are taken from the Canadian Financial Markets Research Center database and Bloomberg. Different event windows are considered. For the event windows [-20; 0], [0; +20], [0; +60], [0; 120] and [0; +250], the estimation windows are respectively [-500; 0], [-500; +20], [-500; +60], [-500; 120] and [-500; +250]. For each window, the estimated coefficients' mean values are presented, with t-statistics in parentheses. Numbers in bold indicate that the coefficients are significant at the 10% level. While Panel A presents results for all corporations in the sample, Panels B and C present results for firms with above-average social performance and firms with below-average social performance, respectively.

<b>Panel A: Entire sample</b>																	
Event window	Positive Variations								Negative Variations								
	FF unconditional model				FF conditional model				FF unconditional model				Agg	FF conditional model			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.		Envir.	Social	Gov.	Agg.
[-20; 0]	0.026 (1.04)	0.027 (1.01)	0.095 (0.73)	0.075 (1.12)	0.033 (1.29)	0.038 (1.39)	0.097 (0.78)	0.086 (1.38)	-0.010 (-0.35)	<b>0.040</b> (1.73)	<b>0.100</b> (2.22)	0.056 (1.30)	0.000 (-0.01)	<b>0.048</b> (1.72)	<b>0.119</b> (2.63)	0.066 (1.53)	
[0; +20]	0.010 (0.41)	0.033 (1.32)	0.058 (1.64)	0.041 (1.21)	0.016 (0.66)	0.043 (1.60)	0.061 (1.62)	0.050 (1.46)	<b>0.092</b> (3.25)	<b>0.087</b> (3.27)	<b>0.132</b> (3.16)	<b>0.091</b> (2.45)	<b>0.096</b> (3.29)	<b>0.091</b> (3.41)	<b>0.149</b> (3.53)	<b>0.103</b> (2.76)	
[0; +60]	-0.010 (-0.75)	-0.008 (-0.59)	0.013 (0.70)	-0.010 (-0.47)	0.000 (0.02)	0.004 (0.26)	0.014 (0.71)	-0.001 (-0.06)	<b>0.046</b> (2.84)	<b>0.031</b> (2.04)	<b>0.047</b> (1.92)	0.031 (1.45)	<b>0.049</b> (2.79)	<b>0.034</b> (2.10)	<b>0.062</b> (2.41)	0.036 (1.60)	
[0; +120]	-0.016 (-1.57)	-0.010 (-0.91)	-0.008 (-0.59)	<b>-0.046</b> (-3.02)	-0.010 (-0.83)	0.000 (0.02)	-0.008 (-0.50)	<b>-0.034</b> (-1.98)	<b>0.025</b> (2.16)	0.012 (1.11)	<b>0.037</b> (1.96)	0.005 (0.32)	<b>0.020</b> (1.74)	0.011 (0.89)	<b>0.034</b> (1.67)	-0.002 (-0.13)	
[0; +250]	-0.006 (-0.71)	-0.014 (-1.53)	0.019 (1.62)	-0.014 (-1.11)	-0.015 (-1.50)	-0.014 (-1.35)	0.002 (0.15)	-0.016 (-1.14)	<b>0.050</b> (4.38)	<b>0.037</b> (3.71)	-0.034 (-1.18)	-0.022 (-1.57)	<b>0.029</b> (2.05)	<b>0.016</b> (1.73)	-0.019 (-1.12)	-0.030 (-1.03)	

**Panel B: Sub-sample of firms with above-average scores**

Event window	Positive Variations								Negative Variations								
	FF unconditional model				FF conditional model				FF unconditional model				FF conditional model				
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.
[-20; 0]	0.017 (0.55)	0.006 (0.18)	0.100 (1.08)	0.070 (1.26)	0.036 (1.15)	0.031 (0.92)	0.125 (0.57)	0.095 (1.21)	0.005 (0.12)	0.045 (0.99)	<b>0.138</b> (1.70)	0.029 (0.44)		0.047 (1.07)	0.059 (1.29)	<b>0.208</b> (2.52)	-0.001 (-0.02)
[0; +20]	0.028 (0.94)	0.041 (1.32)	0.061 (1.41)	0.027 (0.69)	0.043 (1.42)	0.060 (1.51)	0.084 (1.61)	0.052 (1.29)	<b>0.106</b> (2.51)	<b>0.135</b> (3.02)	0.089 (1.19)	<b>0.114</b> (2.05)		<b>0.135</b> (3.11)	<b>0.141</b> (3.12)	<b>0.161</b> (2.10)	<b>0.097</b> (1.72)
[0; +60]	0.001 (0.05)	-0.003 (-0.17)	0.011 (0.44)	-0.025 (-1.08)	0.022 (1.16)	0.019 (0.96)	0.035 (1.34)	0.002 (0.06)	<b>0.083</b> (3.38)	<b>0.056</b> (2.20)	0.041 (0.96)	<b>0.067</b> (2.04)		<b>0.108</b> (4.07)	<b>0.061</b> (2.30)	<b>0.127</b> (2.75)	0.036 (1.06)
[0; +120]	-0.013 (-0.96)	0.002 (0.17)	-0.009 (-0.46)	<b>-0.045</b> (-2.43)	0.006 (0.42)	0.019 (1.20)	0.021 (0.99)	<b>-0.029</b> (-1.93)	<b>0.045</b> (2.56)	<b>0.040</b> (2.18)	<b>0.076</b> (2.24)	0.035 (1.35)		<b>0.060</b> (2.82)	<b>0.044</b> (2.11)	<b>0.138</b> (3.54)	-0.006 (-0.22)
[0; +250]	-0.018 (-1.63)	-0.015 (-1.29)	0.022 (1.40)	<b>-0.046</b> (-3.00)	-0.012 (-0.88)	-0.010 (-0.74)	0.034 (1.61)	<b>-0.032</b> (-1.84)	<b>0.039</b> (2.36)	<b>0.075</b> (4.63)	-0.009 (-0.29)	-0.025 (-1.12)		<b>0.064</b> (3.12)	<b>0.062</b> (3.22)	0.061 (1.62)	-0.059 (-0.43)

**Panel C: Sub-sample of firms with below-average scores**

Event window	Positive Variations								Negative Variations							
	FF unconditional model				FF conditional model				FF unconditional model				FF conditional model			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.
[-20; 0]	0.035 (0.82)	0.044 (0.86)	0.110 (1.11)	0.107 (1.43)	0.040 (0.92)	0.052 (1.01)	0.083 (1.43)	0.108 (1.43)	-0.036 (-0.88)	0.046 (1.22)	0.064 (1.15)	0.079 (1.36)	-0.037 (-0.89)	0.053 (1.39)	0.072 (1.28)	0.104 (1.59)
[0; +20]	-0.040 (-0.98)	-0.002 (-0.03)	0.021 (0.40)	0.048 (0.64)	-0.031 (-0.76)	0.012 (0.25)	0.003 (0.05)	0.044 (0.58)	<b>0.075</b> (1.93)	<b>0.071</b> (2.00)	<b>0.154</b> (2.98)	<b>0.076</b> (1.71)	<b>0.071</b> (1.77)	<b>0.075</b> (2.09)	<b>0.156</b> (3.00)	<b>0.101</b> (1.98)
[0; +60]	<b>-0.038</b> (-1.67)	-0.032 (-1.15)	0.000 (0.00)	0.030 (0.70)	-0.027 (-1.14)	-0.017 (-0.58)	-0.025 (-0.77)	0.022 (0.48)	0.007 (0.32)	0.021 (1.03)	0.037 (1.21)	0.014 (0.47)	0.005 (0.20)	0.019 (0.89)	0.031 (0.97)	0.035 (1.15)
[0; +120]	<b>-0.035</b> (-2.05)	<b>-0.036</b> (-1.76)	-0.032 (-1.36)	<b>-0.065</b> (-2.03)	<b>-0.031</b> (-1.66)	-0.016 (-0.73)	-0.058 (-1.25)	-0.039 (-1.09)	0.005 (0.33)	0.008 (0.55)	0.001 (0.04)	-0.008 (-0.34)	-0.004 (-0.18)	-0.002 (-0.09)	-0.025 (-0.94)	0.003 (0.11)
[0; +250]	0.000 (0.01)	-0.015 (-0.96)	0.022 (1.18)	0.061 (1.64)	-0.021 (-1.26)	-0.015 (-0.83)	-0.036 (-1.60)	0.044 (1.45)	<b>0.052</b> (3.26)	0.018 (1.37)	-0.058 (-1.04)	-0.021 (-1.13)	0.003 (0.14)	-0.007 (-0.46)	-0.060 (-0.91)	-0.014 (-0.71)

