Does news about environmental and social misconduct affect share price performance?

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Abstract

In the recent past, increasing consideration has been given to global standards and financial reporting requirements in environmental and social consdierations. Also, extensive research has been carried out on the financial performance of ethically guided investment. The aim of this paper is to determine whether news containing criticism towards companies concerning environmental and social misconduct have an impact on share prices. More specifically, the research considers whether they add to idiosyncratic risk of those criticized companies, expressed as increased volatility. A superposition of time series of returns is employed as a methodology. The results suggest that there is a detectable signal, but only before the onset of the current economic downturn.

Keywords: Volatility, Corporate Social Responsibility, Subprime Crisis, News, Share Prices

"Only when the last tree has been felled, the last river is poisoned and the last fish has been caught, man will know, that he cannot eat money" - This quote is attributed to the native American tribe of the Cherokee. Anyone with an open mind will realize the alarming actuality of this statement, as not a day goes past without environmental destruction being reported. When will the business community of the world start to take these reports seriously?

1 Context

Recently, increasing consideration has been given to the environmental and social reporting requirements synonymous with the new triple bottom line indicative of modern day financial reporting (Alexander and Nobes, 2007). Specifically, good corporate governance mandates the consideration of a company's

operations on both the environment and the society in which it exists, as evidenced by the requirements of the Cadbury Report (Cadbury, 1992). This has been coupled with an increasing coverage of business operations and performance around the world (Arambewela and Polonsky, 2009). Whilst research on the effect of Corporate Social and Environmental Reporting has gained momentum over the greater part of the last two decades, the specific effects of environmental and social misconduct news on the performance of share prices, remains limited.

The effect of news relating to a company's reported financial performance, its dividend declarations, its operational efficiency, the market's responses thereto and, the corresponding effect on the company's share price; has been the subject of extensive research for the better part of the 20th century. Research undertaken by Harmon (2006); Pettit (1977); Howe et al. (1998); Gibbons (1982) and seminally, Cutler et al. (1989), contends that whilst the direction and magnitude of the effects of financial news covering financial performance have not yet been demonstrated with empirical certainty, it is increasingly apparent that this news has some effect on the share price of the company being reported on.

The need for the debate around the effect of news on share prices to also encompass news on environmental and social misconduct in conjunction with the traditionally considered financial news, is evident and, forms the point of departure for this paper.

2 Research Question

Does news containing criticism towards companies concerning environmental and social misconduct impact share prices? If so, does it specifically do so by adding to idiosyncratic risk of those companies, expressed as increased volatility?

3 Literature Review

The question of whether or not corporate social responsibility (CSR) influences a company's share price has been actively contested for the last 30 years. On a theoretical level there are two competing schools, namely: the cost-concerned and the value-creation schools. The cost-concerned school, whose most prominent representative is Milton Friedman, claims that there is a trade-off between CSR performance and financial performance and CSR activities would have been implemented already, if they were profitable (Friedman, 1962).

The value creation school, now often referred to as the Porter Hypothesis following the influential paper of Porter and van der Linde (1995) argues that CSR activities can be a competitive advantage, dependent on several preconditions. The Porter Hypothesis has been refined and reviewed (Ambec and Lanoie, 2008) and criticized (Braennlund and Lundgren, 2009) and a conclusive proof of it remains elusive. A large body of literature is seeking empirical evidence for either of these hypotheses as reviewed by De la Fuente Sabate and De Quevedo Puente

(2003). One popular research avenue is the portfolio mimicking analysis, which employs CSR indicators to construct portfolios in order to isolate an effect from both idiosyncratic risk and market risk using portfolio theory (Markowitz, 1952) and market factor models (Fama and French, 1993; Sharpe, 1964). In this approach, a non-fulfillment of CSR is generally regarded as a risk to intangible assets such as reputation and should therefore be priced with a risk premium. This risk premium will be incorporated into the share price in an efficient market and therefore require higher returns for companies to maintain their share price in the face of breaching good CSR practices. An efficient market is, however, an ideal assumption and it is likely that, due to information asymmetry, investors remain unaware of this additional risk. Encouraging results have been obtained in this branch of research, however, it is not entirely clear in what direction the effect of CSR should be expected.

An alternative approach is the event study methodology as used by Hamilton (1995) for the release of pollution statements, in which he observes windows of returns centered around the 19th of June 1989 when a number of American companies released their first pollution statements. He found these to cause significantly lower abnormal returns. Similarly, Fisher-Vanden and Thorburn (2008) adopt an approach in which cumulative returns over a 5-day window are analyzed, centered on the day when a company joined a voluntary climate action campaign. They too conclude that this results in a negative, abnormal return. This is very interesting because in the first case negative externalities are revealed, whereas in the latter a willingness to address such externalities is expressed, yet they both result in lower abnormal returns. Vanden and Thornburn (2008) point out that pollution has a much higher risk of legal repercussions, however this makes a point that news on CSR behavior in general does not necessarily have a directional effect. It seems promising to look at risk indicators that are non-directional, namely volatility, which gives rise to the methodology of this study.

4 Methodology

The underlying hypothesis of this study is that the stock market will incorporate any new piece of information and ensure that prices are adjusted accordingly, in other words, the stock market is efficient. If this adjustment process occurs in a systematic way, certain forms of news should cause a consistent and specific response. The methodology of this research aims to extract and amplify this response through the process of superposition. A specific kind of news could be a source of idiosyncratic risk, which, according to portfolio theory, can be diversified away. However in this study the exact opposite occurs: risk is not diversified away but rather concentrated on a single day.

The specific news referred to above is a news item which contains criticism towards a listed company for some kind of social or environmental misconduct. News items are taken from the RepRisk® database, a commercial dataset that provides an index based on news in which such criticism is expressed. The

issues for which companies are criticized are limited to social and environmental misconduct and range from pollution to critical working conditions and child labour. For this study, only those news items that were published in very influential international newspapers and journals were selected. These included: the Financial Times, the Wall Street Journal, the Economist and the New York Times. Companies are included from all parts of the world provided that they have been criticized in these media. The study period extends over 4 years from the 1st of January 2006 to the 1st of February 2010.

Share price data was retrieved from Bloomberg International. For each time series the discrete daily return was computed and on trading holidays the share price was kept constant, resulting in a return of zero. The daily returns were limited to +/-10%, with any outlier exceeding this band being excluded from the data set. The rationale for this exclusion was that a daily return of such magnitude is extremely unlikely to be caused by ethical criticism alone. In order to test the hypothesis, a window of discrete share price returns was selected and centered around the day when the news item was released. Closing prices were used and it is therefore submitted that any effect which would occur as a result of 'bad news' is visible on the same day of its release. These windows were later combined into one array, which can be visualized as a superposition of many such windows layered above each other vertically.

Following that, the variance of the returns on any given day, across all windows, was calculated. This yielded a variance of returns for each day as depicted in Fig 4 and Fig 5. Robustness of the data was ensured by careful observation of the distribution of returns on each day making sure that the variance was not dominated by a few exceptional outliers, but rather that it is a useful reflection of the spread in all quantiles as a whole. The functioning at the heart of this analysis is that a risk signal of increased noise dependent on news on the specified day will accumulate, while other effects that are independent of this exogenous shock will be distributed randomly over all other days.

4.1 Limitations

There are two potential limitations in the above research design, namely:

1. The existence and the treatment of trading holidays is critical in any time series analysis of share prices. The fact that returns on weekends equal zero on two consecutive days might result in a cyclical bias, because news tends to be released on weekdays. However, in mitigation of the above, the publication date of a newspaper is not always an accurate measure of when a particular bit of information reached its audience. Continuous streams of news on the Internet and on television can foreshadow this information on any day of the week.

2. It is possible that there is a certain lag time before the market responds and the signal becomes detectible. And if this lag time is either longer than the superpositioned window permits or is not consistent, no significant effect would be detected within this specific research methodology.

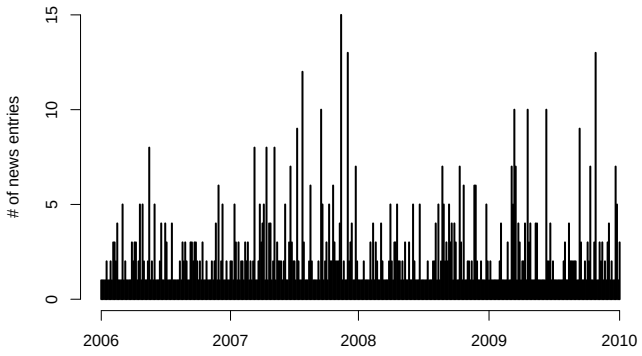

Figure 1: Frequency of news entries per day for the period of January 2006 until January 2010

5 Results

5.1 Descriptive Statistics

During the four year study period from January 2006 until January 2010, a total of 378 companies were criticized in 928 news entries. Figures 1 and 2 provide an overview of the frequency of news. Specifically, Fig. 1 depicts the frequency of news over time and 2 depicts the number of news entries for each of the 378 companies criticized. Over time they are evenly distributed with a peak of 15 news entries per day. However, it must be noted that on occasion, several companies are criticized in one news item resulting in the effective number of published news items being lower than the news entries used for the purposes of this research. The maximum number of companies reported on within any one particular news item is eight, which does not affect the analysis significantly. The distribution of news entries that concern a particular company is shown in Fig. 2. There are a large number of companies that have been criticized only once or twice, and eleven companies that have been criticized more than ten times. The three most frequently criticized companies were Shell, British Petroleum, and Coca Cola.

Descriptive statistics of daily discrete returns are shown in Table 1. The maximum and minimum are at negative 0.1 and positive 0.1 respectively, following the band limitation as discussed under the methodology section. The median is at zero (as a result of the constant price over trading holidays, refer methodology) and, the first and third quartiles are symmetrically centered around zero. The mean is slightly negative indicating an overall loss in this particular investment dataset during the study period. The variance across all

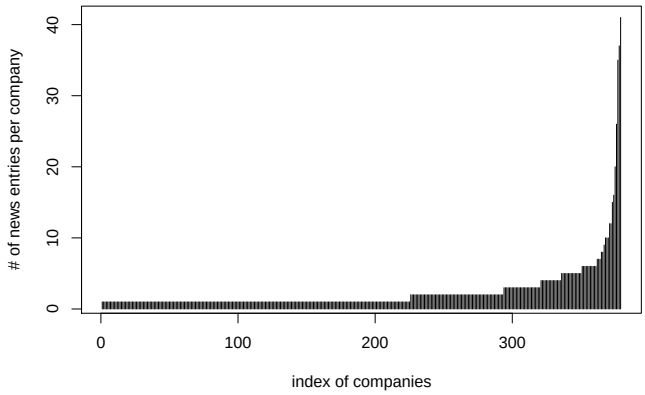

Figure 2: Number of news entries per company

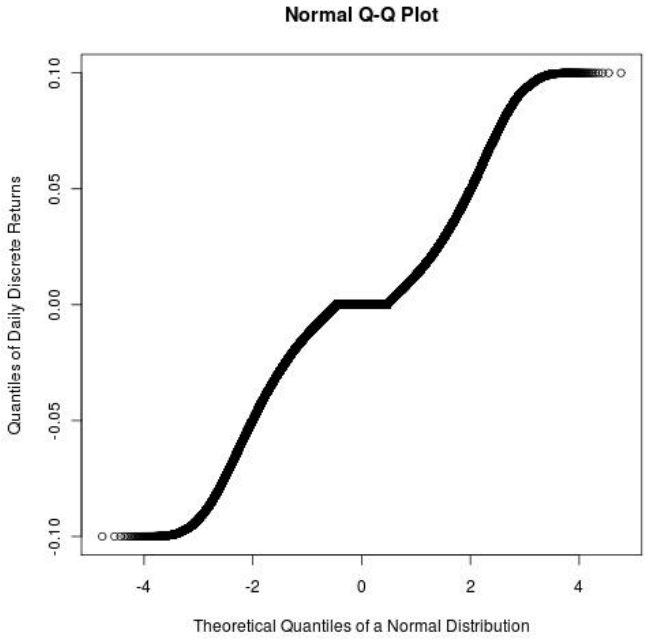

Figure 3: Quantile-Quantile plot of the distribution of returns against the theoretical quantiles of a normal distribution.

Minimum	-0.1
1st Quartile	-4.88E-003
Median	0
Mean	-3.54E-005
3rd Quartile	4.79E-003
Maximum	0.1
Variance	4.18E-004
Missing Values	25785 (4.6%)
Removed excessive outliers	5920 (1%)

Table 1: Descriptive Statistics of the returns of the entire investment universe consisting of daily discrete returns for 378 companies on 1498 days.

values is 0.000419 and 3.5% of all values are classified as 'missing value' (NA). In order to provide a complete picture, a QQ-Plot depicts the distribution of returns against a normal distribution in Fig. 3. The distribution of returns has slightly thin tails and a horizontal bar which stems from the trading holidays. The thin tails are due to the removal of excessive outliers, while the original data had heavy tails when it included returns exceeding +/- 0.1.

5.2 Findings

The result of the analysis for the entire dataset is shown in Fig. 4. The variance of returns is plotted from day -3 to day 3, with each news impact centered on day 0. The data is based on an overlay of 933 windows of returns. Variance varies considerably between different days, ranging from 3.5E-004 to 4.7E-004 and day zero is enclosed by two peaks. The variance at day 0 is the median variance of the entire window and is also close to the median variance of larger windows.

A subset of the data, however, shows a different situation: Fig. 5 depicts the result of the exact same procedure for the dataset excluding the current economic crisis, i.e. only data before 31st of July 2007 is used. In this case variance is generally lower, as expected. Here, variance on day zero is a distinct peak. Before day zero, variance is greater than after day zero. While day -3 and -2 show an increase of variance this drops off on day -1 before peaking on day 0. On day 1 variance plummets to about 25% of the value on day 0 and remains at a similar level throughout the following days. It may be of interest to note that the peak on day 0 remains a global maximum across even much longer window periods of up to twenty days either side of day 0.

When considering mean returns (not shown), there is no visible signal in a 7-day window, both for the full dataset and for the subset before the crisis.

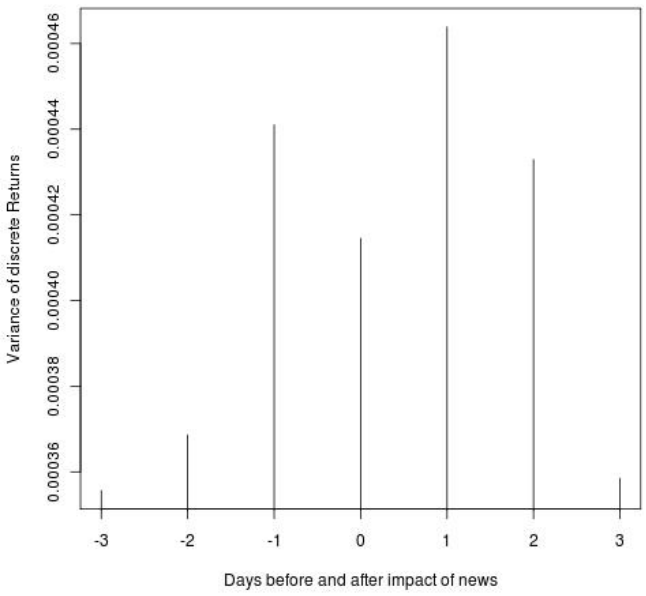

Figure 4: Variance of Returns for the full dataset during a window of 7 days. Day 0 is the day when a news entry was released to the public.

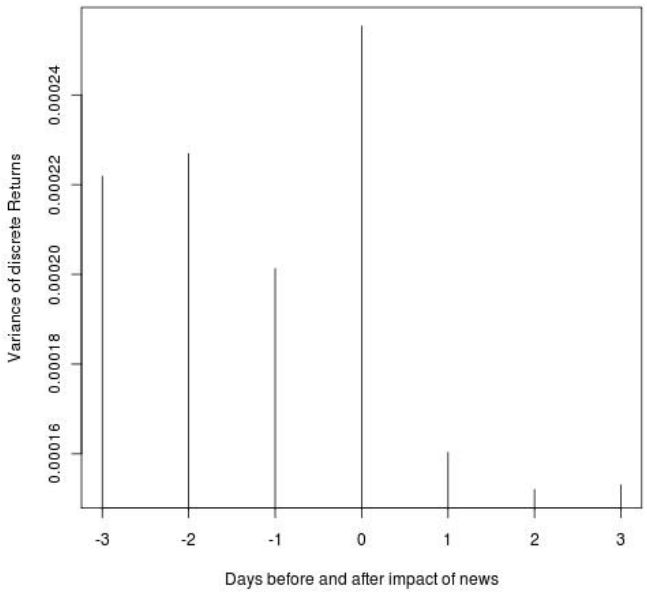

Figure 5: Variance of Returns for only the data before July 2007 during a window of 7 days. Day 0 is the day when a news entry was released to the public.

6 Discussion

The presented results show that the market emits a signal in response to the exogenous shock of news containing criticism towards environmental or social misconduct. They also show, however, that this is not true in general terms but only during a limited period that is characterized by 'bull markets' (Jan 2006 – Jul 2007), whereas during 'bear markets' (Aug 2007 – Jan 2010) (Cox and Glapa, 2009) this signal cannot be detected.

The signal can be interpreted as an expression of idiosyncratic unpriced risk that reveals itself in volatility, but not in absolute terms, given that there is no constant pattern found in daily means. This is an indication of the fact that the response of share prices to news containing criticism about environmental or social misconduct does not have a consistent presign, as highlighted in the literature review. Furthermore, different agents in the market might disagree if published criticism is a damage which might cause noise, but arguably have no determinable directional effect.

The strength of the effect during bull markets is such that the peak on day zero is a distinct maximum within the seven-day window and also a global maximum over a window as long as forty days. The fact that variance is elevated before day zero compared to the subsequent days thereafter, proves very interesting. It could suggest that there are mechanisms in place which predict the impact on day 0. This is intuitively possible, given that there are always leaks by which insiders will receive the news prior to publication (Chakravarty and McConnell, 1999).

However, the above explanation is hampered by the fact that there is not a systematic monotonous buildup towards day 0. The strong decline of variance following day zero is also somewhat peculiar. One would expect an impact on day 0 and following that a relaxation, whereas in Fig. 5 a sharp drop is experienced from day 0 to day 1.

It is evident that any econometric analysis that is concerned with the second half of our decade will be influenced, if not dominated, by the subprime crisis which triggered a recessionary cycle from August 2007 to date of writing. A systematic response to a specific exogenous shock is quite likely to exist only for a limited time after which the regime of the market changes and pricing mechanisms and patterns reorganize (Chakravarty and McConnell, 1999). Against this backdrop, the result that a response to a specific kind of news does not prevail throughout the entire study period but rather exists only during a special phase of it, is anything but discouraging. Rather, it is consistent with previous results, where a portfolio mimicking analysis indicated that a portfolio comprising of heavily criticized companies under-performs the market slightly, but only so during pre-crisis markets (Koelbel, 2008).

7 Conclusion

The analysis has shown that news items containing criticism towards environmental and social misconduct are likely to be a source of unpriced idiosyncratic risk during the bull markets preceding the takeoff of the subprime crisis in August 2007. After this date no effect could be detected. Before the crisis, a superposition of time series of returns has revealed a peak of variance on the day of a news release. The variance surrounding this day is distinctly lower and may suggest a possibility for prediction. The results imply that criticism for environmental and social misconduct in lead media does not systematically lower the share price, but does increase volatility on the given day.

Combined with earlier research, this indicates that there may be a benefit to investments adhering to ethical principles, conditional on the overall market mode. It is an inconvenient question to ask, whether sensitivity to ethical issues is a luxury that only emerges during prospering markets. There are important normative reasons to adopt ethical principles, but in this study it has been shown that the stock market has potential to detect ethical issues.

Further inquiry should investigate the influence of outliers and trading holidays on the results. A very fruitful research avenue will be to research the specific circumstances of every news item and its corresponding share price development and assess the validity of the presented results based on a microeconomic assessment at the company level. Specifically, avenues for future research include:

- Which other kinds of classified news have volatility effects on share prices and how do they compare against each other?
- Can the results be reproduced within regional markets?
- Does the conclusion remain plausible when the individual stories are researched and matched up against the history of economic development at the company level?

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