

Measuring Reputational Penalties – The Case of US Illegal Insider Trading

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First draft, please do not quote

April 2010

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Measuring reputational penalties for corporate illegalities usually require assumptions about the level of legal penalties. The current article avoids this methodological difficulty by examining illegal insider trading. This article examines whether US companies are penalized for illegal insider trading by examining news announcements reported in US press during the period 1993 until 2008. It shows that companies are penalized in financial markets for the illegal insider trading practices of their CEO or executive managers, but not the illegal insider trading by other employees and corporate outsiders. We observe a clear negative abnormal return of -2.24 percent on the day of the newspaper announcement of the illegal insider trading practice by CEOs. Compared to other types of corporate maleficence we find a 100% reputational penalty.

Keywords: illegal insider trading, reputational penalty, private enforcement, ethical culture, breach of ethical boundary

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1. Introduction

This paper focuses on the measurement of reputational penalties for corporate maleficence. Reputational penalties are reported for a wide range of corporate misconduct such as defective or unsafe products, misleading advertisement, fraud, and financial misrepresentation. This empirical literature has an inherent empirical difficulty as the stock price decline upon the discovery of the corporate misconduct reflects both legal and reputational penalties.

Analyzing illegal insider trading therefore adds to the literature on reputational penalties because it avoids the methodological difficulty to distinguish between the level of the legal penalty and the level of the reputational penalty to obtain an unbiased estimate of the reputational penalty. As legal penalties for getting caught for illegal insider trading are attributed to the individual insider traders and not to the company, any financial market discipline by driving down the company's stock price can be interpreted as a reputational penalty. As investors do not anticipate any expected legal penalties at the corporate level, the stock price decline upon the discovery of the corporate illegality is a 100% reputational penalty.

The paper is organized as follows. Section two summarizes the empirical literature on reputational penalties. Section three elaborates on the empirical difficulty to obtain a precise estimate of the reputational penalty. Section four briefly recalls the US regulation on illegal insider trading. We describe our dataset and methodology in section five, while empirical results are presented in section six. Section seven concludes.

2. Reputation penalties literature

The reputational literature starts with the models of Klein and Leffler (1981), Shapiro (1982, 1983) and Lott (1988) and define reputation in terms of customer expectations about product quality. In those models atomistic customers update their expectations about product quality of a seller when they receive news about product defects or product unsafety. They will switch to another seller with higher quality products or they will keep buying products from the same seller at a lower price. This loss of cash flows that occurs due to changing customer behavior is called a reputational penalty. It therefore reflects the lower expected quasi-rents from future sales since customers are no longer willing to pay a premium price for superior product quality. This mechanism induces companies to maintain product quality at a high level because the market mechanism internalizes the cost of corporate misconduct in repeating business transactions. While the original Klein and Leffler model offers a discrete choice between cheating and not cheating on product quality, Lott (1988) extends this model to a stochastic decision process.

One would expect to see a negative stock price reaction upon the announcement of product recalls or the disclosure of unsafe products or service practices. The empirical results from the product recall and product safety literature indeed suggest that stock markets react negatively to news that affects a firm's reputation. This early strand of literature examines drug recalls, air crashes, automobile recalls and other recalls.¹ Jarrell and Peltzman (1985) find considerable stock market losses for producers of recalled pharmaceutical products. Since the stock market imposes a substantial loss of firm value over and above the product-specific recall costs, they interpreted their results as a reputational penalty imposed by the stock market. In contrast with Jarrell and Peltzman, Dranove and Olsen (1994) attribute the negative stock price reaction to increasing compliance costs with more stringent drug testing. Examining the 1982 Tylenol product recall by Johnson & Johnson Mitchell (1989) and Dowdell, Govindaraj and Jain (1992) confirm the negative stock price impact which far exceeds the direct costs and is largely due to the loss of brand-name capital. Recently, Cheah, Chan and Chieng (2007) confirm the negative stock price impact for drug recalls.

Chalk (1986, 1987) shows that the stock market losses suffered by shareholders upon the announcement of air crashes largely exceeds any estimates of regulatory and liability costs (lawsuits, FAA fines, investigation costs and other costs related to legal proceedings). The difference is again attributed to a reputational penalty. Borenstein and Zimmerman (1988) also report a negative stock price reaction, but fail to link adverse consumer reaction to the equity loss. Mitchell and Maloney (1989) compare a sample of at-fault crashes with a sample of no-fault crashes. The former includes crashes due to pilot error and improper maintenance and signal airline negligence, while the latter category includes crashes due to manufacturer error or miscellaneous causes not controlled by the airline (bad weather, air traffic control error). The empirical results show no stock price reaction for no-fault crashes and a clear negative stock price impact

¹ We do not offer an exhaustive overview of this strand of literature. For a detailed overview, see Engelen and van Essen (2010).

for at-fault crashes. Taking into account increases in insurance premium, about 42% of this stock market decline can be attributed to a reputational loss.

Studies on automobile recalls mostly find stock market to react negatively to the recall announcements. Again the stock price decline is not in line with the costs of the product recalls, leading Jarrell and Peltzman (1985), Barber and Darrough (1996), Rupp (2001, 2004) to conclude that the reputational penalty is substantial. It “documents [...] a direct link between product reliability and shareholder wealth. The stock market imposes a penalty on a manufacturer that produces defective vehicles” (Barber and Darrough, 1996: 1098). Govindaraj and Jaggi (2004) estimate about 13% of the negative stock price reaction to be associated with a reputational cost, although it might be a conservative estimate.

Prince and Rubin (2002) examine the impact of news on private product liability litigation (filing, losing or other) in the drug and automobile industry on the company's stock price. The observed equity loss corresponds with a worst-case scenario of out-of-pocket costs (upper-bound). Since stock markets can be assumed to rationally expect future costs and litigation outcomes, the difference between the worst-case scenario costs and the expected costs can be attributed to a reputational penalty.

Alexander (1999) points out that this reputation mechanism is not limited to a seller-customer framework but can be applied to a wide range of settings of repeated transactions. Besides customers other related parties such as suppliers or employees can change their implicit and explicit contracts with the company. Reputational losses are actually the downward revised present values of lower future net sales or higher future costs of capital. In an efficient capital market, this will be translated in a lower stock price. While legal penalties include fines, damage payments and compliance costs, reputational penalties might include lower company's profits due to lost socially conscious customers (lower purchases, consumer boycotts) (Posnikoff, 1997), due to more expensive suppliers (less trade credit), due to more expensive labor force (job satisfaction, absenteeism, job performance, job turnover) (Viswesvaran et al., 1998; Vitell and Davis, 1990), or it might lead to a higher cost of capital, due to a higher cost of equity (Hribar and Jenkins, 2004, Palmrose et al., 2004) or an increased cost of bank debt (Graham et al., 2008).

The empirical studies on corporate maleficence indeed show that the reputation mechanism is observed in a wide range of corporate misconduct. Aggregate samples for a wide range of corporate misconduct, including bribery, tax evasion, illegal political contributions, employee discrimination and criminal antitrust violations exhibit a strong negative stock price decline. Davidson and Worrell (1988) examine the daily returns of a wide sample of illegal business practices (bribery, criminal fraud, tax evasion, illegal political contributions and criminal antitrust violations). They find a significant cumulative abnormal return of -1.08% over the publication date and the preceeding day. Similar results are reported by Reichert, Lockett and Rao (1996) examining a sample of 83 announcements of filing of formal indictments against companies for corporate illegalities at firm level during the eighties.

Rao and Hamilton (1996) examine a sample of 58 events on bribery, employee discrimination, environmental pollution, insider trading and business ethics. They find a monthly abnormal return of -5.67% for the full sample on the announcement moment of the publication in financial press. The full sample in Gunthorpe (1997) shows a negative abnormal return of -1.33% on the announcement date of 69 cases of formal investigations into fraud, bribery, price fixing and the breach of contract.

Using a dataset on criminal offenses by 78 U.S. corporations, Alexander (1999) finds a stock market penalty for a wide range of illegalities such as contract violations, bribes, fraudulent bids, FDA violations, safety violations, illegal antitrust practices, export violations and environmental and wildlife offenses. Over a two-day period around the announcement in press she measures a significant -2.84% abnormal return. Correcting for legal penalties, she attributes the difference to a reputation penalty.

However, pooling all types of corporate maleficence in one sample as is the case in the above aggregate studies makes the results difficult to interpret. Markets might react differently to different types of corporate misconduct. For instance, financial markets might react negatively to accounting fraud, but positively to bribery. Accounting fraud could be considered as bad business practice (decrease of cash flows), while bribery might be considered as good business practice to obtain important business contracts in certain countries (increase of cash flows). Moreover, financial markets might react more strongly to certain types of corporate misconduct than to others (e.g. fraud versus environmental violations). Any aggregation across all types of maleficence could make the results difficult to interpret since the price impacts of different illegal categories might offset each other, and thus, a smaller overall abnormal return is observed.

While the above studies used an aggregate sample of a diverse range of corporate misconduct, the scope of the following studies is more focused by examining a specific types of corporate maleficence. Peltzman (1981) examines the impact of FTC charges on false and misleading advertising on companies' stock prices and observes a cumulative abnormal return of 3.12%.

Over the period 1981-1987 Karpoff and Lott (1993) examine 132 cases of frauds of customers, suppliers, employees, government and investors and find that public announcements of corporate fraud in press leads to an average decline of 1.34% of the stock price. On a subsample of 15 companies they collected information on the level of the legal penalties and find that the stock market loss is in no relation to the expected penalties. They interpret the stock price decline therefore as a reputational penalty imposed by investors on the financial market.

Karpoff, Lott and Wehrly (2005) examine 478 U.S. environmental violations over the period 1980-2000 to determine to what extent reputational penalties impose a significant cost on violating firms. For the full sample they find a stock market loss of 1.00% over a two-day period and for the allegations subsample a two-day abnormal return of -1.69%. Using smaller sample sizes, earlier researchers show a significant negative price reaction (Klassen and McLaughlin, 1996; Hamilton, 1995) or no significant price reaction for environmental violations (Lanoie and Laplante, 1994; and Lanoie, Laplante and Roy,

1998). Most of these earlier studies only measure a negative stock price reaction and assume it as evidence that financial markets penalize environmental violations. However, they conduct no attempt to sort out the effect of legal penalties versus reputational penalties. To make strong conclusions about any reputational penalty imposed by environmental violations it is necessary to calculate which part of the stock market loss can be attributed to legal penalties and which part to reputational penalties. Of the above environmental studies, only Karpoff, Lott and Wehrly (2005) conduct this valuation exercise. Using detailed information on a subsample of 148 violations with respect to fines, damage awards, compliance and cleanup costs, they find that the equity loss constitutes only of expected legal penalties. Estimates for reputational penalties do not differ significantly different from zero. This implies that “firms do not on average experience reputational loss when they violate environmental regulations” (p. 668) and that “legal penalties, and not reputational penalties, are the primary deterrents to environmental violations” (p.655).

Finally, Karpoff, Lee and Martin (2008) examine 585 U.S. firms for financial misrepresentation between 1978 and 2002. Financial accounting misconduct is penalized by a very heavily equity loss. Companies thus pay substantial reputational penalties for cooking the books. According to their measurement 24.5% of the equity loss can be attributed to market adjustment to reflect the correct fundamental value of the company’s financial situation, 8.8% can be associated with expected legal penalties and no less than 66.6% is due to a reputational penalty. Or in absolute dollars terms: “For every dollar of inflated value when a firm’s books are cooked, firm value decreases by that dollar when the misrepresentation is revealed; in addition, firm value declines an additional 36 dollar cents due to fines and class action settlements *and \$2.71 due to lost reputation*” (p.606). Karpoff, Lee and Martin (2008) clearly show that legal penalties are only a small part of the total losses suffered by these firms. The reputational penalty is obviously far more important.

3. Measuring the reputational penalty

Although most empirical studies presented in the previous section show a negative stock price reaction upon the announcement of corporate illegal behavior, it does not automatically answer the question about the magnitude of the reputational penalty. Corporate maleficence can be penalized through explicit legal sanctions imposed through regulatory, civil and criminal proceedings (such as fines, payments to damaged parties, compliance costs and cleanup expenses) and reputational penalties. The empirical difficulty is to distinguish between the level of the expected legal penalty and the level of the reputational penalty, since the stock price decline on the announcement date of the illegal practice reflects both.

Figure 1. Stock price reaction upon the announcement of corporate misconduct

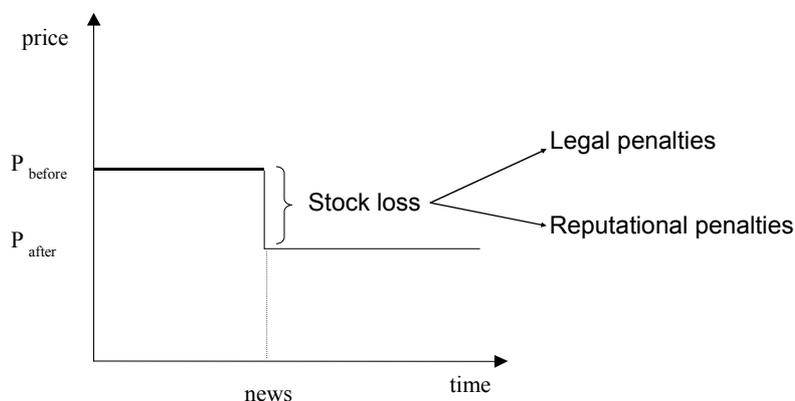
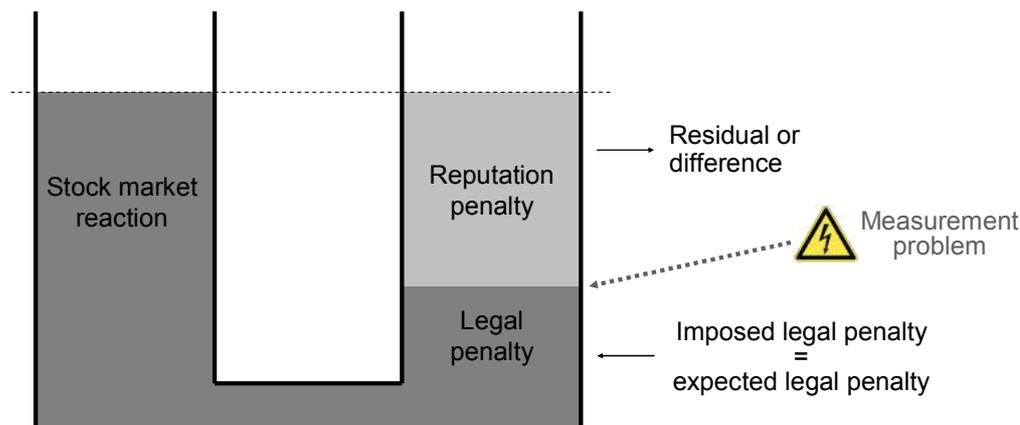


Figure 1 shows that in event studies the equity loss is typically measured as the (cumulative) abnormal return over the event window and captures the joint impact of expected legal penalties and reputational loss. Therefore assumptions have to be made to assign part of the stock price decline to the effect of the legal penalty and part to the effect of the reputational penalty. Karpoff and Lott (1993) and Karpoff, Lott and Wehrly (2005) assume that the ex post imposed legal penalty is an unbiased estimate of the size of the ex ante expected legal penalty at the announcement moment in press. This process rests upon the assumption of rational expectations, according to which investors fully anticipate the legal penalties at the moment of the announcement of the illegality. If the lost market value on this date exceeds the value of the legal penalty, they attribute the difference to the reputational penalty. The residual of the stock price decline not explained by legal penalties or other factors is attributed to the reputational penalty. The accuracy of the measurement of the reputational penalty there depends on the assumptions made with respect to the magnitude of the legal penalty.

Figure 2 illustrates the process of determining the magnitude of the reputational penalty. If one assumes the ex post imposed legal penalties to be equal to the ex ante expected legal penalties, the residual of the equity loss can be attributed to the reputational penalty. Figure 2 shows how this process works as communicating vessels. For instance, following this procedure, Karpoff and Lott (1993) find that the equity loss for fraud consists for about 90% of reputational penalties and for about 10% of expected legal penalties. In contrast, Karpoff, Lott and Wehrly (2005) demonstrate the equity loss for environmental violations only to consist of expected legal penalties (100%) and not of any reputational penalty (0%).

Figure 2. Legal versus reputational penalties as communicating vessels



The current study adds to the existing reputational penalties literature by focusing on a specific type of corporate maleficence, being illegal insider trading, allowing us to measure the reputational impact more clearly and interpret the results more easily. The market-induced penalties companies bear for the misconduct of their managers by committing illegal insider trading are a unique case for measuring reputational penalties. For, any legal penalty is attributed to the individual level, being the manager which is caught for illegal insider trading. While Karpoff and Lott (1993) and Karpoff, Lott and Wehrly (2005) focused on corporate misconduct at the firm level, the current article focuses on misconduct at the individual level. Legal penalties are normally not imposed at the company level. The stock price therefore does not anticipate any legal penalty paid by the company and, by definition, any stock price reaction should reflect lost reputation only. In this way, we can avoid the measurement problem of previous articles within the reputational penalties literature (see Figure 2). Since there is no anticipation of expected legal penalties at the firm level (0%), any stock price reaction should reflect reputational penalties only (100%).

4. Illegal Insider Trading in the US

The U.S. insider trading rules are governed by the statutory authority from Section 10b of the Securities Exchange Act of 1934. Based on this authority, the SEC enacted rules 10b-5 and 14e-3 and it applied to impersonal stock exchange transaction beginning in 1961 (Bainbridge, 2005).

Moreover, milestone U.S. Supreme Court rulings (*Dirks v. SEC*, *Chiarella v. United States*, *United States v. O'Hagan*) further determined the scope of application of those rules. In *Chiarella v. United States*, the U.S. Supreme Court rejected the SEC's equal access to information policy. Insiders are only liable if they breach a fiduciary duty to the source of the information. In *Dirks v. SEC* the U.S. Supreme Court extended this view to tippees, requiring a breach of the tipper's fiduciary duty before the tippee becomes liable.² In *United States v. O'Hagan*, the U.S. Supreme Court accepted the

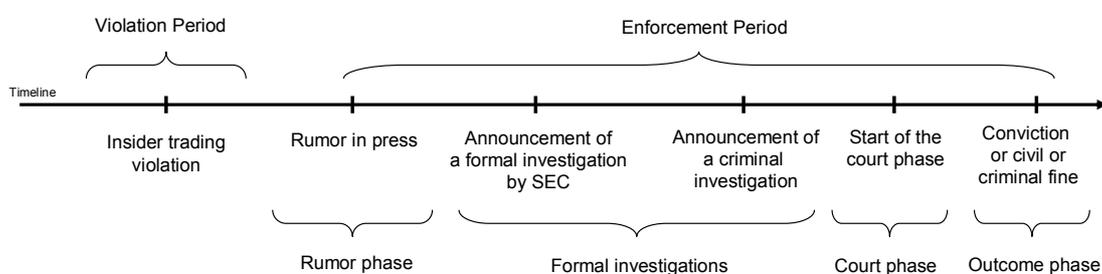
² In the context of takeover bids, Rule 14e-3 prohibits insiders of the bidder and target to tip inside information to persons likely to buy shares of the target for their own account (Bainbridge, 2005).

misappropriation theory, which bases insider trading liability on “a breach of a duty owed to the source of the information.” A misappropriator is thus liable if he fails to disclose to his principal the use of confidential information for his personal gain while having a duty of loyalty or a duty of confidentiality. The U.S. regulation shows that legal prohibition is an evolving field developed by court decisions (Bainbridge, 2005).³

Before 1984 illegal insider trading was sanctioned in the US with a maximum criminal penalty of USD 10,000 or an imprisonment of maximum 2 years, although jail sentences were nonexistent before 1980 (Seyhun, 1992). The sanctions were seriously aggravated in the US during the 1980s. First, the *Insider Trading Sanctions Act* of 1984 (ITSA) raised the maximum criminal fine by tenfold to USD 100,000. Moreover, up to 1984 only criminal sanctions were possible. The SEC had to refer the case to the Public Prosecutor for criminal prosecution. Only after a criminal conviction disgorgement was possible. The ITSA gave the SEC the authority to impose civil sanctions, up to three times the obtained profit.

Second, the *Insider Trading and Securities Fraud Enforcement Act* of 1988 (ITSFEA) again increased the criminal fines by tenfold to maximum USD 1,000,000 for individuals and imprisonment fivefold to maximum ten years. Over a period of five years the maximum criminal penalty thereby increased 100 times (Engelen, 2007). The maximum fine is now USD 1,000,000, while imprisonment is maximum 10 years. Moreover, the SEC can ask for disgorgement of the profit and can impose treble civil damage sanctions as well.

Figure 3. Timeline of the prosecution and enforcement of an illegal insider trading case



³ In this article we will not go into the law and economics debate on insider trading, neither will we discuss the ethical basis for prohibiting insider trading. For the former, see Bainbridge (2000); Carlton and Fischel (1983); Engelen (2006); Haddock and Macey (1986a); Manne (1966); and Scott (1998), while Engelen and Van Liedekerke (2007) discuss the latter.

5. Sample description and Methodology

This section describes the collection of the data set and presents the methodology for measuring abnormal return behavior around the discovery of the illegal insider trading.

5.1. Data collection

Data was collected on news announcements of illegal insider trading practices reported in US press. The illegal insider trading occurred in shares of listed companies on US stock markets (NYSE, AMEX and NASDAQ) for the period 1993 until 2008. The sample is constructed by searching in electronic full-text newspaper databases using the keyword ‘insider trading’ in *The Wall Street Journal* and *The New York Times*. Once potential relevant articles were detected, reading through the texts of the press articles revealed further detailed information. Relevant press articles include pieces on illegal insider trading allegations, news items on formal SEC or judicial investigations into illegal insider trading practices, and press coverage of court cases and convictions for insider trading.

We hand collected 259 cases of US illegal insider trading practices for the six European countries between 1993 and 2008. Some events needed to be eliminated because of missing data or delistings (11 events), overlapping estimation and/or event windows and potential confounding effects (26 events). The latter refers to other major corporate announcements which coincide with the news about illegal insider trading in the event window, such as a restructuring announcement. Including those events in the sample might distort the results. These criteria resulted in a final sample of 222 events. Stock prices data was collected from *Thomson Datastream* and are corrected for dividend payments and stock splits.

<Insert Table 1 here>

The sample consists of sixteen allegations of illegal insider trading (press rumors), fifty eight news paper articles reporting on formal SEC or judicial investigations into an illegal insider trading case, eighty seven articles covering a court case and fifty seven articles covering a conviction for committing illegal insider trading (see panel A of Table 1). Panel B and C report the distribution of the news announcements over time and across months. The sample covers 121 first time news announcements, 39 second time announcements and 19 three time announcements (panel D of Table 1). Multiple announcements consist of firms that received several articles on illegal insider trading practices for different phases. For instance, a second time announcement can mean that the same case is covered during the formal investigation and during the court phase.

5.2. Measuring Abnormal Returns

To evaluate whether financial markets discipline the corporate maleficent behavior of corporate insiders, an event-time study is used. An event study examines if the average abnormal return on the event day (announcement of illegal insider trading in press) is equal to zero (null hypothesis) versus an alternative hypothesis of a non-zero abnormal return:

$$\begin{cases} H_0 : AAR_E = 0 \\ H_1 : AAR_E \neq 0 \end{cases} \quad [1]$$

The average abnormal return (AAR_E) on the event day is the aggregation of the individual stock abnormal returns aligned in event time:

$$AAR_E = \frac{1}{N} \sum_{i=1}^N AR_{i,E} \quad [2]$$

On the event day and on two trading days before and after the announcement, resulting in a 5-day event window, abnormal returns are being calculated to examine returns behavior around the announcement of illegal insider trading. Individual stock abnormal returns ($AR_{i,t}$) are measured as the difference between the realized or actual return on the event day ($R_{i,t}$) and the expected return $E[R_{i,t}]$, which is the benchmark normal return in the absence of the event:

$$AR_{i,t} = R_{i,t} - E[R_{i,t}] \quad [3]$$

This study uses the market-adjusted model and the market model to estimate the expected return of the stocks. The benchmark expected return for each individual stock depends on the model used: $E[R_{i,t}] = R_{m,t}$, for the market-adjusted model, and $E[R_{i,t}] = \hat{a}_i + \hat{b}_i \cdot R_{m,t}$, for the market model.⁴

The expected return of a stock in the market-adjusted model is the current market index return. The market-adjusted abnormal return is thus equal to:

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad [4]$$

with $R_{i,t}$ = the return of stock i in period t ; $R_{m,t}$ = the market index return in period t . This model uses no information from outside the event window to calculate abnormal returns during the event period.

Market model abnormal returns are calculated as:

$$AR_{i,t} = R_{i,t} - (\hat{a}_i + \hat{b}_i \cdot R_{m,t}) \quad [5]$$

where ‘ $\hat{}$ ’ denotes the OLS-estimates from the market model:

$$R_{i,t} = a_i + b_i \cdot R_{m,t} + e_{i,t} \quad [6]$$

with $R_{i,t}$ = the return of stock i in period t ; $R_{m,t}$ = the market index return in period t ; a_i , b_i = intercept and slope coefficient of the market model (stock- i -specific and time-independent parameters); $e_{i,t}$ = random disturbance term of the market model for stock i in period t . In order to calculate market model abnormal returns information from outside the event window is used. The parameters of the market model are estimated over a period from -140 to -21 trading days before the event day.

The significance of mean abnormal returns is first tested using the standard Brown and Warner (1985) test statistic assuming cross-sectional independence, which standardizes abnormal returns for each stock by its standard deviation calculated from the estimation period:

$$t - test = \frac{\sum_{i=1}^N SAR_{i,E}}{\sqrt{N}} \sim t(N-1) \quad [7]$$

with

$$SAR_{i,E} = \frac{AR_{i,E}}{\hat{s}_i} \quad [8]$$

⁴ Prior research shows that significant empirical results are largely independent from the used benchmark models (Engelen and Kabir, 2006). Therefore no effort is made to include additional benchmark models.

The main disadvantage of parametric tests is that they are based on assumptions about the probability distribution of returns. Non-parametric tests do not depend on the assumption of normality. Therefore we also test for significance using the sign test:

$$Z = \frac{(p - 0.50)}{\sqrt{\frac{p(1-p)}{N}}} \quad [9]$$

with p the proportion of positive abnormal returns in the sample and N the sample size.

6. Empirical results

When we calculate the abnormal return on the day of the press announcement of illegal insider trading the overall sample of 222 cases shows a negative stock price reaction. Table 2 shows that a negative abnormal return of -1.02% using the market-adjusted returns and of -0.99% using the market model returns as the benchmark model (both significant at the 5% level). Besides the traditional t-test, we perform the non-parametric sign test, which confirms the results for both the market-adjusted and the market model abnormal return models (significant at the 5% level on day 0). In the four trading days around the news announcement abnormal returns are also negative, but small and insignificant at the conventional levels.

<Insert Table 2 here>

Since several firms in the sample have more than one announcement, for instance first an article about insider trading rumors, next an article about a formal SEC or judicial investigation into those rumors and finally a news story about the court phase. To further check for robustness, we excluded all multiple announcement events from the sample and recalculated the abnormal returns in Table 3. This sample includes 122 one time announcements only and shows a market model abnormal return of -1.49% on the announcement day and a market-adjusted return of -1.46%, both highly significant. The stock price penalization is slightly higher than in the overall sample. This seems logical as in informationally efficient markets we can expect the largest stock price reaction upon the discovery of the corporate maleficence. As the analysis of one time announcements shows similar results, we will use the overall larger sample in the remainder of the paper since it allows to handle a richer dataset.

<Insert Table 3 here>

Although the full sample already gives indications about the stock market penalization for illegal insider trading, we are particularly interested in whether investors penalize CEOs and executives more than other categories of insider traders. We therefore divide the full sample in three subsamples. The subsample CEO contains all insider trading cases in which the insider trader was the company's CEO or a member from the executive board. The subsample Employee contains all other company's employee involved in the illegal insider trading case, while the subsample Others contains all external persons involved in trading on material information about the company

(company's outsiders). This includes persons who received material information due to their profession (e.g. lawyers, consultants) or tippees. The CEO subsample contains 100 cases, the Employee subsample 48 cases and the Others subsample 74 cases. Table 4 shows that the market penalization for illegal insider trading by CEOs and executives is severe: a heavy abnormal return of -2.24% using the market-adjusted model and a similar abnormal return of -2.17% using the market model (both significant at the 0.1% level). The abnormal returns for the two other subsamples are very small and statistically not different from zero. It appears the market penalizes the company for the illegal insider trading by their CEO or executive members, but not for other employees and company's outsiders.

<Insert Table 4 here>

<Insert Table 5 here>

The cumulative abnormal returns (CAARs) analysis in Table 5 largely confirms the individual abnormal return analysis. Between day 0 and day +1 the cumulative abnormal return amounts to -2.23% (market model) and -2.68% (market-adjusted), both significant at the 5% level. Outside the [0,+1] event window, the CAARs are not significantly different from zero. The cumulative abnormal return analysis around the announcement date reinforces the conclusion that financial markets discipline illegal insider trading by managers.

Finally, we examine whether the stock price penalization varies depending on the enforcement phase. Figure 3 shows the typical timeline of the prosecution and enforcement of an illegal insider trading case. First, there might be a rumor in press of a possible insider trading incident. Next, there is typically a formal investigation by the SEC. If the SEC deems it necessary, it refers the case to the Public Prosecutor. The formal criminal investigation by the Public Prosecutor might result in a court phase, which in the end leads to a conviction or an acquittal. Even if the SEC does not refer a case to the Public Prosecutor, it can impose civil sanctions and disgorge profits.

We regroup those enforcement phases into four categories. We examine whether any difference exists between allegation announcements (rumors), press reports on formal investigations (SEC or judicial), press articles on court cases and press articles on convictions. The latter includes both criminal court convictions and civil sanctions imposed by the SEC. Table 6 differentiates the abnormal return calculations between those four categories. The Investigations subsample (58 cases) shows the heaviest stock price reaction and contains news announcements on formal SEC or judicial investigations. The market-adjusted abnormal return for investigation announcements is equal to -3.57% (significant at the 0.1% level). The abnormal return for the Allegation subsample containing rumor announcements amounts to -1.35% (market-adjusted model, although not significant).⁵ The market model calculations confirm this observation.

⁵ Probably due to the small sample size of the Allegations subsample (16 cases).

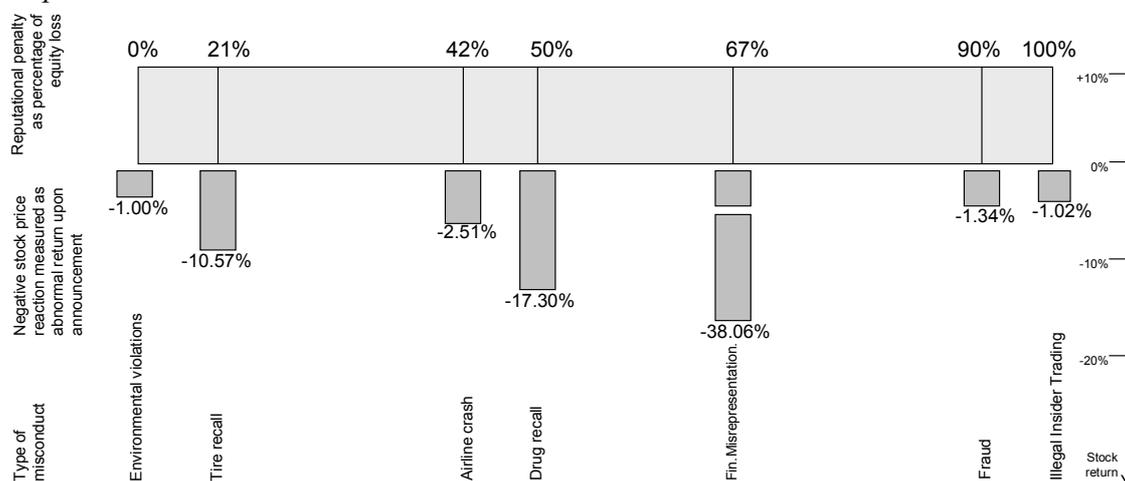
News articles reporting on court cases of illegal insider trading (Court subsample – 87 cases) and news on court convictions and SEC imposed fines (Conviction subsample – 57 cases) are not significantly different from zero (0.04% resp. -0.01% market-adjusted abnormal return). These results are similar to Karpoff, Lott and Wehrly (2005) who report significant heavy price reactions for allegations and investigations, but insignificant price reactions for the outcome and settlement of environmental violation cases. They suggest it not to be unlikely that this information reached the market through different channels earlier, even when an article on an illegal insider trading case is the first press appearance. The cumulative abnormal return analysis presented in Table 7 confirms this image for the four enforcement phase categories.

<Insert Table 6 here>

<Insert Table 7 here>

Overall, the empirical results show that investors on financial markets discipline firms for the corporate maleficent behavior of their managers by driving down stock prices when the illegal insider trading is revealed to the public through a press article. The highly significant abnormal return on the announcement date demonstrates that corporate misconduct of managers is costly for firms. A reputational penalty of 1.02% (measured as an abnormal return on the announcement date) means that a company with a market capitalization of 10 billion dollars loses market value of 102 million dollars on a single day.

Figure 4. Reputational penalty as percentage of equity loss for different types of corporate misconduct



Legend: Information on environmental violations is obtained from Karpoff, Lott and Wehrly (2005), on tire recalls from Govindaraj and Jaggi (2004), on drug recalls from Mitchell (1989), on airline crashes from Mitchell and Maloney (1989), on financial misrepresentation from Karpoff, Lee and Martin (2008), on fraud from Karpoff and Lott (1993) and on illegal insider trading from this study.

7. Conclusion

This paper focuses on the measurement of reputational penalties for corporate maleficence. Reputational penalties are reported for a wide range of corporate misconduct such as defective or unsafe products, misleading advertisement, fraud, and financial misrepresentation. This empirical literature has an inherent empirical difficulty as the stock price decline upon the discovery of the corporate misconduct reflects both legal and reputational penalties.

Analyzing illegal insider trading therefore adds to the literature on reputational penalties because it avoids the methodological difficulty to distinguish between the level of the legal penalty and the level of the reputational penalty to obtain an unbiased estimate of the reputational penalty. As legal penalties for getting caught for illegal insider trading are attributed to the individual insider traders and not to the company, any financial market discipline by driving down the company's stock price can be interpreted as a reputational penalty. As investors do not anticipate any expected legal penalties at the corporate level, the stock price decline upon the discovery of the corporate illegality is a 100% reputational penalty.

Figure 4 shows that we find percentages between 21% and 42% for product recalls and 67% for financial misrepresentation. Compared to other forms of corporate misconduct the reputational penalty for illegal insider trading is at one end of the spectrum (100% reputational penalty), while environmental violations imposing no reputational penalty on companies are at the other end (Karpoff, Lott and Wehrly, 2005). This confirms the theoretical literature which predicts that reputational penalty will work effectively in case the damaged party is a related party, such as customers, suppliers, employees and alike, but will not work well in case of unrelated or third parties. Karpoff and Lott (1993) find a reputational penalty of 90% of the equity loss for party related misconduct as fraud of stakeholders, fraud of the government and financial reporting fraud. As predicted by theory, they do not find any reputational penalty for regulatory violations without direct involvement of related parties (e.g. check-kiting scheme).

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Table 1. Sample statistics

| <i>Panel A. Overview of the types of news announcements</i> | | | |
|---|--------|------------|--------|
| Type | Number | Percentage | |
| Allegation announcement | 16 | 7.2% | |
| Formal SEC or judicial investigation | 58 | 26.1% | |
| Court phase | 87 | 39.2% | |
| Conviction or fine | 57 | 25.7% | |
| Acquittal | 4 | 1.8% | |
| <i>Panel B. Distribution of announcements through time</i> | | | |
| Year | Number | Year | Number |
| 1993 | 3 | 2001 | 4 |
| 1994 | 10 | 2002 | 21 |
| 1995 | 10 | 2003 | 24 |
| 1996 | 11 | 2004 | 19 |
| 1997 | 8 | 2005 | 27 |
| 1998 | 5 | 2006 | 25 |
| 1999 | 6 | 2007 | 28 |
| 2000 | 3 | 2008 | 19 |
| <i>Panel C. Monthly distribution of news announcements</i> | | | |
| January | 21 | July | 23 |
| February | 14 | August | 23 |
| March | 20 | September | 16 |
| April | 22 | October | 18 |
| May | 15 | November | 14 |
| June | 18 | December | 18 |
| <i>Panel D. Distribution across companies</i> | | | |
| First time announcement | 122 | | |
| Second time announcements | 39 | | |
| Third announcements | 19 | | |
| More announcements | 42 | | |

Legend: The Table provides descriptive statistics for the final sample of 222 news announcements of US illegal insider trading in the US press during the period 1993-2008. Allegation announcements consist of press rumors on potential illegal insider trading. Formal investigation consists of news articles reporting on formal SEC or judicial investigations into an illegal insider trading. Court phase or conviction consists of articles covering court cases and convictions of illegal insider trading. Single announcements consist of companies that received just one article on the illegal insider trading practice. Multiple announcements consist of firms that received several articles on illegal insider trading practices for different phases. Percentages might not add up to 100% due to rounding.

Table 2. Abnormal return behavior around the news of illegal insider trading in press

| days | Market-adjusted mean abnormal returns | | | | | | Market model mean abnormal returns | | | | | |
|------|---------------------------------------|--------|---------|------------|---------|---------|------------------------------------|--------|---------|------------|---------|---------|
| | AAR | t-test | signif. | # negative | Z-value | signif. | AAR | t-test | signif. | # negative | Z-value | signif. |
| -2 | -0,0030 | -0,490 | | 123 | 1,611 | | -0,0033 | -0,741 | | 117 | 0,805 | |
| -1 | -0,0001 | -0,100 | | 117 | 0,805 | | 0,0012 | 0,785 | | 116 | 0,671 | |
| 0 | -0,0102 | -2,266 | * | 125 | 1,879 | + | -0,0099 | -2,760 | * | 124 | 1,745 | + |
| 1 | -0,0050 | -0,875 | | 122 | 1,477 | | -0,0020 | -0,770 | | 118 | 0,940 | |
| 2 | -0,0008 | 0,486 | | 113 | 0,268 | | -0,0003 | 0,712 | | 117 | 0,805 | |

Legend: The table reports daily mean market-adjusted abnormal returns and daily mean market model abnormal returns for a five day event window [-2,+2] for a sample of 222 announcements of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test. # positive indicates the number of positive abnormal returns for a given event day. The non-parametric sign test is used to calculate the significance of the mean abnormal returns as well. Z-values are reported. As such, +++ denotes statistical significance at the 0.1% level for the sign test, ++ denotes statistical significance at the 1% level for the sign test, + denotes statistical significance at the 5% level for the sign test.

Table 3. Abnormal return behavior around the news of illegal insider trading in press for first time announcements

| days | Market-adjusted mean abnormal returns | | | | | | Market model mean abnormal returns | | | | | |
|------|---------------------------------------|--------|---------|------------|---------|---------|------------------------------------|--------|---------|------------|---------|---------|
| | AAR | t-test | signif. | # negative | Z-value | signif. | AAR | t-test | signif. | # negative | Z-value | signif. |
| -2 | -0,0043 | -0,385 | | 70 | 1,630 | | -0,0046 | -0,586 | | 69 | 1,449 | |
| -1 | -0,0013 | 0,049 | | 62 | 0,181 | | -0,0011 | 0,377 | | 64 | 0,543 | |
| 0 | -0,0146 | -2,383 | ** | 71 | 1,811 | + | -0,0149 | -3,259 | *** | 71 | 1,811 | + |
| 1 | -0,0018 | -0,528 | | 67 | 1,086 | | 0,0012 | -0,614 | | 67 | 1,086 | |
| 2 | -0,0046 | -0,270 | | 62 | 0,181 | | -0,0059 | -0,818 | | 68 | 1,268 | |

Legend: The table reports daily mean market-adjusted abnormal returns and daily mean market model abnormal returns for a five day event window [-2,+2] for a sample of 122 first time announcements of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test. # positive indicates the number of positive abnormal returns for a given event day. The non-parametric sign test is used to calculate the significance of the mean abnormal returns as well. Z-values are reported. As such, +++ denotes statistical significance at the 0.1% level for the sign test, ++ denotes statistical significance at the 1% level for the sign test, + denotes statistical significance at the 5% level for the sign test.

Table 4. Abnormal returns around the news of illegal insider trading for three types of traders

| days | Market-adjusted mean abnormal returns | | | | | | Market model mean abnormal returns | | | | | |
|------|---------------------------------------|---------|----------|---------|---------|---------|------------------------------------|---------|----------|---------|---------|---------|
| | CEO | | Employee | | Others | | CEO | | Employee | | Others | |
| | AAR | signif. | AAR | signif. | AAR | signif. | AAR | signif. | AAR | signif. | AAR | signif. |
| -2 | -0,0058 | | -0,0007 | | -0,0008 | | -0,0058 | * | -0,0023 | | -0,0005 | |
| -1 | 0,0044 | | -0,0084 | | 0,0018 | | 0,0052 | | -0,0087 | | 0,0028 | |
| 0 | -0,0224 | *** + | 0,0026 | | -0,0020 | | -0,0217 | *** + | 0,0041 | | -0,0016 | |
| 1 | -0,0044 | | -0,0045 | | -0,0061 | | -0,0006 | | 0,0023 | | -0,0066 | |
| 2 | 0,0033 | | -0,0040 | | -0,0045 | | 0,0021 | | 0,0008 | | -0,0042 | |

Legend: The table reports daily mean market-adjusted abnormal returns and daily mean market model abnormal returns for a five day event window [-2,+2] for a sample of 222 announcements of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. Results are reported for three types of traders. The CEO Subsample refers to illegal insider trading by companies' CEOs and contains 100 events. The Employee Subsample refers to illegal insider trading by companies' employees and contains 48 events. The Others Subsample refers to illegal insider trading by traders not related to the company and contains 74 events. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test. The non-parametric sign test is used to calculate the significance of the mean abnormal returns as well. As such, +++ denotes statistical significance at the 0.1% level for the sign test, ++ denotes statistical significance at the 1% level for the sign test, + denotes statistical significance at the 5% level for the sign test.

Table 5. Cumulative abnormal returns for various event windows around the news of illegal insider trading for three types of traders

| Event windows | Market-adjusted mean abnormal returns | | | | | | Market model mean abnormal returns | | | | | |
|---------------|---------------------------------------|---------|----------|---------|---------|---------|------------------------------------|---------|----------|---------|---------|---------|
| | CEO | | Employee | | Others | | CEO | | Employee | | Others | |
| | CAAR | signif. | CAAR | signif. | CAAR | signif. | CAAR | signif. | CAAR | signif. | CAAR | signif. |
| [-2,+2] | -0,0248 | | -0,0150 | | -0,0116 | | -0,0207 | | -0,0039 | | -0,0100 | |
| [-1 , 0] | -0,0180 | | -0,0059 | | -0,0003 | | -0,0164 | | -0,0046 | | 0,0013 | |
| [0, +1] | -0,0268 | * | -0,0019 | | -0,0081 | | -0,0223 | * | 0,0063 | | -0,0082 | |
| [-1,+1] | -0,0224 | | -0,0104 | | -0,0064 | | -0,0170 | | -0,0024 | | -0,0053 | |

Legend: The table reports daily mean market-adjusted cumulative abnormal returns and daily mean market model cumulative abnormal returns for several event windows for a sample of 222 announcements of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. Results are reported for three types of traders. The CEO Subsample refers to illegal insider trading by companies' CEOs and contains 100 events. The Employee Subsample refers to illegal insider trading by companies' employees and contains 48 events. The Others Subsample refers to illegal insider trading by traders not related to the company and contains 74 events. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test.

Table 6. Abnormal return behavior around the news of illegal insider trading for four prosecution phases

| | Market-adjusted mean abnormal returns | | | | Market model mean abnormal returns | | | |
|------|---------------------------------------|---------|----------------|---------|------------------------------------|---------|----------------|---------|
| | Allegations | | Investigation | | Allegations | | Investigation | |
| days | AAR | signif. | AAR | signif. | AAR | signif. | AAR | signif. |
| -2 | -0,0031 | | -0,0189 | *** | -0,0111 | | -0,0328 | *** |
| -1 | -0,0074 | | 0,0043 | | -0,0013 | | -0,0085 | |
| 0 | -0,0135 | | -0,0357 | *** | -0,0070 | | -0,0184 | *** |
| 1 | -0,0044 | | -0,0119 | | -0,0187 | | -0,0115 | |
| 2 | -0,0093 | | 0,0097 | | -0,0032 | | 0,0223 | |
| | Court | | Conviction | | Court | | Conviction | |
| | AAR | signif. | AAR | signif. | AAR | signif. | AAR | signif. |
| -2 | 0,0072 | | -0,0023 | | 0,0014 | | -0,0023 | |
| -1 | 0,0017 | | -0,0052 | | 0,0004 | | 0,0009 | |
| 0 | 0,0004 | | -0,0001 | | -0,0067 | | 0,0009 | |
| 1 | -0,0022 | | -0,0024 | | 0,0083 | | -0,0056 | |
| 2 | -0,0073 | | 0,0001 | | 0,0036 | | 0,0039 | |

Legend: The table reports daily mean market-adjusted abnormal returns and daily mean market model abnormal returns for a five day event window [-2,+2] for four subsamples of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. The total sample size includes 222 events. The Allegations Subsample contains 16 events and refers to press articles in which rumours about possible illegal insider trading are discussed, the Investigation Subsample contains 58 events and refers to press articles discussing the start of a formal investigation by the SEC or by the Public Prosecutor into an illegal insider trading case, the Court Subsample contains 87 events and refers to press articles discussing the court phase of an illegal insider trading case, and the Conviction Subsample contains 57 events and refers to press articles discussing the conviction for illegal insider trading. The Acquittal Subsample of 4 events is not reported. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test.

Table 7. Cumulative abnormal returns for different event windows around the news of illegal insider trading depending on the prosecution phase

| | Market-adjusted mean abnormal returns | | | | Market model mean abnormal returns | | | |
|---------------|---------------------------------------|---------|----------------|---------|------------------------------------|---------|----------------|---------|
| | Allegations | | Investigation | | Allegations | | Investigation | |
| Event windows | CAAR | signif. | CAAR | signif. | CAAR | signif. | CAAR | signif. |
| [-2,+2] | -0,0377 | | -0,0525 | | -0,0412 | | -0,0488 | |
| [-1,0] | -0,0210 | | -0,0314 | | -0,0083 | | -0,0268 | |
| [0,+1] | -0,0179 | | -0,0476 | * | -0,0257 | | -0,0299 | * |
| [-1,+1] | -0,0254 | | -0,0433 | | -0,0270 | | -0,0383 | |
| | Court | | Conviction | | Court | | Conviction | |
| | CAAR | signif. | CAAR | signif. | CAAR | signif. | CAAR | signif. |
| Event windows | | | | | | | | |
| [-2,+2] | -0,0001 | | -0,0099 | | 0,0070 | | -0,0024 | |
| [-1,0] | 0,0021 | | -0,0074 | | -0,0063 | | -0,0014 | |
| [0,+1] | -0,0018 | | -0,0053 | | 0,0016 | | 0,0018 | |
| [-1,+1] | 0,0000 | | -0,0077 | | 0,0020 | | -0,0039 | |

Legend: The table reports daily mean market-adjusted cumulative abnormal returns and daily mean market model cumulative abnormal returns for several event windows for four subsamples of illegal insider trading reported in financial press in the U.S. during the period 1993-2008. The total sample size includes 222 events. The Allegations Subsample contains 16 events and refers to press articles in which rumours about possible illegal insider trading are discussed, the Investigation Subsample contains 58 events and refers to press articles discussing the start of a formal investigation by the SEC or by the Public Prosecutor into an illegal insider trading case, the Court Subsample contains 87 events and refers to press articles discussing the court phase of an illegal insider trading case, and the Conviction Subsample contains 57 events and refers to press articles discussing the conviction for illegal insider trading. The Acquittal Subsample of 4 events is not reported. The significance of the mean abnormal returns is tested using the standard parametric test statistic assuming cross-sectional independence. As such, *** denotes statistical significance at the 0.1% level for a one-tailed test, ** denotes statistical significance at the 1% level for a one-tailed test, * denotes statistical significance at the 5% level for a one-tailed test.

