Corporate Legal Responsibility and Longer Term Shareholder Value: Evidence from Environmental and Social Fines

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Abstract: This paper empirically examines the impact of corporate violations, specifically monetary fines on long term stock performance. It contributes to existing literature by using data of 1,887 monetary fines incurred by 394 firms hand-collected from the Securities and Exchange Commission filings from 1994 to 2012 for United States based firms. We find that in the long term for one year, there is significant underperformance of these firms between 25 and 29 basis points per month measured as Carhart model alphas. We also find that firms with higher fines have larger underperformances indicating that the level of monetary value of fines do indeed impact stock performance. In addition, we find initial announcements of the violations have larger negative returns. Our results also indicate that investors react to violations in the manufacturing, mining and transportation and public utilities industries compared to other industries. Furthermore using classifications of environmental, social and long term aspects, we were able to find that investors perceive environmental issues on all different stages of violations to be a cause of concern, while social and surprisingly also long term aspects matter somewhat less. Overall, we find consistent results that in the long term, illegal corporate behaviour is detrimental to the performance of firms.

Keywords: Corporate Legal Responsibility, Corporate Social Responsibility, CSR, Fines, Illegal Behaviour, Long-Termism, Longer Term Shareholder Value

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Acknowledgements: We would like to thank Adrian Bell, Alfonso DuFour, Carol Padgett and the participants at the CCLFR 2015 Seminar at Reading, PRI 2015 London event at LSE, PRI 2015 NYC event at Bloomberg, ERIIC 2015 conference at Hamburg, Financial Crime Symposium Conference 2016 in London and the ICMA Centre for their comments. We would also like to thank Jochen Leidner for his feedback from the presentation at Thomson Reuters in London 30th January 2015 and Barry Feldman from Russell on 2nd July 2015. Authors are listed alphabetically. All remaining errors are our sole responsibility. No authors benefited financially or otherwise form the presented results.

LIST OF ABBREVIATIONS

BP	British Petroleum P.L.C
CAPM	Capital Asset Pricing Model
CV	Confirmed Violations
CVPM	Confirmed Violations but Pending other Matters
Datastream	Thomson Reuters Datastream
EFFAS	European Federation of Financial Analysts Societies
EPA	Environmental Protection Agency
EW	Equal Weighted
IA	Initial Allegations
ICB	Industry Classification Benchmark
ISIN	International Securities Identification Number
KPIs	Key Performance Indicators
LT	Long-Term
MC	Market Capitalisation
RI	Responsible Investment
SEC	Securities and Exchange Commission
SIC	Standard Industrial Classification
US	United States
USD	United States Dollar

1.0 Introduction

In 2015, Volkswagen agreed to pay $15 billion in fines to settle their emissions-cheating scandal which is the largest paid fine by an auto-maker for negligence. Volkswagen's share price tumbled nearly 30% since the Environmental Protection Agency (EPA) announced that the automaker manipulated emissions software. In 2012, British Petroleum P.L.C (BP) paid $4.5 billion penalty over the Deepwater Horizon disaster which at that time was the single total largest criminal resolution in the history of the United States. BP's share price dropped a 13 year low after the incident and they have yet to recover from that pre-crisis period. BP paid an additional environmental fine in 2015 of $18.7 billion to settle legal actions based on that Gulf of Mexico oil spill. The Federal Bureau of Investigation (FBI) in FY2011 secured $2.4 billion in restitution orders and $16.1 million in fines from corporate criminals in that year and the amount of fines increased drastically by 198% from FY2009 to FY2011[1]. Eaglesham and Fuller (2015) find that the Securities Exchange Commission (SEC) for the fiscal year ended September 2014 levied more sanctions (including fines and repayment of illicit profits) overall on firms and individuals amounting to $4.2 billion which was a 22% increase from the previous year. This can be deduced that monetary penalty has risen substantially and in tandem with an increase in corporate crime. Monetary fines are growing and the implications of these fines no longer hold just as a "cost" of business. There are strong impacts of these fines which are not only felt by the firm but also stakeholders. English (2014) state that *"Financial implications are much wider than the actual fine levied… regulatory action can have a negative impact on the share price of a firm and damage its relationship with investors".*

We find numerous amount of literature that have measured the short term impact of firm illegalities on stock returns (Arnold & Engelen, 2007; Bosch & Eckard, 1991; Davidson,

1 "Financial Crimes Report 2010-2011" available at http://www.fbi.gov/stats-services/publications/financial-crimes-report-2010-2011 (accessed 10 September 2016)

et al., 1994; Karpoff, et al., 1999; Song & Han, 2015; Wallace & Worrell, 1988). One of the earlier studies by Wallace & Worrell (1988) used an event study methodology to examine announcements of firm illegalities and find that the market does react negatively in the short term to socially irresponsible acts. There have been a number of studies that have measured the impact of different types of crimes on stock returns (Arnold & Engelen, 2007; Cohen, 1996; Davidson, Worrell, & Lee, 1994; Song & Han, 2015), on different types of industries (Baucus & Near, 1991; Song & Han, 2015; Zeidan, 2013) and by environmental and social violations (Capelle-Blancard & Laguna, 2010; Karpoff, John R. Lott, & Eric W. Wehrly, 2005). However, we find only two studies that have measured the long-term impact of illegalities (Baucus & Baucus, 1997; Baucus & Near, 1991). We differ from them in several ways. Firstly, both the studies use a sample of illegal behaviour data of convicted firms to meet the criteria of only "clear illegal" behaviour. Their violation data is based only on the assumption that managers knew or should have known the illegality of their actions. Our study instead incorporates all announcements of illegality and by different legal stages of violations that involve monetary penalization. Secondly, though Baucus & Baucus (1997) measures the longer-term performance using accounting and market returns, their study is based on an rather simple analysis of covariance procedures whereas we intend on measuring the impacts of illegalities using a more advanced, Carhart model based portfolio method to determine performance. Thirdly, their data sample though similar in the length of period of 19 years from 1963 to 1981, our data period is more recent from 1994 to 2012 and thus intends to examine whether investors in the current period react to illegal behaviours of firms with monetary fines.

Thus the purpose of this paper is to investigate the long-term impacts of monetary fines on the performance of stock returns especially by different industries and on various environment, social and long-term issues. We are the first to our knowledge to investigate the

impact of long-term issues on stock returns using classifications of environmental, social and long term aspects. In this paper, we examined data of 1,887 monetary fines incurred by 394 firms hand-collected from the Securities and Exchange Commission (SEC) filings from 1994 to 2012 for United States based firms. Our main contribution of this study is to examine the long term impact as most institutional investors are concerned about long term profitability. As we are interested in studying the longer term shareholder value effect instead of specific event effect, and considering limited news data on rumours prior to the fines as our dataset begins from 1994 a short term study would not be feasible.

Our review of the literature shows that on the short-term, illegal behaviour is penalized by the market. Hence our first part of the study is to examine whether this would also hold on the long-run. The empirical findings indicate when holding firms with monetary fines in the long run for one year there are negative underperformances of between 25 and 29 basis points per month (p.m) measured as Carhart model alphas. These results support the overall study that fines are also detrimental to stock returns in the long run. Secondly, Karpoff, Lee, & Martin (2007) state that in determining fines to be imposed on criminal frauds, the US Sentencing Commission guidelines mandate that the fines increase with the size and scope of the violation. Thus, we also examined whether investors look at the size of the fine in respective to the size of the firm. Our results indicate that firms with higher fines per firm size (based on market capitalization) have a larger underperformance compared to firms with lower fines.

Thirdly, studies such as (Karpoff & John R. Lott, 1993; Karpoff, John R. Lott, et al., 2005; Karpoff, Lee, & Martin, 2005) have all measured the different stages of announcements of violations. Similarly, we also investigate the different impacts of the legal stages of violations on stock returns[2]. We find that initial announcements of the violations

[2] Refer to figure 1 in the appendix for the full description of the different stages of violations

have larger negative returns compared to the other stages, indicating that investors are much more concerned when first announcements of the fines are out. Fourthly, Zeidan (2013) state that shareholders in different industries when faced with similar problems would react differently. Therefore, it is important to examine whether these results would also hold in the long-term on different industries. Considering that environmental issues such as the depletion of natural mineral resources and scandals such as BP which caused massive fines, we find that investors react to violations in the manufacturing, mining and transportation and public utilities industries compared to other industries. Finally, we also measure the different types of violations based on environment, social and long-term fines. Following our results, we were able to find that investors perceive environmental issues on all different stages of violations to be a cause of concern, while social and surprisingly also long term aspects matter somewhat less.

The remainder of this paper is ordered as follows. We begin in Section 2 with a literature review that discusses the concept of corporate legal responsibility by reviewing studies that examine sentencing practices. We then also review studies of illegality on firm value and also on environmental and social issues. This is then followed by the hypotheses development. Section 3 explains the method for the hand-collected data and the empirical methodology. Following that we discuss our results in Section 4. Finally, we conclude with the findings and suggestions for future research in Section 5.

2. 0 Literature Review and Hypothesis Development

2.1 Corporate Legal Responsibility

The definition of corporate crime can be very diverse. Becker (1968) indicate that the word "crime" should cover all violations, not just felonies like murder but also white collar crimes and punishment inflicted on offenders vary from imprisonment to fines. Baucus &

Baucus (1997) define illegal corporate behaviour as *"unlawful activities of members or agents of a firm, engaged in primarily for the firm's benefit which includes intentional and unintentional illegal acts"(p129).* Song and Han (2015) adopted a comprehensive definition to corporate crime indicating that *"corporate crimes are illegal activities perpetrated by both corporate executives as individuals and corporations as organizations. Individual crimes may include white-collar crimes (e.g., fraud, embezzlement) and street crimes (e.g., assault, theft), while organizational crimes could incorporate operational crimes (e.g., price fixing, labor law violation) and financial crimes (e.g., accounting fraud)"(p2).* From a firm's perspective, firm valuation theory explains whether investors are likely to react if a firm commits a crime (Wallace & Worrell, 1988). A value of a firm may increase if investors believe that the crime committed for example bribery may actually increase firm value (Zeume, 2014). Instead, value of the firm might decrease if investors believe that the crime committed may be detrimental to the firm because of potential fines or penalties (Wallace & Worrell, 1988).

The concept of firm valuation theory can be extended with stakeholder theory. The idea is that management in a firm should conduct its everyday business to benefit all stakeholders and in the long run create value for the firm. However, the interpretation of this theory has been debatable whether stakeholders are only interested in the firms fundamental values (i.e. financial performance) or other things (Harrison & Wicks, 2012). Once a crime is committed, how are firms punished for their actions? For a firm, a court can implement retribution via monetary penalty which Ulen (1996) argues should be "calculated according to the amount of harm that the fraud imposes directly on identifiable victims (the civil loss) and indirectly on other consumers and business organizations (the social loss)".

There are other theories that intend on explaining the penalties that firms receive for their misconduct. Becker (1968) seminal paper introduced the optimal penalty theory where

the penalty should equal the social harm divided by the probability of detention. Cohen (1996) empirically examines the extent to which past sentencing practice for corporations convicted of federal crimes (prior to adoption of the new sentencing guidelines in 1991) has been consistent with optimal penalty theory. Their findings suggest that the sentencing practice is consistent with an optimal penalty framework. Cohen (1996) also found no deep pocket effects (larger firms receive larger monetary sanctions), which is in contrast to Karpoff, Lee & Martin (2007) that finds there is effects of deep pockets as their data indicated that both private and regulatory monetary penalties are related to defendant's ability to pay. This shows that there is still ambiguity in the sentencing practices. Courts are quick to give out penalties to firms but Lott (1996) argues that criminal penalties should be limited to the rare situations in which there are third-party externalities. His views are opposing to Ulen (1996) who state that criminal penalties are required to ensure that offending firms internalize the losses imposed on buyers.

We find the definition of crime is vast and the sentencing practices ambiguous, nevertheless when corporate crime is committed, it has consequences on shareholders. Though it is the firms managers that cause the violations, shareholders are left to bear the full economic burden of the fines (Kennedy, 1985). Zyglidopoulos (2016) state that second-order corruption which is the abuse of power by individuals or groups to change existing (or create) rules or norms so that they can benefit unfairly is more harmful in long run and is harder to prevent, detect and stop[3]. Thus, it is crucial that the sense of corporate legal responsibility is instilled in managers to ensure violations are not re-occurring phenomena. The debate of corporation's responsibility especially legally has led to various discussions on the cultural behaviours of the risk perceptions of firms (Tully, 2005). Corporations are taking risks without understanding the full extent of the consequences of their actions. Therefore, perhaps

[3] The first-order corruption is the abuse of power by either individuals or groups for private gain, given a system of existing rules or norms.

a stronger sense of the implications especially on the impact of performance on firms would deter corporations from having violations and invoking a stronger adherence to the law.

2.2 Illegalities and Firm Value

It is evident that shareholders bear the consequences of illegal behaviours of firms and many scholars assert there are significant negative impacts of these behaviours on shareholder returns. Various literatures have used the event study methodology to measure impacts of fines on stock prices. Wallace & Worrell (1988) used that method to measure the impacts on shareholder returns of announcements of corporate illegalities as proxies for social irresponsibility. They claim that this method would be able to determine the accurate way to measure effects on very short terms. With a sample of 131 events and 96 firms, using a market model, they find that markets do react negatively to announcements of alleged corporate crime. Bosch & Eckard (1991) investigated market reactions to only US federal indictments to price fixing. They find a total value loss of $2.18billion in equity value for the 127 observed sample firms around the announcements of their indictments.

Davidson, Worrell, & Lee (1994) extended Wallace & Worrell (1988) study by using a larger sample size of 535 announcements. In contrast, they find there is an overall insignificant market reaction to the announcements but when the samples were further broken down to specific crimes, they find that markets react significantly to bribery, tax evasion and violations of government contracts. Karpoff et al., (1999) investigated defence procurement fraud, indictments and suspensions and find significantly negative abnormal returns. Langus and Motta (2006) measured the impact of antitrust investigations in Europe on firms stock market value. They find that the European Commission's surprise inspection of the firm's premises has a strong and statistically significant effect on the firm's share price, with its cumulative average abnormal return being approximately -2.2%. Arnold & Engelen (2007) measured the impact of announcements of different types of illegal corporate activities on

stock prices of Belgian and Dutch firms. They find that there were no reactions to news related to corruption, and a very small reaction on day [0] and a larger, delayed reaction on day [+1]. Investors seem to anticipate news on accounting fraud as an abnormal return of -10.40% is found on day [-2]. Choi & Pritchard (2012) find that the stock market reacts more negatively to class actions relative to SEC investigations. Zeidan (2013) find that the market did not react significantly to the severity of violations. He argues even though his study is based only on financial institutions, the findings were consistent with reactions of shareholders in other industries. He also controlled for size as he indicates that larger firms have extensive resources that allow them to more easily absorb the penalties set forth. Kouwenberg and Phunnarungsi (2013) examined market reactions when firms with good and poor governance commit violations of the listing rules in Thailand. They find a strong market reaction, −8.1% on average, when firms with low past violations and low governance scores commit violations. Also using an event study methodology, Song & Han (2015) analyzed different types of corporate crime[4] in Korea from 2001 to 2010 and find negative reactions to stock prices around the announcements of corporate crimes.

The string of literature above confirms that investors react to violations negatively especially on the short term. We find only two studies that investigate the long term performance effects of corporate illegality. Baucus & Near, (1991) used an event history analysis for a 19 year period to measure illegal activities of firms using financial performance measures such as return on investment. They find that large firms are more prone to behave illegally and firms with poor performance were not prone to commit wrongdoing. Baucus and Baucus (1997) investigated the long term performance effects of corporate illegality over the period of one through five years after a conviction. Their results indicate that firms'

[4] The crimes that they measure are; crime type (white-collar vs. street crime, operational vs. financial), industry type (financial vs. industrial), business group affiliation (chaebol-affiliated vs. non-chaebol-affiliated), and corporate governance (strong vs. weak board structure index)

experience lower accounting returns over five years and slower sales growth in the third through fifth year after a conviction.

2.3 Environmental and Social issues on Firm Value

There are also various literatures that have also looked into measuring different types of specific environmental and social issues on performances of firms. On environmental issues, Konar and Cohen (2001) find that legally emitted toxic chemicals have a significant effect on the intangible asset value of publicly traded firms. Thomas (2001) examined the correlation between the excess stock market returns and the adoption of an environmental protocol by firms. His results indicate that both the adoption of an environmental policy and prosecution for breach of environment standards have significant explanatory power in an analysis of excess returns. Jacobs et al., (2010) analyzed the shareholder value effects of environmental performance by measuring the stock market reaction associated with announcements of environmental performance. They find overall, that the market is selective in reacting to announcements of environmental performance with certain types of announcements even valued negatively. Karpoff, John R. Lott, et al., (2005) find firms that violate environmental laws suffer statistically significant losses in the market value of firm equity. Capelle-Blancard and Laguna (2010) examined stock market reactions to industrial disasters which caused toxic release and death or serious injuries. They find petrochemical firms drop 1.3% in their market value over the two days immediately following the disaster. On environmental and social issues, Ziegler, Schröder, & Rennings,(2007) examined the effect of sustainability performance of European corporations on their stock performance. The main result is that the average environmental performance of the industry has a significantly positive influence on the stock performance. In contrast, the average social performance of the industry has a significantly negative influence. We proceed in the next section with the explanation of our hypotheses.

2.4 Hypotheses Development

This paper makes several contributions to literature. Firstly, most of the reviewed studies have focused on event methodologies and measuring short term effects (Arnold & Engelen, 2007; Bosch & Eckard, 1991; Davidson, et al., 1994; Karpoff, et al., 1999; Song & Han, 2015; Wallace & Worrell, 1988). What about longer term impacts of violations on the performances of stock returns? There is very little evidence empirically measuring long term impacts other than Baucus & Near (1991) and Baucus and Baucus (1997). Stock prices are a good indicator and appropriate measure compared to accounting measures as there is an immediate market reaction to events such as illegalities. Accounting based returns would only show a reaction until the next accounting period when the report is prepared. Furthermore, in efficient market, shareholders penalize managers who act irresponsibly via a drop in the share price and hence a reduction in shareholder wealth. Here, we intend to investigate whether investors only penalize firms on the short run or does the impact of wrongdoing extend further? Ziegler et al., (2007) used a longer observation period in their econometric analysis as they indicate that the short term over reactions of stock markets can become weaker or even disappear over time. Similar to most of the reviewed literature that find short term negative impacts on stock returns, we expect similar results in the long term. Hence, the first hypothesis is defined as the following:

Hypothesis 1: Stocks of firms that are being held for one year upon announcement of violations have negative stock returns

The second contribution this paper makes is by measuring whether the magnitude of fines in the firm has an impact on stock returns. Karpoff, John R. Lott, et al.,(2005) were one of the earlier authors to measure the size of the legal penalties imposed on environmental violations and find that firms' losses in share values are related to the size of the fine or damage award eventually imposed by regulators or the courts. As part of their independent

variable, they use the dollar amount of the fine divided by the market value of the firm equity to examine the cross-sectional relations between share value losses and legal penalties. On the other hand, Karpoff, Lee, & Martin (2005) examined the legal penalties due to financial misrepresentation and find that large legal penalties can be substantial but market penalties are larger. Those studies both examine the size of the fines and its impact on returns, hence here we intend on measuring whether investors also look at the size of the fine in respective to the size of the firm. Using a rational expectations assumption, we expect that fines that are high per market size would have larger underperformances. Hence, the second hypothesis is defined as following:

Hypothesis 2: Firms with higher fines per market size would have a larger negative stock return in the long term compared to firms with lower fines per market size

The third contribution of this paper is to understand which legal stage of the process would bring a stronger reaction from investors. Though fines are detrimental to stock returns, at times the confirmation of fines maybe viewed positively, if the market expected worse and/or the market is relieved to have simply been removed from the uncertainty. For example, after the settlement was announced for JP Morgan's $13 billion fine of selling bad mortgage bonds ahead of the financial crisis, JP Morgan's share price jumped more than 3 percent as investors were relieved to put the legal woes to end[5]. We deduce that the initial stage of violation or announcement would be more of a concern (if there were no prior announcements or rumours) compared to the other legal stages. This similar is to Karpoff, John R. Lott, et al., (2005) who find that the stock price reactions to initial announcements on environmental fines captures most of the firm's total loss in market value. Karpoff & John R. Lott (1993) examined different types of press dates (i.e. allegation date, charges filed

[5] "JPMorgan's Soaring Stock Price To Completely Erase $13 Billion Fine" available at http://www.huffingtonpost.com/2013/11/26/jpmorgan-stock-fine_n_4343987.html accessed 8th May 2017

date and settlement date) surrounding corporate fraud and Karpoff, Lee, et al., (2005) also examined various stages of the enforcement process surrounding federal securities investigation. Here, we examine the impact on different level of the fines per market size and we hypothesize that the initial allegation stage would have larger negative returns compared to the other legal stages. Thus our third hypothesis is defined as the following:

Hypothesis 3: Violations at the initial allegation legal stage would have larger negative stock returns compared to the confirmed but pending other matters, confirmed and overall stages of violations

The fourth contribution this paper makes is by understanding the long term impacts of returns within individual industries. Every industry is unique with its own characteristics. Even shareholder perception for each individual industry would differ. Zeidan (2013) specifically measured public traded banks using a short term study methodology, noticed that there is a significant negative market reaction on violations by banks which were subject to enforcement actions by US regulators. Song and Han (2015) finds that corporate crime by a financial firm has a stronger negative impact on stock market valuation than by an industrial firm in South Korea using a short term study. Taking into account that both those studies are based only on short term effects, we expect investors to react more on the long term to industries that have a more profound long term impact to the environment. Furthermore, Karpoff, John R. Lott, et al., (2005) state that *"the firm's customers, employees, and suppliers can be motivated by environmental concern to change their reservation prices in doing business with the firm. Environmentally costly activities that attract unfavourable attention could then lower demand for the firm's products or increase the firm's costs".* In addition, considering that the depletion of natural mineral resources is a constant debate and concern (Jenkins & Yakovleva, 2006), plus environmental massive disasters and scandals such as BP and Volkswagen, we expect industries that are related to extractions and usage of

valuable minerals and natural resources (i.e. mining, manufacturing) would have more investor reactions in each stage of the legal process. The fourth hypothesis is defined as the following:

Hypothesis 4: Investors would react to violations in the extractions and usage of valuable minerals and natural resources industries compared to other industries based on each stage of the legal process

The fifth contribution of this study is to understand which individual environment, social plus LT factor is more of a concern to investors. There are various other studies that measure individual criteria's such as environmental and social (Ziegler, et al., 2007), environmental (Jacobs, et al., 2010; Karpoff, John R. Lott, et al., 2005; Konar & Cohen, 2001; Patten, 2002; Shimshack & Ward, 2005; Thomas, 2001). However none to our knowledge have used environmental and social plus LT criteria's to measure violations. We consider the LT issues key to be added because firms usually pursue corporate sustainability with both an agenda to reduce corporate environmental responsibility and corporate social responsibility risk but also to increase their long term viability i.e. increase their profits. Hence, examining the LT separately from environmental and social issues would be crucial in understanding whether investors consider LT issues that affect firms as a concern. For example, the LT could relate to innovation (i.e. patents) that would affect the long term revenue generation of the firm. Furthermore, bearing in mind that in our previous hypothesis, we would perceive violations in the extractions and usage of valuable minerals and natural resources industries (i.e. environmental related) to be more of a concern compared to other industries, thus our fifth hypothesis is defined as the following:

Hypothesis 5: Investors perceive environmental violations at every stage of the legal process to be more of a concern compared to social and long-term violations

In order to measure whether our hypotheses above are valid, we examine the impacts of these violations using empirical data in the following sections.

3.0 Methodology

3.1 Data Sample

This study consists of a sample of publicly traded US firms that have violated regulations that involve only monetary penalization. The lists of US firms were taken from the MSCI World Large Cap Constituents over a 19-year period from 1994 to 2012. Baucus and Near (1991) find that large firms that operate in dynamic, munificent environments were the most likely firms to behave illegally. The overall sample contains data of 1,887 monetary fines incurred by 394 firms hand-collected from SEC filings.

[Insert Table 1 here]

Most of the reviewed literature use media sources for the date of events such as Wall Street Journal, Dow Jones news retrieval service and other news databases such as Lexis/Nexis and Factiva. However, using such databases may 1) not capture all the relevant or large events 2) different databases might provide different event dates and 3) it might only collect certain types of announcements that might skew the actual research question (Karpoff, Koester, Lee, & Martin, 2014). Coleman (2011) had used various governmental databases but also indicate that there is no certainty of comprehensive data.

Hence, the source of information for the violations was identified and hand-collected via filings of 10-K reports in the SEC database. It is mandatory that all public firms publish this which are available at the SEC. Schnatterly (2003) indicates that there is a significant amount of repetition between annual reports and 10Ks and further states that the 10Ks are usually viewed by regulators and analysts. Hence, this legitimizes our purpose using the 10Ks as our source of data. The violations were noted under Item 103 of legal proceedings or unless directed under commitment and contingencies in the fillings. In order to create the

database, only firms that had any announcements of corporate violations or violations (i.e. bribery, breach of fiduciary duties, anti-trust, tax evasions, fraud, labour issues) with monetary penalties were used. However, Item 103 of Regulation S-K requires disclosure of administrative or judicial proceedings arising under any federal, state or local provisions dealing with protection of the environment, if the monetary sanctions might exceed $100,000. As we are unable to trace pre-announcements rumours in the earlier part of the dataset due to limited news data as our data begins from 1994 and considering we are interested in studying the longer term shareholder value effect instead of specific event effects, a portfolio method is much more feasible compared to an event study method. In addition, Ziegler, et al., (2007) state that in an event study method short-term reactions of stock markets is possible such that potential positive or negative stock price changes can become weaker or even disappear over time.

3.2 EFFAS' Criteria

We used in this study the European Federation of Financial Analysts Societies (EFFAS) Key Performance Indicators (KPIs) 3.0 as they are the only classification that includes long-term as well. These KPIs have an additional factor "Long Term Viability" or "Viability", herein "Long Term". As discussed in the hypotheses section, this could relate to innovation (i.e. patents) or even to anti-competitive behaviour, anti-trust and monopoly practices. These KPIs were created as a guideline for the integration of Corporate Environmental Responsibility and Corporate Social Responsibility into financial analysis and corporate valuation and was specifically designed for stock listed firms. These KPIs are defined by 114 subsectors following the Dow Jones Industry Classification Benchmark (ICB). In this study we matched our list of firms to the ICB codes and then for each

individual violation, matched it to the KPIs. Refer to figure 2 for a detailed explanation on the KPIs.

3.3 Data Preparation

The returns were taken from Thomson Reuters Datastream (Datastream) under the Return Index (RI) category where it is assumed that dividends are reinvested[6]. The index is under the local currency of USD. Firstly, International Securities Identification Number's (ISINs) for the firms were manually searched in Datastream. The final sample consisted of 597 unique firms. Secondly, all firms were checked if either it was delisted or merged. To ensure there were no attrition biases, the returns were used till the point of time before the firms were to turn 'dead'. Finally, the returns were then converted into continuously compounded returns using the following formula:

$$r_{i,t} = ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \quad (1)$$

The equation above indicates that the natural logarithm (ln) is taken by dividing the firms' price in that period by the price of the previous period. In order to calculate the excess returns, we calculated the risk free rate (r_f) using the three months US Treasury bill rate was retrieved from Datastream. It was then converted into monthly data using the following formula:

$$r_{f,t,1m} = ln\left(1 + SR_{f,t,13w}\,\frac{91}{365.25}\right)^{\frac{30.4375}{91}} \quad (2)$$

3.4 Portfolio Creation

From the database, four different portfolios were created. These were depending on the stage of violation of each firm; i) initial allegation ii) confirmed violation but pending various other matters iii) confirmed violation and iv) includes an overall portfolio consisting

[6] A return index (RI) is available for individual equities and unit trusts. This shows a theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity or unit trust at the closing price applicable on the ex-dividend date.

of the three different stages. Figure 1 depicts different stages of a violation. The portfolios (p) were then equally weighted using the following formula:

$$r_{p,t} = ln\left[\frac{1}{N}\left(\frac{P_{i1,t}}{P_{i1,t-1}} + \frac{P_{i2,t}}{P_{i2,t-1}} + \cdots + \frac{P_{iN,t}}{P_{iN,t-1}}\right)\right] \quad (3)$$

Where $r_{p,t}$ is the equally weighted portfolio, $P_{i,t}$is the stock price of the firm at the end of month t and $P_{i,t-1}$ is the firm stock price for the month prior and N is the total number of firms in the portfolio. The equal weighted (EW) portfolios were also created using two different ways. The first method is EW fine level, where all violations events or all fines are equally weighted. For example if in the portfolio, if one firm has five fines in a specific period of time, we would sum all the returns and divide by the number of events/fines in that time period. The second method EW firm level, we equal weighted the portfolios by individual firm. For example if in the portfolio one firm has five fines in a specific period of time, we would only use the one return data in that specific period of time to ensure that there are no overlaps in returns.

For the separation by fines per market size, yearly Market Capitalisation (MC) data were retrieved from Datastream. For the MC portfolios, we used the end of year MC data. The amount of fines in dollar value was all summed up per year for accuracy and cohesiveness to the end of year MC figures.

The next step was then to rank the fines according to percentile ranges. From the percentile ranges, we created two different portfolios which consisted of only fines between 0 to 20th percentile and 80th to 100th percentile. The low (high) percentile portfolio included all fines per market size below the 20th (above the 80th) percentile in that respective year.

3.5 Empirical Model and Benchmark Creation

For measuring the long term impact, holding periods of twelve month portfolios were created. Time- series regressions were run using the single and multifactor models following

the Capital Asset Pricing Model (CAPM), the three factor Fama-French model and the four factor Carhart model.

The CAPM is a widely used and known model that was developed by William Sharpe (1964) and John Lintner (1965). The intuition of this model is that the excess return can be explained by the expected risk premium, which is the beta multiplied by the market return minus risk free rate. Hence, the Jensen (1968) alpha or intercept would be zero. Any outperformance of the portfolio will be shown with a positive alpha and subsequently underperformance with a negative alpha.

The CAPM model is said to be flawed as it does not take into account other risk factors. Hence, the three factor model was proposed by Fama and French (1993, 1996), small minus big (SMB) is the difference between the returns on diversified portfolios of small and big stocks and high minus low (HML) is the difference between the returns of high and low stocks. Fama & French (2004) states that the three factor model "captures much of the variation in average return for portfolios formed on size, book-to-market equity and other price ratios that cause problems for the CAPM".

However, there are stocks that tend to outperform the market on a continuous basis for some point and others that tend to do poorly continuously as well. Jegadeesh and Titman (1993) find this as a momentum effect that lasts between three to twelve months. Carhart (1997) in his paper suggested extending the three factor model with momentum (MOM) as a fourth factor. This factor is the difference between the returns of diversified portfolios of short-term winners and losers. Carhart (1997) did indicate that momentum is a very important factor that can explain stock returns. He argues that the reason momentum strategy works is not because that there is a conscious decision to hold these kind of stocks (winners) but rather by chance (Sapp & Tiwari, 2004).

In this analysis, instead of using traditional market benchmarks, we constructed a specific market benchmark to match the set of firms in the created portfolios. Tailored benchmarks are a very common practice used in studies, for example data from Style Research is used to create specific, size, value and momentum factors for different regions (Hoepner, Rammal, & Rezec, 2011; Renneboog, Ter Horst, & Zhang, 2008). As the data sample in this study is only based on one specific country, US, the size, value and momentum factors were retrieved from Kenneth-French data library.

Considering that the sample of US firms in the portfolios consists of only large market cap firms, using a conventional benchmark might differ as the asset sizes might vary. Hence, the created market benchmark (creat) was equally weighted using only all unique firms from 1994 to 2012 which were in the sample. We start our empirical analysis using the simple CAPM as per in Equation (4)

$$r_{p,t} = \alpha_p + \beta_{creat,p}\, r_{creat,t} + \varepsilon_{p,t}, \quad (4)$$

Where $r_{p,t}$ and $r_{creat,t}$ represent the excess return of the portfolio (p) and the created equity market benchmark minus the risk free rate (r_f), respectively. $\beta_{creat,p}$ is the portfolio's systematic exposure to the created equity market benchmark. The Jensen alpha is represented by α_p and $\varepsilon_{p,t}$ is the error term which captures the random components of a portfolio's excess return for each observation(t) (Lintner, 1965; Sharpe, 1964). We also run our analysis using Fama-French in equation (5) and Carhart in equation (6) models, where the SMB and HML have been described previously:

$$r_{p,t} = \alpha_p + \beta_{creat,p}\, r_{creat,t} + \gamma_p\, SMB_t + \delta_p HML_t + \varepsilon_{p,t}, \quad (5)$$

$$r_{p,t} = \alpha_p + \beta_{creat,p} r_{creat,t} + \gamma_p SMB_t + \delta_p HML_t + \theta_p MOM_t + \varepsilon_{p,t}, \quad (6)$$

We also created a second type of market benchmark with the similar methodology but for each of the four individual industries. In order to do so, instead of using all firms, only

firms within those industries are used to create the specific industry benchmark following the Standard Industrial Classification (SIC) codes as per Table 1.

This specific industry equity benchmark (ind) was used for the regressions of the industry separation portfolio:

$$r_{p,t} = \alpha_p + \beta_{ind,p}\, r_{ind,t} + \varepsilon_{p,t}, \quad (7)$$

$$r_{p,t} = \alpha_p + \beta_{ind,p}\, r_{ind,t} + \gamma_p\, SMB_t + \delta_p HML_t + \varepsilon_{p,t}, \quad (8)$$

$$r_{p,t} = \alpha_p + \beta_{ind,p} r_{ind,t} + \gamma_p SMB_t + \delta_p HML_t + \theta_p MOM_t + \varepsilon_{p,t}, \quad (9)$$

4.0 Empirical Results and Analysis

The following section is to discuss the results from the i) overall (all industries) portfolio, ii) portfolios for fines per market size iii) portfolios separated by the legal stage of the violations iv) portfolios separated by the four industries, as per the two digit SIC code, and vi) portfolios for each environmental and social plus LT issue. Each portfolio has four different subset of portfolios; i) Initial Allegations (IA) ii) Confirmed Violations but Pending other Matters (CVPM), iii) Confirmed Violations (CV) and iv) Overall including all three stages of violations (Overall). Figure 1 provides a descriptive view of the different stages. In order to control for heteroscedasticity and autocorrelation, the Newey and West (1986) estimations have been used. Following the empirical model, the alphas are obtained using the CAPM, and Fama-French and Carhart models.

4.1 Impact of Overall (All industries) Results

The results of the alphas in Table 2 indicate that two out of the four portfolios (Confirmed and Overall) underperform between 25 and 29 basis points per month. These results are similar in both EW fine and firm level. The adjusted r-squared values increase for all results and are rather high between 0.63 and 0.85 indicating a good fit of the model. The

results here strengthen our assumption that on an overall basis, investors are concerned in the long run and do react negatively to violations and specifically monetary fines.

[Insert Table 2 here]

4.2 Impact of Fines per Firm Size Results

In this section, we compare the results between the lowest portfolio, 20th percentile and lower in Table 3 and the highest portfolio, 80th percentile and higher in Table 4 for the fines per firm size. We find that in fact firms with higher fines per firm size do have larger underperformances compared to firms with lower fines per firm size. This is evident in the example of the IA portfolio at the Carhart model, whereby the underperformance for the lower and highest percentile in the EW fine level is 50 and 64 basis points p.m respectively. This confirms our second hypothesis that firms with higher fines per firm size would have a larger negative stock returns in the long term.

[Insert Table 3 here]

[Insert Table 4 here]

4.3 Impact of Individual Legal Stages

As observed in table 3 and 4 we find that the IA for the 80th to 100th percentile portfolio for the fines per market size has a larger underperformance compared to the 0 to 20th percentile portfolio. Furthermore, we find though not statistically significant, the underperformance for the confirmed portfolio is lesser compared to the IA portfolio. This shows that investors react more negatively to fines that are large at the IA stage. This result supports our hypothesis that the initial announcement of the violations has a larger negative impact on returns compared to other legal stages indicating that investors react more to the first announcements of the fines. These results are also comparable to Karpoff, Lee, et

al.,(2005) as it confirms the notion that the first announcements of the fines would be more of a concern compared to settlement announcements based on the size of the fines per market size.

4.4 Impact of Individual Industry Results

The results of the individual industry portfolios in Table 5 to Table 7 are very interesting. We find that not all the portfolios display risk-adjusted returns that are statistically significant. This is evident for the Retail and Wholesale Trade industries[7]. We constructed unique industry market benchmarks in these portfolios to ensure that appropriate industry level benchmarks are regressed. Comparing the remaining three industries in the Carhart model, we find the IA portfolios the Manufacturing industry underperforms in both EW fine and firm level at 41 and 38 basis points per month respectively. For the CVPM portfolio only transportation and public Utilities underperform. In both EW fine and firm level, the Transportation industry indicates underperformances of 73 and 72 basis points p.m respectively in the Carhart model. For the CV portfolios, only two industries underperform which are Transportation and Public Utilities and Mining. At the EW fine and firm level, the transportation industry underperformed by 73 and 72 basis points p.m respectively and mining industry underperformed by 63 basis points p.m only at the EW fine level in the Carhart models. In the overall portfolios we find two industries underperform. The transportation and public utilities industry underperforms by 36 basis points p.m at the EW firm level in the Carhart model. The mining industry underperforms in the Carhart model by 42 and 41 basis points in the EW fine and firm level respectively.

[Insert Table 5 here]

[Insert Table 6 here]

[Insert Table 7 here]

[7] We do not provide the table for the Retail and Whole Trade portfolios as we do not find any statistically significant results.

Our initial hypothesis is that investors would react to violations in the extractions and usage of valuable minerals and natural resources industries compared to other industries. In examining only the Carhart results, supporting our hypothesis, we find that manufacturing, mining, transportation and public utilities have at least two stages of the legal process with statistical significance compared to Wholesale and Retail trade industry which did not have any statistical significance. Though we find that the majority of the portfolios underperform, the manufacturing industry for CVPM portfolio outperforms with 39 basis points p.m at the EW fine level in Carhart model. One explanation could be that investors in manufacturing industries perceive the violation at the IA to be would be more of a concern hence the negative return. However once the violation is subject to legal procedures, investors are much more confident of a better outcome of the fine. The adjusted r-squared values for all the industry portfolios vary between 0.40 and 0.80, indicating that the explanatory powers differ.

4.5 Impact of Environmental, Social plus LT Results

In this section, we discuss the results from the three different Environmental, Social plus LT portfolios. For the environment portfolios results in Table 8, we find strong statistical significance on all four different types of allegation portfolios in the Carhart model. The alphas indicate underperformances of between 38 and 127 basis points per month on a consistent basis for both EW fine and firm level. The adjusted r-squared values vary between 0.40 and 0.80.

[Insert Table 8 here]

The social portfolio in Table 9 on the other hand does not indicate any statistical significance on the EW fine level but only on the firm level. Only two portfolios, the IA and

CV portfolios underperform by 72 and 51 basis points per month respectively in the Carhart model. The LT portfolios in Table 10 for the EW fine level showed underperformance of 27 basis points p.m only at the Overall portfolio. However on the EW firm level, both the IA and Overall portfolios underperformed by 44 and 33 basis points per month.

[Insert Table 9 here]

[Insert Table 10 here]

When comparing the E,S and LT portfolios, we confirm our hypothesis that investors in overall are concerned more on the illegal behaviours of firms relating to environmental issues as we find statistical significance at all four levels of violations and with a larger underperformance of 127 basis points per month. This concurs with other literature that indicate environmental performances of firms can impact their firm value (Jacobs, et al., 2010; Konar & Cohen, 2001). Our results further extends Capelle-Blancard and Laguna (2010) who examined market reactions to only industrial disasters of 64 chemical plants and refineries worldwide. They find that not only is there a 1.3% drop in market value of the firms in their sample but also this loss is significantly related to the seriousness of the accident as measured by the number of casualties and by chemical pollution: each casualty corresponds to a loss of $164 million and a toxic release to a loss of $1 billion. We are to our knowledge the first to show that environmental fines would have larger underperformances compared to Social and Long Term fines. A further possible explanation of investor's strong reaction to environmental fines could be the increase of fines in FY11 and FY12 and tighter inspections and evaluations. The fiscal year 2015 Environmental Protection Agency (EPA) enforcement and compliance annual results showed that Administrative and Civil Judicial

Penalties assessed in FY11 was $162 million and increased to $215 million in FY12[8]. Federal Inspections and Evaluations also increased in FY12.

5.0 Conclusion

The aim of this paper is to measure the impact of monetary fines on the long term performance of stock returns. Various literatures have measured the short term impact of negative events such as fines on the performance of stock returns. However, we find that there is a gap in understanding the long term impact of fines. The sample of firms used in this paper is large cap firms and institutional investors usually hold stocks of large cap firms for the long run. In this paper, we hand-collected data of monetary fines from 10-K fillings which is in contrast to most data sources. Furthermore, our sample size of nineteen years reflects a larger observable period. Instead of using conventional benchmarks, we created a specific market benchmarks for the overall and each individual industry.

We began with analyzing the CAPM, Fama-French and Carhart models which control for size, value and growth factors for the overall industry. Our results indicate and affirm our first hypothesis that firms that are being held for one year upon announcement of violations do show underperformances of between 25 and 29 basis points p.m as Carhart model alphas. Our findings are sturdy as the adjusted r squared values are rather high. Next, we measured the different levels of fines per market size. Our results on an overall basis confirm our second hypothesis that firms with higher fines do indeed have a higher level of underperformance compared to firms with lower fines. Our third hypothesis is also supported that initial announcements of the violations have a larger negative returns compared to other legal stages. Our results are in line with our fourth hypothesis suggesting that investors react

[8] "Fiscal Year 2015 EPA Enforcement and Compliance Annual Results, Prepared by the Office of Enforcement and Compliance Assurance U.S Environmental Protection Agency, December 16, 2016" available at https://www.epa.gov/sites/production/files/2015-12/documents/fy-2015-enforcement-annual-results-charts_0.pdf#page=1 (accessed 1 August 2016)

to violations in manufacturing, mining and transportation and public utilities (which includes sub categories i.e. pipelines and electric and gas services), which are firms that have a strong connection with natural resources (i.e. environmental issues). Using the E,S plus LT classifications, we were able to confirm our fifth hypothesis that investors perceive environmental issues on all different stages of violations to be a cause of concern and with larger underperformance. In totality our portfolios indicate underperformances, however this does not hold for the manufacturing industry where we find outperformance in social and confirmed but pending other matters fines. This warrants interesting further research to investigate and understand the behaviours of investors in the manufacturing industry.

This paper shows that investors still indicate that the value of the firm would decrease even in the long run after a fine. In summary, this paper further sheds light on the impact of corporate violations on the performance of firms. Literature has already confirmed that in the short term, illegality does indeed have negative consequences on firms. Here we provide evidence that this also holds for the long run. These results would be important to institutional investors who hold portfolios of firms on a long term basis. Hence, we advocate that firms should have strong principles of corporate legal responsibility as behaviours of violations would be detrimental for corporation's performances especially in the long run. Instilling this sense of corporate legal responsibility could stem out from firms having sufficient steps and measures in place such as the creation of adequate controls, the protection of whistleblowers, the simplification and visibility of its structures and procedures, and the creation of an ethics-based culture (S. C. Zyglidopoulos & Fleming, 2016).

Although we have tried to obtain the most accurate and reliable data to measure violations, there are some limitations to be noted. Our results are only prevalent for large US firms and further research might be directed towards measuring smaller US firms. Furthermore due to data availability, we only collected violations from public firms. It would

be interesting to measure the impacts of violations in private firms and whether they are penalized for their illegal behaviours by their own investors and by other stakeholders. In addition, due to database limitations and our long sample period of nineteen years, we were unable to collect data regarding rumours prior to the fines and hence it would be an avenue for further research.

6.0 References

Arnold, M., & Engelen, P.-J. (2007). Do financial markets discipline firms for illegal corporate behaviour. *Management & Marketing, 2*(4), 103-110.

Baucus, M. S., & Baucus, D. A. (1997). Paying the Piper: An Empirical Examination of Longer-Term Financial Consequences of Illegal Corporate Behavior. *The Academy of Management Journal, 40*(1), 129-151. doi: 10.2307/257023

Baucus, M. S., & Near, J. P. (1991). Can Illegal Corporate Behavior Be Predicted? An Event History Analysis. *The Academy of Management Journal, 34*(1), 9-36. doi: 10.2307/256300

Becker, G. S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy, 76*(2), 169-217. doi: 10.2307/1830482

Bosch, J.-C., & Eckard, E. W., Jr. (1991). The Profitability of Price Fixing: Evidence From Stock Market Reaction to Federal Indictments. *The Review of Economics and Statistics, 73*(2), 309-317. doi: 10.2307/2109522

Capelle-Blancard, G., & Laguna, M.-A. (2010). How does the stock market respond to chemical disasters? *Journal of Environmental Economics and Management, 59*(2), 192-205. doi: http://dx.doi.org/10.1016/j.jeem.2009.11.002

Carhart, M. M. (1997). On Persistence in Mutual Fund Performance. *The Journal of Finance, 52*(1), 57-82. doi: 10.1111/j.1540-6261.1997.tb03808.x

Choi, S., & Pritchard, A. (2012). SEC Investigations and Securities Class Actions: An Empirical Comparison. *Law & Economics Working Papers. Paper 55.*

Cohen, M. A. (1996). Theories of Punishment and Empirical Trends in Corporate Criminal Sanctions. *Managerial and Decision Economics, 17*(4), 399-411. doi: 10.2307/2487975

Coleman, L. (2011). Losses from Failure of Stakeholder Sensitive Processes: Financial Consequences for Large US Companies from Breakdowns in Product, Environmental, and Accounting Standards. *Journal of Business Ethics, 98*(2), 247-258. doi: 10.2307/41475813

Davidson, W. N., III, Worrell, D. L., & Lee, C. I. (1994). Stock Market Reactions to Announced Corporate Illegalities. *Journal of Business Ethics, 13*(12), 979-987. doi: 10.2307/25072611

Eaglesham, J., & Fuller, A. (2015). Wall Street's Top Cop Takes Harder Line. Retrieved from http://www.wsj.com/articles/sec-escalates-financial-penalties-1436804327

English, S. (2014). The rising costs of non-compliance. Retrieved from http://thomsonreuters.com/en/articles/2014/rising-costs-of-non-compliance.html

Fama, E. F., & French, K. R. (1993). Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics*

33:1, 3–56.

Fama, E. F., & French, K. R. (1996). Multifactor Explanations of Asset Pricing Anomalies. *Journal of Finance, 51:1*, 55–84.

Fama, E. F., & French, K. R. (2004). The Capital Asset Pricing Model: Theory and Evidence. *The Journal of Economic Perspectives, 18*(3), 25-46. doi: 10.2307/3216805

Harrison, J. S., & Wicks, A. C. (2012). Stakeholder theory, value, and firm performance. *Business ethics quarterly, 23(1)*, 97-124.

Hoepner, A. G. F., Rammal, H. G., & Rezec, M. (2011). Islamic mutual funds' financial performance and international investment style: evidence from 20 countries. *The European Journal of Finance, 17*(9-10), 829-850. doi: 10.1080/1351847x.2010.538521

Jacobs, B. W., Singhal, V. R., & Subramanian, R. (2010). An empirical investigation of environmental performance and the market value of the firm. *Journal of Operations Management, 28*(5), 430-441. doi: http://dx.doi.org/10.1016/j.jom.2010.01.001

Jegadeesh, N., & Titman, S. (1993). Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance, 48*(1), 65-91. doi: 10.1111/j.1540-6261.1993.tb04702.x

Jenkins, H., & Yakovleva, N. (2006). Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. *Journal of Cleaner Production, 14*(3–4), 271-284. doi: http://dx.doi.org/10.1016/j.jclepro.2004.10.004

Jensen, M. C. (1968). THE PERFORMANCE OF MUTUAL FUNDS IN THE PERIOD 1945–1964. *The Journal of Finance, 23*(2), 389-416. doi: 10.1111/j.1540-6261.1968.tb00815.x

Karpoff, J. M., D. Scott Lee, & Valaria P. Vendrzyk. (1999). Defense Procurement Fraud, Penalties, and Contractor Influence. *Journal of Political Economy, 107*(4), 809-842. doi: 10.1086/250080

Karpoff, J. M., & John R. Lott, Jr. (1993). The reputational penalty firms bear from committing criminal fraud. *Journal of Law and Economics, 36*, 757 to 802.

Karpoff, J. M., John R. Lott, Jr., & Eric W. Wehrly. (2005). The Reputational Penalties for Environmental Violations: Empirical Evidence. *Journal of Law and Economics, 48*(2), 653-675. doi: 10.1086/430806

Karpoff, J. M., Koester, A., Lee, D. S., & Martin, G. S. (2014). Database Challenges in Financial Misconduct Research. *Georgetown McDonough School of Business Research Paper No. 2012-15*.

Karpoff, J. M., Lee, D. S., & Martin, G. S. (2005). The Cost to Firms of Cooking the Books. *Journal of Financial and Quantitative Analysis, 43,* 581-611. doi: 10.1017/S0022109000004221

Karpoff, J. M., Lee, D. S., & Martin, G. S. (2007). The legal penalties for financial misrepresentation. *University of Washington and Texas A&M University working paper*.

Kennedy, C. (1985). Criminal Sentences for Corporations: Alternative Fining Mechanisms. *California Law Review*, *73*(2), 443-482. doi: 10.2307/3480315

Konar, S., & Cohen, M. A. (2001). Does the market value environmental performance? *Review of economics and statistics*(83.2), 281-289.

Kouwenberg, R., & Phunnarungsi, V. (2013). Corporate governance, violations and market reactions. *Pacific-Basin Finance Journal, 21*(1), 881-898. doi: http://dx.doi.org/10.1016/j.pacfin.2012.06.006

Langus, G., & Motta, M. (2006). The effect of antitrust investigations and fines on the firm valuation. *Manuscript, European University Institute, Florence*.

Lintner, J. (1965). The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets. *Review of Economics and Statistics, 47:1,* 13–37.

Lott, J. R., Jr. (1996). Corporate Criminal Penalties. *Managerial and Decision Economics, 17*(4), 349-350. doi: 10.2307/2487971

Newey, W. K., & West., K. D. (1986). A simple, positive semi-definite, heteroskedasticity and autocorrelationconsistent covariance matrix.

Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: a research note. *Accounting, Organizations and Society*, *27*(8), 763-773. doi: http://dx.doi.org/10.1016/S0361-3682(02)00028-4

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. *Journal of Corporate Finance, 14*(3), 302-322. doi: http://dx.doi.org/10.1016/j.jcorpfin.2008.03.009

Sapp, T., & Tiwari, A. (2004). Does Stock Return Momentum Explain the "Smart Money" Effect? *The Journal of Finance, 59*(6), 2605-2622. doi: 10.1111/j.1540-6261.2004.00710.x

Schnatterly, K. (2003). Increasing firm value through detection and prevention of white-collar crime. *Strategic Management Journal, 24*(7), 587-614. doi: 10.1002/smj.330

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk*. *The journal of finance 19(3)*, 425-442.

Shimshack, J. P., & Ward, M. B. (2005). Regulator reputation, enforcement, and environmental compliance. *Journal of Environmental Economics and Management, 50*(3), 519-540. doi: http://dx.doi.org/10.1016/j.jeem.2005.02.002

Song, C., & Han, S. H. (2015). Stock Market Reaction to Corporate Crime: Evidence from South Korea. [journal article]. *Journal of Business Ethics*, 1-29. doi: 10.1007/s10551-015-2717-y

Thomas, A. (2001). Corporate environmental policy and abnormal stock price returns: An empirical investigation. *Business Strategy and the Environment, 10*(3), 125-134. doi: 10.1002/bse.281

Tully, S., ed. (2005). Research Handbook on Corporate Legal Responsibility. *Edward Elgar Publishing*.

Ulen, T. S. (1996). The Economics of Corporate Criminal Liability. *Managerial and Decision Economics, 17*(4), 351-362. doi: 10.2307/2487972

Wallace, N. D., III, & Worrell, D. L. (1988). The Impact of Announcements of Corporate Illegalities on Shareholder Returns. *The Academy of Management Journal*, *31*(1), 195-200. doi: 10.2307/256506

Zeidan, M. J. (2013). Effects of Illegal Behavior on the Financial Performance of US Banking Institutions. *Journal of Business Ethics, 112*(2), 313-324. doi: 10.2307/23327207

Zeume, S. (2014). Bribes and Firm Value. *Available at SSRN: http://ssrn.com/abstract=2179437*. doi: http://dx.doi.org/10.2139/ssrn.2179437

Ziegler, A., Schröder, M., & Rennings, K. (2007). The effect of environmental and social performance on the stock performance of european corporations. *Environmental and Resource Economics*, *37*(4), 661-680. doi: 10.1007/s10640-007-9082-y

Zyglidopoulos, S. (2016). Toward a Theory of Second-Order Corruption. *Journal of Management Inquiry*, *25*(1), 3-10. doi: doi:10.1177/1056492615579914

Zyglidopoulos, S. C., & Fleming, P. (2016). Organizational self-restraint. *In: Van Slyke, S. R., Benson, M. L. and Cullen, F. T. (eds.) The Oxford Handbook of White-Collar Crime. Series: The Oxford handbooks in criminology and criminal justice. Oxford University Press: Oxford*, 463-475.

Table 1: List of Relevant SIC Codes, Number of Violations and Firms

		Panel A: Number of Violations from 1994 to 2002								
2 Digit SIC Code	Industry	1994	1995	1996	1997	1998	1999	2000	2001	2002
[10xx-14xx]	Mining	22	12	17	2	6	5	8	9	4
[20xx-39xx]	Manufacturing	105	67	83	51	40	52	58	62	55
[40xx-49xx]	Transportation & Public Utilities	47	34	30	18	18	27	41	18	20
[50xx-59xx]	Retail and Wholesale Trade	2	2	1	5	3	7	2	4	5
	Total	176	115	131	76	67	91	109	93	84

		Panel B: Number of Violations from 2003 to 2012											
2 Digit SIC Code	Industry	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total Number of Violations (1994-2012)	Total Number of Unique Firms (1994-2012)
[10xx-14xx]	Mining	5	4	3	9	6	7	4	13	12	7	155	26
[20xx-39xx]	Manufacturing	53	60	46	60	65	52	70	81	62	62	1184	205
[40xx-49xx]	Transportation & Public Utilities	16	13	17	18	19	19	16	27	28	11	437	112
[50xx-59xx]	Retail and Wholesale Trade	3	8	7	12	12	4	3	8	12	11	111	51
	Total	77	85	73	99	102	82	93	129	114	91	**1887**	**394**

The table above reports the total number of violations and firms by the type of industry. The type of industry is based on the Standard Industrial Classification (SIC) Code. Panel A represents the number of violations per year from 1994 to 2002 and Panel B represents the number of violations per year from 2003 to 2012. These violations are categorized according to the two digit SIC code and are based on the hand-collected data from the SEC filings.

Table 2: Overall portfolio (All Industries) results of CAPM,Fama-French and Carhart regressions with created benchmarks

	All Industries									
	Panel A: Fine Level					**Panel B: Firm Level**				
CAPM Results	**Alpha**			R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	-0.0010		(-0.5458)	0.6884	0.6872	-0.0019		(-1.2116)	0.7372	0.7361
Confirmed violations but still pending other matters	0.0007		(0.3634)	0.6236	0.6220	0.0002		(0.0908)	0.7008	0.6995
Confirmed violations	**-0.0024**	*	**(-1.7907)**	0.7401	0.7391	**-0.0025**	**	**(-1.9885)**	0.7714	0.7704
Overall - Including all three stages of violations	**-0.0024**	*	**(-1.7616)**	0.7399	0.7389	**-0.0021**	*	**(-1.8239)**	0.8194	0.8187
Fama-French Results										
Initial allegations	-0.0007		(-0.3997)	0.7432	0.7400	-0.0015		(-1.1073)	0.7950	0.7924
Confirmed violations but still pending other matters	0.0008		(0.4536)	0.4715	0.4471	0.0003		(0.1961)	0.7129	0.7092
Confirmed violations	**-0.0023**	*	**(-1.6847)**	0.7517	0.7486	**-0.0024**	*	**(-1.8833)**	0.7817	0.7789
Overall - Including all three stages of violations	**-0.0022**	*	**(-1.6604)**	0.7516	0.7485	**-0.0019**	*	**(-1.7635)**	0.8461	0.8442
Carhart Results										
Initial allegations	-0.0022		(-1.3301)	0.7590	0.7549	-0.0023		(-1.6029)	0.7994	0.7960
Confirmed violations but still pending other matters	0.0004		(0.1978)	0.6380	0.6319	-0.0002		(-0.0971)	0.7143	0.7094
Confirmed violations	**-0.0029**	**	**(-1.999)**	0.7547	0.7506	**-0.0029**	**	**(-2.1123)**	0.7836	0.7800
Overall - Including all three stages of violations	**-0.0028**	**	**(-1.9767)**	0.7546	0.7505	**-0.0025**	**	**(-2.1894)**	0.8491	0.8466

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 3: Portfolio results of CAPM,Fama-French and Carhart regressions with created benchmarks for the fines per market cap (0 to 20th percentile)

	0 to 20th Percentile Level								
	Panel A: Fine Level				Panel B: Firm Level				
CAPM Results	**Alpha**			R^2	Adj R^2	**Alpha**			R^2	Adj R^2
Initial allegations	-0.0043		(-1.6036)	0.5407	0.5387	-0.0043		(-1.647)	0.5190	0.5170
Confirmed violations but still pending other matters	-0.0054		(-1.5314)	0.4907	0.4886	**-0.0057**	*	**(-1.6951)**	0.5341	0.5321
Confirmed violations	-0.0011		(-0.3873)	0.5275	0.5255	-0.0009		(-0.308)	0.5408	0.5388
Overall - Including all three stages of violations	-0.0024		(-1.1614)	0.6401	0.6385	-0.0025		(-1.3973)	0.8773	0.8768
Fama-French Results										
Initial allegations	-0.0040		(-1.5578)	0.5726	0.5671	-0.0041		(-1.6005)	0.548	0.542466
Confirmed violations but still pending other matters	-0.0054		(-1.5633)	0.4980	0.4916	**-0.0057**	*	**(-1.7069)**	0.536	0.529986
Confirmed violations	-0.0011		(-0.4036)	0.5527	0.5469	-0.0009		(-0.3292)	0.567	0.561453
Overall - Including all three stages of violations	-0.0023		(-1.116)	0.6474	0.6429	-0.0024		(-1.3518)	0.681	0.676481
Carhart Results										
Initial allegations	**-0.0050**	*	(-1.9188)	0.5774	0.5701	**-0.0052**	**	**(-2.0601)**	0.555	0.547181
Confirmed violations but still pending other matters	-0.0058		(-1.6137)	0.4985	0.4899	**-0.0060**	*	**(-1.7736)**	0.536	0.528225
Confirmed violations	-0.0033		(-1.2237)	0.5760	0.5686	-0.0029		(-1.0316)	0.585	0.578171
Overall - Including all three stages of violations	-0.0035		(-1.6377)	0.6568	0.6510	-0.0033		(-1.7697)	0.685	0.679923

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 4: Portfolio results of CAPM,Fama-French and Carhart regressions with created benchmarks for the fines per market cap (80^{th} to 100^{th} percentile)

	80th to 100th Percentile Level								
	Panel A: Fine Level				**Panel B: Firm Level**				
CAPM Results	**Alpha**		***R*²**	**Adj *R*²**	**Alpha**			***R*²**	**Adj *R*²**
Initial allegations	-0.0051	(-1.6001)	0.4132	0.4107	**-0.0071**	**	**(-2.5693)**	0.4917	0.4895
Confirmed violations but still pending other matters	0.0057	(1.1001)	0.3460	0.3432	0.0053		(1.0456)	0.3476	0.3447
Confirmed violations	-0.0036	(-1.1784)	0.3582	0.3555	-0.0036		(-1.2391)	0.3799	0.3773
Overall - Including all three stages of violations	-0.0025	(-1.2907)	0.5461	0.5442	**-0.0039**	**	**(-2.0845)**	0.5835	0.5817
Fama-French Results									
Initial allegations	-0.0050	(-1.5442)	0.4236	0.4161	**-0.0069**	**	**(-2.5127)**	0.5070	0.5005
Confirmed violations but still pending other matters	0.0057	(1.1046)	0.3483	0.3397	0.0054		(1.0514)	0.3492	0.3406
Confirmed violations	-0.0034	(-1.1383)	0.3640	0.3559	-0.0035		(-1.2028)	0.3864	0.3785
Overall - Including all three stages of violations	-0.0023	(-1.224)	0.5791	0.5737	**-0.0036**	**	**(-2.1276)**	0.6256	0.6208
Carhart Results									
Initial allegations	**-0.0064**	*** **(-2.0177)**	0.4307	0.4207	**-0.0067**	**	**(-2.4067)**	0.5071	0.4984
Confirmed violations but still pending other matters	0.0054	(0.9483)	0.3486	0.3371	0.0052		(0.9294)	0.3492	0.3378
Confirmed violations	-0.0028	(-0.9028)	0.3656	0.3547	-0.0032		(-1.0429)	0.3869	0.3764
Overall - Including all three stages of violations	-0.0026	(-1.5477)	0.5798	0.5726	-0.0031		(-1.7944)	0.6266	0.6202

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 5: Manufacturing portfolio results of CAPM,Fama-French and Carhart regressions with industry created benchmarks

	Manufacturing									
	Panel A: Fine Level					**Panel B: Firm Level**				
One Year Holding Period - CAPM Results	**Alpha**			R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	**-0.0037**	****	**(-2.0362)**	0.7312	0.7301	**-0.0039**	****	**(-2.3644)**	0.7574	0.7564
Confirmed violations but still pending other matters	**0.0045**	****	**(2.2349)**	0.5126	0.5105	**0.0031**	*****	**(1.7417)**	0.5907	0.5890
Confirmed violations	-0.0003		(-0.2411)	0.7113	0.7102	-0.0002		(-0.1672)	0.7371	0.7360
Overall - Including all three stages of violations	-0.0002		(-0.2123)	0.7795	0.7786	-0.0007		(-0.6679)	0.8128	0.8120
One Year Holding Period - Fama-French Results										
Initial allegations	**-0.0034**	****	**(-2.2325)**	0.7964	0.7938	**-0.0037**	*****	**(-2.6549)**	0.8283	0.8262
Confirmed violations but still pending other matters	**0.0045**	****	**(2.2955)**	0.5191	0.5129	**0.0031**	*****	**(1.7992)**	0.5989	0.5937
Confirmed violations	-0.0002		(-0.1115)	0.7383	0.7351	-0.0001		(-0.042)	0.7633	0.7603
Overall - Including all three stages of violations	0.0000		(-0.0399)	0.8242	0.8220	-0.0005		(-0.5404)	0.8569	0.8551
One Year Holding Period - Carhart Results										
Initial allegations	**-0.0041**	*****	**(-2.6595)**	0.7984	0.7949	**-0.0038**	*****	**(-2.6968)**	0.8284	0.8254
Confirmed violations but still pending other matters	**0.0039**	****	**(1.9885)**	0.5214	0.5132	0.0022		(1.2959)	0.6031	0.5962
Confirmed violations	-0.0006		(-0.3727)	0.7394	0.7351	-0.0002		(-0.168)	0.7635	0.7596
Overall - Including all three stages of violations	-0.0005		(-0.446)	0.8255	0.8226	-0.0008		(-0.7779)	0.8573	0.8550

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 6: Transportation and Public Utilities portfolio results of CAPM,Fama-French and Carhart regressions with industry created benchmarks

	Transportation and Public Utilities									
	Panel A: Fine Level					**Panel B: Firm Level**				
CAPM Results	**Alpha**			R^2	Adj R^2	**Alpha**			R^2	Adj R^2
Initial allegations	0.0004		(0.1163)	0.4229	0.4204	-0.0006		(-0.2268)	0.4886	0.4864
Confirmed violations but still pending other matters	**-0.0074**	**	**(-2.1382)**	0.5365	0.5345	**-0.0074**	**	**(-2.1366)**	0.5358	0.5338
Confirmed violations	-0.0028		(-1.1863)	0.4679	0.4657	-0.0031		(-1.3054)	0.5066	0.5046
Overall - Including all three stages of violations	-0.0007		(-0.3092)	0.6087	0.6071	-0.0021		(-1.1935)	0.6785	0.6771
Fama-French Results										
Initial allegations	0.0008		(0.2887)	0.4637	0.4569	-0.0001		(-0.05)	0.5282	0.5222
Confirmed violations but still pending other matters	**-0.0073**	**	**(-2.0889)**	0.5505	0.5446	**-0.0073**	**	**(-2.0832)**	0.5515	0.5457
Confirmed violations	-0.0025		(-1.0641)	0.4764	0.4698	-0.0029		(-1.1942)	0.5136	0.5075
Overall - Including all three stages of violations	-0.0003		(-0.1579)	0.6364	0.6318	-0.0018		(-1.0112)	0.7066	0.7029
Carhart Results										
Initial allegations	-0.0024		(-0.8654)	0.5352	0.5272	-0.0029		(-1.1849)	0.5848	0.5777
Confirmed violations but still pending other matters	**-0.0073**	**	**(-2.0302)**	0.5505	0.5426	**-0.0072**	**	**(-2.0055)**	0.5516	0.5438
Confirmed violations	**-0.0042**	*	**(-1.7875)**	0.5007	0.4923	**-0.0044**	*	**(-1.8554)**	0.5338	0.5260
Overall - Including all three stages of violations	-0.0026		(-1.2677)	0.6892	0.6840	**-0.0036**	**	**(-2.0255)**	0.7410	0.7367

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 7: Mining portfolio results of CAPM,Fama-French and Carhart regressions with industry created benchmarks

	Mining									
	Panel A: Fine Level					**Panel B: Firm Level**				
CAPM Results	**Alpha**			R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	-0.0027		(-1.0504)	0.6521	0.6506	-0.0022		(-0.8869)	0.6534	0.6519
Confirmed violations but still pending other matters	-0.0044		(-1.0097)	0.3338	0.3307	-0.0008		(-0.2510)	0.7128	0.7114
Confirmed violations	**-0.0078**	**	**(-2.3216)**	0.5848	0.5830	**-0.0056**	*	**(-1.7656)**	0.5461	0.5441
Overall - Including all three stages of violations	**-0.0050**	**	**(-1.9804)**	0.7000	0.6987	**-0.0048**	**	**(-1.9702)**	0.7207	0.7195
Fama-French Results										
Initial allegations	-0.0028		(-1.0913)	0.6624	0.6581	-0.0022		(-0.9058)	0.6643	0.6600
Confirmed violations but still pending other matters	-0.0040		(-0.9647)	0.3440	0.3347	-0.0005		(-0.1810)	0.7200	0.7160
Confirmed violations	**-0.0079**	**	**(-2.4432)**	0.6081	0.6030	**-0.0060**	**	**(-2.0219)**	0.5872	0.5818
Overall - Including all three stages of violations	**-0.0051**	**	**(-2.1564)**	0.7383	0.7350	**-0.0049**	**	**(-2.1347)**	0.7567	0.7536
Carhart Results										
Initial allegations	-0.0029		(-1.1057)	0.6625	0.6567	-0.0024		(-0.9214)	0.6644	0.6586
Confirmed violations but still pending other matters	-0.0035		(-0.7591)	0.3452	0.3328	0.0005		(0.1400)	0.7234	0.7181
Confirmed violations	**-0.0063**	*	**(-1.9291)**	0.6184	0.6118	-0.0048		(-1.5432)	0.5932	0.5861
Overall - Including all three stages of violations	**-0.0042**	*	**(-1.6812)**	0.7430	0.7386	**-0.0041**	*	**(-1.7091)**	0.7601	0.7560

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 8: Environment portfolio results of CAPM,Fama-French and Carhart regressions with created benchmarks

	Environment									
	Panel A: Fine Level					**Panel B: Firm Level**				
CAPM Results	**Alpha**			R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	-0.0024		(-1.3017)	0.6641	0.6627	-0.0026		(-1.4351)	0.6654	0.6640
Confirmed violations but still pending other matters	**-0.0128**	***	**(-2.8927)**	0.4407	0.4383	**-0.0119**	***	**(-2.975)**	0.5269	0.5249
Confirmed violations	-0.0032		(-1.646)	0.6402	0.6387	**-0.0038**	**	**(-2.1394)**	0.6895	0.6882
Overall - Including all three stages of violations	**-0.0034**	*	**(-1.9516)**	0.7151	0.7139	**-0.0036**	**	**(-2.3151)**	0.7506	0.7496
Fama-French Results										
Initial allegations	-0.0021		(-1.1932)	0.7064	0.7027	-0.0022		(-1.3180)	0.7137	0.7101
Confirmed violations but still pending other matters	**-0.0126**	***	**(-2.8182)**	0.4440	0.4369	**-0.0118**	***	**(-2.9231)**	0.5300	0.5240
Confirmed violations	-0.0030		(-1.5632)	0.6531	0.6488	**-0.0036**	**	**(-2.0403)**	0.7001	0.6964
Overall - Including all three stages of violations	**-0.0031**	*	**(-1.8894)**	0.7403	0.7371	**-0.0033**	**	**(-2.2568)**	0.7764	0.7736
Carhart Results										
Initial allegations	**-0.0038**	**	**(-2.2462)**	0.7241	0.7194	**-0.0038**	**	**(-2.2671)**	0.7285	0.7239
Confirmed violations but still pending other matters	**-0.0127**	***	**(-2.669)**	0.4441	0.4344	**-0.0123**	***	**(-2.9479)**	0.5306	0.5226
Confirmed violations	**-0.0043**	**	**(-2.1442)**	0.6631	0.6575	**-0.0045**	**	**(-2.3014)**	0.7049	0.7000
Overall - Including all three stages of violations	**-0.0047**	***	**(-2.8633)**	0.7565	0.7525	**-0.0046**	***	**(-3.0239)**	0.7868	0.7832

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 9: Social portfolio results of CAPM,Fama-French and Carhart regressions with created benchmarks

	Social								
	Panel A: Fine Level				**Panel B: Firm Level**				
CAPM Results	**Alpha**		R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	-0.0030	(-0.8618)	0.2837	0.2806	-0.0054		(-1.5628)	0.3515	0.3487
Confirmed violations but still pending other matters	0.0028	(0.7898)	0.2715	0.2682	0.0027		(0.8252)	0.3450	0.3421
Confirmed violations	-0.0034	(-1.2763)	0.4048	0.4023	-0.0039		(-1.4124)	0.4518	0.4495
Overall - Including all three stages of violations	0.0001	(0.0495)	0.4984	0.4963	-0.0009		(-0.501)	0.5762	0.5745
Fama-French Results									
Initial allegations	-0.0029	(-0.8256)	0.2950	0.2858	-0.0052		(-1.5232)	0.3694	0.3611
Confirmed violations but still pending other matters	0.0031	(0.892)	0.2915	0.2819	0.0030		(0.928)	0.3611	0.3524
Confirmed violations	-0.0030	(-1.1764)	0.4451	0.4380	-0.0035		(-1.375)	0.4981	0.4918
Overall - Including all three stages of violations	0.0005	(0.2264)	0.5451	0.5394	-0.0006		(-0.3351)	0.6299	0.6252
Carhart Results									
Initial allegations	-0.0052	(-1.4624)	0.3157	0.3038	**-0.0072**	**	**(-2.051)**	0.3848	0.3741
Confirmed violations but still pending other matters	0.0041	(1.1553)	0.2952	0.2824	0.0041		(1.2519)	0.3657	0.3541
Confirmed violations	-0.0042	(-1.5176)	0.4504	0.4411	**-0.0051**	*	**(-1.8633)**	0.5085	0.5001
Overall - Including all three stages of violations	0.0003	(0.1224)	0.5454	0.5377	-0.0009		(-0.4906)	0.6305	0.6242

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

Table 10: Long-Term portfolio results of CAPM,Fama-French and Carhart regressions with created benchmarks

	Long-Term								
	Panel A: Fine Level					**Panel B: Firm Level**			
CAPM Results	**Alpha**			R^2	**Adj R^2**	**Alpha**			R^2	**Adj R^2**
Initial allegations	-0.0028		(-1.1238)	0.5936	0.5918	**-0.0054**	**	**(-2.4039)**	0.6542	0.6527
Confirmed violations but still pending other matters	-0.0015		(-0.7002)	0.6664	0.6650	-0.0008		(-0.3435)	0.6536	0.6521
Confirmed violations	-0.0016		(-0.8447)	0.6972	0.6960	-0.0008		(-0.4438)	0.6810	0.6797
Overall - Including all three stages of violations	-0.0022		(-1.3961)	0.8094	0.8086	**-0.0032**	**	**(-2.2038)**	0.8375	0.8368
Fama-French Results										
Initial allegations	-0.0025		(-1.0402)	0.6218	0.6169	**-0.0052**	**	**(-2.3956)**	0.6894	0.6854
Confirmed violations but still pending other matters	-0.0014		(-0.6572)	0.6824	0.6784	-0.0008		(-0.3082)	0.6664	0.6622
Confirmed violations	-0.0014		(-0.7963)	0.7046	0.7008	-0.0006		(-0.3467)	0.6984	0.6945
Overall - Including all three stages of violations	-0.0020		(-1.302)	0.8203	0.8180	**-0.0030**	**	**(-2.1125)**	0.8571	0.8552
Carhart Results										
Initial allegations	-0.0029		(-1.2777)	0.6223	0.6158	**-0.0044**	**	**(-1.9751)**	0.6921	0.6868
Confirmed violations but still pending other matters	-0.0017		(-0.7154)	0.6830	0.6775	-0.0010		(-0.3495)	0.6666	0.6609
Confirmed violations	-0.0022		(-1.0872)	0.7077	0.7027	-0.0020		(-0.9737)	0.7086	0.7035
Overall - Including all three stages of violations	**-0.0027**	*	**(-1.6694)**	0.8226	0.8196	**-0.0033**	**	**(-2.1233)**	0.8576	0.8551

The following table displays the Jensen's alpha's results from CAPM, Fama-French and Carhart regressions with the specific overall created benchmark. Column one indicates the four different portfolios based on the stages of the violations, column two indicates the equal-weighted at the fine level (Panel A) followed by the equal-weighted at firm level (Panel B). Each portfolio reports the r-squared and adjusted r-squared values. T-statistics are computed with Newey-West (1987) corrections for serial correlation. ***,**,* indicates statistical significance at the 1%,5% and 10% levels respectively. The values in the parentheses represent the values of the t-statistics.

7.0 Appendices

Figure 1: Different legal stages of the violations

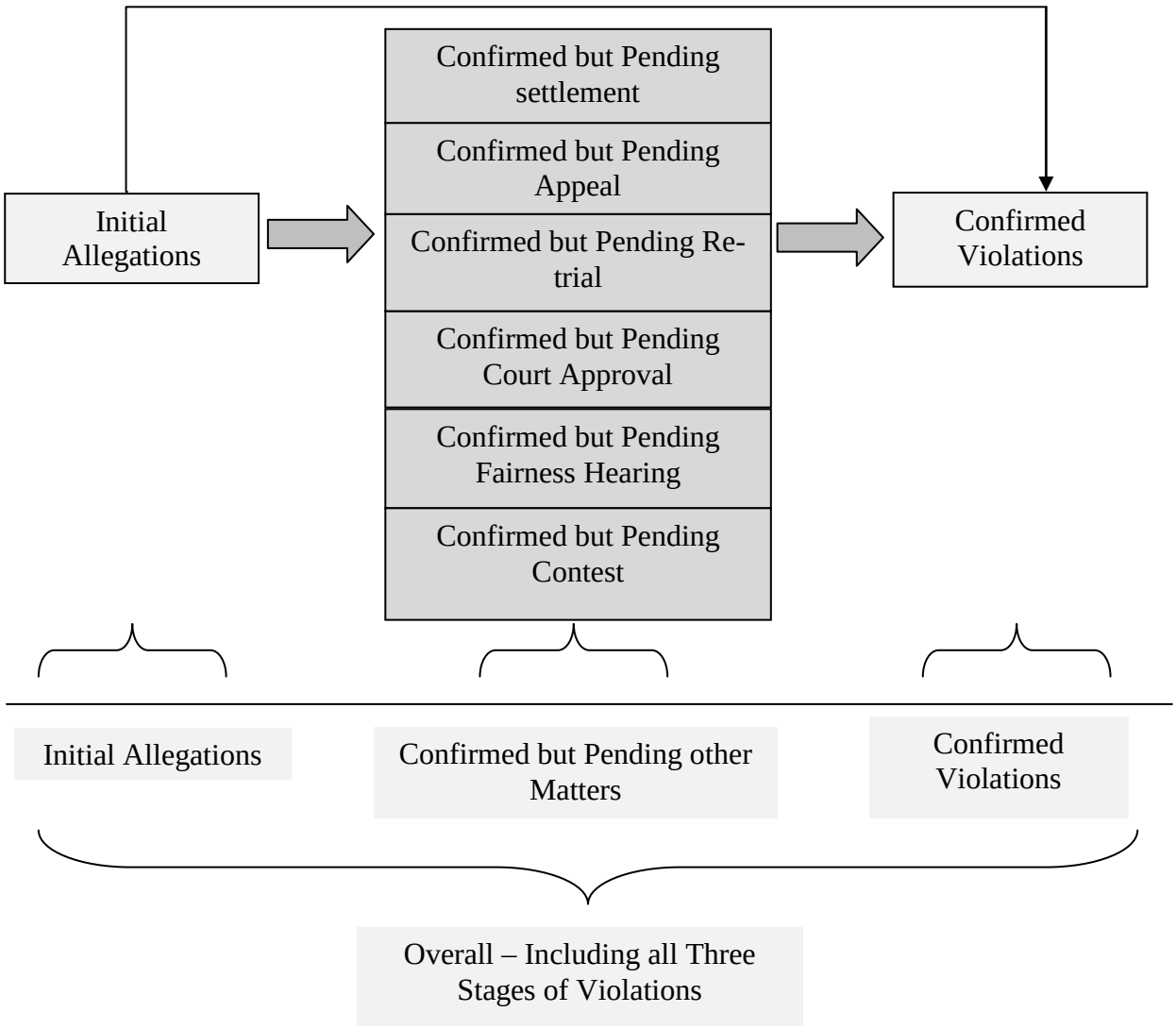
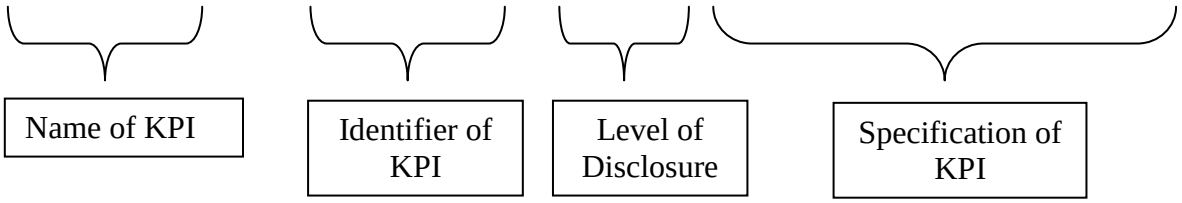


Figure above depicts the process of violation in this study from the first stage of the initial date of allegation. The second stage involves firms which are confirmed to have violations or violations but are pending numerous actions such as settlement, appeal, re-trial, court approval, fairness hearing or contest. The final stage is the actual confirmed violation without any further actions.

Figure 2: Detailed EFFAS Classification Explanation

KPI	Spez.-ID	SCOPE	Specification
Accidental oil/gas spills	E25-02	III	Total amount of costs incurred through accidental oil spills amount including remediation and fines
Fatalities & Injuries	S04-03	II	Total number of fatalities in relation to FTEs
Litigation Risk	V01.01	I	Expenses and fines on filings, law suits related to anti-competitive behaviour, anti-trust and monopoly practices



The figure above depicts examples of the KPIs provided in the EFFAS KPIs version 3.0. The objective of the KPIs is to propose the basis for the integration of Corporate Environmental Responsibility and Corporate Social Responsibility data into corporate performance reporting. The KPIs sets out overall requirements for the presentation of Corporate Social Responsibility and Corporate Environmental Responsibility reports, guidelines for the presentation and structure as well as minimum requirements for content to be disclosed. For each of the 114 subsectors following the Dow Jones Industry Classification Benchmark (ICB) lists of KPIs were defined. The first column provides the name of the KPI, the second column identifies the specific KPI whereby E would relate to Environmental, S for Social and V for Long-Term (LT) Viability. The third column indicates the level of company disclosure where Scope 1 (Entry level), Scope II (Mid level) and Scope III (High Level). The fourth column is the specification which provides a detailed explanation of the KPI. For the purpose of this study, we use the KPI identifiers (E,S and LT) to match our dataset of violations.