



Chaire Desjardins  
en finance responsable

par

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# Are changes in extra- financial ratings a (un)sustainable source of abnormal returns ?

## CAHIER DE RECHERCHE



UNIVERSITÉ DE  
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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.

La littérature scientifique révèle parfois que les meilleures entreprises en matière environnementale, sociale et de gouvernance (facteurs ESG) présentent des performances financières plus faibles que celles qui négligent ces facteurs. Le contexte de notre étude nous permet d'analyser si la performance financière obtenue suite à un changement dans la notation des entreprises est positive ou négative d'une part, et si cette performance persiste temporellement d'autre part. Nos résultats suggèrent que la persistance de performances financières légèrement positives des entreprises qui expérimentent une diminution de leur notation ESG peut être perçue par l'absence dans nos modèles d'évaluation d'actifs d'un facteur de risque de réputation. Ce facteur de réputation pénaliserait ainsi les entreprises jugées plus irresponsables (diminution de notation) en exigeant un rendement boursier moyen plus élevé pour celles-ci que pour celles qui sont jugées plus responsables (augmentation de notation). D'autres recherches devront toutefois montrer que cette persistance dans la performance anormale des entreprises est bien attribuable à un facteur de risque de type ESG.

# ARE CHANGES IN EXTRA-FINANCIAL RATINGS A (UN)SUSTAINABLE SOURCE OF ABNORMAL RETURNS?

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## Abstract

Using a conditional asset pricing model approach, this study investigates how the Canadian stock market reacts to changes in extra-financial ratings related to environmental social and governance (ESG) factors. Our results suggest that upgrades (downgrades) in CSR ratings lead to negative (positive) abnormal returns (alpha). This result is consistent with the notion that the expected stock return or cost of capital must be lower (higher) for socially responsible (irresponsible) firms because they are associated with lower (higher) risk.

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**JEL Classifications:** G14, M14

**Key words:** Corporate social responsibility, ESG rating, abnormal returns, conditional model, extra-financial risk premium.

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**Abstract**

Using a conditional asset pricing model approach, this study investigates how the Canadian stock market reacts to changes in extra-financial ratings related to environmental social and governance (ESG) factors. Our results suggest that upgrades (downgrades) in CSR ratings lead to negative (positive) abnormal returns (alpha). This result is consistent with the notion that the expected stock return or cost of capital must be lower (higher) for socially responsible (irresponsible) firms because they are associated with lower (higher) risk.

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## 1. INTRODUCTION

Although the concept of responsible investing (hereafter RI) 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 movement started gaining notable popularity during the second half of the 1990s. In Canada, the RI market has experienced rapid growth in recent years. According to the 2015 Canadian Responsible Investment Trends Report published by the Responsible Investment Association, Canadian RI assets account for 31% of total assets under management, while they represent only 18% of assets in the U.S. The growing awareness of the importance of RI is particularly remarkable among institutional investors, including pension funds.

Simultaneously, and in line with an increasing demand, an extra-financial ratings market has also developed considerably since the end of the 1990s. Extra-financial ratings can help with the comparison of the corporate social responsibility (CSR) of firms and they are commonly used by investment managers to build RI funds. But how does CSR relate to firm financial performance and risk which, in the end, is a main concern for investors?

Our study seeks to further the understanding of the CSR rating - financial performance relationship by examining whether extra-financial rating upgrades and downgrades affect corporate returns. Our study is motivated by the following considerations. Firstly, given the enhanced awareness of investors to extra-financial risk and the mainstreaming of CSR-related information in capital markets, we expect financial markets to increasingly react to CSR rating upgrades and downgrades, like they would for credit rating changes (see, for e.g., Holthausen and Leftwic, 1986).<sup>1</sup> And while the literature on the subject is still growing, empirical results are far from conclusive. Renneboog et al. (2008) conclude that whether or not CSR is priced by capital markets remains an open question.

Secondly, our study seeks better understanding of the fairly controversial issue of *how* CSR strategies or initiatives affect corporate financial performance and risk. Research is ongoing, but produces mixed empirical findings, which reflect the contrasting theoretical views on the subject.

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<sup>1</sup> The fact that major financial players, such as Bloomberg and Morgan Stanley, now provide CSR-related information is an indication of its mainstreaming.

Stakeholder theory implies a positive relationship between extra-financial and financial performances (see, for e.g., Edmans, 2011; Hillman and Keim, 2001 and Freeman, 1984). In contrast, theories based on the cost of CSR initiatives or agency problems related to CSR activities imply a negative relationship between CSR and financial performance (see, for e.g., Krüger, 2015; Wright and Ferris, 1997 and Klassen and McLaughlin, 1996). However, we argue that the impact of CSR on stock returns would then be short lived, as investors anticipate its effect on stock prices. Finally, theories based on the presence of an extra-financial risk premium also imply a negative relationship between CSR initiatives and financial risk, which confers a competitive advantage to the responsible firm compared with the irresponsible firm in terms of cost of capital (e.g. Chava, 2014; Hong and Kacperczyk, 2009; Sharfman and Fernando, 2008 or Heinkel et al., 2001). However, without an asset model that explicitly integrates an appropriate irresponsible-risk factor, we argue that the impact of CSR initiatives on financial performance would then translate into a *sustainable* negative alpha. Firms with lower CSR *should* earn a higher absolute return compared with high-CSR firms because the former are fundamentally riskier.

Unlike prior studies which mainly investigate the impact of extra-financial rating *levels* on corporate financial performance (e.g. Edmans, 2011; Sharfman and Fernando, 2008 or Heinkel et al., 2001), our study extends the existing literature by investigating market reactions to *changes* or shocks in extra-financial ratings. Specifically, we examine how CSR rating upgrades and downgrades affect firms' risk-adjusted returns (alpha). Furthermore, we use a conditional asset pricing model approach following recent studies that show that extra-financial ratings and macro-economic factors can co-vary (Oikonomou, 2012 and Chen et al., 2010). The advantage of the conditional approach is that the respective impacts of the economic context and of the changes in extra-financial ratings on firms' risk-adjusted returns (alphas) can be distinctly estimated.

The rest of the study is structured as follows. Section 2 presents the related literature. Section 3 describes the methodology and the data. Section 4 presents and discusses our empirical results, and finally, section 5 concludes the paper.



## 2. RELATED LITERATURE AND THEORETICAL FRAMEWORK

The literature on the impact of CSR on firms' financial performance is abundant and can be classified into three large streams: i) studies consistent with or related to stakeholder theory, ii) studies consistent with or related to agency theory and/or cost theory, and iii) studies consistent with or related to the presence of an extra-financial risk premium.

In the first stream of the literature, stakeholder theory proponents (e.g., Freeman et al., 2010; Jiao, 2010; Porter and van der Linde, 1995; Freeman, 1984) argue for a positive relationship between extra-financial and financial performances. Specifically, firms that identify and manage their relationships with principal stakeholders are more likely to enjoy a variety of benefits in the long run.

In the second stream, based on Friedman's (1970) neoclassical school of thought<sup>2</sup>, CSR 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 (see, for e.g., Wright & Ferris, 1997) or projects that involve promoting community development plans or investments in environmental protection technology (see, for e.g. Klassen and McLaughlin, 1996), as costly sacrifices for shareholders. Some empirical studies corroborate neoclassical thinking whereby a corporate responsible behavior increases costs and reduces shareholder wealth. For instance, Makni et al. (2009) examine, in the Canadian context, the causality (Granger) between CSR and financial performance (ROA, ROE and stock returns) and find no significant link between overall CSR performance and financial performance, with the exception of stock returns for which they observe a negative relationship. However, the authors note that, when analyzed individually, environmental factors have a significant one-directional negative impact on each of the three financial performance measures examined. These results agree with other studies from the U.K. (Brammer et al., 2006) and the U.S. (and Waddock and Graves, 1997; Klassen and McLaughlin, 1996 and Vance, 1975), suggesting that, under certain conditions, corporate spending on CSR activities can be value destructive for firms (Navarro, 1988).

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<sup>2</sup> 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).

In the second stream of literature, we also include studies related to the agency theory in which authors such as Krüger (2015), Barnea and Rubin (2010), Cespa and Cestone (2007) or Hemingway and MacLagan (2004) argue that CSR represent private benefits (e.g. respect, job security, public image, etc.) that managers extract at the expense of shareholders. This strategy, if known, can adversely affect firms' market performance possibly because of costs that investors feel are too high or inopportune. For instance, Krüger (2015) examines how stock markets react to positive and negative events regarding a firm's CSR and shows that investors respond negatively to positive CSR news, which are more likely to result from agency problems than negative news.

Finally, in the third stream, authors such as Chava (2014), El Ghouli et al. (2011), Sharfman and Fernando (2008) and Heinkel et al. (2001) argue that ESG ratings might in fact affect the risk profile of firms by adding an extra-financial risk component to the market risk, size, book-to-market and other risk documented premiums. As a result, expected returns for firms with low CSR ratings should be higher because they carry a premium for extra-financial risk. For example, theoretical models of the relationship between CSR and expected returns (e.g., Fama and French, 2007; Barnea et al., 2005 and Heinkel et al., 2001) relax the assumption of perfect capital markets by supposing differences in investor preferences (i.e. segmented capital markets based on CSR ratings) and assume the existence of two types of investors in financial markets: traditional investors and socially responsible investors. Traditional investors consider only financial criteria (risk and return) in their investment decisions, whereas socially responsible investors consider both financial and extra-financial criteria, such as CSR-related ratings. The main prediction of these models is that socially responsible stocks will have an excess demand, which leads to lower risk and expected return and thus overvalued stock prices based on traditional asset pricing models that do not include an extra-financial risk premium. In contrast, socially irresponsible stocks will have a weaker demand due to the “neglect effect”, which leads to higher risk and expected return because investors require additional premiums as a compensation for the lack of risk sharing opportunities. Hong and Kacperczyk (2009) provide empirical evidence consistent with the “neglect effect” caused by CSR. The authors show that “sin” stocks (e.g., alcohol, tobacco, gambling, weapons



manufacturers and the military, etc.) have higher expected returns because they are neglected by norm-constrained institutional investors such as pension funds.

Overall, the above three streams or theories imply different results regarding the relationship between CSR shocks and financial performance. According to the first theory, in efficient markets, extra-financial rating upgrades (downgrades) should be related to an anticipated value creation (destruction), higher (lower) stock prices, and thus short-term positive (negative) abnormal returns. In contrast, following the second set of theories, namely agency theory and/or cost theory, extra-financial rating upgrades (downgrades) should lead to lower (higher) stock prices, and thus to short-term negative (positive) alphas as investors anticipate inefficient (more efficient) expenses. Finally, the third theory, based on a systematic risk premium adjustment, suggests that extra-financial upgrades (downgrades) should lead to *sustainable* negative (positive) alphas since long-term expected returns (cost of capital) should be lower for responsible firms compared with irresponsible firms.

Our results will help shed light on the relationship between CSR shocks and financial performance and help with identifying which theory seems better at explaining empirical results.

### 3. METHODOLOGY AND DATA

#### 3.1 Model Specification

To test the impacts of CSR rating upgrades and downgrades on financial performance, we follow the methodology introduced by Sadjahin et al. (2017), which is based on Fama-French's (1993) model and on the conditional approach proposed by Ferson and Schadt (1996). This approach allows us to condition the impact on return and risk on the macro-economic and financial context. The return diffusion process for firm  $i$  is defined as follows:

$$R_{it} - R_{ft} = \alpha_{it}(\delta_{Et}, Z_{n,t-1}) + \beta_{it}(\delta_{Et}, Z_{n,t-1})(R_{mt} - R_{ft}) + \beta_{1i}SMB_t + \beta_{2i}HML_t + \beta_{3i}Jan_t + \beta_{4i}Mon_t + \varepsilon_{it} \quad (1)$$

where  $R_{it} - R_{ft}$  is the excess daily return of firm  $i$  on day  $t$  and  $R_{it}$  and  $R_{ft}$  respectively designate the return for firm  $i$  and the risk-free rate (i.e. the daily yield on a 90-day maturity government bond). Market portfolio return  $R_{mt}$  is the value-weighted stock return of 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 control for the January and Monday effects respectively and equal 1 for the control period, and 0 otherwise.  $\delta_{Et}$  is a dummy variable that equals 1 if day  $t$  is included in the event window (i.e. when we observe a change in firm  $i$ 's ESG rating), and 0 otherwise. Vectors  $Z_{n,t-1}$  with  $n = 1, 2, \dots, 5$ , include the five macroeconomic information variables that condition the alpha,  $\alpha_{it}(\delta_{Et}, Z_{n,t-1})$ .<sup>3</sup>  $\varepsilon_{it}$  is the error term for firm  $i$  and  $\varepsilon_{it} \sim N(0, \sigma)$ .

Conditional alpha for firm  $i$  is then defined as follows:

$$\alpha_{it}(\delta_{Et}, Z_{n,t-1}) = a_{0i} + a_{Ei}\delta_{Et} + \sum_{n=1}^5 a_{ni}z_{n,t-1} \quad (2)$$

where  $z_{n,t} = Z_{n,t} - E(Z_n)$  is a vector of the deviations of  $Z_{n,t}$  from the unconditional means.  $a_{0i}$  measures the average conditional alpha unrelated to rating changes and macroeconomic information variables;  $a_{Ei}$  is the average daily abnormal return attributable to the ESG rating change (upgrade or downgrade) and  $a_{ni}$  (for  $n = 1, \dots, 5$ ) measures the sensibility of the conditional alpha to the  $n^{\text{th}}$  conditioning variable,  $(Z_{n,t-1})$ .

We estimate model (2) for estimation windows that begin 500 days preceding changes in ESG ratings and ending 250 days following the changes. Based on parameters  $a_{Ei}$ , we then analyze the impact of ESG rating upgrades and downgrades on abnormal returns for six different analysis periods around ESG rating changes: [-250; 0], [-120; 0], [-60; 0], [0; +60], [0; +120] and [0; +250].

### 3.2 Data

Our sample comprises 266 Canadian firms included in the 2007-2012 *Sustainalytics*'s extra-financial ratings database. Unlike MSCI ESG STATS, which evaluates CSR based on seven qualitative

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<sup>3</sup> Based on the literature (see, for e.g. Ferson and Qian, 2004) and following Sodjahn et al.'s (2017) methodology, we identify five information variables: i) the short-term interest rates, ii) the term structure of interest rates, iii) the stock market performance, iv) stock market (implied) volatility, and v) the credit spread.

criteria (e.g., strengths and concerns), Sustainalytics<sup>4</sup> scores firms on over 100 proprietary indicators for the three ESG dimensions. Aggregate ESG ratings are weighted to reflect the importance of each dimension for a particular industry. For example, the environmental dimension is weighted more heavily for energy companies than it is for companies in the banking industry. Sustainalytics' ESG ratings range from 0 (worse) to 10 (best). We complement data on CSR with financial and macro-economic data for the 2007-2012 period extracted from the Canadian Financial Markets Research Center (CFMRC) and Bloomberg databases.

For the period studied (January 2007 to December 2012), there are 2,213 extra-financial rating changes, consisting of 1,312 upgrades and 901 downgrades. Table I presents descriptive statistics on rating levels (Panel A) and changes (Panel B) for firms in the sample, by rating dimension (environmental, social and governance). From Panel A, we see that average rating is higher for firms that experience an upgrade in their extra-financial rating, both on the aggregate level and for each ESG dimension. From Panel B, we observe that, for the aggregate rating as well as for the environment and the social dimensions, upgrades are more common than downgrades. Also, extra-financial rating upgrades (in absolute value) are, on average, larger than rating downgrades, for each rating dimension, with the exception of the governance dimension.

**[Insert Table I here]**

#### **4. EMPIRICAL RESULTS**

We estimate model (1) and analyze results for the evaluation of alpha (model (2)) to assess the impact of extra-financial rating changes on financial performance. Table II presents the mean values for coefficients  $\alpha_{Ei}$  that measure abnormal return (alpha) around changes in extra-financial ratings.

**[Insert Table II here]**

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<sup>4</sup> Sustainalytics' analysis is primarily based on publicly available information reported by the companies as well as information produced by NGOs, governmental organisations or trade unions.

Our results show that extra-financial rating upgrades (downgrades) are associated with negative (positive) abnormal returns. For example, aggregate rating upgrades are followed by decreases in alpha of -0.0001 for the three periods following rating changes. Similar results are obtained for upgrades in the environmental, social and governance dimensions. Firms that improve (worsen) their CSR therefore appear to be penalized (rewarded) by financial markets in terms of their risk-adjusted returns. Results also provide some evidence that changes in extra-financial ratings are associated with significant *sustainable* abnormal returns. Specifically, significant abnormal returns are observed for the three post-changes periods, [0, 60], [0; 120] and [0; 250], indicating that the impact of extra-financial rating changes on alpha lasts for at least one year after the rating changes.

Our results show that there is a *negative* relationship between CSR shocks and financial performance, consistent with either the agency/cost theory or the risk-premium theory discussed previously. However, the fact that we observe a long lasting impact of CRS shocks on alpha indicates that the extra-financial risk premium theory seems more plausible, specifically in light of recent research which shows that firms' social *irresponsibility* (responsibility) increases (decreases) their financial risk (see, for e.g., Sadjahin et al., 2017 and Bouslah et al., 2013). Investors are therefore tempted to increase (reduce) the risk premium related to the social irresponsibility (responsibility) of firms, which will increase (decrease) the return required by investors for firms less (more) responsible.

## 5. CONCLUSION

This study investigates whether and how stock markets react to extra-financial rating changes (upgrades and downgrades) for a sample of 266 Canadian firms between 2007 and 2012 and provides important empirical findings. Our results show that extra-financial rating upgrades (downgrades) lead to sustainable negative (positive) abnormal returns. Further, we find that the impact of rating changes on alpha is long lasting. There is therefore a negative and sustainable relationship between CSR shocks and financial performance which is consistent with the notion that expected stock returns (or cost of capital) must be lower (higher) for socially responsible (irresponsible) firms because they are associated with lower (higher) risk. In sum, our general results imply that it may be appropriate to include a social-

irresponsibility-related extra-financial risk factor in a general asset-pricing model. We leave this question and tests to future research. At the very least, our results confirm that, as for financial and macroeconomic information, extra-financial ratings play an important roles for investors.

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**Table I: Descriptive statistics for extra-financial ratings**

This table presents descriptive statistics for the CSR ratings for a sample of 266 Canadian firms between 2007 and 2012. Statistics are presented for the aggregate rating and for each ESG rating dimension: Environment, Social and Governance. N is the number of observations.

ESG rating (Rating/10)	Rating upgrades						Rating downgrades					
	Mean	Std	Min	Max	Observations		Mean	Std	Min	Max	Observations	
					N	# of Firms					N	# of Firms
Panel A: ESG rating levels												
Aggregate	5.514	0.851	2.800	7.954	1312	236	5.398	0.812	2.700	7.926	901	244
Environment	5.624	0.975	3.039	8.900	1104	254	5.048	0.937	2.929	8.446	772	235
Social	5.602	1.514	1.900	9.586	930	252	5.200	1.380	1.000	9.186	521	221
Governance	6.876	0.986	4.282	9.686	867	232	6.148	1.018	3.500	9.586	860	254
Panel B: ESG rating changes												
Aggregate	0.206	0.210	0.002	2.074	1312	236	-0.141	0.159	-2.400	-0.002	901	244
Environment	0.565	0.598	0.002	3.547	1104	254	-0.457	0.573	-5.031	-0.014	772	235
Social	0.713	0.680	0.000	5.172	930	252	-0.498	0.493	-3.093	-0.004	521	221
Governance	0.572	0.552	0.004	4.360	867	232	-0.693	0.667	-4.360	-0.088	860	254

**Table II: Abnormal returns around changes in extra-financial ratings**

This table presents the results for the estimation of model (2). Mean values for  $a_{Ei}$  are shown, with t-statistics in parentheses. Other coefficients in model (2) are estimated but not shown to save valuable space. Model (2) is estimated on a sub-sample of rating upgrades and a sub-sample of rating downgrades and, in each case, for the four types of rating dimensions (aggregate (agg.), environment (envir.), social and governance (gov.)). Six analysis periods are considered ([-250; 0] [-120; 0], [-60; 0], [0; +60], [0; +120] and [0; +250]), for which the estimation period [-500; +250]. The overall sample includes 266 Canadian firms from January 2007 to December 2012. Numbers in bold indicate significance at the 10% level.

Analysis window	Rating upgrades				Rating downgrades			
	Agg.	Envir.	Social	Gov.	Agg.	Envir.	Social	Gov.
[-250; 0]	0.0001 (0.14)	-0.0001 (-0.51)	-0.0000 (-0.16)	-0.0002 (-1.29)	0.0001 (0.14)	0.0002 (1.04)	0.0001 (0.15)	0.0000 (0.09)
[-120; 0]	0.0000 (0.00)	-0.0000 (-0.08)	-0.0001 (-0.23)	-0.0000 (-0.02)	0.0000 (1.12)	0.0000 (0.00)	0.0001 (1.08)	0.0001 (0.17)
[-60; 0]	-0.0001 (-1.11)	0.0000 (-0.14)	-0.0001 (-1.05)	-0.0003 (-1.51)	0.0001 (0.03)	0.0000 (1.01)	0.0002 (1.03)	0.0001 (1.56)
[0; +60]	<b>-0.0001</b> (-1.84)	0.0000 (0.03)	<b>-0.0002</b> (-2.87)	-0.0001 (-1.01)	<b>0.0002</b> (1.99)	<b>0.0002</b> (2.13)	<b>0.0002</b> (2.19)	<b>0.0002</b> (2.87)
[0; +120]	<b>-0.0001</b> (-2.33)	-0.0001 (-0.83)	<b>-0.0001</b> (-2.79)	<b>-0.0001</b> (-2.14)	<b>0.0002</b> (1.96)	<b>0.0002</b> (3.01)	<b>0.0002</b> (2.73)	<b>0.0002</b> (3.13)
[0; +250]	<b>-0.0001</b> (-1.81)	<b>-0.0002</b> (-2.89)	<b>-0.0001</b> (-1.97)	<b>-0.0001</b> (-1.79)	<b>0.0002</b> (3.02)	<b>0.0003</b> (3.85)	<b>0.0001</b> (2.59)	<b>0.0002</b> (3.27)
Obs.	1312	1104	930	867	901	772	521	860