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Renate Hecker
Andreas Wild

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The Market Effects of the German Two-tier Enforcement of Financial Reporting

Renate Hecker* **and Andreas Wild**

Department of Accounting

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Abstract:

This study contributes to the literature by analyzing the potential market penalties due to financial reporting violations detected by the German enforcement regime. Event study results provide evidence that official error announcements lead to significant negative (cumulative) abnormal returns. Investigating the variation between the cumulative abnormal returns, the cross-sectional analysis indicates that companies are able to dilute the (negative) capital market reaction by releasing other (positive) information simultaneously. The negative stock market reaction is less pronounced for profit-decreasing errors. The cumulative abnormal returns are more negative for companies that have been listed for a longer period of time.

Keywords: German two-tier enforcement regime, quality of financial accounting, erroneous financial reports, Federal Financial Supervisory Authority (BaFin), Financial Reporting Review Panel (FREP).

JEL-Codes: G14, M41.

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* Corresponding author: Renate Hecker (renate.hecker@uni-tuebingen.de), Eberhard Karls University Tuebingen, Department of Accounting, Nauklerstr. 47, 72074 Tuebingen, Germany.

1. Introduction

Enforcement of financial reporting is one crucial factor that influences managers' reporting incentives and hence reporting quality. Examining the economic consequences of the introduction of mandatory IFRS reporting in 26 countries around the world, Daske, Hail, Leuz, and Verdi (2008), for example, find that increasing market liquidity and decreasing costs of equity capital exist only in countries classified as having strict enforcement and an institutional framework that provides strong reporting incentives. Even if, at the end of the harmonization process, IFRS emerge as the sole set of accounting standards adopted worldwide, the strictness of enforcement will be one dimension stimulating competition between different regulatory regimes (Leuz & Wysocki, 2008, p. 73).

In Germany, in response to numerous accounting scandals worldwide, on December 15, 2004 the Balance Sheet Control Act (BilKoG) established for the first time a two-tier enforcement regime that aimed at regaining and strengthening the capital market participants' trust in the accuracy of financial statements. The German enforcement regime has two clear aims: managers shall be prevented ex ante from reporting erroneously, and existing erroneous accounting shall be detected and published ex post (BilKoG Exposure Draft of the German Government, 2004, p. 11). In the event of accounting errors being detected by the enforcement examination, the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)) at the second tier of the enforcement process is normally required to order the immediate publication of the error and substantial parts of the reasoning.

Thus, the German legislator relies heavily on market penalties incurred by adverse publicity as a sanctioning device available to the enforcement agency (for the term "adverse (agency) publicity" see Gellhorn, 1973, for example). Using a sample of 112 enforcement cases for which accounting errors were published in the electronic Federal Gazette between the beginning of the German enforcement regime in 2005 and June 30, 2010, we investigate whether there is a negative abnormal stock price reaction around the date of the first disclosed indication of the erroneous accounting. We further investigate whether announcements that explicitly refer to the enforcement examination and/or are official error publications ordered by the BaFin have additional informational value.

In order to be able to judge the effectiveness of the German two-tier enforcement regime, it is important to know whether the enforcement-related announcements have information content in practice that is reflected in a negative

abnormal stock price reaction and thus triggers a sanction for the respective companies via the market. After running a descriptive analysis of a small sample of 23 error publications in the first 14 months of the German enforcement regime, von Keitz and Stolle (2008) are sceptical about the information content of the official error publications ordered by the BaFin. Their results suggest that the announcements are frequently not timely and of limited relevance. Often it is not possible for an outsider to correct the erroneous financial statements when solely relying on the (insufficient) information given by the error publication.

By conducting an event study analysis, we try to capture the informational value to outside stockholders of the first disclosure of the erroneous accounting (first event) and the informational value of announcements that explicitly refer to the enforcement examination (second event) and/or are official error announcements ordered by the BaFin (third event). We control for confounding events by using a subsample of all enforcement cases excluding a case if there are positive or negative confounding events in the event window or a financial report is published at the event date. We find strong evidence for negative (cumulative) abnormal returns around the third event date indicating a negative stock price adjustment due to the official error publication. However, we only find weak evidence for negative (cumulative) abnormal returns around the first and the second event date. For the first event this might be due to the fact that we exclude all error announcements published in a financial report which causes the first disclosure date of the then remaining cases to coincide frequently with the date of the official error publication. Thus a plausible explanation for the weak results for the first event might be that the published errors of the remaining cases are frequently rather minor ones and therefore do not lead to prior restatements or press releases. This interpretation is supported by our data.

By conducting a cross-sectional analysis, we try to highlight which error-, event- or firm-specific characteristics might explain the varying degree of cumulative abnormal stock price reactions. Our results imply that companies are able to dilute the (negative) capital market impact of an error announcement by simultaneously publishing other (positive) information. In the event of first announcements of erroneous accounting coinciding with official error announcements there is weak evidence for less pronounced negative cumulative abnormal returns which supports the interpretation described above. Furthermore, there is evidence for less pronounced negative abnormal stock returns if the disclosed accounting errors are profit-decreasing errors. This is consistent with a positive readjustment effect for

downward manipulations of profit[1]. Our results also support the existence of a reputation effect, since there is some evidence for more negative cumulative abnormal returns for companies that have been listed for a longer period of time. Firm age might proxy for the company's reputational capital at stake (for a theoretical reasoning for firm age as a source of reputation see Banerjee & Duflo, 2000, pp. 994-995). Younger firms might have a worse reputation ex ante for a high quality of financial reporting, and thus the error probability reflected in the stock price discount might already be higher ex ante for younger firms.

The results of our event study analysis suggest that especially the official error announcements ordered by the BaFin have information content in practice that is reflected in a negative abnormal stock price reaction and thus triggers a sanction for the respective companies via the market. For evaluating the deterrence potential of these market reactions it is important to know whether the reactions solely reflect a stock price readjustment. As the managers can profit from the mispricing of the stock resulting from the inaccurate accounting until the prices are readjusted, the readjustment effect alone will not prevent them from manipulation, even if the probability of error detection is high (see, e.g., Böckem, 2000, p. 48). The results of our cross-sectional analysis however might imply that the negative stock market reactions are not only driven by readjustment, but also by reputational considerations.

This study is one of the first to investigate the potential stock price reaction to the disclosure of accounting errors detected by the enforcement mechanism in Germany. To the best of our knowledge there are two other studies in this area (Hitz, Ernstberger, & Stich, 2012; the unpublished study of Maul, 2011). Both of them also conduct an event study combined with a cross-sectional analysis. Both studies do not explicitly consider each of the three different event dates described above and therefore do not separately analyze the stock market reaction around each of the three event dates. Furthermore, their regression models in their cross-sectional analyses differ substantially from the models in our study, since we put one main emphasis on the stock price impact of event-specific characteristics. Thus our study contributes to the literature by separately determining and analyzing the three different event dates and by focusing on event-specific characteristics.

The paper is organized as follows. Section 2 describes the German two-tier enforcement process and the timeline of financial reporting events. Section 3 briefly reviews the related literature, describes the theoretical background and

[1] As the overwhelming majority of erroneous financial reports are IFRS-financial reports we use the IFRS-term "profit" instead of the SEC-term "(net) income" throughout the paper.

develops our hypotheses. Section 4 describes the sample selection and the data. In Sections 5 and 6 we present the research design, the results and the discussion of the event study analysis and the cross-sectional analysis. Section 7 provides a summary, conclusions and the limitations of our study.

2. The German Enforcement Regime

2.1. The Enforcement Process

The Balance Sheet Control Act (BilKoG) of December 15, 2004 established a two-tier enforcement regime in Germany that is authorized to examine whether the most recently adopted (or approved consolidated) annual financial statements, the associated (group) management reports and, since 2007, also the most recently published half-year financial reports, including the interim management reports, comply with the legal requirements, including German accepted accounting principles and other accounting standards permitted by law (§§ 342b (2) HGB (German Commercial Code), 37n WpHG (German Securities Trading Act)). Only companies whose securities are admitted for trading on the regulated market of a German stock exchange are affected by the German enforcement process (for a detailed description of the enforcement process see DPR – FREP, 2006; Oser & Harzheim, 2008). According to § 342b HGB[2] at the first tier of the enforcement process there are three reasons for the privately organized Financial Reporting Enforcement Panel (FREP) to initiate an enforcement examination. First, an examination with cause is carried out if there are concrete indications of an infringement of financial reporting requirements and no indications exist that the examination is evidently not in the public interest. Second, an enforcement examination can be initiated at the request of the BaFin, and third, it may be initiated without any particular reason (sampling examination).

Sampling examinations are not conducted for half-year financial reports. The sample selection criteria are risk-oriented, i.e., companies with a potentially higher risk of reporting errors, for instance, because of first listing, takeovers, transactions with related parties or an unfavorable economic situation, ceteris paribus have a higher probability of being selected for a sampling examination. Each company in the main indices (DAX, MDAX, SDAX and TecDAX) shall be examined at least every four to five years and all other capital-market-oriented companies at least every eight to ten years (DPR – FREP, 2005, 2009b). Therefore, sampling examinations dominate in Germany.

[2] For an English translation of an older version of § 342b HGB, see Fey and Fladt 2006.

The scope of each type of examination is limited. Examinations with cause concentrate on issues for which concrete indications of an infringement of financial reporting requirements have been identified. The scope may be extended, however, if other indications of an infringement are observed while conducting the examination. Sampling examinations concentrate on the audit areas of emphasis formulated by the FREP on a yearly basis in so far as they are relevant for the respective company. In addition, company-specific critical review areas are normally identified. With this known enforcement examination policy in mind, managers and outside investors may form their expectations ex ante on the detection probability of an error given erroneous financial statements or management reports.

The FREP initiated the first examinations of (consolidated) annual financial statements in the second half of 2005. At the end of 2010 the FREP, at the first tier of the enforcement regime, had completed 625 examinations, 547 (87.52%) sampling examinations, 69 (11.04%) examinations with cause and 9 (1.44%) examinations at the request of the BaFin. The error ratio of 23.52% was rather high; in 147 out of 625 examination cases accounting errors were found at the first tier of the enforcement regime. The FREP supposes that the primary reason for this result is the extreme complexity of many IFRS. The majority of the official error publications (93 or 63.27%) result from sampling examinations, while only 50 (34.01%) result from examinations with cause and 4 (2.72%) from examinations at the request of the BaFin (DPR – FREP, 2006, 2007, 2008, 2009a, 2010, 2011; information acquired from FREP via telephone, 2011/02/10).

At the second tier of the enforcement process according to §§ 37o (1), 37p (1) WpHG, the BaFin orders an enforcement examination using sovereign power if a company is not willing to cooperate with the FREP at the first tier. The BaFin also initiates an examination if the company has not accepted the results of the FREP's examination. Additionally, the BaFin calls for an enforcement examination if there are significant doubts that the examination results of the FREP are correct or that the examination was conducted appropriately.

According to § 37q WpHG, if accounting errors are detected by the FREP and accepted by the company at the first tier of the enforcement process (and, in the case of errors found during a BaFin-initiated enforcement examination at the second tier of the process), the BaFin is usually required to take a specific course of action. This comprises ordering the immediate publication of the error and substantial parts of the reasoning in the electronic Federal Gazette and a multi-regional financial newspaper or a second electronic financial information database. In rare cases,

the BaFin can waive the publication of the error(s) if no public interest in the publication exists (e.g., the error is not material (Kumm & Müller, 2009) or legitimate interests of the company conflict with the publication. At the end of 2009, the BaFin had ordered the publication of errors in 102 cases (BaFin, 2010, p. 210). The Frankfurt am Main High Regional Court explicitly stated in 2007 that one must not assume such a conflict to exist solely because of a company's expected disadvantages in the capital market, and especially not because of expected negative stock price reactions. Rather, such negative reactions to the announcement of the error support the preventive effect of the enforcement. The company's publication need not give any information about the type or scope of the conducted examination and the company may use its own words to describe the errors and the reasoning (High Regional Court Frankfurt/M., adjudication of 14 June 2007 – WpÜG 1/07, res judicata.). Yet there is a risk of having to correct the first publication(s) if the company deviates from the content of the publication ordered by the BaFin, for instance by describing the stipulated parts of the reasoning incompletely. A correction might also be required if the company decides to publish the error before the BaFin officially orders it (Kumm & Müller, 2009). It is, however, not necessary to provide sufficient information for an outsider to be able to correct the erroneous financial statements in all cases solely by relying on the information given in the publication (Oser & Harzheim, 2008, p. 93). Kumm and Müller (2009) suppose that the BaFin may order that the publication be kept free of general or diluting comments (see also BaFin, 2009, p. 212). § 37q (2) WpHG requires the companies to publish the information immediately after the order of the BaFin. In the literature, "immediately" is interpreted in this context as "in two weeks at the latest" (Kumm & Müller, 2009).

According to § 342b (8) HGB and § 37r WpHG, enforcement examinations can lead to the FREP and the BaFin having to perform statutory duties such as notifying prosecuting authorities in the case of criminal activity relating to the financial reporting of the entity being suspected, or the Chamber of German Public Auditors (Wirtschaftsprüferkammer (WPK)) in the event of there being an indication of a violation of professional duties by the external auditors responsible. In addition, the BaFin is obliged to inform the supervisory authority of the relevant stock exchange if it seems that a company has violated the stock exchange rules.

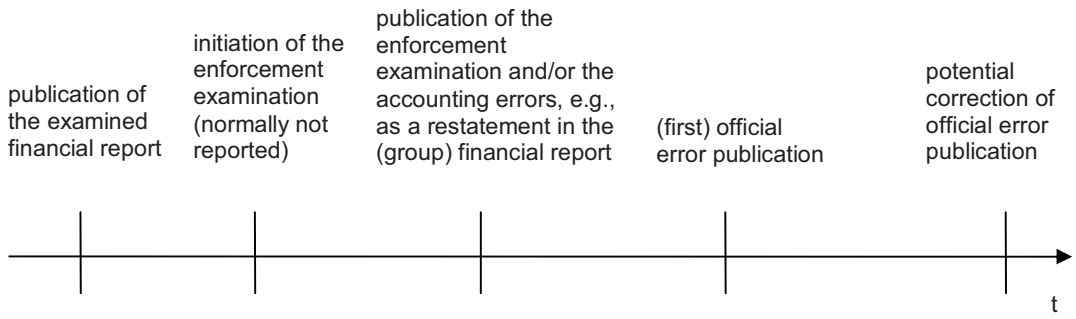
We do not know whether, and if so, in how many cases the FREP or the BaFin have notified prosecuting authorities in the case of criminal activity having been suspected. The same is true for the notification of the supervisory authorities of the relevant stock exchanges in the event of there being an indication that the stock exchange rules have been violated. However, there is at least incomplete data about the notification of the WPK if it appears there

has been a violation of professional duties by the external auditors responsible. According to the data, the Chamber seems to have been notified in the majority of the cases where errors were found by the enforcement examination (WPK, 2007, p. 5, 2008, p. 6, 2009, p. 8, 2010, p. 6).

2.2. Timeline of Financial Reporting Enforcement Events

The potential stock price reaction to the error publication ordered by the BaFin in the event of accounting errors and, hence, the potential informational value of the error announcement to outside stockholders depends on whether the error publication ordered by the BaFin is the first information release to the capital market concerning the erroneous accounting. If there are earlier publications that at least call the accounting quality of a company into question, the stock price might already be affected at this earlier point in time. Figure 1 shows which earlier events might come into play (see Karpoff, Lee, & Martin, 2008, pp. 586-588, for example, for a timeline of events surrounding a SEC enforcement action).

Figure 1. Timeline of financial reporting enforcement events.



First, in the case of examinations with cause or an enforcement examination initiated at the BaFin's request, there must always be a cause, a so-called trigger, to initiate the examination. These concrete indications of an infringement of financial reporting requirements might be public information before the initiation of the examination. Second, the initiation of an examination with cause or at the BaFin's request should induce a mandatory ad hoc announcement according to § 15 (1) WpHG (Assmann, 2006; BaFin, 2009, p. 211). However, presumably due to uncertainty about

the legal duties pertaining to companies in this area, there are no such ad hoc announcements (Assmann, 2006). Third, a company might voluntarily decide to disclose the initiation of an enforcement examination in a press release or in the financial report, for example in the case of a sampling examination. Moreover, a company might disclose the accounting errors before the BaFin officially orders it, especially as a restatement in the (group) financial reports following the erroneous (group) financial reports, with or without special reference to the FREP's examination and its results. Fourth, after the official publication there might be a need for correction of this publication. Finally, the information content of each publication may be confounded by a separate earlier or simultaneous publication (confounding event).

3. Theoretical Background, Related Literature and Hypotheses

Opportunistic managers may have incentives to influence the market prices of their company's stock in such a way that prices increase above the stock's intrinsic value. If we consider the dividend discount model, for instance, as one common model of security valuation (for a discussion of this model, see, e.g., Penman, 2010, pp. 116-118), we might assume that managers may overstate profit, expecting that higher actual profit will, ceteris paribus, convert into higher profit forecasts. Adjusted for accruals, these forecasts convert, ceteris paribus, into higher forecasted net distributions to the company's stockholders, which in turn would lead to a higher value according to the dividend discount model and thus possible inflation of the stock's market price. Of course, one can also imagine situations in which the management might have incentives to manipulate actual profit downward (see, e.g., Penman, 2010, p. 608, on so-called big-bath accounting). However, in our study profit-decreasing errors could be identified only for a small proportion of the enforcement cases investigated.

If financial reporting violations are detected in the future, we would expect an adjustment of the stock price. Theoretically, the abnormal stock price reaction we expect to be induced by the first disclosure of a detected financial reporting violation can be divided into three components (Karpoff et al., 2008). First, the readjustment effect is the difference between the hypothetical value of the company's stock, had investors based their valuation on accurate accounting information, and its price based on the inaccurate accounting information. If, as a first step, we assume that the market expects, ex ante, all managers to be honest such that the probability of accounting errors is set to zero before the detection and publication of an error, in the case of the profit overstatement described above we would clearly expect a negative readjustment effect, resulting in a negative abnormal stock price reaction at the date

of the first publication of the error. As the managers can profit from the mispricing of the stock resulting from the inaccurate accounting until the date when the error first becomes public information and the prices are readjusted, the expected readjustment effect alone will not prevent them from manipulation, even if the probability of error detection is high (see, e.g., Böckem, 2000, p. 48). The so-called reputation effect induces an additional negative abnormal stock price reaction via both the downward revision of the market's assessment of the company's financial reporting credibility and a general loss of the management's reputation for compliant behavior (see, e.g., Böckem, 1998, pp. 3-4; Karpoff & Lott, 1993, p. 768). On the one hand, this induced negative abnormal stock price reaction may reflect an increase in the equity cost of capital, since outside stockholders may raise their risk premium with regard to being expropriated in the future. On the other hand, it may also reflect a decrease in the company's future profit, as other stakeholders, too, may change the terms of their contracts in a way that is costly for the company. Finally, the so-called legal penalties effect results from expected future legal penalties for the company as a consequence of the detected financial statement errors. For the rare occurrence of downward manipulations of profit, we would expect a positive readjustment effect, but nevertheless negative reputation and legal penalties effects (see also Böckem, 2000, pp. 47-50).

If the first information release concerning the FREP's investigation or the date of the first official publication of the error ordered by the BaFin do not coincide with the date of the first disclosure of the detected financial reporting violation, we should only expect an additional negative abnormal stock price reaction if these events mean additional bad news for the market. This might be the case if the capital market views the FREP as an agency especially independent of the interests of incumbent management so that an explicit reference to the FREP in connection with the mentioning of accounting errors is interpreted as a signal for material errors and sheds a more unfavorable light on the credibility of the company's financial reporting as, for instance, an earlier restatement initiated by the incumbent management (see for a similar reasoning concerning the British Financial Reporting Review Panel Böckem, 2000, p. 84). Of course, the expected stock price reaction pertaining to the first disclosure date selected would even be reduced if we were to take into account information leakage before the selected date.

Until now, for simplicity, we have assumed that the market expects, ex ante, all managers to be honest so that the probability of accounting errors is set to zero before the detection and first publication of an error. In reality, however, a price discount might already exist beforehand, since outside stockholders might expect the management of a firm to be dishonest with a positive probability. Assuming rational expectations, this should not alter our

reasoning. As the error probability increases at the first disclosure date, we should still expect a negative abnormal stock price reaction on average. However, this is only true on average: in particular, there might exist a positive readjustment effect for some firms if the effect of their accounting errors on fundamental value is below average, such that the amount of the resulting firm-specific readjustment effect is smaller than that of the negative readjustment effect expected on average (see, e.g., Böckem, 1998, pp. 7-8).

There are several event studies for the US that analyze stock price reactions related to SEC enforcement actions. For instance, based on 224 Accounting and Auditing Enforcement Releases issued between April 1982 and April 1989, Feroz, Park, and Pastena (1991) select a sample of 58 firms for their event study. At the first disclosure date of alleged financial reporting violations, they observe a mean cumulative abnormal stock price reaction that is both significant and negative (–13%) for the two-day interval from the day preceding the disclosure date until the day of the disclosure. The cross-sectional analysis reveals that the magnitude of this reaction is highly correlated with the impact of the accounting error on profit. The disclosure of the initiation of a formal SEC investigation seems to mean additional bad news for the market since the mean two-day cumulative abnormal return the authors observe is significant and negative (–6%), even for the enforcement cases for which the disclosure date of the SEC investigation is not the first disclosure date of the violation. This might be due to the fact that the initiation of an SEC investigation may be interpreted as an indication of severe accounting errors, due to the SEC's selection policy and the fact that it increases the probability of future successful stockholder lawsuits. Thus, managers seem to have market-based incentives to avoid SEC investigations. Feroz et al. (1991) do not find significant abnormal stock price reactions at the disclosure date of the settlement of the SEC investigation.

Karpoff et al. (2008) investigate a sample of 585 SEC enforcement cases initiated between 1978 and 2002 in a more recent event study. They observe significant negative mean abnormal stock price returns for each of the different enforcement-related events they distinguish between. The mean cumulative abnormal stock price reaction across all events and firms is –38%, with a median of –30%. The mean total dollar loss is $ 397.24 million, and the median dollar loss $ 21.49 million. The authors try to estimate how much of the total loss is due to the readjustment, the legal penalties and the reputation effects respectively. Their results indicate that only 24.5% of the aggregate stock value loss is attributable to readjustment and 8.8% to legal penalties, leaving two-thirds of the aggregate loss as resulting from reputation loss. The cross-sectional analysis reveals in particular that reputation loss is correlated with proxies for asset intangibility and financial distress.

Böckem's event study investigates Press Notice releases issued between 1990 and 1997 after successful enforcement examinations by the British Financial Reporting Review Panel (Böckem, 2000, pp. 85-96). In her sample of 30 firms, Böckem (2000) identifies counter publicity around the Press Notice Release for more than half of the sample firms. Her results indicate that the negative mean stock price reaction of firms without counter publicity is more pronounced.

To the best of our knowledge there are two other event studies that investigate the potential stock price reaction to the disclosure of accounting errors detected by the enforcement mechanism in Germany. Hitz et al. (2012) investigate a final sample of 51, 45, and 40 enforcement releases for three different short event windows [0], [-1;+1], and [-2;+2] and a final sample of 76 enforcement releases for two long event windows [-150;-1] and [+1;+150] around the identified error announcement. The sample period is July 2005 until December 2009. The mean short-term abnormal stock price reaction is negative and significant at the 5% level according to the one-sided Corrado rank test for the three different event windows with a mean abnormal return of -0.509% for the event day t=0. The long-term analysis reveals a negative stock price reaction starting about ten trading days prior to the announcement period and significant negative mean daily stock returns of -0.008% in the 150-day post-announcement period. In the event study abnormal relative trading volumes and bid-ask spreads are also investigated. The cross-sectional analysis reveals that the magnitude of the negative stock price reaction in the three-day event window around the event date is correlated with a proxy for error severity, with the error announcement refering to an individual financial statement or management report according to German GAAP, and with the error announcement citing the BaFin as authority establishing the error(s). Finally, two control variables are significant, too.

In the unpublished study of Maul (2011) the potential market reaction at the date of the first (official) error announcement[3] and at the date of the second official error announcement in the electronic Federal Gazette for the sample period from July 2005 to December 2010 is investigated. At the date of the first of the two error announcements Maul finds significant negative abnormal returns for the event windows [0] and [0;+1] with the Corrado rank test. The mean abnormal returns are for these event windows -0.71% and -0.93%. If the second error announcement is released at least two days later than the preceding announcement and is published in the electronic Federal Gazette, almost no indications for a capital market reaction are found. The study conducts a mean

[3] The examined first announcements in the study are not exclusively official announcements.

comparison test and a multivariate regression to estimate the influence of the error severity on the abnormal return at the date of the first identified error announcement. These analyses provide at most very weak evidence for a stronger capital market reaction for more severe errors in financial reporting.

By running an event study analysis we intend to investigate the deterrence potential of the adverse publicity as a sanctioning device used by the German enforcement agency. We control for confounding events during the event days. When measuring the effect of confounding events on the capital market reaction, we include specific dummy variables in our cross sectional analysis. As the error publication ordered by the BaFin need not be the first information release to the capital market concerning the erroneous accounting, our first hypothesis for the event study analysis is stated as follows:

H1. At the date of the first disclosed indication of the erroneous accounting (first disclosure date, first event), there is a negative abnormal stock price reaction of the respective company.

As the first disclosure date provides concrete indications of, or even proves the existence, the type and sometimes even the magnitude of financial reporting violations for the companies in our sample, we expect the market assessment of the probability of accounting errors to increase substantially (or even to become one) for these companies around that date. If credible financial reporting is value-relevant for investors, this should lead to a negative stock price reaction. As we are especially interested in the potential informational value of announcements that explicitly refer to the FREP's examination and/or are even official error publications according to § 37q WpHG, we state the following additional hypotheses for our event study analysis:

H2. At the date of the first information release concerning the FREP's investigation with a simultaneous indication of the erroneous accounting (disclosure date of FREP's investigation, second event), there is a negative abnormal stock price reaction of the respective company.

H3. At the date of the first official error publication according to § 37q WpHG (date of official error publication, third event), there is a negative abnormal stock price reaction of the respective company.

4. Sample and Data Description

4.1. Sample

Since all companies are required to publish the accounting errors found during an enforcement examination in the electronic Federal Gazette, we searched this database for official error publications issued between 07/01/2005 and 06/30/2010. This resulted in 112 error publications. In our sample we only include the error publications of companies that are listed on a German stock exchange. Seven companies that have only issued other listed securities, such as bonds, are not included in our sample. In order to avoid double counting, we exclude nine other cases in which companies issued two error publications for different financial reports on the same day. Due to infrequent trading of the respective stock (no trading on more than 50% of the trading days of the estimation period), we exclude a further 15 companies. Table 1 shows the results of the sample selection process.

For each case found in the Federal Gazette, we searched the Lexis Nexis Database and the website of the "Börsen-Zeitung"[4] for ad hoc or press news, in order to find the second official error publication as well as press articles related to the enforcement process. If we could not find the second publication we asked the company directly for the relevant information. We also searched every financial report issued after the publication of the erroneous report but before the first official error publication for restatements (IAS 8) and for additional information about the errors or the enforcement process. After identifying the three different events, we excluded a case if we could not identify the publication date of the respective information source, for example, of a financial report, or if there was no stock trading on the respective event date. Additionally, we conducted a press research for each event in the Lexis Nexis database for other potentially good or bad news about the respective firm around the event date.

[4] See http://www.boersen-zeitung.de.

Table 1. Overview of the sample.

	Number
Official error publications	112
- no stocks listed in the regulated market	7
- two error publications on the same day	9
- exclusion due to insufficient trading for beta estimation	15
	81

	First event	Second event	Third event
- exclusion due to unknown publication date of the respective information source, e.g. of a financial report	10	2	0
- exclusion due to no trading on the respective event date t= 0	1	6	8
Cases included for each event	70	73	73

We extract the adjusted stock prices (P)[5], the adjusted price index data for the value-weighted CDAX (PI), the debt to asset ratio (total liabilities (WC03351) / total assets (WC02999)), the market to book ratio (MTBR ((total assets (WC02999) - common equity (WC03501) + market value of equity (MVC and MV respectively)) / total assets (WC 02999)), the ratio of the intangibles (WC02649) to total assets (WC 02999), and the market capitalization (MVC and MV respectively) from Datastream. All other information is collected from financial reports and the website of the Deutsche Börse[6].

4.2. Descriptive Statistics

Due to the way our event days are defined, it is possible that the announcement date for different events is the same. In 17 cases, the date of the official error announcement coincides with the first disclosure date of the error. So, for these 17 cases, all events have the same date. In 49 (36) cases the date of the first (second) event equals the date of the second (third) event. In four cases, all events have a different date.

Table 2 illustrates the time period in months between the balance sheet date of the erroneous financial report and the different event dates. The majority of the announcements are published between 12 and 30 months after the balance sheet date of the erroneous report. The average time period between the first disclosure date of the error (first event) and the official error announcement (third event) is about 5 months if the first and third event have a different event date. The late publication of errors in financial statements can influence the capital market reaction. The later the

[5] In brackets is the Datastream variable name.

[6] See http://www.deutsche-boerse.de.

publication of a profit- or an equity-increasing error, the higher the probability that this error has, in the meanwhile, already been reversed by higher depreciation, lower revenue recognition, etc. Thus, a late error publication can reduce a potential stock price reaction due to the readjustment effect.

Table 2. Time period in months between the balance sheet date of the erroneous financial report and the error publication.

	From the balance sheet date of the erroneous financial report to the		
	first event	**second event**	**third event**
< 12 months	15	9	5
≥ 12 months & < 18 months	36	33	27
≥ 18 months & < 24 months	10	13	21
≥ 24 months & < 30 months	4	10	9
≥ 30 months & < 36 months	4	5	7
≥ 36 months	1	3	4
Total firms	70	73	73
Mean gap in months	16.51	19.46	21.15

The information sources for the first event are presented in Table 3. Only in the case of a qualified audit opinion (six cases), which is an obvious cause for a FREP examination, does the first disclosure date coincide with the publication date of the examined group financial report. Restatements following the erroneous financial reports are the first source of information for investors about the erroneous accounting in 21 cases. Sometimes only the FREP's investigation indicating erroneous accounting is mentioned in a financial report (four cases). For a substantial part of the sample, the first disclosure dates are official error publications according to § 37q WpHG (17 cases), or press or ad hoc news of the accounting errors (22 cases).

Table 3. Sources of first disclosure of errors in financial reports.

Source of first disclosure	**Number**	**Percentage**
Qualified audit opinion in financial report	6	8.6
Restatement in financial report	21	30.0
Announcement of FREP's investigation in a financial report indicating erroneous accounting	4	5.7
Official error publication in the electronic Federal Gazette, in another electronic financial information database or in a financial newspaper	17	24.3
Press article or ad hoc news (not official)	22	31.4
	70	100.0

The official error publications are not standardized and they do not always provide sufficient information for correcting the error. Moreover, the second publication medium, in addition to the electronic Federal Gazette, is not exactly specified and the chronology of the two publications is not regulated. Therefore, if the publication date of the two announcements differs, we investigate the capital market reaction only for the first of the two official error publications, irrespective of the publication medium.

When the respective company informs the market about the erroneous accounting, its management has the opportunity to confound the negative information content of an error publication by means of a separate release of other news about the company in the press, either earlier, simultaneously or subsequently. Therefore, we conducted a press research for news with potential stock price relevance to control for confounding events. We categorized the confounding events in either potentially positive or potentially negative information. For example, we classified the announcement of an increase of the profit forecast as positive information and the announcement of a decrease as negative information. The publication of a financial report at the respective event date is measured by a separate dummy variable and is thus neither classified as positive nor as negative information. Error-related events such as press articles about the financial statement errors or about downward revisions of the stock price are not classified as confounding events. Table 4 illustrates the distribution of positive and negative confounding events in the sample for the day before the event date (t = -1), the event date (t = 0), and the day after the event date (t = +1). Since the publication of information after the error announcement is less able to reduce the visibility of the latter and the capital market reaction on the event day, we found most of the confounding events at the event date and on the day before. Furthermore, we found much more positive than negative confounding information. This might indicate that managers try to reduce an expected stock price decrease at the event date by earlier or simultaneous publication of positive information.

Table 4. Distribution of positive and negative confounding events during the event windows.

	[-1]	**[0]**	**[+1]**	**total**
First event: First disclosure	10 (7)	19 (13)	6 (3)	35 (23)
Second event: Disclosure of FREP's investigation	6 (4)	19 (15)	4 (2)	29 (21)
Third event: Official error publication	9 (8)	10 (10)	2 (2)	21 (20)

Note. The table reports the number of positive and negative confounding events during the event windows. In each column the total number of confounding events is presented first. The number of positive confounding events is shown in parentheses.

5. Event Study Analysis

5.1. Methodology

We calculate the abnormal returns by estimating the market model with OLS (Fama, Fisher, Jensen, & Roll, 1969). The market model is given by

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} . \quad (1)$$

R_{it} is the daily return for firm i on day t and R_{mt} is the daily return of the value-weighted German All Share Index CDAX on day t. α_i and β_i are the regression coefficients for firm i; e_{it} is the error term for firm i on day t. The daily abnormal return (AR_{it}) for firm i on day t is calculated by subtracting the predicted "normal" return according to the market model regression from the actual return (R_{it}):

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) . \quad (2)$$

$\hat{\alpha}_i$ and $\hat{\beta}_i$ are the estimated values of α_i and β_i calculated using data from the 180-trading-day estimation period (from day t = -11 to t = -190 before the first event date). We calculate the abnormal returns for the event day, as well as for the trading days before and after the event respectively. Cumulative abnormal returns (CAR_{it1t2}) for firm i from day t_1 to day t_2 are calculated as the sum of the daily abnormal returns:

$$CAR_{it1t2} = \sum_{t=t_1}^{t=t_2} AR_{it} . \quad (3)$$

Mean abnormal returns AR_t are calculated for our sample firms from the individual AR_{it}*s* for each day of the event windows, and mean cumulative abnormal returns CAR_{t1t2} from the individual CAR_{it1t2}*s* across different periods within the event windows. We apply the one-sided Corrado rank test and the one-sided t-test to test for significance of the calculated mean (cumulative) abnormal returns. An advantage of the Corrado rank test is that there is no need for symmetrically distributed abnormal returns for a correct test specification (Corrado, 1989). Additionally, we report the results of the widely used one-sided Wilcoxon signed rank test (Wilcoxon, 1945). However, when testing for

negative abnormal returns, this test tends to reject the null hypothesis of zero mean (cumulative) abnormal returns too often (Brown & Warner, 1980).

5.2. Results: Stock price reaction around error publications

Table 5 presents the results of the univariate analysis. The analysis in Panel A does not control for confounding events, but includes all 70 (first event) and 73 (second and third event) cases respectively. This approach assumes that the overall impact of the other events is negligible (Foster, 1980, p. 55 alternative 5). However, since confounding events can contain a great deal of information for the capital market, these events can influence the capital market reaction at the event date causing biased results (McWilliams & Siegel, 1997, p. 637). Therefore, we conduct another analysis (reported in Panel B) excluding a case in a specific event window if there are positive or negative confounding events in this specific event window (Foster, 1980, p. 55 alternative 3) or a financial report is published at the respective event date. Since the results of Panel A differ clearly from those of Panel B a bias caused by other events is plausible. Consequently, we do not interpret the results in Panel A, but focus on the results in Panel B. However, we try to estimate the effect of confounding events on the cumulative abnormal returns by dummy variables for a simultaneous publication of positive or negative information or a financial report in the cross-sectional analysis (see Section six).

Using abnormal returns, we test the stock price reaction due to error publications. In addition to the (C)ARs and the three different test statistics, we report the proportion of negative (cumulative) abnormal returns in the event window. To test our hypotheses we distinguish between three events.

The first event is defined as the date of the first disclosed indication of erroneous accounting (first disclosure date). On the day of the first disclosure date we find a negative mean abnormal stock price reaction, which is significant at the 10% level using the t-test. The $CAR_{-1;+1}$ is -1.3% and the Wilcoxon signed rank test is significant at the 10% level. The $CAR_{-1;0}$ is -1.8% and the Wilcoxon signed rank test and the Corrado rank test are significant at the 10% level, the t-test is significant at the 5% level. Thus we only find weak evidence for hypothesis 1. Since we exclude all error announcements published in a financial report, the first disclosure date of the then remaining cases coincides frequently with the date of the first official error publication (see also table 3). In the majority of the cases where the date of the first event and the date of the official error publication according to § 37q WpHG coincide, the errors have no impact on profit and/or an outsider is able to detect the error in the erroneous financial report, which is

especially probable for missing information in the notes. Thus a plausible explanation for the weak results for the first event in Panel B might be that the published errors of the analyzed cases are frequently rather minor ones, for example, results of sampling examinations that just detect errors in the notes of the financial statements without any impact on profit, and therefore do not lead to prior restatements or press releases.

At the date of the first information release about the FREP's investigation simultaneously indicating erroneous accounting (second event), the AR is -1.3% and significant at the 10% level using the Wilcoxon signed rank test and significant at the 5% level using the t-test. The $CAR_{-1;0}$ is also negative and the Corrado rank test and the t-test are significant at the 10% level (Wilcoxon signed rank test at the 5% level). Thus we only find weak evidence for hypothesis 2. At the date of the first official error publication according to § 37q WpHG (third event), we find a negative AR of -1.4%, significant at the 1% level using the Corrado rank test, the t-test, and the Wilcoxon signed rank test. Furthermore, the CARs are negative and the Corrado rank test is significant at the 1% level for all multi-day event windows. The Wilcoxon signed-rank test is significant at the 1% level for the event windows [-1,0] and [0,+1] and at the 5% level for the event window [-1,+1]. The t-test is significant at the 5% level for the event windows [-1,+1] and [0,+1] and at the 1% level for the event window [-1,0]. Furthermore, the AR of day -1 is negative and significant at the 10% level for the Corrado rank test and the Wilcoxon signed-rank test. Thus we find strong evidence for a negative abnormal stock price reaction and consequently do not reject hypothesis 3.

The negative (C)ARs reported in our event study for the event day t=0 and all multi-day event windows of the third event are slightly higher than those presented in the two existing studies for the German market (see Section 3). However, the negative (C)ARs reported in our event study are substantially lower than those in the US studies (see Section 3). In our opinion, the differences to the US in the capital market reaction are mainly due to two reasons. First, the SEC initiates a formal investigation only if the probability of success and potential message value is high (Feroz et al., 1991). Contrary to this, due to its institutional setting, the lion's share of the examinations the FREP conducts are sampling examinations with a considerably lower error probability and message value. The majority of the official error publications result from such sampling examinations, and thus only a minority of the official error publications result from examinations with cause for which concrete indications of an infringement of financial reporting requirements exist. Therefore, it is probable that the errors detected by the FREP are less important on average than the respective financial reporting violations published by the SEC as a result of a formal investigation. Second, there are additional differences in the enforcement regime. While in the US the SEC publishes the

Accounting and Auditing Enforcement Releases, in Germany the company has some discretion in determining the text and timing of the official error publication, and thus managers seem to rely to a considerable degree on the announcement of positive confounding information around error publications for reducing the negative stock market reaction. Furthermore, in the US the threat of legal penalties for the company as a consequence of detected financial statement errors is expected to be more pronounced than in Germany (see also Hitz et al., 2012, pp. 255, 269, 271).

Our results are robust for an estimation period of 150 trading days prior to the first event. Furthermore, our results remain robust if we test our model with log returns over a 150-day and a 180-day estimation period respectively. In order to deal with the problem of non-synchronous trading and daily data, we use the Scholes and Williams' (1977) correction in our sensitivity analysis. The results remain qualitatively the same and do not indicate any disturbance of thin trading, and thus are in line with those of Jain (1986) and Campbell, Lo, Andrew, and MacKinlay (1997, p. 177). However, the evidence for hypothesis 1 is even weaker (see table 8 in the appendix).

In another sensitivity analysis we did not exclude cases with a financial report published at the respective event date. Again, our results remain qualitatively the same. However, especially the evidence for hypothesis 2 is a little bit stronger, since the negative mean (cumulative) abnormal return is significant at least at the 10%-level for the event window [-1;0] and also for the event day t=0 irrespective of the test statistic used.

Table 5. Results of the Event Study Analysis.

	Panel A (all cases)						Panel B (without cases with positive or negative information published in the specific event window or a financial report published at the respective event date)					
First event	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**
[-1]	70	0.48	-0.003	-0.76	-0.18	-0.10	60	0.51	-0.004	-1.01	-0.66	-0.58
[0]	70	0.46	-0.005	-0.82	-0.13	0.52	24	0.44	-0.014	-1.62*	-0.83	-0.25
[+1]	70	0.51	-0.005	-1.04	-0.86	-0.84	64	0.49	-0.006	-1.05	-0.73	-0.70
[-1;+1]	70	0.53	-0.013	-1.81**	-1.67**	-0.36	23	0.52	-0.013	-1.15	-1.34*	-0.87
[-1;0]	70	0.51	-0.008	-1.30*	-1.03	0.44	23	0.52	-0.018	-1.74**	-1.55*	-1.45*
[0;+1]	70	0.50	-0.01	-1.41*	-1.06	-0.34	24	0.42	-0.009	-0.94	-0.57	-0.25
Second event	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**
[-1]	73	0.48	-0.003	-0.84	-0.71	-0.50	67	0.49	-0.004	-0.98	-1.02	-0.81
[0]	73	0.49	-0.005	-0.86	-0.53	-0.07	40	0.51	-0.013	-1.71**	-1.40*	-0.92
[+1]	73	0.47	0	-0.01	-0.18	-0.49	69	0.47	-0.001	-0.22	-0.27	-0.52
[-1;+1]	73	0.50	-0.008	-1.14	-1.28	-2.09**	37	0.49	-0.005	-0.62	-1.03	-0.46
[-1;0]	73	0.51	-0.008	-1.20	-1.05	-1.37*	38	0.52	-0.017	-1.67*	-1.88**	-1.60*
[0;+1]	73	0.47	-0.005	-0.80	-0.74	-1.34*	39	0.44	-0.003	-0.42	-0.45	-0.09
Third event	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**	**N**	**proportion of negative (C)ARs**	**(C)AR**	**t-test**	**Wilcoxon**	**Corrado**
[-1]	73	0.49	-0.002	-0.30	-0.68	-0.73	64	0.51	-0.008	-1.14	-1.32*	-1.31*
[0]	73	0.56	-0.002	-0.34	-1.39*	-1.29	63	0.63	-0.014	-2.74***	-3.07***	-2.59***
[+1]	73	0.52	0.002	0.41	-0.71	-0.97	71	0.53	0	0.04	-1.09	-1.31*
[-1;+1]	73	0.52	-0.002	-0.33	-1.16	-2.05**	55	0.56	-0.013	-1.84**	-2.28**	-2.51***
[-1;0]	73	0.48	-0.005	-0.62	-1.13	-1.73**	56	0.57	-0.019	-2.46***	-2.98***	-2.88***
[0;+1]	73	0.51	0	-0.06	-1.09	-1.91**	62	0.58	-0.011	-2.35**	-2.65***	-2.48***

Note. The table reports the number of cases for a specific event window, the proportion of negative (cumulative) abnormal returns, the mean (cumulative) abnormal return, the test statistics of the t-test, the Wilcoxon signed rank test, and the Corrado rank test. The first event is defined as the date of the first disclosed indication of erroneous accounting. The date of the first information release about the FREP's investigation simultaneously indicating erroneous accounting is defined as the second event. The third event is defined as the date of the first official error publication according to § 37q WpHG. Panel A reports the results for all cases, in Panel B a case is excluded if there are positive or negative confounding events in the specific event window or a financial report is published at the respective event date. * p<0.1, ** p<0.05, and *** p<0.01 (one-sided tests).

6. Cross-sectional Differences in (Cumulative) Abnormal Stock Returns

6.1. Methodology

To examine the cross-sectional differences in (cumulative) abnormal stock returns, we estimate the following regression model 1 by OLS for each of the three events:

$$\begin{aligned} CAR_i = {} & \beta_1 + \beta_2 \cdot POSITIVE_i + \beta_3 \cdot NEGATIVE_i + \beta_4 \cdot FINAN\_REP_i + \beta_5 \cdot OFFICIAL_i \\ & + \beta_6 \cdot FIRST\_AND\_FREP_i + \beta_7 \cdot PUBLIC_i + \beta_8 \cdot TIME_i + \beta_9 \cdot PROFIT\_DECREASE_i \\ & + \beta_{10} \cdot BIG4_i + \beta_{11} \cdot DISTRESS_i + \beta_{12} \cdot LEV_i + \beta_{13} \cdot MTBR_i \\ & + \beta_{14} \cdot INTANGIBLE\_ASSETS_i / TA_i + \beta_{15} \cdot LN(AGE_i) + \beta_{16} \cdot LN(MARKETCAP_i) + e_i . \end{aligned} \tag{4}$$

The variables $FINAN\_REP_i$ and $OFFICIAL_i$ are not used in the regression model for the third event. Furthermore, we estimate another OLS regression model 2. In this model we exclude all cases with either positive or negative confounding information published in the specific event window or with a financial report published at the respective event date. Thus, this model does not incorporate the variables $POSITIVE_i$, $NEGATIVE_i$, and $FINAN\_REP_i$. We present heteroscedasticity-robust standard errors.

6.1.1. Event-specific Characteristics

We include the variables $POSITIVE_i$, $NEGATIVE_i$, and $FINAN\_REP_i$, whose coefficients are expected to have a positive ($POSITIVE_i$ and $FINAN\_REP_i$) or a negative ($NEGATIVE_i$) sign. As it is more or less within the discretion of the respective company's management when to disclose information about the erroneous accounting, the management might combine this disclosure with the simultaneous disclosure of good or bad news. So, we define the dummy variable $POSITIVE_i$ ($NEGATIVE_i$) as positive (negative) information about the company in the press on at least one day of the analyzed event window. The simultaneous publication of good or bad news might reduce the visibility of the information about the erroneous accounting and good news, in particular, might dilute the expected negative abnormal stock price reaction. Applying the same reasoning, we try to control for the publication of a financial report. $FINAN\_REP_i$ is a dummy variable for the publication of a financial report on the event day t=0.

We add the dummy variable $OFFICIAL_i$ to measure the impact on the abnormal return of an official error publication according to § 37q WpHG. We expect a negative sign of the variable's coefficient if an official error announcement casts the credibility of the company´s financial statements in a more unfavorable light than non-official error publications.

We include the variable $FIRST\_AND\_FREP_i$, which will equal one in the regression model for the first or second event if the first and the second events coincide. In other words, the variable equals one, if the announcement of the first event is either an official error announcement, or refers to the FREP's investigation. In the regression model for the third event the variable equals one if the first and the third events coincide, i.e., if the announcement of the first event is an official error announcement. The interpretation of the variable's coefficient depends on the event analyzed in the regression model. For the first event we test whether the first information release about the FREP's investigation has an additional informational value per se. We expect a negative sign if the reference to the FREP casts the credibility of the company´s financial statements in a more unfavorable light than the first disclosed indication of the erroneous accounting would do on its own. For the second and third event we expect the variable to have a negative coefficient sign because we expect a more pronounced negative market reaction if the disclosure of the FREP's investigation (the official error publication) is at the same time the first (and sole) disclosure of the accounting error(s).

6.1.2. Error-specific Characteristics

An accounting error is already public information at the respective event date ($PUBLIC_i$) if an outsider is able to detect the error in the erroneous financial report published before the event date. In these cases, we expect the influence of the explicit error announcement on the stock price to be minor and expect the coefficient of the dummy variable to have a positive sign.

The readjustment effect may, ceteris paribus, diminish, the longer the time interval between the erroneous accounting and the disclosure of the errors. This is true for profit- or equity-increasing errors, for instance, that are automatically reversed in the subsequent financial reports by higher depreciation, lower revenue recognition, lower gains from asset sales, etc. Thus, we use the time period in months between the balance sheet date of the examined financial

report and the respective event ($TIME_i$) to account for this problem, and we predict a positive sign for the coefficient of this variable.

The dummy variable $PROFIT\_DECREASE_i$ is equal to one if the disclosed accounting errors are profit-decreasing errors. As a consequence of the readjustment effect, we expect less pronounced negative abnormal stock returns for profit-decreasing errors. Therefore, we predict the variable $PROFIT\_DECREASE_i$ to have a positive coefficient.

6.1.3. Firm-specific Characteristics

Firm-specific characteristics might affect the market's assessment of the probability and the potential size of financial reporting violations before the announcement of an accounting error. Consequently, the following variables might also influence the extent of the abnormal stock price reaction around the announcement dates.

According to DeAngelo (1981), the auditor size can be used as a proxy for the level of audit quality and for the credibility of financial statements. Therefore, we expect a low error probability ex ante and, hence, a more pronounced negative abnormal stock price reaction on the event date if a Big 4 auditor ($BIG4_i$) has audited the erroneous financial report. We predict a negative sign for the coefficient of the dummy variable $BIG4_i$.

Financial distress or at least substantial debt may influence the stock price reaction, too. We therefore use the variables financial distress ($DISTRESS_i$) and debt-to-asset-ratio at the balance sheet date of the erroneous financial report (LEV_i). $DISTRESS_i$ is equal to one if the audit opinion for the examined financial report is followed by an explanatory paragraph signaling substantial doubt about the going concern of the company. However, it is difficult to predict the directional impact of substantial debt or financial distress. On the one hand, these variables could control for stronger incentives for managers to manipulate financial statements. Hence, we would expect accounting error announcements to have a lower impact on stock returns, due to the higher expectation of less accurate financial reports by the investors. On the other hand, these firms rely heavily on outside (debt) capital, and thus they are particularly affected by increasing financing costs once the financial violations have become public (for similar reasoning and the use of similar variables, see Karpoff et al., 2008, p. 602).

The reputation loss should be larger for firms with more growth opportunities or intangible assets. We control for this issue by adding the variable market to book ratio ($MTBR_i$) and the ratio of intangible assets to total assets ($INTANGIBLE\_ASSETS_i / TA_i$) each measured at the balance sheet date of the erroneous financial report to the regression model (see Karpoff et al., 2008, p. 602). There might also be more reputation at risk for older firms (see Banerjee & Duflo, 2000, pp. 994-995). We account for the firm's age by using the natural logarithm of the number of months the firm was listed on a German stock exchange between its IPO and the respective event date ($LN(AGE_i)$). We select the log market capitalization ten trading days before the first event date[8] ($LN(MARKETCAP_i)$) to control for firm size.

6.2. Results

Table 6 presents the results of the multivariate regression analysis. As dependent variables in the regression model we use the cumulative abnormal returns, which are calculated for the event windows [-1;+1], [-1;0], and [0;+1] by estimating the market model with OLS, using discrete stock returns and a beta estimation period of 180 trading days. The regression model reported in table 6, in the following referred to as model 1, is based on all cases and controls for confounding events by dummy variables for the simultaneous publication of positive information, negative information, or a financial report[9]. Unlike model 1, the regression analysis reported in table 7, in the following referred to as model 2, excludes an observation in a specific event window if positive or negative confounding information was published in the specific event window or a financial report was published at the respective event date[10].

Panels A, B, and C of table 6 illustrate the results of the multivariate analysis of model 1 for the first, second, and third events respectively. For regression model 2 we do not conduct the multivariate analysis for the first event since

[8] If the publication date of the respective information source (financial report) for the first event is not known we use the date of the audit opinion in the respective financial report instead of the unknown first event date.

[9] Due to missing data the cross sectional analysis in table 6 is based on fewer observations than the event study analysis for the respective event windows in Panel A of table 5.

[10] Due to missing data the cross sectional analysis in table 7 is based on fewer observations than the event study analysis for the respective event windows in Panel B of table 5.

we have twelve independent variables and only 18 observations. Thus panels A and B in table 7 illustrate the results of the multivariate analysis for the second and third event[11].

We estimate the effect of positive and negative confounding information and of the publication of a financial report on the cumulative abnormal returns with model 1. For the first event we find a positive coefficient significant at the 5% level for the positive information dummy for the event windows [-1;0] and [-1;+1] and significant at the 10% level for the event window [0;+1]. The dummy for negative information has a negative coefficient for all event windows and is significant at the 5% level for the event windows [-1;+1] and [0;+1]. The coefficient of the dummy variable financial report is not significant at all. Essentially, the results are similar for the second and third event for the variable $POSITIVE_i$ and for the second event for the variable $FINAN\_REP_i$, while the coefficients of the variable $NEGATIVE_i$ are not significant for the second event. This variable is not used in the regression model for the third event since we only found one observation with negative information. Also the variable $FINAN\_REP_i$ is not used in the regression model for the third event. For the second (third) event, the variable for positive confounding information is actually highly significant at the 1% level for one (two) of the three multi-day event windows (the coefficient is significant at the 5% level for the other event window(s)). The positive impact of $POSITIVE_i$ on the cumulative abnormal returns might imply that companies tend to publish concrete indications of financial reporting violations simultaneously with other (positive) information, in order to dilute the (negative) capital market impact of the error announcement.

The dummy variable $OFFICIAL_i$ of regression model 1 in table 6, in contrast to our expectations, has a positive coefficient for all event windows of the first and the second event and is only once significant at the 10% level for the event window [0;+1] around the first event date. In regression model 2 in table 7 the variable's coefficient for the second event is also positive and significant at the 1% (10%) level for the event window [-1;0] ([-1;+1]). One plausible explanation for this result might be that in case of the first disclosure of the erroneous accounting being at the same time the official error announcement the published errors might be rather minor ones, for example, results

[11] Note that the model fit is low for the event window [0;+1] of the third event in table 7 (adjusted r-squared is negative with a p-value of the F-test of 39.69%). However, our interpretations in the following may be supported by the results of the other regressions. The same is true for event window [-1;+1] of the third event in table 6 (p-value of the F-test 17,61%).

of sampling examinations that just detect errors in the notes of the financial statements without any impact on profit, and therefore do not lead to prior restatements or press releases. This explanation is supported by our data. In the majority of the cases where the first event date and the date of the official error publication according to § 37q WpHG coincide the errors have no impact on profit and/or an outsider is able to detect the error in the erroneous financial report, which is especially probable for missing information in the notes. This is also true for the majority of the cases where the second event date and the date of the official error publication according to § 37q WpHG coincide.

The coefficient of the variable $FIRST\_AND\_FREP_i$ is negative for the first event and significant at the 10% level for the event window [-1;+1]. Hence, we only find rather weak evidence that the reference to the FREP casts the credibility of the company´s financial statements in a more unfavorable light than other disclosed indication of the erroneous accounting. For the second event the variable's coefficient is also mostly negative for model 1 and 2, and only once significant at the 10% level for the event window [-1;+1] of model 1. Thus, only with one model we find very weak evidence for a more pronounced negative market reaction if the disclosure of the FREP's investigation (second event) is at the same time the first disclosure of the accounting errors. The coefficients for the third event (both models) are all positive and not significant at all. Hence, we could not find a more pronounced negative market reaction at all if the official error publication (third event) is at the same time the first and sole disclosure of the accounting error(s).

Analyzing the error-specific characteristics we find that the coefficients of the variables $PUBLIC_i$ and $TIME_i$ are not significant at all in regression model 1 in table 6. However, for regression model 2 in table 7, the coefficient of the variable $PUBLIC_i$ is positive and significant at the 10% level for the event window [0;+1] around the second event. Thus, we could find at most very weak evidence for a less pronounced negative market reaction if an outsider was able to detect the error in the erroneous financial report published before the event date. In contrast to our prediction, the coefficient of the variable $TIME_i$ in model 2 is negative and significant at the 10% (5%) level for the event window [-1;+1] around the second (third) event. One plausible explanation for this result might be that in case of minor errors the enforcement process does not last as long as for severe errors. For example, companies with minor errors have fewer incentives to argue with the FREP or the BaFin.

For all events and both regression models the coefficients of the variable $PROFIT\_DECREASE_i$ have a positive sign. For the first event (only analyzed in regression model 1), the variable has a significant influence on the cumulative abnormal returns at the 10% level for the event window [-1;0]. For the second event (both regression models), the coefficient of the variable is significant at the 1% level for all event windows. For the third event the influence of the dummy variable on the cumulative abnormal returns is only significant in regression model 2 at the 10% level (event windows [-1;+1] and [0;+1]). Thus there is evidence for less pronounced negative abnormal stock returns if the disclosed accounting errors are profit-decreasing errors. This is consistent with a positive readjustment effect for downward manipulations of profit.

Analyzing the firm-specific characteristics the coefficient of the BIG4-dummy is insignificant for all events, except for the event windows [-1;+1] and [-1;0] for the first event (only regression model 1). For these event windows the coefficients are significant at the 5% level, but, in contrast to our theoretical considerations, have a positive sign. Around the second event the variable's coefficient is positive and significant at the 10% level for the event window [-1;+1] in regression model 2, only. Thus our results are not in line with a lower error probability ex ante if a firm has been audited by a member of the BIG4.

The coefficient of the variable $DISTRESS_i$ is mostly positive, but not statistically significant in regression model 1. However, in regression model 2, the variable's coefficient is positive and statistically significant at the 5% (10%) level for the event window [-1;+1] ([-1;0]) around the second event. The coefficient of the variable LEV_i is also mostly positive and is significant at the 10% level for one multiday-event window around the second event in each of the two regression models. This might be interpreted as rather weak evidence for a higher expectation ex ante of less accurate financial reports by the investors for firms with managers having stronger incentives to manipulate financial statements.

As reputation is probably most important for firms with large growth opportunities, or intangible assets, we control for the companies' growth opportunities in our study by adding the market to book ratio ($MTBR_i$). For all events in regression model 1, the coefficients of this variable have a negative sign (once the coefficient is zero) and are significant at the 1% level for the event windows [-1;+1] and [0;+1] and at the 5% level for the event window [-1;0] of the first event. The coefficient for the event window [-1;+1] ([-1;0]) of the second event is significant at the 1%

level (10% level). At the third event the coefficient of the event window [-1;+1] is significant at the 5% level. Thus there is evidence for a more pronounced negative abnormal stock price reaction for companies with larger growth opportunities which might be due to more reputational capital at stake for these firms. However, since the coefficient of this variable is not significant at all in regression model 2 this interpretation might be limited[12]. The coefficient of the variable $INTANGIBLE\_ ASSETS_i / TA_i$ is insignificant for all events in both regression models.

For all events of regression model 1 the coefficient of the dummy variable $LN(AGE_i)$ is negative and for all multi-day event windows of the second event significant at least at the 5% level and for the multi-day event window [0;+1] of the third event significant at the 10% level. Also for regression model 2 the variable's coefficient is negative and significant at the 1% (5%) level for the event window [-1;+1] ([-1;0]) of the second event and significant at the 10% level for the event window [-1;+1] of the third event. Thus the market reaction around the publication of the erroneous accounting is more negative for companies that have been listed for a longer period of time. One possible explanation for this finding may be that also firm age proxies for the company's reputational capital at stake (for a theoretical reasoning for firm age as a source of reputation see Banerjee & Duflo, 2000, pp. 994-995). Younger firms might have a worse reputation ex ante for a high quality of financial reporting, and thus the error probability might already be higher ex ante for younger firms.

Firm size measured by the natural logarithm of a company's market capitalization ($LN(MARKETCAP_i)$) does not significantly influence the cumulative abnormal returns of the first and second event in regression model 1. The coefficient of the variable is positive and significant at the 5% level for the event window [-1;0] of the third event in that model. For regression model 2, the coefficient of the variable is positive and significant at the 1% level for the event window [-1;0] of the second and third event. Thus there is some evidence for the negative market reaction around the publication of the erroneous accounting being less pronounced for larger firms.

We perform sensitivity tests to evaluate the robustness of the results of our cross-sectional analysis. Running our multivariate analysis with log cumulative abnormal returns as dependent variables, there is no need to alter our above

[12] Note however, that all our tests for significance in the cross-sectional analysis are two-tailed tests. With a one-sided test the coefficient of the variable would be significant at the 10%-level for the event window [-1;0] of the second and third event.

interpretations[13]. The erroneous financial reports of a small number of companies of our sample are no IFRS reports, and thus the use of book values as independent variables might be problematic, since they are affected by differences in accounting standards. Therefore we rerun our cross-sectional analysis by substituting the balance sheet date of the first IFRS report of these companies for the balance sheet date of the erroneous financial report when calculating LEV_i, $MTBR_i$, and $(INTANGIBLE\_ASSETS_i / TA_i)$. The results remain qualitatively the same, but are even stronger for $MTBR_i$ and weaker for $LN(AGE_i)$ [14].

[13] The coefficient of the variable $OFFICIAL_i$ is still positive, but not significant any longer for the first event. When using the Scholes and Williams' (1977) correction to calculate our dependent variable the coefficient of the variable $FIRST\_AND\_FREP_i$ is not significant at all, the results for the variable $TIME_i$ in model 2 are even weaker and the coefficient of the variable LEV_i is again only once significant at the 10%-level for model 1, but has a negative sign. Furthermore the results for the variable AGE_i are a little bit weaker.

[14] In model 1 the coefficient of the variable $FIRST\_AND\_FREP_i$ is not significant any longer for the second event, and the coefficient of the variable LEV_i is again only once significant at the 10%-level, but has a negative sign.

Table 6. Cross-Sectional Analysis without exclusions.

	Panel A: First Event			Panel B: Second Event			Panel C: Third Event		
	[-1;+1]	[-1;0]	[0;+1]	[-1;+1]	[-1;0]	[0;+1]	[-1;+1]	[-1;0]	[0;+1]
Dependent variable: Cumulative abnormal return	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)
POSITIVE	0.0428**	0.0381**	0.0400*	0.0454**	0.0531***	0.0415**	0.0450**	0.0466***	0.0637***
	(2.20)	(2.32)	(1.84)	(2.34)	(3.39)	(2.43)	(2.31)	(3.45)	(3.17)
NEGATIVE	-0.0571**	-0.0022	-0.0458**	-0.0228	0.0408	-0.0273			
	(-2.14)	(-0.10)	(-2.11)	(-0.49)	(1.06)	(-0.91)			
FINAN_REP	-0.0104	-0.0045	0.0037	0.0068	0.0121	0.0040			
	(-0.54)	(-0.24)	(0.21)	(0.34)	(0.63)	(0.23)			
OFFICIAL	0.0262	0.028	0.0292*	0.0224	0.0223	0.0182			
	(1.35)	(1.35)	(1.70)	(1.22)	(1.12)	(1.03)			
FIRST_AND_FREP	-0.0333*	-0.0189	-0.0253	-0.0268*	-0.0152	-0.0084	0.0110	0.0097	0.008
	(-1.71)	(-1.09)	(-1.44)	(-1.68)	(-1.04)	(-0.68)	(0.64)	(0.64)	(0.59)
PUBLIC	0.0077	0.0043	-0.0042	0.0188	0.0162	0.0094	0.0117	0.0027	0.0179
	(0.57)	(0.35)	(-0.29)	(1.34)	(1.13)	(0.80)	(0.87)	(0.21)	(1.58)
TIME	-0.0008	-0.0003	0.0004	0.0000	0.0000	0.0007	-0.0005	-0.0004	0.0003
	(-0.81)	(-0.37)	(0.47)	(-0.01)	(-0.05)	(0.72)	(-0.49)	(-0.52)	(0.35)
PROFIT_DECREASE	0.0365	0.0403*	0.0112	0.0604***	0.0685***	0.0379***	0.0274	0.0321	0.0286
	(1.61)	(1.83)	(0.48)	(3.54)	(3.39)	(3.34)	(1.38)	(1.50)	(1.31)
BIG4	0.0354**	0.0260**	0.0168	0.0227	0.009	0.0101	-0.006	-0.0171	-0.005
	(2.39)	(2.03)	(1.40)	(1.53)	(0.52)	(0.91)	(-0.40)	(-1.06)	(-0.52)
DISTRESS	0.019	-0.0029	0.011	0.0217	0.0281	0.0047	-0.0204	-0.0073	0.0231
	(0.73)	(-0.11)	(0.42)	(1.05)	(1.25)	(0.22)	(-0.75)	(-0.34)	(1.11)
LEV	0.0100	0.0313	0.0182	0.0327	0.0461*	0.0260	-0.0291	0.0063	0.0496
	(0.31)	(0.98)	(0.48)	(1.44)	(1.73)	(1.09)	(-1.17)	(0.26)	(1.38)
MTBR	-0.0111***	-0.0076**	-0.0113***	-0.0114***	-0.0060*	-0.0058	-0.0083**	-0.0045	0.0000
	(-3.15)	(-2.27)	(-3.27)	(-2.71)	(-1.82)	(-1.53)	(-2.08)	(-1.56)	(0.01)
INTANGIBLE_ASSETS/TA	-0.0103	-0.0110	-0.0259	0.0146	0.0151	-0.0159	0.0163	0.0276	-0.0228
	(-0.23)	(-0.30)	(-0.68)	(0.39)	(0.40)	(-0.53)	(0.47)	(0.81)	(-0.78)
LN(AGE)	-0.0013	-0.0092	-0.0015	-0.0271***	-0.0261**	-0.0166**	-0.0128	-0.0174	-0.0111*
	(-0.15)	(-1.07)	(-0.18)	(-3.47)	(-2.33)	(-2.56)	(-1.55)	(-1.52)	(-1.69)
LN(MARKETCAP)	-0.0011	0.0015	-0.0011	0.0007	0.0054	-0.0006	-0.0002	0.0061**	-0.0024
	(-0.34)	(0.51)	(-0.32)	(0.25)	(1.49)	(-0.20)	(-0.05)	(2.19)	(-0.87)
Constant	0.0398	-0.0114	0.0267	0.072	-0.052	0.0454	0.0770	-0.0486	0.0389
	(0.62)	(-0.18)	(0.46)	(1.37)	(-0.81)	(0.84)	(1.14)	(-0.93)	(0.62)
R-squared-adjusted	0.1485	0.0814	0.1149	0.1988	0.2442	0.1796	0.063	0.2812	0.2929
F-test	2.2716	2.0546	3.5166	1.9141	2.1417	2.1996	1.4452	2.3926	1.7944
p-value F-test	0.0196	0.0352	0.0007	0.0481	0.0255	0.0217	0.1761	0.0151	0.0737
N	56	56	56	60	60	60	65	65	65

Note. The table reports standardized coefficients and t-statistics (in parentheses) from an OLS regression with heteroscedasticity-robust standard errors. The dependent variable is the cumulative abnormal return (discrete returns; beta estimation period of 180 trading days) for three different event windows for each event. The first event is defined as the date of the first disclosed indication of the erroneous accounting. The date of the first information release concerning the FREP's investigation with a simultaneous indication of the erroneous accounting is defined as the second event. The third event is defined as the date of the first official error publication according to § 37q WpHG. POSITIVE (NEGATIVE) is a dummy variable for positive (negative) information about the company in the press on at least one day of the event window. FINAN_REP is a dummy variable being equal to one if a financial report is published on the event day t=0. OFFICIAL is a dummy variable being equal to one for the first and second event if the event date is equal to the date of the first official error publication. FIRST_AND_FREP is a dummy variable and is equal to one for the first and the second event if the events coincide (for the third event: the variable is equal to one if the first and the third events coincide.). The dummy variable PUBLIC is equal to one if an outsider is able to detect the error in the examined financial report. TIME is the time period in months between the balance sheet date of the examined financial report and the respective event. The dummy variable PROFIT_DECREASE is equal to one if the disclosed accounting errors are profit- decreasing errors. The dummy variable BIG4 indicates whether a Big 4 auditor has audited the erroneous financial report. The dummy variable DISTRESS is equal to one if the audit opinion for the examined financial report is followed by an explanatory paragraph signaling substantial doubt about the going concern of the company. LEV is the debt-to-asset-ratio at the balance sheet date of the erroneous financial report. MTBR is the market to book ratio at the balance sheet date of the erroneous financial report. (INTANGIBLE_ASSETS/TA) is the ratio of intangible assets to total assets at the balance sheet date of the erroneous financial report. LN(MARKETCAP) is the natural logarithm of the market capitalization ten trading days before the first event date. LN(AGE) is the natural logarithm of the number of months the firm was listed on a German stock exchange between its IPO and the respective event date. The number of cases N for the different events is reduced because of missing values. * p<0.1, ** p<0.05, and *** p<0.01.

Table 7. Cross-Sectional Analysis with exclusions.

	Panel A: Second Event			Panel B: Third Event		
	[-1;+1]	**[-1;0]**	**[0;+1]**	**[-1;+1]**	**[-1;0]**	**[0;+1]**
Dependent variable: Cumulative abnormal return	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)	Coefficient (t-Statistic)
OFFICIAL	0.0384*	0.0720***	0.0075			
	(1.83)	(3.17)	(0.47)			
FIRST_AND_FREP	-0.0278	0.0051	-0.0075	0.0094	0.0188	0.0111
	(-1.51)	(0.27)	(-0.46)	(0.49)	(0.95)	(0.81)
PUBLIC	0.0105	-0.0099	0.0280*	0.0115	-0.0043	0.0148
	(0.51)	(-0.44)	(1.94)	(0.77)	(-0.30)	(1.43)
TIME	-0.0015*	-0.0007	-0.0001	-0.0020**	-0.001	-0.0004
	(-1.95)	(-0.64)	(-0.08)	(-2.50)	(-1.49)	(-0.51)
PROFIT_DECREASE	0.0676***	0.0737***	0.0545***	0.0387*	0.0383	0.0322*
	(3.51)	(2.96)	(3.57)	(1.88)	(1.55)	(1.81)
BIG4	0.0289*	-0.0009	0.0148	-0.0044	-0.0198	0.0001
	(2.00)	(-0.04)	(1.19)	(-0.27)	(-1.26)	(0.01)
DISTRESS	0.0481**	0.0567*	0.0106	-0.004	-0.0022	0.0095
	(2.44)	(1.99)	(0.56)	(-0.13)	(-0.08)	(0.56)
LEV	0.0288	0.0405	0.0583*	-0.0155	0.0056	0.0081
	(1.25)	(1.14)	(1.90)	(-0.58)	(0.15)	(0.38)
MTBR	0.0083	-0.0077	0.0099	0.0041	-0.006	0.0028
	(0.76)	(-1.49)	(1.09)	(0.38)	(-1.53)	(0.37)
INTANGIBLE_ASSETS/TA	0.0307	0.0229	-0.0074	0.0137	0.015	-0.0227
	(0.91)	(0.48)	(-0.22)	(0.37)	(0.37)	(-0.80)
LN(AGE)	-0.0307***	-0.0306**	-0.0129	-0.0142*	-0.0203	-0.0081
	(-3.26)	(-2.65)	(-1.34)	(-1.88)	(-1.54)	(-1.26)
LN(MARKETCAP)	0.0039	0.0178***	-0.005	-0.0008	0.0091***	-0.0021
	(1.23)	(4.13)	(-1.34)	(-0.20)	(3.41)	(-0.66)
Constant	0.0097	-0.2889***	0.0744	0.0973	-0.0699	0.0552
	(0.13)	(-3.40)	(0.89)	(1.21)	(-1.05)	(0.82)
R-squared-adjusted	0.4992	0.4944	0.1756	0.0843	0.2682	-0.0084
F-test	9.7427	6.1987	2.2401	3.3132	2.2615	1.0831
p-value F-test	0.0000	0.0002	0.0534	0.003	0.0309	0.3969
N	31	32	33	49	50	55

Note. The table reports standardized coefficients and t-statistics (in parentheses) from an OLS regression with heteroscedasticity-robust standard errors. The dependent variable is the cumulative abnormal return (discrete returns; beta estimation period of 180 trading days) for three different event windows for each event. The date of the first information release concerning the FREP's investigation with a simultaneous indication of the erroneous accounting is defined as the second event. The third event is defined as the date of the first official error publication according to § 37q WpHG. OFFICIAL is a dummy variable being equal to one for the second event if the event date is equal to the date of the first official error publication. FIRST_AND_FREP is a dummy variable and is equal to one for the second event if the first and the second events coincide (for the third event: the variable is equal to one if the first and the third events coincide.). The dummy variable PUBLIC is equal to one if an outsider is able to detect the error in the examined financial report. TIME is the time period in months between the balance sheet date of the examined financial report and the respective event. The dummy variable PROFIT_DECREASE is equal to one if the disclosed accounting errors are profit- decreasing errors. The dummy variable BIG4 indicates whether a Big 4 auditor has audited the erroneous financial report. The dummy variable DISTRESS is equal to one if the audit opinion for the examined financial report is followed by an explanatory paragraph signaling substantial doubt about the going concern of the company. LEV is the debt-to-asset-ratio at the balance sheet date of the erroneous financial report. MTBR is the market to book ratio at the balance sheet date of the erroneous financial report. (INTANGIBLE_ASSETS/TA) is the ratio of intangible assets to total assets at the balance sheet date of the erroneous financial report. LN(MARKETCAP) is the natural logarithm of the market capitalization ten trading days before the first event date. LN(AGE) is the natural logarithm of the number of months the firm was listed on a German stock exchange between its IPO and the respective event date. The number of cases N for the different events is reduced because of missing values. * p<0.1, ** p<0.05, and *** p<0.01.

7. Summary, Conclusions, and Limitations

The German two-tier enforcement regime, established by the Balance Sheet Control Act on December 15, 2004, has two clear aims: managers shall be prevented ex ante from reporting erroneously, and existing erroneous accounting shall be detected and published ex post (BilKoG Exposure Draft of the German Government, 2004, p. 11). We investigate a sample of 112 enforcement cases for which accounting errors were published in the electronic Federal Gazette between the beginning of the German enforcement regime in 2005 and June 30, 2010. The study contributes to the literature by analyzing potential market penalties induced by the German enforcement regime.

We define three different events of particular interest, since companies use different reporting strategies for their financial reporting errors. In the event study we control for confounding events by using a subsample of all enforcement cases excluding a case if there are positive or negative confounding events in the event window or a financial report is published at the respective event date. At the first event we try to measure the stock price reaction due to the first disclosed indication of erroneous accounting. We only find weak evidence for negative (cumulative) abnormal returns around the first event date. This might be due to the fact that we exclude all error announcements published in a financial report which causes the first disclosure date of the then remaining cases to coincide frequently with the date of the official error publication. Thus a plausible explanation for the weak results for the first event might be that the published errors of the remaining cases are frequently rather minor ones and therefore do not lead to restatements or press releases prior to the official error announcement ordered by the BaFin. This interpretation is supported by our data. The first information release concerning the FREP's investigation with a simultaneous indication of the erroneous accounting is defined as the second event. Also for this event we only find weak evidence for a negative (cumulative) abnormal stock price reaction. However, we find strong evidence for negative (cumulative) abnormal returns around the third event (the first official error publication according to § 37q WpHG), indicating a negative stock price adjustment due to the official error publication ordered by the BaFin.

By conducting a multivariate regression analysis, we try to highlight which error-, event- or firm-specific characteristics might explain the varying degree of abnormal stock price reactions. Our results imply that companies are able to dilute the (negative) capital market impact of an error announcement by simultaneously publishing other (positive) information. In the event of first announcements of erroneous accounting coinciding with official error announcements there is weak evidence for less pronounced negative cumulative abnormal returns which supports the

interpretation described above. Furthermore, there is evidence for less pronounced negative abnormal stock returns if the disclosed accounting errors are profit-decreasing errors. This is consistent with a positive readjustment effect for downward manipulations of profit. Our results might also support the existence of a reputation effect, since there is some evidence for more negative cumulative abnormal returns for companies that have been listed for a longer period of time. Firm age might proxy for the company's reputational capital at stake (for a theoretical reasoning for firm age as a source of reputation see Banerjee & Duflo, 2000, pp. 994-995). Younger firms might have a worse reputation ex ante for a high quality of financial reporting, and thus the error probability reflected in the stock price discount might already be higher ex ante for younger firms.

The results of our event study analysis suggest that especially the official error announcements ordered by the BaFin have information content in practice that is reflected in a negative abnormal stock price reaction and thus triggers a sanction for the respective companies via the market. For evaluating the deterrence potential of these market reactions it is important to know whether the reactions solely reflect a stock price readjustment. The results of our cross-sectional analysis might imply that the negative stock market reactions are not only driven by readjustment, but also by reputational considerations.

The negative (cumulative) abnormal returns reported in our event study for the event day t=0 and all multi-day event windows of the third event are slightly higher than those presented in the two existing studies for the German market (see Section 3). However, the negative (cumulative) abnormal returns in our study are substantially lower than those in the US studies (see Section 3). In our opinion, these differences in the capital market reaction are mainly due to two reasons. First, the SEC initiates a formal investigation only if the probability of success and potential message value is high (Feroz et al., 1991). Contrary to this, the majority of the official error publications ordered by the BaFin result from sampling examinations, and thus, it is probable that the errors detected by the German enforcement agency are less important on average than the respective financial reporting violations published by the SEC as a result of a formal investigation. Second, there are additional differences in the enforcement regime. While in the US the SEC publishes the Accounting and Auditing Enforcement Releases, in Germany the company has some discretion in determining the text and timing of the official error publication, and thus managers seem to rely to a considerable degree on the announcement of positive confounding information around error publications for reducing the negative stock market reaction. At least for official error publications this problem might easily be reduced de lege ferenda by requiring the BaFin to publish the errors instead of the management of the respective

company at a date not exactly determinable ex ante. This might be combined with the same publication date and a standardized information channel for each of the two announcements if two mandatory announcements should be kept at all. Furthermore, in the US the threat of legal penalties for the company as a consequence of detected financial statement errors is expected to be more pronounced than in Germany (see also Hitz et al., 2012, pp. 255, 269, 271).

There are some limitations of our study. First of all, we are not able to estimate the size of the readjustment effect, and thus to separate this effect from the reputation (and legal penalties) effect, or to investigate whether the magnitude of the stock price reaction around the error announcements is highly correlated with the extent of the accounting errors impact on profit (instead of just using a dummy variable). This is due to the official error announcements not always providing sufficient information for an outsider to be able to correct the erroneous financial statements and to a simultaneous lack of a restatement or other sufficient information prior to the official error publication. The problem of insufficient information given by the official error publication might easily be reduced de lege ferenda. Second, we interpret our results as supporting a reputation effect although not all variables used in our cross-sectional analysis as proxies for the importance of reputation are significant. Furthermore, for our event study analysis the well-known problem of adequate selection of event dates exists for the first and second event date. We tried to reduce this problem by an extensive and careful financial report and press search. Finally, also the classification of a confounding event as positive or negative can be argued. The same is true for the decision to delete a case with a confounding event only if it is announced in the specific event window under consideration (see also Foster, 1980, p. 56).

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Appendix

Sensitivity Analysis: Event Study

Table 8. Comparison of the Corrado rank test statistic for different beta estimation periods with discrete or logarithmic returns.

Trading days for beta estimation	**180**	**150**	**180**	**150**	**180**	**150**
Calculation method of returns	**discrete**	**discrete**	**log**	**log**	**Scholes and Williams correction**	**Scholes and Williams correction**
First event						
[-1]	-0.58	-0.43	-0.37	-0.34	-0.50	-0.45
[0]	-0.25	-0.28	-0.30	-0.29	-0.31	-0.30
[+1]	-0.70	-0.70	-0.51	-0.71	-0.86	-0.92
[-1;+1]	-0.87	-0.92	-0.07	-0.90	-0.07	-0.76
[-1;0]	-1.45*	-1.38*	-0.90	-1.37*	-0.97	-1.26
[0;+1]	-0.25	-0.34	0.08	-0.34	0.06	-0.31
Second event						
[-1]	-0.81	-0.80	-0.59	-0.71	-1.06	-0.97
[0]	-0.92	-0.96	-0.95	-0.94	-1.08	-1.04
[+1]	-0.52	-0.59	-0.32	-0.59	-0.11	-0.25
[-1;+1]	-0.46	-0.59	-0.13	-0.58	-0.01	-0.22
[-1;0]	-1.60*	-1.69*	-1.42*	-1.68*	-1.50*	-1.53*
[0;+1]	-0.09	-0.19	0.08	-0.18	0.25	0.09
Third event						
[-1]	-1.31*	-1.28	-1.12	-1.28	-1.20	-1.18
[0]	-2.59***	-2.43***	-2.59***	-2.40***	-2.86***	-2.60***
[+1]	-1.31*	-1.34*	-1.12	-1.32*	-0.64	-0.83
[-1;+1]	-2.51***	-2.43***	-2.27**	-2.41***	-2.12**	-2.12**
[-1;0]	-2.88***	-2.73***	-2.74***	-2.72***	-2.89***	-2.68***
[0;+1]	-2.48***	-2.42***	-2.35**	-2.40***	-2.15**	-2.14**

Note. The table reports the Corrado rank test statistics for different beta estimation periods with discrete or logarithmic returns as well as the Scholes and Williams' (1977) correction. The first event is defined as the date of the first disclosed indication of erroneous accounting. The date of the first information release about the FREP's investigation simultaneously indicating erroneous accounting is defined as the second event. The third event is defined as the date of the first official error publication according to § 37q WpHG. A case is excluded if a financial report was published at the respective event date or there were positive or negative confounding events in the specific event window. * p<0.1, ** p<0.05, and *** p<0.01.

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