

# **Essays on Fraud and Forensic Accounting**

Research from a German Accounting Perspective



Dissertation

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I dedicate this thesis to you because *family is where life begins, and love never ends.*

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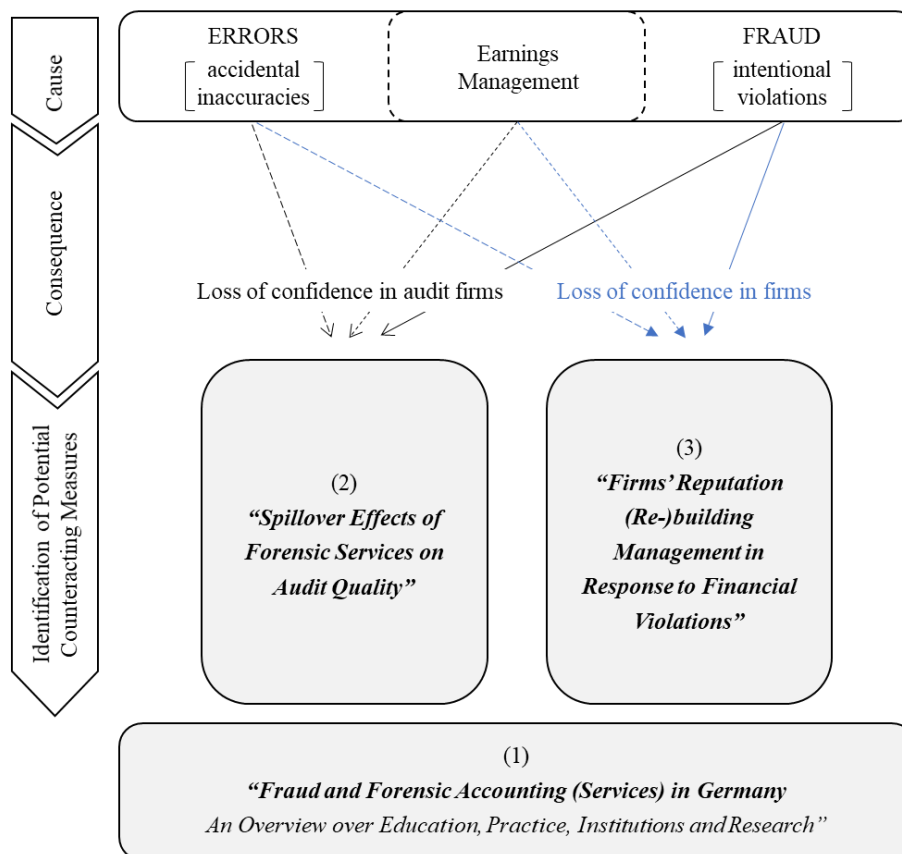
## Preface

Investment fraud, cybercrime, inconsistencies in health care or the emission scams at the car manufacturers, economic crime (fraud) manifests itself in many facets. For Germany, the cases of *FlowTex*, *Comroad*, *HRE-Bad-Bank*, *Holzmann*, *Volkswagen* and the current fraud suspicions at *Porsche AG* are prominent examples with mostly appalling consequences (Ballwieser and Dobler 2003; Kögler 2015; Meck, Nienhaus, and von Petersdorff 2011; Peemöller and Hofmann 2005). Nevertheless, newspapers without reports on fraud have become scarce. Headlines such as: "Corruption - the daily business" impress hardly anyone, not least because of their certain regularity. The cases revealed publicly are, however, only the tip of the iceberg, as reported by renowned experts (Bundeskriminalamt 2018; LKA 2018). Currently, the State Criminal Police Office (Landeskriminalamt (LKA)) of Baden-Württemberg and its department for economic and environmental crime and corruption is concerned with 72 major proceedings (LKA 2018). However, fraud could be avoided or at least contained by appropriate preventive measures (Bundeskriminalamt 2018; Bussmann 2004; Hlavica, Klapproth, and Hülsberg 2011). Consequently, the pressure on companies and employees to demonstrate compliant and ethical behavior and to meet the demands of stakeholders at all times within their business activities has grown (Buff 2000). This raises the question about which precautionary measures a company can and must implement (Weick and Sutcliffe 2015). Although corporate awareness of this issue has increased, most in-house detection of fraud is accidental, suggesting that companies are still lacking appropriately functioning and systematic (early) detection mechanism (Hlavica et al. 2011). If a company is accused of fraud, this usually has serious repercussions on its corporate reputation. Prior research found that capital market reputation-based penalties for affected companies are on average 7.5 times higher than penalties imposed by the legal system (Karpoff, Lee, and Martin 2008). Furthermore, the accusation of fraud also affects the external auditor's reputation, since lacking the detection of manipulations in clients' (financial) reports not only damages public confidence in the accuracy of firms' financial statements but also in the reliability of the auditor's report. Therefore, it is not surprising that the demand for greater supervision and control of firms' (financial) reporting as well as for reliable work of statutory auditors continually increases (Herkendell 2007). Although to a lesser extent, this is also the case for the determination of material (accounting) errors within a firm's financial statements, which are often difficult to distinguish from accounting fraud. According to the International Accounting Standard (IAS) 8.5, published by the International Accounting Standards Board (IASB), errors are omissions and/or misstatements of items that result from the nonapplication or



misapplication of trusted information (IASB 2003). Thus, accounting errors and accounting fraud both result in incorrect information of a firm's financial reports and consequently affect stakeholders' decision-making. One resulting attempt in counteracting the broad demand for appropriate protective measures was the implementation of a two-stage enforcement system involving the German Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)) as part of the adopted Financial Reporting Enforcement Act (Bilanzkontrollgesetz (BilKoG)) in 2004. The primary objective of the Federal Government's implementation of this mechanism was to strengthen investors' lost confidence in the German capital market, the information content of financial reporting, and Germany as a financial center in the international competition. In addition, the enforcement system serves as a sanctioning instrument for firms in the event of an error detection and subsequent adverse error disclosure via the German federal registry (elektronischer Bundesanzeiger). This adverse error disclosure not only sanctions denounced firms but also questions the quality of the annual financial statement audit and thus the quality of the responsible audit firm. Hence, the often thin line between firms' unintentional accounting errors, purposive engagement in earnings management, and intentional fraud in particular presents an increasing challenge for the audit profession.

The objective of my cumulative dissertation is to provide a comprehensive overview of fraud and forensic accounting as well as insights into the distinct dimensions among the concepts of errors, earnings management and fraud from a German accounting perspective. I aim at achieving this objective in three steps: First (1), by providing an overview of discipline-specific education possibilities, existing forensic accounting practices, institutions, and current developments in research. Second (2), by assessing auditors' obligations and responsibilities for the detection of irregularities within the scope of the annual financial statement audit and whether including forensic services into the service portfolio of audit firms can help increase their audit quality due to spillover effects. Third (3), by examining firms' reputation (re-)building management in response to financial violations and how this process is associated with managing multiple (stakeholder) reputations. This dissertation is composed of three individual papers whereby each considers one of the above outlined focus areas as illustrated by Figure 1.

**Figure 1:** Thematic relationships between the three papers

The first paper (*"Fraud and Forensic Accounting (Services) in Germany – An Overview over Education, Practice, Institutions and Research"*)<sup>1</sup> aims to provide an overview of the key topics – fraud and forensic accounting – of this doctoral thesis and gives insights into the related forensic accounting services from a German accounting and research perspective as well as on an international comparison. A further objective is to enable forensic accountants, whether practitioners or researchers from other countries, to better understand and cooperate with their German counterparts. Therefore, the paper attempts to make forensic accountants aware of differences that prevail in the German setting compared to other traditions of forensic accounting throughout the world. We believe that the awareness of such differences might also be helpful when engaging in collaborations. Thus, we first outline the educational opportunities as well as the market for forensic (audit) practice in Germany. In addition, we identify typical situations and areas of responsibility in which forensic examiners are usually consulted, with special reference to particularities of the German (audit) market as well as German legislation. Within this context, the study discusses the responsibilities of both sides, hence those of a firm's legal representatives and those of the auditors, relating to the detection of fraud. The third

<sup>1</sup> This paper is co-authored by Prof. Dr. Markus Grottko. As of June 2018, the manuscript is under review (second round, revise-and-resubmit) at *Journal of Forensic and Investigative Accounting (JFIA)*.

section of the paper outlines the current developments and points to some peculiarities in the field of forensic accounting research in Germany within recent decades. Finally, we provide an outlook on possible developments in forensic accounting in Germany. In order to obtain a correspondingly profound and targeted degree of understanding the described topics, we conduct a so-called "systematic literature review." For this purpose, the criteria for the selection of sources as well as the procedure for the literature research is discussed in detail. Furthermore, relevant investigations are carried out independently by both authors and finally aggregated to the summarized results. This approach is consistently pursued throughout the study. Overall, we determine a rapidly growing focus on the topic in business practice as well as in recent research. This growing focus is clearly justified in the increasing detailed and demanding regulation as well as in the more sophisticated technology which challenge preparers of the financial statements as well as auditors and tax auditors. However, these developments have not been sufficiently addressed by higher education institutions such as universities or research institutions. Thus, the topic of forensic accounting still manifests itself as research niche with only a few researchers actively and constantly participating.

The second paper (*"Spillover Effects of Forensic Services on Audit Quality"*) questions whether audit firms' supply of forensic services is associated with higher audit quality. I therefor seek to examine how including forensic services into the service portfolio of audit firms can help in increasing audit quality. I assume that the supply of forensic services by audit firms per se can improve the quality of statutory audits due to "spillover effects". These could arise for the following reasons. First, field auditors can profit from the existence of specialized fraud detection tools. Second, training of field auditors on relevant fraud topics and fraud detection procedures as a continuous improvement process of field auditors' fraud knowledge can be provided in-house. Third, field auditors can make use of fast consulting opportunities with fraud specialist colleagues about challenging situations during the course of an audit engagement. Thus, my focus is deliberately not aimed at determining whether the actual delivery of forensic services on specific audit engagements enhances audit quality. I further assume that an additional effect on audit quality is caused by certain personal factors of the individual auditor, such as the individual auditor's level of conservatism, the auditor's age and the auditor's experience. In a supplemental analysis, I examine the effects of the scope of forensic subservices offered by the respective audit firm. For my analyses, I use a German institutional setting in which the number of audit firms providing forensic services increased gradually over time. To investigate the research question, I conduct a survey of all German audit firms that present at least one publicly listed client in their transparency report in 2016. I then matched

the respondent audit firms with detailed information of their audit clients, collected from the annual reports, as well as with the corresponding individual audit partners over the years. I measure audit quality by the performance-adjusted discretionary accruals (Kothari, Leone, and Wasley 2005) of the respective audit firm clients. The descriptive evaluations of the survey results show that the number of audit firms providing forensic services increases from 9 audit firms (19.6%) in 2008 to 17 audit firms (37.0%) in 2016. The multivariate results, however, reveal that companies tend to record extreme values of income-decreasing discretionary accruals if the incumbent audit firm provides forensic services within its range of services. This suggests that the simple existence of forensic services and hence the expected spillover effect does not constrain clients' income-decreasing earnings management while it has no impact on income-increasing earnings management as well as the absolute value of discretionary accruals.

My third paper (*"Firms' Reputation (Re-)building Management in Response to Financial Violations"*) examines the complex nature of firms' reputation (re-)building management in response to financial violations and how this process is associated with managing multiple (stakeholder) reputations. From an organizational perspective, an increased awareness and sensitivity of the trade-offs associated with a firm's specific reputations should enhance managers' ability to protect and rebuild these specific reputations when they are threatened. To display financial violation, I rely on (1) firms with financial restatements – DPR firms – as disclosed by the German Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)) and (2) firms associated with fraud – Fraud firms – as disclosed by the *LexisNexis WorldCompliance Online Search Tool*. I procure all press releases published by the denounced firms as well as all press releases of their respective matched control firms (i.e. Non-DPR firms and Non-Fraud firms, respectively) over a time period of six months prior (PRE-restatement period) and one year after (POST-restatement period) the initial restatement date. I expect that both, DPR firms and especially Fraud firms have incentives to improve their reputation with their stakeholders and thus increase the frequency of external communication (i.e. press releases) in general and reputation-building measures in particular, after the release of a DPR restatement. Further, I assume an immediate effect of firms' reputation (re-)building management, measurable by short-window market reactions surrounding the publications of reputation-building measures, depending on time- and firm-specific aspects. With regard to my first sample (DPR firms vs. Non-DPR firms), the results show an overall increase in the frequency of reputation-building measures by DPR firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched Non-DPR firms (control firms), however, the results are not significant and therefore only present a tendency. Analyzing

the effectiveness of firms' reputation (re-)building reveals that findings are consistent with my overall predictions. Findings of my second sample (Fraud firms vs. Non-Fraud firms) reveal that Fraud firms issue a significantly higher average amount of total press releases and engage in significantly higher average numbers of reputation-building measures in the POST-restatement period relative to Non-Fraud firms (firm-specific effect). However, there is no significant effect between reputation-building measures in the PRE-restatement period compared to the POST-restatement period (time-specific effect) for neither of the sample groups. Analysis of the effectiveness of Fraud firms' reputation (re-)building, also reveals significant firm-specific effect, but no time-specific effect. These results lead to the assumption that Fraud firms' reputation repair behavior is independent of the actual DPR restatement announcement date.

In principle, the three papers of this dissertation are independent of each other. Thus, each paper contains all the information necessary to understand the underlying topic and contributes to existing research individually. Albeit in their fundamental structure similar, each study is organized individually regarding numbering of figures, tables, footnotes and equations and has its own abstract, introduction, conclusion, list of references and appendices. The relevant figures and tables are integrated into the continuous text, whereas any amendments are found in the appendices at the end of each paper and before the list of references. Citation and reference styles may differ among papers depending on the journals for which they were originally intended for submission.

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# **I. Fraud and Forensic Accounting (Services) in Germany**

## **– An Overview over Education, Practice, Institutions, and Research\***

Markus Grottke<sup>†</sup> / Katrina Kopp<sup>‡</sup>

**ABSTRACT** The following manuscript outlines the current state of forensic accounting in both, business practice and business economics research in Germany. The purpose of the paper is twofold. First, it aims to enable forensic accountants around the world, whether practitioners or researchers from other countries to better cooperate with their German counterparts. This involves, in the first place, a better understanding of their German counterparts. Second, the paper attempts to make forensic accountants aware of differences that prevail in the German setting compared to other traditions of forensic accounting throughout the world. This fact should also be taken into account when engaging in collaborations. We conclude with an outlook on the potential developments of forensic accounting (services) in Germany that are likely to take place in the near future.

**Keywords:** Fraud, Forensic Accounting, Forensic (Accounting) Services, Forensic Accounting Education, Forensic Accounting Research, Germany

**JEL Classification:** K4, M4

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## 1. Introduction

The following manuscript intends to outline the current state of forensic accounting in both, business practice and business economics research in Germany. The purpose of this paper is twofold. First, it aims to enable forensic accountants, whether practitioners or researchers from other countries, to better cooperate with their German counterparts. This involves, in the first place, a better understanding of their German counterparts. Second, the paper attempts to make forensic accountants aware of differences that prevail in the German setting compared to other traditions of forensic accounting throughout the world. An awareness of such differences might also be helpful when engaging in collaborations. Forensic accounting practice and research requires thorough knowledge on both sites, that is, on the practitioner's site as well as on the researcher's site. To enable an in-depth review of the German landscape in forensic accounting, we composed the research team of two researchers that represents both sides. The first author has, for several years, dedicated his efforts to the area of forensic accounting research. The second author has been in practice for four years, being part of one of the growing forensic accounting departments of the Big Four and only recently returned to research. Combining the knowledge of both sides should allow for a comprehensive picture on developments in the German area although we certainly cannot and will not claim that we have been aware of every detailed development that has taken place recently.

This review is organized as follows. The second section outlines the education opportunities as well as the market for forensic accountants in Germany. Further typical situations in which forensic accountants are usually consulted are illustrated. Whenever appropriate, peculiarities of the German setting are highlighted. The third section outlines the current developments and points to some hallmarks in the research area of forensic accounting in Germany during the last decades. The focus is on research, which is particular for this geographical area, mostly published in German and, therefore, less known internationally. The paper concludes by providing an outlook on possible developments in forensic accounting in the German area that we expect to take place in the near future.

## 2. Forensic Accounting in German Business Practice

### 2.1. Education of Forensic Accountants in Germany

To our knowledge, German universities rarely offer programs specialized on forensic accounting. More often we find such programs in universities of applied science/polytechnics. One reason for this scarcity might be the structure of the university system in Germany which is organized following a chair structure rather than a department structure. Once a chairholder is appointed, full freedom is guaranteed in choosing the research and teaching content, which makes it difficult to develop programs dedicated to forensic accounting beyond the chair level. That is why today education at the university level in forensic accounting is mainly linked to certain chairs that are specialized in this area. They either offer regular courses in the field of forensic accounting or occasional seminars concerning this topic. An example of regular courses but with a slightly different approach and perspective on the topic is the chair of economics and economic theory held by Johann Graf Lambsdorff in Passau. He offers regular courses related to forensic topics from an economic theory perspective – partly also open to students from other universities in summer schools such as “The economics of corruption”. Other universities like Ruhr University of Bochum as well as Friedrich-Alexander-University of Erlangen-Nürnberg occasionally offer forensic accounting seminars. Universities of applied sciences, on the other hand, more often offer either courses or course programs that are attractive for a career path as a forensic accountant.<sup>1</sup> One reason might be that universities of applied sciences are closer attached with business practice and might have reacted faster to the growing market for forensic accountants in Germany than universities. However, universities of applied science more often focus on IT security and forensic data analysis. To provide insights into the currently existing educational opportunities in Germany both authors performed an independent research on all course programs, courses and seminars offered in Germany at the moment and combined their results in Table 1.

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<sup>1</sup> For example, the University of Applied Science of Albstadt-Sigmaringen or the University of Applied Science Konstanz and the Steinbeis University Berlin offer regular courses.

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**Table 1:** Course programs, courses and seminars existent in Germany at the present.

University	Programs of Study	Course Programs	Regularly Courses	Seminar (occasionally)
Friedrich-Alexander-Universität Erlangen-Nürnberg	Finance, Auditing, Controlling, Taxation (Bachelor)		- Controlling of Business Development: Corporate Governance, Compliance & Risk Control	
	Finance, Auditing, Controlling, Taxation (Master)		- International Corporate Governance	- Advanced Seminar: Contemporary Issues in Auditing incl. Forensic Accounting
Hochschule Albstadt-Sigmaringen University of Applied Sciences	IT Security (Bachelor)		- Big Data - Digital Forensic	
	Digital Forensic (Master)		- Fundamentals of Digital Forensic - Cybercrime & Law on Computer Crime - Digital Investigations of Fraud	
	IT Governance, Risk & Compliance Management		- Fundamentals of IT Governance, Risk & Compliance Management - Fraud and Cybercrime - Legal Disputes & eDiscovery - Fundamentals of Digital Forensic - Compliance from the viewpoint of Civil & Criminal Law - IT-Governance & IT-Compliance	
Fachhochschule Brandenburg	Security Management (Master)		- Law, Compliance & Data Security	
	Business Administration (Master)		- International Corporate Governance: Standards, Norms and Values	
Freie Universität Berlin				- Forensic
Hochschule Konstanz University of Applied Sciences	Executive MBA		- Compliance & Corporate Governance - Global Corporate Governance	

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University	Programs of Study	Course Programs	Regularly Courses	Seminar (occasionally)
Applied Sciences (HTWG)			<ul style="list-style-type: none"> <li>- Regulatory &amp; Corporate Criminal Law</li> <li>- Business Ethics</li> <li>- Compliance &amp; Fraud Risk Management</li> </ul>	
	Management (Master)	Corporate Governance & Compliance	<ul style="list-style-type: none"> <li>- Global Corporate Governance</li> <li>- Supervisory &amp; Corporate Criminal Law</li> <li>- Business Ethics</li> <li>- Compliance &amp; Fraud Risk Management</li> </ul>	
Hochschule Mittweida University of Applied Sciences	General & Digital Forensic (Bachelor)		<ul style="list-style-type: none"> <li>- Fundamentals of Computer Forensics</li> <li>- General Forensics</li> <li>- Operational Systems &amp; Digital Trails</li> <li>- Criminology</li> <li>- Data Mining</li> </ul>	
Karlshochschule International University	International Business (Bachelor)		<ul style="list-style-type: none"> <li>- Ethics in Management: Globalization &amp; Ethics; Sustainability &amp; Ethics; Ethics in Practice</li> </ul>	
Ruhr-University Bochum	Management & Economics (Bachelor)			<ul style="list-style-type: none"> <li>- Forensic Accounting</li> <li>- Contemporary Issues in Corporate Governance incl. Compliance</li> </ul>
Steinbeis-Hochschule Berlin	School of Criminal Investigation & Forensic Science: Criminalistics (Master)		<ul style="list-style-type: none"> <li>- IT-Forensic &amp; Investigations of the Internet</li> <li>- Economic Crime</li> </ul>	
	School of Governance, Risk & Compliance: Economic Crime & Compliance (MBA)	Corporate Governance	<ul style="list-style-type: none"> <li>- Corporate Governance</li> <li>- Internal Control Systems</li> </ul>	
		Fraud Management	<ul style="list-style-type: none"> <li>- Fraud Management</li> <li>- Forensic Software</li> </ul>	

I. Fraud and Forensic Accounting (Services) in Germany  
 – An Overview over Education, Practice, Institutions, and Research

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University	Programs of Study	Course Programs	Regularly Courses	Seminar (occasionally)
Paderborn University	International Business Studies (Bachelor)		- Money Laundering & Art Dealing - Principles of Business Ethics	- Seminar Business Ethics
	International Business Studies (Master)		- Principals of Corporate Governance - Business Ethics - Corporate Compliance - Colloquium on Corporate Governance	- Seminar Economic & Business Ethics
University of Applied Science Brandenburg	Digital Media (Master)		- IT & Media Forensic	
	Computer Science (Master)		- Current Topics in Cloud & Network Forensics	
	Security Management (Master)		- Risk Analysis & Risk Management - Mathematical & technical basics of IT security: Forensic & Auditing - Technical Aspects of IT Forensic	
University of Munster	Business Administration (Master)	Major Finance	- Corporate Governance & Responsible Business Practices	- Seminar Corporate Governance
University of Passau	International Economics & Business (Master)		- Governance, Institutions & Anticorruption	- Economics of Corruption

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What can be verified from Table 1 – and this is certainly a peculiarity of Germany – is that there is still a paucity of higher education that is fully dedicated to forensic accounting or other forensic services. Different from what one might expect, this is even true for auditors. Their assignments are often very similar to that of a forensic accountant, such as in the case of embezzlement audits (Brauner 2010) which are part of the advisory services offered by auditors (mentioned in paragraph (par.) 2 of the German Auditor's Regulations). Despite this fact, even universities and institutions of applied sciences that are acknowledged by the German profession of auditors do not mention such specific audits (e.g. embezzlement audits) and they are even farther away from mentioning fraud detection tools as part of their curriculum. Of those eight institutions that are officially acknowledged by the German institute of auditors as taking over part of the auditor exam (according to par. 8a or par. 13b German Auditor's Regulations), only two, namely Pforzheim and Osnabrück/Munster, mention that their education contains special audits (Brauner 2010).

As a result, in business practice today and within the currently fast growing area of forensic services, we experience quite different types of education and career paths that have led today's experts to become dedicated to this area. Specialists that form the teams/departments that offer forensic services could be auditors, tax consultants, sociologists, computer specialists, lawyers, former criminologists, prosecutors or psychologists (see also Wilkinson and Rebmann 2001). One reason for this plentitude of different specializations might be that the creativity in committing fraud needs to be countered by a similar degree of different perspectives on potential fraud cases.

In view of the aforementioned state of education in forensic accounting it is not surprising that in Germany, at least in the private sector, neither exist established certification(s) nor education requirements, experience requirements, test requirements or standards of practice procedures. This often led to the common practice that German employees of forensic accounting (services) departments are send abroad to the United States to achieve special certifications that provide evidence of a certain minimum level of education in forensic accounting such as the Certified Fraud Examiner (CFE). Meanwhile the CFE exam can either be taken through the exam's software or with the help of the online portal offered by the Association of Certified Fraud Examiners (ACFE). In 1998 the German institute for internal revision became a member of the Institute of Internal Auditors (IIA) and introduced the exam of the Certified Internal Auditor (CIA) in Germany (Amling and Bantleon 2008). The CIA exam consists of three parts. The first part concentrates on internal audit basics, whereas the second section includes aspects of how to conduct individual engagements as well as

consolidations of fraud risks and controls. The third part contains internal audit knowledge elements, which incorporates topics on governance and business ethics. With respect to the necessary exam preparation the IIA however again recommends essential American literature. As a consequence, different German practices taking care of German peculiarities are not observable in the education at the moment.<sup>2</sup> Also, in the area of IT-Forensic, recourse is often taken to the international trainings of the SANS-Institute (SysAdmin, Audit, Network and Security), where participants are afterwards certified by the Global Information Assurance Certification (GIAC) as Certified Fraud Analysts or Certified Incidence Handlers. Whereas the first training enables to detect which kind of data can be found with respect to incidences in the IT systems, the second training enables to react to incidents such as an attack on one's own web side. It is important to note that those educational requirements have increasingly made a precondition for the acquisition of offers in tender processes, which might explain why German forensic accountants resort to these certificates.

At the same time, it should be noted that for certain vocational specializations relevant education institutions have been established. This relates particularly to the tax auditors and tax investigators which are educated by special education institutions run by the German fiscal authority as well as to the career path of special investigators that are educated by other German ministries including the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht (BAFIN)). In the area of the Financial Reporting Enforcement Panel and the professional supervision of auditors mostly former successful and experienced auditors are employed while no particular career path exists.

## *2.2. Typical tasks of Forensic Accountants in Germany*

Traditionally, the tasks of forensic accountants emerged in three areas: internal audits, (albeit little developed) audits of the annual financial statement reports and tax audits. In the following section we outline each area on which legal requirements are mainly based and which practices are established. Further we describe how the increasing regulatory enforcement activities have led to a demand for additional forensic (accounting) services and demonstrate how the newly emerged market for forensic (accounting) services is related to the existing and established areas.

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<sup>2</sup> Further information can be found at: <http://www.diir.de/zertifizierung/iia-zertifizierungen/cia-certified-internal-auditor/>

*2.2.1. Internal Audit and Accounting Fraud Risk – the responsibility of the company’s legal representatives to detect fraud*

While there was never a formal requirement to install an internal audit department in a company (e.g. Amling and Bantleon 2008) it was always clear that the obligation of the board to orderly run the company (par. 76 (1) German Stock corporations Act (AktG)) also involves supervision. In 1998 par. 91 (2) German Stock Corporations Act was introduced and thereby established the responsibility of the board to timely detect threats to the going concern assumption by use of an early risk warning system (Bantelon and Thomann 2006). This also involved, according to the official governmental justification for this Act, implementing an internal audit, which, however, was still not codified (Drucksache 13/9712 1998; IDW PS 340 2000). With the last great reform, the introduction of the German Commercial Code and Stock Corporations Act (Bilanzrechtsmodernisierungsgesetz (BilMoG)) in 2009, the requirements for internal audits became more detailed. Paragraph 107 (3) German Stock Corporations Act now determines that the supervisory board can also oversee the functioning of the internal audit including the internal control system as well as the process of financial reporting within the firm (Amling and Bantleon 2008). Furthermore, according to par. 91 (1) German Stock Corporations Act in conjunction with par. 93 (1) German Stock Corporations Act the executive board is responsible for a proper bookkeeping and accounting and has an obligation to clarify suspicious or disagreeable matters by commissioning an external service provider (Schiesser and Burkart 2001). If, on the other hand, the executive board is involved in any suspicious or disagreeable matters and might circumvent internal control measures, which is referred to as “management override”, the supervisory board may also be the supervisory body of the company for the provision of external specialists, e.g. forensic accountants, whereby the supervisory board fulfills its legal duty according to par. 111 German Stock Corporations Act (IDW PS 210 2006; Chwolka and Zwernemann 2012).

Another legal boost of internal audit was introduced by the Administrative Offences Act (Ordnungswidrigkeitengesetz (OwiG)). The OwiG established rules that govern the duty of the company and its legal representatives to introduce preventive policies that deter general breaches of duty (par. 130, par. 9 and par. 30 OwiG). In particular, the OwiG introduces an extension of legal liability from the delinquent to the legal representatives if they could have hindered the events’ unfolding by installing an appropriate control system. As a result, the existence of effective compliance arrangements can not only be seen as ex ante prevention but rather as a means to reduce legal liability from the viewpoint of the legal representatives of a company. If, in the individual case, existing compliance efforts could not prevent an offense



they nevertheless serve, both internally and externally, as a reduction of liability. Internally, par. 93 (1) sentence (sent.) 2 of the German Stock Corporations Act provides the possibility of an exculpation through effective information provision and factual clarification of the case (also referred to as the “German Business Judgment Rule”). Thereby, a breach of duty does not exist if the executive board member was reasonably allowed to act on the basis of appropriate information for the benefit of the company in a business decision (par. 93 (1) sent. 2 German Stock Corporations Act). Externally, sanctions can be mitigated through the traceable existence of effective compliance arrangements (also referred to as „Leniency“) (Ax, Schneider, and Scheffen 2010).

Furthermore, the legal representatives have to take care of a strict compliance with the latest legal norms in the context of the company’s financial accounting. If the person responsible for the preparation of the financial statement does not comply with the commercial and legal requirements of proper bookkeeping and accounting this may not directly lead to a personal punishment. If, however, one of the following cases occurs, the person in charge will be personally punishable according to the respective laws outlined below (Schildbach, Stobbe, and Brösel 2013):

- If, in connection with the neglect of the proper bookkeeping duties, third parties are damaged by fraud, embezzlement, breach of trust, forgery of documents or counterfeiting (par. 246, 263, 266, and 267 German Penal Code).
- If inaccurate annual financial statements are submitted as a result of deliberate violations or conditional intended violations (e.g. balance sheet fraud) and the company in question is either a public limited company, an unlimited company with owners that are public limited companies (par. 264a German Commercial Code), a large unlimited company according to par. 17 German Publicity Act or a cooperation (par. 331 and 335b German Commercial Code, par. 17 German Publicity Act, and par. 147 German Cooperation Code).

Consequently, and in order to fulfill the obligation of the board to orderly run and supervise the company, the installation of a proper internal audit is indispensable. One major field of activity of an internal audit is the performance of compliance audits, whereas compliance audits also include conducting fraud investigations, which comprises audits for legal offences, embezzlement audits, and investigations (Amling and Bantleon 2008). One example of how fraud detection could take place within the scope of the internal audit is provided by Bantleon and Thomann (2006). The authors suggest to formally install a four-phase

model for fraud prevention, fraud detection, fraud investigation and legal action as part of the internal audit. In doing so they distinguish a prevention phase, a detection phase, an investigation phase and a sanction phase. In the first phase the authors concentrate on the fraud triangle. This, on the one hand, includes certain preventive actions such as the employment of honest employees, the creation of a good working climate, the development of a code of conduct, the elimination of conflicts of interest, and the promotion of employees. On the other hand, it contains a clear communication of severe consequences arising from committing fraud, for example via disseminating reports on past fraud cases. However, even the best preventive actions cannot provide absolute certainty. As a consequence, appropriate measures to uncover fraud are required. In the second phase Bantelon and Thomann (2006) therefore rely on catalogues of red flags that had been established in prior research (Albrecht, Romney, Cherrington, Payne, and Roe 1986; Albrecht and Albrecht 2002; Iyer and Samociuk 2016) and that help observing characteristic circumstances of fraud. The purpose of the measures employed in this phase is to deliver a judgement as to whether the detected red flags could be deliberate violations or simply a range of errors. In the event that the measures of observing red flags in the second phase lead to a suspicion of deliberate violations (i.e. fraud), appropriate actions must be taken in the third phase "fraud investigation". The third phase focuses on the factual clarification of the case and the adequate presentation of the facts. In this respect, the factual clarification of the case means taking suitable measures to obtain applicable evidence in order to identify the appropriate sanctions and legal actions in the subsequent fourth phase. Such sanctions either include recourse to civil claims or criminal legal actions against potential perpetrators as well as to abstain from any sanction in case the situation could not be clarified sufficiently (Bantelon and Thomann 2006).

Summarizing the discussed developments with an eye on the requirements of a company's internal audit, we find that the pressure to take care of a properly working internal audit has increased significantly during the last two decades. As a result, the extent to which companies engage in fraud prevention or rely on externally provided forensic services has also increased.

*2.2.2. Fraud Detection within the Audit of the Annual Report – the responsibility of the incumbent auditor to detect fraud*

Different from most international audit practices, the annual audit of financial statements in Germany until the late nineties was only directed towards ensuring compliance with German law as well as with the articles of association and the accounting standards (Langenbucher and Blaum 1997; Terlinde 2005). Neither the law nor the professional prescriptions in terms of audit standards or recommendations issued by the German Institute of Auditors (IDW) (in this case Hauptfachausschuss (HFA) Fachgutachten 1/1988) demanded that the audit of financial statements should be carried out in a way that allows for detecting errors, erroneous estimations, misappropriation or breaches of law (Langenbucher and Blaum 1997). On the contrary, the HFA Fachgutachten 1/1988 explicitly defined the annual audit as not being directed towards the detection and clarification of criminal code related aspects or breaches of law outside the financial statements and made clear that audit actions targeting such issues were not part of the annual audit (HFA Fachgutachten 1/1988 1988).

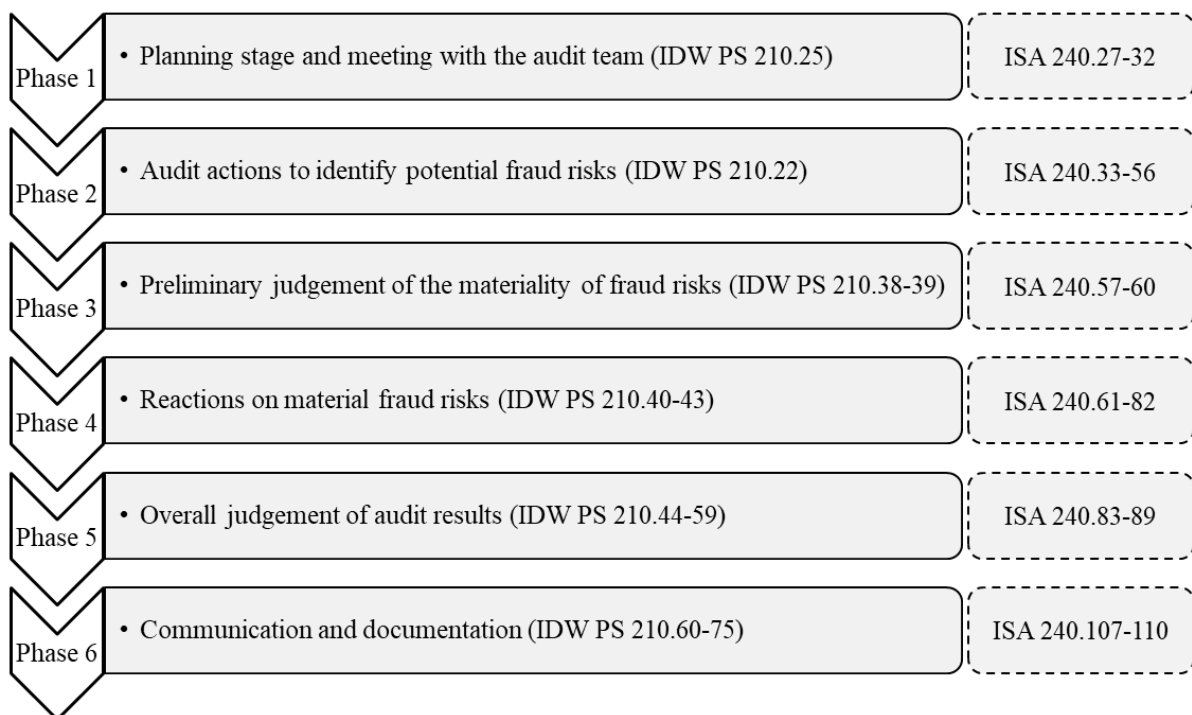
Already in 1996, the main regulatory body of the German Institute of Auditors (IDW) enumerated in a draft certain qualitative indicators that point to the threat of existing accounting fraud such as doubts on the capacity and integrity of CEOs, critical situations in which the company may be, unusual business transactions, difficulties to obtain information during the audit, and insufficient documentation of certain transactions (IDW Hauptfachausschuss 1996). One reason for the increased activities of the IDW was that at that time the number of detected fraud cases during the annual audit increased noticeable as the lean management wave had often eliminated controls and thus created the opportunities to commit fraud (Langenbucher and Blaum 1997). When the mentioned draft finally went into force in form of the HFA Fachgutachten 7/1997, it also included the main content of the International Standards on Auditing (ISA) ISA 240 “The Auditor’s Responsibilities Relating to Fraud in an Audit of Financial Statements” (International Auditing and Assurance Standards Board (IAASB) 2010) and ISA 250 “Consideration of Laws and Regulations in an Audit of Financial Statements” (IAASB 2010). Moreover, for the first time a positive responsibility with respect to fraud detection was attributed to the auditor as the auditor is now required to carry out his financial statement audit with a critical attitude. However, embezzlement audits were clearly not part of the annual financial statement audit. Instead, embezzlement audits represented an individual audit whose content and extent were to be determined by the client as no legal prescriptions existed (Berndt and Jeker 2007). However, not only professional norms but also legal norms were changed. As a result, German auditors were required, according to par. 317

(1) sent. 3 German Commercial Code (Handelsgesetzbuch (HGB)), to carry out their audit in a way that permits them to detect incorrect statements and breaches that have an impact on the view of the volume of assets, financial position and profitability of the company.

In 2003 the HFA Fachgutachten 7/1997 was replaced by the IDW audit standard (Prüfungsstandard (PS)) 210. This standard included the further developments of ISA 240 that evolved since 1997. One important change, in the wake of the wave of financial scandals at the beginning of this century, was that the audit of the annual financial statement report was explicitly extended to also include cases of the manipulation of earnings. This aspect further increases the auditor's responsibility to audit with a critical attitude towards fraud (Ruhnke and Schwind 2006) especially compared to the prior audit statement HFA Fachgutachten 7/1997 that did not involve such an extensive responsibility of detecting fraud (Kümpel, Oldewurtel, and Wolz 2011). Further, the new standard (IDW PS 210) reveals the obligation for auditors to interview the legal representatives of the company during the annual audit whether they have installed instruments that prevent or aim to detect irregularities within the company. The results of these interviews have to be taken into account when conducting the risk evaluation of the annual report (Berndt and Jeker 2007). While IDW PS 210 has been revised several times since then, its main core remained untouched. Due to its importance for German forensic accounting in practice we will describe this standard in some more detail. IDW PS 210 focuses on irregularities occurring during the annual audit of financial statements. Looking at the basic structure of IDW PS 210, it is important to notice that in Germany there is a strict difference between fraud on the one hand and earnings management on the other hand. While earnings management is tolerated accounting policy, fraud reaches the illegal area (for example, Kaduk 2007). Correspondingly, IDW PS 210 distinguishes irregularities in incorrect statements (unintentional), breaches of the financial reporting (intentional), and other breaches of the law (intentional or unintentional). While the last category does not refer to financial statements, the first two types are important for the audit of financial statements and therefore need to be further distinguished based on the question whether there is an intention or not. In the case of unintentional misreporting it can be seen as an accounting error. If, however, an intention behind the irregularity can be observed, IDW PS 210 categorizes the event as fraud. Still, the audit standard attributes the responsibility for avoiding fraud to the company's management as being in charge of the installation of an internal control system, an internal audit as well as further tools directed to detect fraud within the corporate compliance (IDW PS 210.8-9). The standard explicitly demands a critical attitude of the auditor while planning and executing the audit (IDW PS 210.14). However, the objective of the audit now has to allow for a statement

that existing fraud has been detected with sufficient reliability (Kümpel et al. 2011). Therefore, the new approach of IDW PS 210 has a direct impact on the audit process itself since it influences the planning of the audit, demands an evaluation of the suspected risks while executing the audit and requests a clear communication of the results of the audit with respect to fraud (Kümpel et al. 2011). If evidence of fraud is discovered during the course of the audit or during the simultaneous risk assessment, the audit procedures must be extended by certain measures. Figure 1 illustrates the six consecutive phases by which the annual audit must be expanded (IDW PS 210; Berndt and Jeker 2007):

**Figure 1:** Additional audit procedures for the presumption or detection of irregularities during the annual audit



During the first phase, which includes the planning stage and the meeting with the audit team, the inherent risks as well as the internal control system risks are analyzed (Kümpel et al. 2011) and potential areas of the client's fraud risks are discussed (Ruhnke and Lee 2014). One method to detect potential fraud risk factors is the conduction of interviews. In this context, IDW PS 210 explicitly addresses the obligation to carry out extensive interviews with the management, internal audit staff (if the company has an internal audit in place), members of the supervisory board as well as other suitable persons responsible for obtaining useful information about fraud risks (IDW PS 210.26-31; for potential interview questions see Berndt and Jeker 2007). In addition, the audit team can conduct surveys or use checklists of established red flags (Ruhnke and Schwind 2006; Langenbacher and Blaum 1997). In the case of using checklists,

Ruhnke (2000) points out that empirical findings have shown checklists to be rather hindering fraud detection since they reduce the attention of the auditor to the unique situation of the present client (Ruhnke and Schwind 2006; Ruhnke 2000).

In the second phase and based on the information obtained at the planning and discussion stage, the auditor has to identify and judge material fraud risks (Ruhnke and Lee 2014). Thus, further analytical audit procedures (e.g. a trend analysis) as well as case audits should be carried out (Henzler 2006). For example, the auditor, beyond the ordinary measures, is required to take a closer look at extraordinary and atypical business transactions (Ruhnke and Schwind 2006). In this context IDW PS 210 further requires including an increased number of surprise elements in the audit (IDW PS 210.42). However, it should be emphasized that an application of criminological methods is not needed so far, which is why the aspiration level of detecting fraud within the annual audit is still much lower than within an embezzlement audit (Ruhnke and Schwind 2006).

After having carried out required additional audit procedures, the auditor, in a third phase has to preliminarily revise his judgement on the materiality of fraud risks. Thereby the judgement whether identified fraud risks are material due to intentional violations or not lies in the personal responsibility and professional skepticism of the individual auditor. Furthermore, the auditor must be able to assess which items of the financial statements may be affected by the identified risks and to what extent. At this stage, and to take account for the conditions of phase four, the involvement of forensic specialists in the annual audit should also be considered. ISA 240 for example, in case of fraud suspicion, explicitly emphasizes that the auditor needs to refer to the special competence of additional individuals, such as forensic experts (IAASB, 2010).

The fifth phase summarizes the overall judgement of the audit results obtained by the auditor in charge (Ruhnke and Lee 2014) before the results have to be documented and communicated to the management in a last step. At this stage the auditor has to determine to whom he/she will report the obtained results (IDW PS 210.60). In case that the management itself is suspected of having committed fraud, the supervisory board has to already be informed during the conduction of the audit (IDW PS 210.62). If this is not the case the closing communication takes place when the audit report (a German formal summary of the results of the audit for the supervisory board) is passed on to the supervisory board (Kümpel et al. 2011). In addition to the regular audit results, the year-end report also contains a list of all breaches detected during the audit (par. 321 (1) sent. 3 German Commercial Code). In case further communication is required, a management letter that complements the audit report is added

(Kümpel et al. 2011). Third parties, however, receive much less information. They can only conclude from the qualified or denied audit opinion if material fraud had been committed and that the financial statements have not been corrected so far (par. 322 (4) German Commercial Code).

It should be noted that in some respects the German approach of fraud investigations as a part of the annual audits, as stated in IDW PS 210, still clearly differs from the international legal prescription in ISA 240 and 250. This is because the process of auditing that is laid down in ISA 240 and 250 has no direct equivalent in IDW PS 210 (Ruhnke and Michel 2010). However, researchers as well as many practitioners emphasize that German auditors should also take relevant ISA prescriptions into account even without being legally required to do so (Ruhnke and Michel 2010; Langenbucher and Blaum 1997).

Summarizing the developments with respect to forensic accounting as part of the annual financial statement audit, we can observe increasing legal and professional demands on auditors to carry out thorough audit procedures that also consider fraud investigations or at least respective elements of such investigations as part of the annual financial statement audit. Especially large audit firms meanwhile include specialists of their forensic services department in the annual financial statement audit in order to realize gains from their specialization in detecting fraud.

### *2.2.3. Tax Audits – the responsibility of the tax consultant and the fiscal authority to detect (tax-) fraud*

A third traditional field for the forensic accounting profession is the area of tax audits since the German tax code provides its own prescriptions on tax fraud. The respective requirements can be found in par. 378 German Tax Code in the case of flippanant tax reduction and par. 370 German Tax Code in the case of classical tax evasion or tax fraud. Particularly, in the last few years, another legal prescription, which deals with the fact of assistance to tax fraud, gained importance according to par. 71 German Tax Code. Anyone who assists another person in committing tax fraud is legally liable for the sanctions and amounts evaded by the other person. In the last few years and with increasing pressure arising from the fiscal authority, many cases in the area of value added tax evasion came up, in which suppliers were accused of having assisted their customers in committing tax evasion. However, in most cases known to us the respective customers were insolvent which leads to the fiscal authority trying to obtain the evaded tax following the supply chain backwards and at the end charging the suppliers.

While there were no substantial changes in the provisions concerning tax fraud, besides the already outlined enhanced aggressiveness of fiscal authorities to pursue cases of tax evasion, to a large degree the data volume has increased to which the fiscal authority has access to. This is mainly due to the introduction of the e-balance sheet, an electronic balance sheet that allows for a diversified and automated analysis and therefore a large data volume. As a result, in the late nineties of the last century, the methods of the so called “digit analyses” were increasingly established within the tax audit practice in Germany as a means of an undirected search for irregularities (Blenkers 2003). One of the most recommended and theoretically as well as empirically justified methods in that respect is the so called Benford’s Law distribution. The basic idea of this digit analysis consists in the assumption that digit patterns of manipulated data differ from digit patterns of non-manipulated data (Blenkers 2003). Usually, two ways of classifying data as being manipulated are applied. First, the fiscal authority assumes the validity of Benford’s Law with respect to the first digits of the regarded amounts. Second, the fiscal authority assumes an equi-distribution of digits with respect to the two digits precisely before the comma and the two digits precisely after the comma (Watrin and Ullmann 2009). Significant deviations from the equi-distribution are then interpreted as human manipulation since manipulating taxpayers are expected to unconsciously modify personally preferred digits (Blenkers 2003). Additionally, the fiscal authority often applies a Chi<sup>2</sup>-test to evaluate whether the theoretically expected distribution matches the distribution of the present digits (Watrin and Ullmann 2009). However, reacting on juridical and tax investigator’s misapplications, researchers, on the other hand, repeatedly point out the limits of the digit analysis (for example Watrin and Struffert 2006; Diller, Schmid, Späth, and Kühne 2015) and recommend to avoid immediately interpreting deviations from Benford’s law and equi-distribution as positive evidence for manipulation. With the rising data availability, the fiscal authority introduces continuously more quantitative digit analyses employing the well-known Interactive Data Extraction and Analysis (IDEA) software (Watrin and Ullmann 2009). The application area of such analyses arises with respect to the question whether the fiscal authority formally questions the bookkeeping of the taxpayers and therefore is allowed to estimate the true amounts on which taxes have to be based (according to par. 158 German Tax Code). In this context, the digit analysis is applied on behalf of the fiscal authority to obtain the right to estimate according to par. 162 German Tax Code and consequently taxpayers need carefully selected arguments to return to a taxation based on their books.



Overall, the level and the intensity with which tax fraud is pursued on behalf of the fiscal authority has enormously increased during the last decades which consequently led to an increasing demand for forensic accountants in this area.

### 2.3. *Additional Enforcement Activities and Public Commissions*

Another aspect that has changed for preparers as well as for auditors was, in the wake of diverse scandals and in reaction to the US regulatory efforts in enacting Sarbanes-Oxley Act, the European Commission's provision of par. 20 of the Transparency Directive demanding the introduction of an enforcement instance. In Germany the directive was realized by introducing the German Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)). The Panel in turn was announced with the German Accounting Control Act (Bilanzkontrollgesetz (BilKoG)) in November 2004 and represents the German reaction on past financial scandals. Moreover in 2005, the Auditor Oversight Commission (AOC), an oversight body comparable to the Public Company Accounting Oversight Board (PCAOB), however less endowed with resources and less powerful, was introduced. The new institutions led to the establishment of a market for certain expert opinions, such as of forensic accountants, since the additional enforcements also provoked increasing disputes between companies and either the Financial Reporting Enforcement Panel or the AOC on accounting irregularities. Therefore, both sides at a certain stage seek additional arguments to back their respective positions.

A final application for forensic accountants in Germany arises if a fraud case is of high public interest and special public commissions are built up to thoroughly investigate the case. Such special public commissions had been installed, for example, in the context of the financial scandals of *Flowtex*<sup>3</sup>, *Bankgesellschaft Berlin*<sup>4</sup> and *Sachsen LB*<sup>5</sup>. During the investigation the commission interviews witnesses, reviews documents and often orders forensic accounting

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<sup>3</sup> The Flowtex case is one of the largest fraud scandals in German economic history. The company sold and then leased back its equipment to banks and leasing companies. To simulate a large number of machines, Flowtex counterfeited each serial number on the license plates prior to the annual audits.

<sup>4</sup> To achieve growth, real estate funds were built up in a time of very favorable market conditions. With the help of these funds the true position of the bank was veiled - impairment losses on bad loans were avoided by purchasing critical properties through the borrowers and then moved these to the fund. The funds in turn were sold as a safe investment to private investors. As a consequence, credit risks became warranty risks, which however did not attract the attention of banking supervision. In early 2001 the first reports of sham transactions, accounting tricks and financial difficulties came to light.

<sup>5</sup> Sachsen LB had, operated through its Irish subsidiary and Conduits, securitization transactions with US mortgage market loans, which however were not from the subprime segment. In the wake of the US mortgage market crisis in the summer of 2007, these conduits were temporarily no longer able to place sufficient short-term bonds on the capital market to refinance their acquired long-term loans in full screen. Also, the credit portfolio was off-balance not covered by the risk analysis system of the bank. At the beginning of the financial market crisis in 2007 there had not been made "visible measures" to reduce the risks; but instead Sachsen LB expanded the business and new SPEs were established.

experts to clarify the facts in question and to apply specialized knowledge of fraud detection methods. In the case of banking institutions such oversight can also take place in the form of a special audit of the regulatory body concerned with banking institutions (“Bundesaufsichtsamt für das Kreditwesen”). This was the case, for example, with *Bankgesellschaft Berlin* in 2001 (the case described in footnote 4).

#### 2.4. Market for Forensic (Accounting) Services in Germany

In view of the above, the question is: How big is the market for forensic (accounting) services in Germany? One indication with respect to the demand for forensic (accounting) services can be exhibited by the crime statistics of the German police, which annually publishes a report concerning the occurrence of business crimes in Germany. Figure 2 shows the development over time. However, it should be noted that only those business crimes are included in which the German police was somehow involved (Bundeskriminalamt 2015).

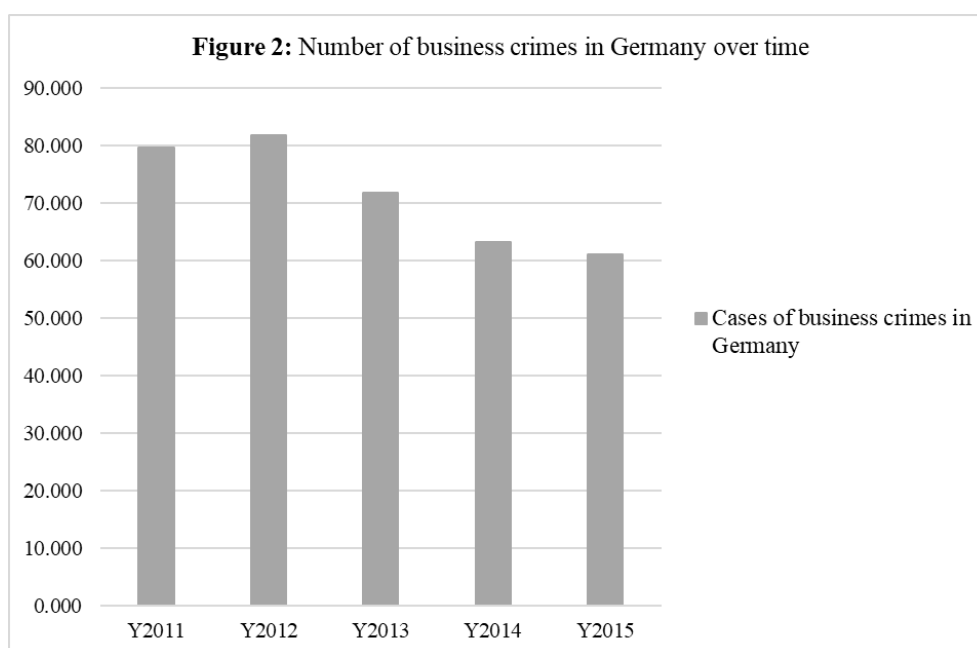
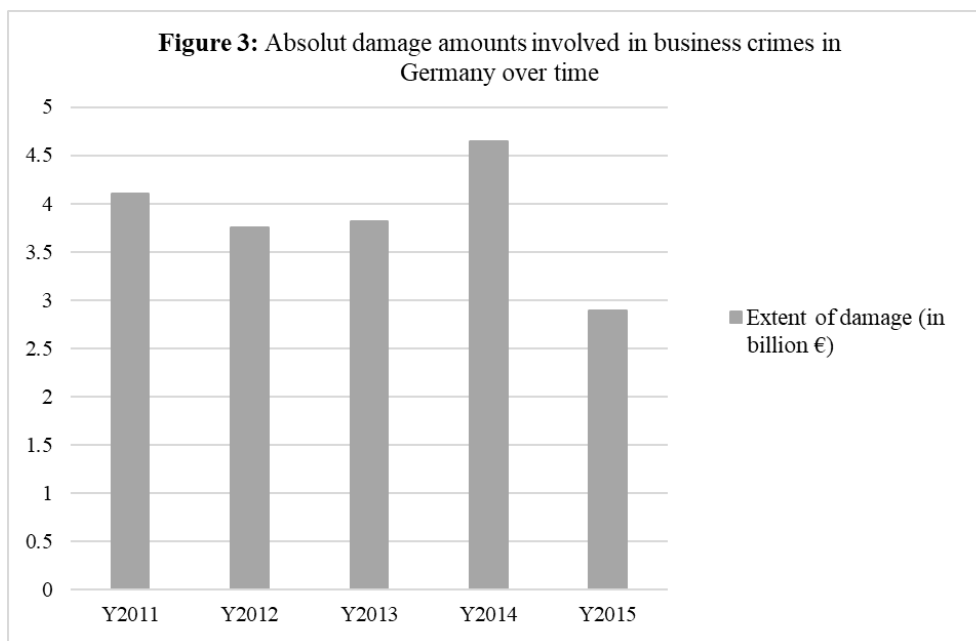


Figure 3, on the other hand, provides information about the corresponding absolute damage amounts involved. Both figures reveal that there is a significant market and obvious demand for forensic (accounting) services in Germany. In addition, the numbers can be corroborated by a questionnaire survey of KPMG from 2016 according to which over 36% of the 400 sample companies surveyed have been victims of business crimes during the last two years (KPMG 2016).



Therefore, it is not surprising that a vivid supplier-side of forensic (accounting) services has been developing over the past years. Historically, these services were offered by traditional consulting firms and trust companies (Wilkinson and Rebmann 2001). Since the mid-nineties, however, large audit companies also started to offer forensic (accounting) services (Chwolka and Zwernemann 2012). Nowadays most of the large transnational and German audit companies offer forensic (accounting) services. In the private industry, forensic accounting experts are mainly employed by the big four audit companies (namely Deloitte Touche Tohmatsu Limited (Deloitte), Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft (EY), KPMG AG Wirtschaftsprüfungsgesellschaft (KPMG), and PricewaterhouseCoopers (pwc)), which have installed and increased their forensic (accounting) services departments enormously during the last decade. This can be illustrated with an example of *EY* for the area of Germany, Switzerland and Austria (GSA). In 2011, the forensic (accounting) services department called FIDS (Fraud Investigation and Dispute Services) was run by around 60 employees in GSA. In 2016, the workforce counts around 200 specialists in GSA. However, forensic accounting services are also carried out by second tier audit companies. The official investigation and the final report on the fraud case of *Comroad*<sup>6</sup>, for example, was issued by *Rödl & Partner*, a well-known second tier audit firm, which mainly operates in the south of Germany. Furthermore, such services are increasingly offered by a range of smaller firms (Wilkinson and Rebmann

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<sup>6</sup> *Comroad* was a German company in the development and manufacturing business of telematics-systems and navigation computers for vehicles. In 2002 it was discovered that the company had cooked its books since 1998 through big sham transactions. Approximately 95 percent of all sales were fictitious.

2001) including law firms, small specialized consulting firms, forensic experts and detective agencies (Kümpel and Melcher 2012).

Moreover, business academics are often employed to issue expert opinions. Specialized consulting firms with a focus on forensic (accounting) services are mostly run by former forensic accounting experts from large firms such as, for example, *MLT Compliance Solutions GmbH* (whose founder Reinhard Preusche previously worked at Allianz) and *Günter Müller Unternehmensberatung* (whose founder previously worked at the Bayer group). Others, like Roger Odenthal, have established a long-time reputation in a certain area such as digital data analysis. On the other hand, large listed companies usually possess their own in house departments which are responsible for any kind of fraud cases or compliance issues. Whereas the type of compliance controlled for depends on the type of business model followed by the company. Banks, for example, often install model departments that develop complex mathematical models to identify fraud within portfolio numbers. The following Table 2 presents an overview of the key providers on the German market for forensic (accounting) services that explicitly offer services in the area of compliance, criminal law, litigation, internal investigations or IT-forensics.<sup>7</sup> Again both authors ran an independent study on the key players on the German market and then combined their research results.<sup>8</sup>

**Table 2:** Providers of forensic services in Germany and their area of expertise.

Provider	Type	Compliance	Criminal Law	Litigation	Internal Investigation	IT Forensic
Acker Görling Schmalz	Law firm	✓		✓		✓
Allen & Overy	Law firm	✓		✓		
Ashurst	Law firm	✓		✓		
Baker & McKenzie	Law firm	✓		✓		✓
Baker Tilly Roelfs	Audit firm/ Law firm	✓	✓	✓	✓	✓
BDO	Audit firm	✓	✓		✓	✓
Beiten Burkhardt	Law firm	✓		✓		✓
Bird & Bird	Law firm			✓	✓	
Buse Heberer Fromm	Law firm	✓		✓		
Cleary Gottlieb Steen & Hamilton	Law firm	✓	✓	✓	✓	

<sup>7</sup> We owe Graf Lambsdorff the insight that the core of forensic accounting is not so much demanded by the companies. Rather the bulk of orders comes from the areas of forensic data analysis and compliance, simply because companies prefer to keep the real forensic issues inhouse as reputational concerns are involved.

<sup>8</sup> Note that the list might be still incomplete as the market is dynamic so that former key players vanish while new key players emerge. Checkmarks involve that the provider explicitly offers the specific service on its homepage or on its business card.

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Provider	Type	Compliance	Criminal Law	Litigation	Internal Investigation	IT Forensic
Clifford Chance	Law firm	✓		✓		✓
Crowe Kleeberg Audit GmbH WPG	Audit firm	✓			✓	
CMS Hasche Sigle	Law firm	✓		✓		
Debevoise & Plimpton	Law firm	✓		✓		
Deloitte	Audit firm	✓	✓	✓	✓	✓
Dentons	Law firm			✓		
Detektei Becker	Detective Agency				✓	
DHPG Audit GmbH	Audit firm				✓	✓
DLA Piper	Law firm	✓		✓		✓
EAAP Wirtschaftsdetektei	Detective Agency	✓			✓	✓
Ebner Stolz GmbH & Co. KG	Audit firm	✓			✓	✓
ESC Wirtschaftsprüfung GmbH	Audit firm	✓			✓	
EY	Audit firm	✓	✓	✓	✓	✓
FIDES Treuhand GmbH & Co. KG	Audit firm	✓			✓	
Flick Gocke Schaumburg	Law firm	✓			✓	
FPS Fritze Wicke Seelig	Law firm		✓	✓		
Franz Reißner Treuhandgesellschaft mbH WPGG	Audit firm	✓			✓	
Freshfields, Bruckhaus, Deringer	Law firm	✓		✓		✓
Gibson Dunn & Crutcher	Law firm	✓		✓		✓
Gleiss Lutz	Law firm	✓		✓		
Görg	Law firm			✓		
Graf von Westphalen	Law firm			✓		
GSK Stockmann + Kollegen	Law firm	✓		✓		
Günter Müller	Consulting Firm	✓	✓	✓	✓	
Heisse Kursawe Eversheds	Law firm			✓		
Hengeler Mueller	Law firm	✓		✓		
Heuking Kühn Lüer Wojtek	Law firm	✓		✓		
Heussen	Law firm			✓		
Hogan Lovells	Law firm	✓		✓		✓
Jones Day	Law firm	✓		✓	✓	

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Provider	Type	Compliance	Criminal Law	Litigation	Internal Investigation	IT Forensic
K&L Gates	Law firm	✓		✓		✓
Kapellmann und Partner	Law firm	✓	✓		✓	
Knierim Huber	Law firm	✓	✓	✓	✓	
KPMG	Audit firm	✓	✓	✓	✓	✓
Latham & Watkins	Law firm	✓		✓		
Lentz & Co. GmbH	Detective Agency	✓			✓	
Linklaters	Law firm	✓		✓		
Luther	Law firm	✓	✓	✓		
Mayer Brown	Law firm	✓		✓	✓	
Milbank Tweed Hadley & McCloy	Law firm	✓		✓	✓	
Moore Stephens Treuhand Kurpfalz GmbH	Audit firm	✓		✓		
Noerr	Law firm	✓		✓		✓
Norton Rose Fulbright	Law firm	✓		✓		✓
Oppenhoff & Partner	Law firm	✓	✓			
Orrick Herrington & Sutcliffe	Law firm			✓		
P+P Pöllath + Partners	Law firm			✓		
Pohlmann & Company	Law firm	✓				
PSP Peters Schönberger GmbH	Audit firm	✓		✓	✓	✓
PwC	Audit firm	✓	✓	✓	✓	✓
Redeker Sellner Dahs	Law firm		✓	✓		
Rödl & Partner	Audit firm/ Law firm	✓	✓	✓	✓	
Roger Odenthal und Partner	Consulting	✓			✓	✓
RSM Breidenbach	Audit firm	✓		✓	✓	
Schultze & Braun	Law firm					
Shearman & Sterling	Law firm	✓		✓	✓	
SJ Berwin	Law firm	✓		✓	✓	
Skadden Arps Slate Meagher & Flom	Law firm	✓		✓		
SKW Schwarz	Law firm			✓		
S & P GmbH	Audit firm	✓			✓	
SZA Schilling Zutt & Anschütz	Law firm	✓		✓		
Taylor Wessing	Law firm	✓		✓		
Warth & Klein Grant Thornton AG	Audit firm	✓		✓	✓	✓
Weil Gotshal & Manges	Law firm			✓		

Provider	Type	Compliance	Criminal Law	Litigation	Internal Investigation	IT Forensic
White & Case	Law firm			✓		
Willkie Farr & Gallagher	Law firm	✓		✓		
WilmerHale	Law firm	✓		✓	✓	
Witten Treuhand Oldenburg	Audit firm	✓		✓	✓	

The service areas presented in Table 2 can further be aggregated to the following three main categories of forensic services: *preventive consulting services* that help to avoid situations that permit committing fraud, *forensic special investigations*, and *remediation services* (Chwolka and Zwernemann 2012). Sometimes additional juridical activities such as dispute services, representation of clients in court, assistance in the enforcement of claims reimbursement and issuing expert opinions are provided (Wülser 2001; Zwernemann, 2015). Preventive consulting contains services such as forensic process analysis, implementation and revision of compliance management systems, anti-fraud- and risk management systems as well as the revision of internal control systems (Chwolka and Zwernemann 2012). The implementation of a compliance-, an anti-fraud- or a risk management system, in a first step, requires a thorough identification and evaluation of relevant compliance and fraud risks (risk assessment). Building on this basis, specific subsequent measures with the ability to counteract company-specific risks are derived and installed effectively and efficiently. Thereby some typical measures are revising human resource selections, creating awareness and reducing cases of unfairness, putting reasonable performance targets into place, carrying out fraud awareness trainings and implementing whistleblower hotlines. The final bundling of these measures is then called the firm's Compliance Management System (CMS) (Eiselt and Uhlen 2009; Ruhnke and Michel 2010; Chwolka and Zwernemann 2012). However, no single CMS design fits every company since a company's risk profile, business model, organizational structure and culture all influence the development of the specific compliance measures. Besides the formal implementation forensic service providers usually also offer to revise previously installed management systems on a regular basis. The revision of the internal control system also aims at evaluating its ability to avoid or detect actual cases of fraud. This involves, among other tasks, determining the existence and functioning of access controls, transaction limits, the four eyes principle, segregation of duties as well as clear job descriptions and responsibilities (Eiselt and Uhlen 2009; Ruhnke and Michel 2010; Chwolka and Zwernemann 2012).

Forensic special investigations are directed on the actual detection of respective business crimes. In a first step, this implies the clarification of the facts. This means to fully understand the objective of the investigation, to identify relevant responsibilities for the caused damages, to determine the extent of the damages that resulted, to identify the fact basis for a potential civil lawsuit or criminal complaint and to assist in creating an adequate public relations strategy (Kümpel and Melcher 2012; Wilkinson and Rebmann 2001). In a second step, forensic special investigations rely on different investigation procedures such as specified analytical audit methods. Therefore often, as in the regular annual audit, a global analysis is carried out in order to localize potential vulnerable areas which are then subject to a detailed examination (Baetge and Melcher 2008; Ebeling and Böhme 2000). Procedures of the detailed examination can vary depending on the unique situation of the respective fraud case. However, a commonly used procedure is the comparison of existing financial key (performance) figures with the expected target values derived from specific models. These models can further be divided in quantitative- and qualitative models. One example for a quantitative model is the employment of time series analyses in order to establish and map internal trend analyses of past financial key (performance) figures. The trend line for determining the target values is then derived on the basis of the established prior-year figures. Thus, discrepancies can be discovered as long as the defrauder has not adapted or is not able to adapt its fraud patterns over time matching the determined trend (Ebeling and Böhme 2000). Increasingly also the aforementioned digit analysis, in particular Benford's Law, is applied as a quantitative model (Trede, Watrin, and Ullmann, 2009). As a qualitative method, on the other hand, forensic brainstorming sessions within the audit team are conducted. Among other things, company-specific risk factors and risk areas are discussed and evaluated. Forensic brainstorming sessions are particularly suitable if only a very vague initial suspicion is present (Marten, Quick, and Ruhnke 2015; Bologna, Lindquist, and Wells. 1993).

Besides discussed specified analytical audit methods also methods from the area of criminology are applied as procedures of the detailed examination. Criminal investigation methods are, inter alia, concerned with auditing the authenticity of documents or with conducting interviews in order to replicate the events and situations that have occurred during the course of the respective case (Ebeling and Böhme 2000). Another criminalistics approach with increasing importance is the application of forensic data analyses. Within the scope of forensic data analyses the access times and places of relevant people, such as accesses at the weekend or later than 10 at night or smart phone profiles with respect to meeting points with potential collaborating people, are verified for anomalies. Moreover, deleted documents can be



reconstructed and electronic communication systems (e.g. E-Mails) can be analyzed (Chwolka and Zwernemann 2012; Eiselt and Uhlen 2009; Odenthal 2005). Furthermore, through data analysis, hidden relationships between certain people and companies that might cause conflicts of interest can be detected and risk factors that could foster corruption can be identified (for an overview on the different IT supported approaches to detect fraud, see also Odenthal (1996)). However, within the scope of forensic data analyses the strict legal prescriptions based on the German Federal Data Protection Act have to be observed. Although these legal prescriptions constitute as substantial constraints (Hlavica, Klapproth, and Hülsberg 2011) their infringement can involve the validity of available evidence. Finally, a report with an adequate legal evaluation of the discovered facts and a juridical sound argumentation has to be written out. Thereby the report has to answer the question whether fraud has been committed or not, reveal the offenders, determine the amount of damage, and explain how the fraud was committed. This requires professional criminal knowledge since in case the report must be acceptable in court (Chwolka and Zwernemann 2012; Ebeling and Böhme 2000). Within this context it should be noted that it is usually not a legal requirement that triggers forensic special investigations but rather a particular business situation or conspicuous behavior of a person (Kümpel and Melcher 2012). A forensic special investigation can also be the results of an internal audit, of hints provided by whistleblowers or of external indications provided by prosecution authorities (Kümpel and Melcher 2012). Subsequent to forensic special investigations most providers of forensic (accounting) services additionally offer remediation-, prevention- or dispute services to improve, for example, the client's internal control system and avoid similar cases in the future (Kümpel and Melcher 2012).

### 3. Developments in German Forensic Accounting Research within the last Decade

#### 3.1. Researchers and Publication Outlets in Germany

Forensic accounting research in Germany still presents itself rather fragmented than integrated. Often researchers in this area are not aware of each other which can be seen, for example, in the fact that they take no notice of each other in their publications. To develop a more or less comprehensive list of researchers from Germany dedicated to the area of forensic accounting research we again employed an independent research approach. Therefore, one author reviewed the entire list of memberships of the German Academic Association of Business Administration from the year 2014 (Verband der Hochschullehrer für Betriebswirtschaftslehre e.V. 2014) revealing more than 2,000 members (professors or post doc researchers) with their main areas of expertise. The other author, while assessing existing education programs of German universities, colleges or research institutions (results shown in Table 1), analyzed whether researchers with a focus on topics related to forensic accounting emerged. The following Table 3 combines obtained results of the leading German researchers in forensic accounting at the moment.

**Table 3:** Overview of the leading German researchers in forensic accounting

Name	Institution	Position	Area of Expertise
Alexander Dühnfort	Hochschule Ravensburg-Weingarten	Professor	Tax- and Administrative Offence Law
Andreas Dutzi	University of Siegen, Chair for Management, Accounting and Corporate Governance	Professor	Forensic Accounting and Fraud Examination
Anne Chwolka	University of Madgeburg, Chair of Accounting	Professor	Forensic Services
Barbara E. Weißenberger	Heinrich Heine Universität Düsseldorf, Chair of Accounting	Professor	Compliance, Business Ethics and Corporate Social Responsibility
Burkhard Pedell	University of Stuttgart, Chair of Management Accounting and Control	Professor	Internal Audit
Christoph Watrin	University of Münster, Institute of Accounting and Taxation	Professor	Benford's Law
Corinna Ewelt-Knauer	Justus-Liebig-Universität Giessen, Chair of Financial Accounting	Professor	Compliance
Daniela Kühne	University of Passau, Chair of Tax Management	Research Assistant	Forensic Tax Accounting

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<b>Name</b>	<b>Institution</b>	<b>Position</b>	<b>Area of Expertise</b>
Dirk Labudde	Hochschule Mittweida, Faculty Applied Computer Sciences & Biosciences	Professor	Digital Forensic and Data-Mining, Big Data Analysis & Processing
Dominik Brodowski	Goethe-Universität Frankfurt am Main	Assistant Professor	Criminal Law and White Collar Crime
Felix Geidel	Catholic University of Eichstätt-Ingolstadt, Chair of Auditing and Management Accounting	Research Assistant	Forensic Accounting
Felix Freiling	Friedrich-Alexander-Universität Erlangen-Nürnberg, Department Informatik	Professor	Computer Science
Friedrich Lothar Holl	University of Applied Sciences Brandenburg	Professor	IT Security, Data Security
Hansrudi Lenz	University of Würzburg, Chair of Financial Accounting, Auditing and Consulting	Professor	Fraud in Financial Statements
Holger Morgenstern	Albstadt-Sigmaringen University	Professor	Digitale Forensik, IT-GRC, Technische Informatik
Joachim S. Tanski	University of Applied Sciences Brandenburg	Professor	Internal Audit, Risk Management
Johann Graf Lambsdorff	University of Passau, Chair of Economic Theory	Professor	Corruption Research
Josef Wieland	Zeppelin University, Chair of Institutional Economics	Professor	CSR and Competitiveness, Anti-Fraud Management
Klaus Ruhnke	Free University of Berlin, Chair of Accounting and Auditing	Professor	Audit differences, Fraud in Financial Statements
Manuela Möller	University of Passau, Chair of Accountancy and Auditing	Professor	Forensic Accounting
Marc Eulerich	University of Duisburg-Essen, Campus Duisburg, Chair of Internal Auditing	Professor	Internal Audit
Markus Grottko	SRH University of Applied Sciences Calw, Chair of Accounting and Control	Professor	Forensic Accounting, Forensic Tax Accounting
Max Götsche	Catholic University of Eichstätt-Ingolstadt, Chair of Auditing and Management Accounting	Professor	Digital Analysis, Fraud Detection
Michael Wiese	University of Duisburg-Essen, Chair of Auditing, Accounting and Control	Research Assistant	Forensic Accounting, Fraud Auditing
Michael Zerr	Karlshochschule International University, Chair of Theory of Science and Interpretive Management	Professor	Business Ethics and CSR
Nick Gehrke	Nordakademie - University of applied sciences, Department Computer Science	Professor	IT-Compliance
René Fahr	Paderborn University, Chair of Corporate Governance	Professor	Quantitative Corporate Governance and Behavioral Ethics

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Name	Institution	Position	Area of Expertise
Robert U. Franz	University of Applied Sciences Brandenburg	Professor	Security Management
Stephan Grüninger	University of Applied Sciences Konstanz - Center for Business Compliance & Integrity (CBCI)	Professor	Corporate Compliance, Business Ethics and Integrity Management
Tobias Oswald	University of Augsburg	Assistant Professor	Accounting Scandals, Accounting Fraud Detection, Accounting Fraud Prediction
Volker H. Peemöller	Friedrich-Alexander-Universität Erlangen-Nürnberg	Professor emeritus	Internal Audit
Jochen Zimmermann	University of Bremen, Department of Accounting and Control	Professor	Accounting Scandals

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With respect to publication outlets it should be noted that there are barely any journals or specified publishers in Germany that are dedicated solely to topics related to forensic accounting. One reason for that might be the tradition of general business economics outlets rather than specialized accounting journals in Germany. Another reason might be that accounting research in general has not dedicated overly much attention to the area of forensic accounting so that any journal would find it difficult to put a sufficient number of articles together. Consequently, there is only one specified publisher in Germany, called the Erich Schmidt Verlag (ESV), that publishes, among others, the following four journals focusing on topics that are, in a broader sense, related to forensic accounting. The *Zeitschrift interne Revision* (Journal of Internal Audit), which is hosted by the German Institute for Internal Audit e.V.<sup>9</sup>, publishes manuscripts on relevant internal audit topics and therefore, on potential issues that involve forensic accounting.<sup>10</sup> *Die Steuerliche Betriebsprüfung* (The Tax Audit), an outlet of the German fiscal authority that targets the area of tax audit and tax investigations;<sup>11</sup> The *Zeitschrift für Corporate Governance* (Journal of Corporate Governance) points out standards for good corporate governance and provides guidance for auditors on conducting an effective audit practice. The journal in principal focuses on an international outlook addressing national and international initiatives, insights and developments with a focus on corporate governance. Within their professional contributions the Journal *Risk, Fraud & Compliance* is aimed at

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<sup>9</sup> e.V. stands for the German abbreviation of “eingetragener Verein” which can be translated as “registered association”.

<sup>10</sup> Further information (only in German) can be found at: <http://www.esv.info/z/ZIR/zeitschriften.html>.

<sup>11</sup> It should be noted that this outlet is mainly concerned with legal issues. Further information (unfortunately again only in German) can be found at: <http://www.beck-shop.de/StBp-steuerliche-Betriebspruefung/productview.aspx?product=799752>.

sustainably supporting companies to protect themselves against economic crimes through effective compliance management. For this purpose, methods, systems, measures, instruments and technologies for dealing with fraud and non-compliance are presented and comprehensive legal questions on fraud, risk and compliance issues are discussed. Additionally, four times a year, the *Zeitschrift für Compliance* (Journal of Compliance) combines the most important insights from the ESV editorial team in an eJournal. Thereby the focus is on cross-cutting issues such as economic crime, risk and anti-fraud management, IT and data protection, auditing and corporate consultancy, corporate governance, corporate social responsibility and internal auditing.

Besides the above-mentioned journals all sorts of publication outlets including books, anthologies, and general business economics journals have been used by forensic accounting researchers in the past to publish their research results.

### 3.2. Recent Forensic Accounting Research in Germany

Overall the German forensic accounting research content is comparably small and can be structured into five different categories: (1) Case studies and cause studies of financial scandals, (2) development of quantitative red flags to detect and instruments to prevent fraud, (3) state-of-the-art literature reviews, (4) qualitative text signals to detect fraud and (5) comprehensive fraud handbooks that emerged mainly from practitioner-researcher collaborations.

Besides the great financial scandals in the United States like *Enron* or *Worldcom* at the beginning of the twentieth century, also many German scandals like *Comroad*, *Phenomed*<sup>12</sup> or *Siemens* attracted researchers' attention. As a consequence, several researchers dedicated their time to descriptions of and conclusions from those scandals. Noteworthy in this context is the article of Zimmermann (2004) who summarizes nine scandals (three US, three non-German but European and three German scandals), describes the reactions of the regulators in the US, Europe, and Germany and draws respective conclusions. In another paper Zimmermann (2002) analyses the relationship between variable compensation schemes and incentives to manipulate the balance sheet. He concludes that variable compensation systems suffer from serious design errors, which might lead to balance sheet manipulations. By means of extensive variable

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<sup>12</sup> *Phenomed* AG was a company which established, among others computer games and games for mobile phones. The company was one of the best known representatives of the German New Economy and was listed in the stock exchange segment of the New Market. With the help of fake balance sheets and by the success of the computer game called "Moorhuhn", the company experienced an enormous increase in value in 2002. After uncovering the financial scandal, the company slipped into bankruptcy and was unwound.

remuneration systems, managers are not only encouraged to undertake value-increasing (legal) activities, but also to feign them in balance sheets. He further argues that as long as capital markets are unable to notice these large opportunities to manipulate accounting figures, the risk of the misuse of incentive programs persists (Zimmermann 2002).

In 2005 Peemöller and Hofmann published their well-known book of case studies that summarizes the course of events in 33 scandals. They first provide an overview on the accounting practices prevailing in the scandals before they isolate the common overarching structures that characterize respective scandals. The authors further provide an overview of the counteractions that had been installed in reaction to the scandals and analyze whether they seem to be appropriate measures for the prevention of future scandals. To our knowledge, until now this is the most comprehensive work on financial scandals, their causes and their (long-term) effects in Germany. Additionally, Lenz (2012) provides a summary based on the analysis of six financial scandals in Germany followed by a critical analysis of the subsequent regulatory reforms as part of the comprehensive book *Creative Accounting, Fraud and International Scandals* which was edited by Mike Jones.

Research that explores the opportunities to develop quantitative red flags to detect fraud as well as instruments to prevent fraud can be summarized as the second category of forensic accounting research in Germany. Within that area (Schirmeister and Siebold 2008) provide a range of quantitative indicators for the identification of balance sheet fraud. First, they point out how very general comparisons of financial key figures (anything conspicuously deviating) within a firm's peer group might be a promising approach. This is followed an exposition of certain balance sheet items that are susceptible for manipulations such as inventory and accounts receivable on the asset side and trade payables on the liability side. The authors further highlight some key relationships that could reveal accounting fraud such as the relationship between rising revenues and constant material costs, rising revenues and constant time of turnover or terms of payment as well as rising revenues and rising accounts receivables. Another mayor indicator mentioned by the authors is the increase in personal drawings by its owners in times of crisis.

Quick and Wolz (2003), on the other hand, apply the well-known Benford's Law on accounting data of the largest public limited liability companies according to the Hoppenstedt database between 1994 and 1998. Based on a Chi2-test they find that Benford's Law applies to respective data in terms of volume of assets and the profit and loss account. They conclude that Benford's Law might enrich the audit practice but also express caution against its application beyond being an indication of certain key figures which might be worth of digging deeper.

Additionally, the authors emphasize that the number of elements of the underlying distribution has to be large enough and that Benford's Law does neither allow for detecting under- nor overvaluations. They further point out that a few large manipulated financial statement items as well as a given manipulation of all data, based on a multiplication of the original data by a constant, will rather stay undetected by Benford's Law (Quick and Wolz 2003). Watrin, Struffert, and Ullmann (2008) instead provide experimental evidence that confirms the validity of Benford's Law in the area of taxation while Rauch, Götsche, Brähler, Geidel, and Pietras (2014) analyze the applicability of Benford's Law on statements of accounts that are provided by German parties. Further, work on the suitability of digital numeric analysis to detect fraud is provided by Odenthal (1999), Rafeld and Then Bergh (2007) and Trede et al. (2009).

A third area of recent German research on forensic accounting consists of state-of-the-art reviews of national practice and international literature. Ballwieser and Dobler (2003) discuss the consequences and possible causes of balance sheet fraud as well as instruments for the prevention of fraud. Within that, they provide an overview of the consequences for the company itself, for the managers involved as well as for the incumbent auditor. The authors discover firms' growing complexity and conflicts of interests between the managers and the shareholders of the company as being the main causes for fraud. Furthermore, they provide a detailed overview as well as an appraisal of the regulative consequences that have been established over the years in different countries due to big fraud scandals.

Kronfeld and Krenzin (2014) provide an overview with respect to forensic accounting methods that are typically applied in practice to detect irregularities in financial accounting. They distinguish and explain classification-based instruments (such as the logistic regression and artificial neural networks as well as support vector machines, decision trees, genetic algorithms, and Bayesian networks), pattern-based instruments (such as time series analyses and digit analyses like Benford and Chi-Square tests) as well as rules-based instruments (such as duplicate analysis, gap analysis, master data analysis, relations analysis like the difference factor analysis, negative tests, rounding tests, and time tests). Watrin and Kubata (2014) discuss internationally available tools to detect tax fraud. Among other things, they present statistical key figures, Benford's Law, time series analysis, book-tax-difference-models, discretionary permanent book-tax-difference-models, unrecognized tax benefit models, tax functions and tax shelter models as provided by Wilson (2009) or Lisowsky (2010). Ruhnke (2009) presents an

integrative framework for audit differences<sup>13</sup> to reveal false statements in annual reports. Therefore, he compares the results of over 50 international studies on audit differences. His framework concentrates on the types of differences that occur, such as the size of the error or irregularity, the influence on net income, the distribution across certain balance sheet items, different areas of audit procedures, reactions and intentions of the client, and the representability of detected errors for the entire population. Furthermore, the framework points out the causes related to the firm's inherent- and control risks, the potential to detect such errors within ordinary audits of the annual reports, and the reaction of auditors to detected differences. The author also refers to the still existing research gaps with respect to theoretical approaches that allow for the identification of more robust causal relationships within formal models that can be tested afterwards. Moreover, he emphasizes the need of a more practical application and contribution of gained research results for auditors as well as for regulators.

Ruhnke and Lee (2014) provide insights into the psychological state of the art literature by illustrating nine international audit studies with respect to the advantages and disadvantages of different types of the organization of audit team meetings. The authors draw conclusions on the most suitable types of meetings within audit practice. However, they find little generalizable insights beyond the fact that general meetings are better than no meetings and IT support for communication is better than no IT support. With respect to risk identification (procedures), they find that open discussions in terms of brainstorming sessions within meetings lead to qualitatively better ideas. On the other hand, letting each team member determine its own risk factors and respective procedures leads to more adaptation of the subsequent audit program. Regarding the evaluation of the materiality of identified risks and therefore the decision whether to confront the client with determined results, the authors conclude the presence of all team members in the meeting as being beneficial.

One of the largest remaining gaps in German research on forensic accounting has been addressed by Grottke and Kühne (2015). The authors develop instruments that assist in the identification of indicators of fraudulent statements in narrative parts and text documents. In his German dissertation Grottke (2012) develops a new methodological approach based on a variety of disciplines amalgamating insights of criminology, forensic psychology and even unreliable narration from literature theory. The authors framework distinguishes between weak text signals based on errors and weak text signals based on intentional false information. With respect to intentional false information in text passages, three levels are further distinguished

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<sup>13</sup> Audit differences are the discovered errors or irregularities of the financial statement of a client by the incumbent auditor during the annual audit. The undetected violations elude detection as an audit difference by the auditor and may be subject to further testing.



dependent on whether text signals are to be understood with respect to the content as an effect of successful strategic concealment or unsuccessful strategic concealment, an effect of redirecting the reader's attention to uncomplicated areas, or whether they exhibit signals that make clear that the preparer intends to secure his or her credibility. All signals are illustrated by making use of empirical examples from former accounting scandals or detections of irregularities by the German Financial Enforcement Panel. Furthermore, a critical discussion is provided as to the extent to which such signals can really contribute to the detection of cases of fraud. More practitioner related elaborations of this approach were provided in practitioner fraud handbooks (Grottke 2011, Grottke 2017). Kühne and Grottke (2014) transfer the methodology that was developed by Grottke (2012) to the area of tax fraud. They explore the opportunities offered by two different literature strands from forensic psychology, namely the forensic statement analysis and the behavioral oriented credibility analysis, to detect tax fraud in textual documents that form parts of tax audits and provide a systematic framework for the instruments that were identified to provide weak clues in textual information or verbal statements. Moreover, Grottke and Kühne (2014) combined the instruments for detecting irregularities within the area of narrative reporting with the results of psychological research on the creditworthiness of expert opinions before court that were employed in areas other than accounting (for example, sexual harassment). In this area, great scandals about erroneous judgments had led to a wave of investigations on signals that allow for detecting the incredibility of witnesses before court. To address this issue the authors developed a methodology that allows for a meticulous detection of potential indications for incredibility in witnesses' statements within the area of tax fraud. The methodology incorporates elements such as

- the analysis of the emergence of the witness opinion (such as the analysis whether a biased selection of witnesses has taken place or whether the influence of suggestive questions on the opinions which the witnesses hold can be verified),
- the competency of the witness to hold up a certain opinion,
- the potential motivation of the witness to distort her or his opinion, and
- the analysis of the mere text passages of witness protocols on signals whether statements are true or not.

In 2015 Grottke and Kühne analyzed, in an experimental setting, whether a standard catalogue of indicators for false statements which had been established within the area of forensic psychology, can assist in separating tax evaders from honest taxpayers. Surprisingly

they find that the standard catalogue of indicators only in rare cases provides significant evidence that allows for this separation. As a result, they caution against applying the standard catalogue of indicators, known from forensic psychology, in practice. However, making use of an ex post classification between categories that characterize free statements in which the tax evaders and the honest taxpayers in the experiment had to state their tax case, the authors identify strong evidence for the existence of certain characteristics. These characteristics could not have been identified within an experimental setting because the usual treatments of experimental settings very strictly prescribe how to stimulate participants. The signals identified by the authors are quite intuitive: honest taxpayers try to make it easy for tax authorities by providing concrete, tailored and detailed answers while tax evaders try to make it difficult for tax authorities by pretending to simply be uninformed on the issue and unable to check the issue.

Finally, during the last decade, the number of comprehensive handbooks on forensic accounting increased conspicuously, providing evidence for the growing market of professional forensic (accounting) services in this area. Most handbooks are structured in a similar way. Starting with a description of typical situations in which fraud could occur (mainly focusing on the fraud triangle) followed by emphasizing the relevance of the topic and pointing out recent regulatory efforts. However, most comprehensive handbooks differ in their specific approach, which is why we outline the unique strengths of some of these individual handbooks. Both Sell (1999) and Finking (2011) discuss forensic accounting from the viewpoint of an auditor. Sell (1999) outlines the responsibilities of an auditor within the process of the audit of the annual financial statement. The book describes the different types of fraud which an auditor can be confronted with, the relevant audit standards, how to apply the risk oriented audit approach with a focus on potential fraud as well as how an auditor should report discovered irregularities. Finking (2011), on the other hand, applies the principal-agent theory as a theoretical lens and incorporates the regulatory reforms with respective relevance for auditors that occurred between 1999 and 2011. One of the most recent handbooks is the dissertation of Zwernemann (2015). The author deals with the question whether the provision of forensic services represents only an additional source of revenue for accounting firms, or additionally offers the potential to sustainably improve the audit firm's audit quality. Therefore, Zwernemann first examines how the additional provision of forensic services can affect the quality of the annual audit from a model-theoretical view. Furthermore, on a survey-based approach, she examines the extent to which forensic services are established on the German audit market. For that reason, the companies surveyed are consulted about their general provision of forensic services followed

by the request to disclose various aspects of forensic services. In that context, the author for example conducts information about the provision of specific components of forensic services, the date of order, the direction of order meaning the disclosure of the principal of respective services as well as the reasons for an offer of forensic services and the classification as audit and/or consultancy services. Nimwegen (2009) discusses fraud and forensic accounting from the perspective of the board and the supervisory board (the two bodies responsible for running a firm in the German two-tier system). With respect to the board, the handbook outlines useful information regarding the integration of the framework of the Committee of Sponsoring Organizations of the Treadway Commission (COSO) with a focus on fraud. Thus, the author discusses the formulation of code of conducts, specific fraud-policies as well as an appropriate installment of a fraud focused internal audit including whistleblowing systems, fraud control activities and fraud information management systems. With respect to the supervisory board the author provides insights on the specificities of top management fraud and how to exploit the information sources available to the supervisory board. Boecker (2010) presents an integrated handbook that considers all three perspectives, the auditor's, the board's and the supervisory board's. Furthermore, Boecker and Zwirner (2010) explain what is meant by accounting fraud and illustrate the typical manifestations. Additionally, the suspected reasons, possible risk factors as well as red flags are displayed.

Another approach mainly puts emphasis on a more legal perspective. Within that scope Scherp (2015) discusses additional legal norms with a focus on fraud as considered by the German Banking Act (Kreditwesengesetz (KWG)) as well as by the German criminal code (Strafgesetzbuch). Furthermore, the author provides an overview of essential preventive actions against fraud as well as applicable instruments for the detection of fraud. The comprehensive handbook "Tax Fraud and Forensic Accounting", which was mainly composed by KPMG experts (Hlavica et al. 2011, Hlavica et al. 2017), outlines, among other things, typical cases of tax fraud particularly in the areas of value added tax, taxes and tariffs, consumption tax and withholding tax for construction contracts as well as the consequences for taxpayers, certified tax consultants, and auditors. Moreover, the handbook illustrates the norms, the international legal environment as well as particular cases of money laundering. Finally, instruments for preventing and detecting fraud including insights on forensic data analysis as well as elaborations on Anti-Fraud-Risk-Management are provided.<sup>14</sup>

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<sup>14</sup> For more insights on Anti-Fraud-Risk Management Hofmann (2008) and the anthology edited by Jackmuth (2012) should be considered.

Taken together, German research in the area of forensic accounting remains scarce. As outlined above, most researchers concentrate on applying Benford's Law to a German data setting or summarizing international research results as well as international fraud scandals. One reason might be the provoking difficulty to obtain high quality data of fraud cases. Another reason might be the continuously growing attempt of German researchers to publish in high ranked international journals, which (with rare exceptions that might be unknown even in the international arena) were not focused by this review. Despite this criticism, there are also genuine German research results that are promising and encouraging, including some of the comprehensive case study research results on fraud as well as the research on qualitative instruments to detect fraud. Some of these, to our knowledge, even experience little international equivalent so far.

#### **4. Outlook: Forensic Accounting in Germany - Potential Future Developments**

Summarizing the insights into the German market of forensic accounting, we determine a rapidly growing focus on the topic in business practice as well as in recent research. This growing focus is clearly justified in the increasing detailed and demanding regulation as well as in the more sophisticated technology which challenge preparers of the financial statements as well as auditors and tax auditors. However, these developments have not been sufficiently addressed by higher education institutions, such as universities or research institutions. While some universities of applied science have specialized in forensic accounting, we determined comparably little activity within the course programs of confessed universities. Given the increasing demand of specialized knowledge in this field, we presume universities to take up the apparent opportunity to establish a unique selling point for the future.

Until today, the topic of forensic accounting still manifests itself as research niche with only a few researchers actively and constantly participating. We found little innovation on the market but rather publications just reviewing and reproducing existing research carried out in other regions of the world (mainly in the USA). Within that scope, a common method that has emerged in the past is the simple replication of existing models and methods based on German data. However, we expect a continuous change in the near future as the newly emerging opportunities to analyze accounting fraud based on the electronically available data and by applying big data techniques as well as modern technological devices for large data sets such as neural networks or support vector machines might offer new paths to explore the opportunities to avoid fraud.

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## II. Spillover Effects of Forensic Services on Audit Quality\*

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**ABSTRACT** This paper examines how including forensic services into an audit firm's range of services is associated with an impact on audit quality for their respective audit clients. I conjecture that spillover effects of forensic services facilitate financial statement audits of respective audit firms. Moreover, I investigate how personal characteristics of individual auditors, such as the level of conservatism, age and experience influence this effect. For my analyses, I use a German institutional setting in which the number of audit firms providing forensic services increased gradually over time. I find that companies tend to record extreme values of income-decreasing discretionary accruals if the incumbent audit firm provides forensic services within its range of services. I interpret these findings to suggest that the simple existence of forensic services and hence the expected spillover effect does not constrain clients' income-decreasing earnings management while it has no impact on income-increasing earnings management as well as the absolute value of discretionary accruals. Examining the assumed simultaneous impact of forensic services and individual audit partner quality on discretionary accruals of audit firm clients, I find that audit quality slightly decreases concerning the signed and the positive value of discretionary accruals if audit firms that provide forensic services, at the same time, employ high quality audit engagement partners.

**Keywords:** auditing, audit quality, knowledge spillover, forensic services, conservatism, individual auditors

**JEL:** M41, M42, K22, K42, C83, L8

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### 1. Introduction

The purpose of the annual financial statements audit is to increase the credibility as well as the reliability of the information presented in the annual financial statements. Therefore, both the German and the international auditing standards require auditors to identify and assess the risk of material violations of the annual financial statements. Consequently, for the accounting profession as well as for standard setters, fraud detection, and in a wider perspective also fraud prevention, has become one of the highest priorities of the annual financial statement audit (Elliott 2002; Douglas 2003; PCAOB 2007; PCAOB 2008; PCAOB 2016). The Advisory Committee on the Auditing Profession even determines fraud detection to be of great concern to the general sustainability of the auditing profession (Advisory Committee on the Auditing Profession 2008). Moreover, since information technology nowadays can considerably ease the preparation and reduce the error-rate of annual reports, the focus will no longer be on detecting errors but on detecting irregularities i.e. fraud (Elliott 2002). However, the Public Company Accounting Oversight Board (PCAOB) has, during the annual staff inspections, repeatedly drawn its attention on auditors' fraud judgements and actual ability to detect fraud (PCAOB 2015b, 2016). While an earlier report of the PCAOB inspections releases a continuous failure of auditors to "apply an appropriate level of professional skepticism when conducting audit procedures and evaluating audit results" (PCAOB 2008, p. 2), a recent preview of observations from the 2015 inspections again reveals major deficiencies especially in assessing and responding to risks of material misstatements (PCAOB 2016). Not only can improper handling of these critical components of an audit lead to deficiencies that might affect the result of the entire annual financial statement audit, but also the individual auditor fails to comply with (national) specific auditing standards. For German auditors this would specifically be the case concerning auditing standard IDW PS 210: "For the detection of irregularities within the framework of the annual financial statement" (IDW 2012) of the German Institute of Auditors (Institut der Wirtschaftsprüfer in Deutschland (IDW)). For American auditors the compliance with auditing standard (AS) 2110: "Identifying and Assessing Risks of Material Misstatement" (PCAOB 2010a) as well as auditing standard (AS) 2301: "The Auditor's Responses to the Risks of Material Misstatement" (PCAOB 2010b) and auditing standard (AS) 2401: "Consideration of Fraud in a Financial Statement Audit" (PCAOB 2015a) is paramount. The PCAOB concludes that these deficiencies arise from auditors lacking a sufficient knowledge of the process of revenue recognition including the determination of the different types of revenues as well as revenue transactions but also from auditors having an insufficient understanding of performing substantive audit procedures that include specific testing methods, which are known

to be responsive to fraud risks and other significant risks in an annual audit (PCAOB 2016). It is therefore not surprising that, in reaction to past fraud scandals, shareholders, creditors and the media question the ability of auditors to fulfill their duties. This results in discussions about auditors' obligations and responsibilities for the detection of irregularities within the scope of the annual financial statement audit and the involvement of forensic specialists. Hence, I seek to examine how including forensic services<sup>1</sup> into the service portfolio of audit firms can help in increasing audit quality.

I argue that the supply of forensic services by audit firms per se can improve the quality of statutory audits due to "spillover effects". These could arise for the following reasons. First, statutory auditors can profit from the existence of specialized fraud detection tools. Second, training of statutory auditors on relevant fraud topics and fraud detection procedures as a continuous improvement process of statutory auditors' fraud knowledge can be provided in-house. Third, statutory auditors can make use of fast consulting opportunities with fraud specialist colleagues about challenging situations during the course of an audit engagement. Thus, my focus is deliberately not aimed at determining whether the actual delivery of forensic services on specific audit engagements enhances audit quality. I further assume that an additional effect on audit quality is caused by certain personal factors of the individual auditor, such as the individual auditor's level of conservatism, the auditor's age and the auditor's experience. In a supplemental analysis, I examine the effects of the scope of forensic subservices offered by the respective audit firm. Further, I investigate a rather direct relation between forensic services and the quality of the annual financial statement audit. Within that scope, I replace the treatment variable by an indicator variable, which equals 1 if the incumbent audit firm (occasionally) consults in-house forensic services specialists within the scope of the annual financial statement audits. The final additional analysis explores the effects of the professional compositions i.e. the expert structure of forensic services (departments) in my sample.

I conduct my empirical analysis using a German institutional setting for the following reasons. First, the number of audit firms providing forensic services increases from 9 (19,6%) firms in 2008 to 17 (37,0%) firms in 2016 and therefore almost doubles. Second, a dataset compiled in August 2016 by the German Chamber of Public Accountants (Wirtschaftsprüferkammer (WPK)) allows to control for personal characteristics of individual auditors such as date of birth, gender and the date of appointment.

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<sup>1</sup> In this paper the terms forensic services (department) and compliance services (department) are used synonymously since for most respondents of my survey it is only a matter of different labeling of the same services.

To investigate my research question, I conduct a survey of all German audit firms that present at least one publicly listed client in their transparency report in 2016. The survey consists of five categories: “I. Information on the audit firm and on your person”, “II. General questions about the offer of forensic services and/or compliance services”, “III. Scope of the offered partial services”, “IV. Personnel structure”, “V. Expert structure”. To strengthen my identification strategy, I inquired the aforementioned categories of the questionnaire for each year from 2008 to 2016.<sup>2</sup> I sent 68 paper based survey forms to the respective audit firms and received 19 answers. I test for non-response bias by telephonic enquiries and by mail. This procedure led to 43 answers and a respective response rate of 64 percent of which 46 percent (31 answers) provided evaluable information for the empirical analyses. I then matched the respondent audit firms with detailed information of their audit clients, collected from the annual reports, as well as with the corresponding individual audit partners over the years.<sup>3</sup>

I measure audit quality by the performance-adjusted discretionary accruals (Kothari, Leone, and Wasley 2005) of the respective audit firm clients. I choose to rely on an accrual-based measure of audit quality for the following reasons. First, abnormal (discretionary) accruals directly map into the concept of audit quality and are one of the most common proxies for audit quality in the literature. Second, other common measures of audit quality, such as audit opinions and client restatement history, are narrower in scope in that they only reflect whether the auditor detects and reports the breach of the respective accounting policy (by issuing an unclean opinion or requiring a restatement). To examine the research question, I regress the accruals measures on the indicator variables for the supply of forensic services and several control variables. My final sample consists of 1,827 firm-year observations of 271 German listed firms.

I find that companies tend to record extreme values of income-decreasing discretionary accruals if the incumbent audit firm provides forensic services within its range of services. This suggests that the simple existence of forensic services and hence the expected spillover effect does not constrain clients’ income-decreasing earnings management while it has no impact on income-increasing earnings management as well as the absolute value of discretionary accruals. By additionally controlling for personal characteristics of the individual auditors, I find positive and modestly significant coefficients of the interaction term of the forensic services measure and the individual audit partner quality variable for signed discretionary accruals as well as for

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<sup>2</sup> See Appendix A for the detailed questionnaire.

<sup>3</sup> I gratefully acknowledge the help of Prof. Dr. Manuela Möller, Prof. Dr. Jürgen Ernstberger and Dr. Lisa Frey for their great support during the development, the distribution and collection as well as the evaluation process of the questionnaire.

income-increasing discretionary accruals. These results indicate a mutual weakening of both variables in their combined effect on the level of signed discretionary accruals and income-increasing discretionary accruals. Hence, audit quality slightly decreases concerning the signed and the positive value (income-increasing earnings management) of discretionary accruals if audit firms that provide forensic services, at the same time, employ high quality audit engagement partners.

My paper contributes to prior literature in the following ways. First, using the beforehand mentioned unique German institutional setting I follow the suggestions of DeFond and Francis (2005) of adding an individual audit partner measure to my model in order to determine audit quality at the firm level. Second, existing literature rarely addresses the provision of forensic services by audit firms and even less in an audit quality context. Watters, Casey, Humphrey, and Linn (2007) provide descriptive evidence through survey data on the supply of forensic services by audit firms for the US market. They find that between 1998 and 2004, the rate of audit firms offering forensic services increased from 19.3% to 25.2% and that rather large audit firms provide these services (Watters et al. 2007). For the German market Zwernemann (2015) examines how the additional provision of forensic services can affect the quality of the annual financial statement audit from a model-theoretical view and with a survey-based approach. The author therefor uses a simple one-period context. To my best knowledge, my paper is the first to combine all mentioned aspects: measuring the effect of forensic services on audit quality by using a cross sectional and a time series dimension (panel data) as well as the individual audit partner components such as the individual auditors' level of conservatism on the German audit market.

The remainder of this paper is organized as follows. Section 2 introduces the relevant institutional background, discusses the involvement of forensic specialists in the annual financial statement audit and describes the tasks of forensic services as well as the predicted spillover effects. Section 3 develops the testable hypotheses. The fourth section presents the underlying research design. Empirical results can be found in section five, followed by section six and seven that present robustness checks and additional analyses. The final section contains a summary and conclusion.



## **2. Institutional Background, Involvement of Forensic Specialists and (Knowledge-) Spillover Effects**

### *2.1. Responsibilities and Tasks of the Auditor within the Framework of IDW PS 210*

For German audit practice the application of the International Standards on Auditing (ISA) is compulsory according to paragraph (par.) 317 (5) German Commercial Code (Handelsgesetzbuch (HGB)). However, this obligation will depend on the formal adoption of ISA by the European Commission. Until then, the ISA may but must not be used. Thus, the IDW examination standards continue to apply for German auditors whereas the IDW PS 210 already fulfils the international requirements formulated in ISA 240 "The Auditor's Responsibilities Relating to Fraud in the Audit of Financial Statements" (IAASB 2010a) and ISA 250 "Consideration of Laws and Regulations in the Audit of Financial Statements" (IAASB 2010b). IDW PS 210 "for the detection of irregularities within the framework of the annual financial statement audit" (IDW 2012) defines the auditor's duties with regard to the identification of "irregularities" resulting in accidental "inaccuracies" or "errors", intended "violations" or "fraud" and deliberate as well as unintentional "other legal violations". According to IDW PS 210, the term "fraud", which is often used in many ways, is to be understood as the concept of "deceptions and asset misappropriation" (IDW 2012).<sup>4</sup> This description is reflected in both, business practice as well as in the literature, since "fraud" can be brought to a common denominator by deception and massive misuse of trust (Sutherland 1940).

IDW PS 210 also examines the appropriate orientation of the financial statement audit, describes the risk assessment and establishes measures for the presumption or detection of irregularities. In particular after the comprehensive revisions of IDW PS 210 in 2006, the focus of the examination practice is, in addition to the intensification of professional skepticism, increasingly concentrated on the active detection of fraud (Orth, Finking, and Wolz 2012; Köster, Kuschel, and Ribbert 2010; Boecker, Petersen, and Zwirner 2011). In order to assess with a reasonable degree of certainty whether the financial statements comply with the stricter requirements and do not contain any material misstatements, the auditor conducts a risk assessment, function tests and statement-related audit procedures on his own responsibility and with his professional diligence. With a critical attitude, the auditor has to scrutinize all statements and records, independently of the previous perception of the client. Even if

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<sup>4</sup> The „Association of Certified Fraud Examiners“ (ACFE) breaks down „fraud“ into „Corruption“, „Asset Misappropriation“ and „Financial Statement Fraud“ (Association of Certified Fraud Examiners (ACFE) 2016).

immanent mistrust is not required, the auditor must be aware of the risk of deception at all times (Orth et al. 2012; IDW 2012). If doubts about the authenticity of the documents or honesty of the statements arise, the auditor has to undertake further reasonable inquiries. If the auditor finds incorrect information, it is necessary to determine the cause(s), in order to assess possible influences on the audit strategy and the audit program (IDW 2012).

In addition, IDW PS 210 addresses the duty of conducting extensive interviews with the client's management, internal audit staff (if the company has an internal audit function), members of the supervisory board, and other suitable persons who contribute to the acquisition of useful information on fraud risks. Particularly in the case of fraud on the higher hierarchical levels of the company, a survey of other employees can also lead to important and otherwise uninformed and discovered points of reference. Therefore, the auditor must develop methodological know-how to understand the monitoring strategy of the supervisory body on fraud prevention (IDW 2012).

But even with the proper conduct of a financial statement audit and by taking into account the stricter regulations of the IDW PS 210, an unavoidable residual risk of fraud, outside the responsibility and control of the auditor, remains (IDW 2012). Accordingly, if a fraud case is subsequently discovered, the auditor cannot be found to be guilty of an error within the framework of the financial statement audit (Orth et al. 2012). However, this leads to the often cited "expectation gap", a disagreement between the expectations according to the general public's understanding of a financial statement audit and the actual statutory performance of an audit (McEnroe and Martens 2001; Salehi and Azary 2009; Schiel 2012; Schuchter 2012). If fraud is disclosed at a late point of time or maybe even not disclosed at all by the auditor, a loss of confidence in accounting and the audit profession as well as in the audit opinion can generally arise. This can consequently lead to the loss of mandates, the impairment of business relationships or relationships with authorities, as well as to other intangible and financial damages. It is therefore not surprising that demands for a stronger monitoring and control of the financial statements as well as the work of the auditors themselves are increasing (Herkendell 2007). Accordingly, the current extended requirements for the detection of fraud are to be conscientiously fulfilled, while adhering to the usual principles for the planning and execution of the annual audit as well as the preservation of the critical basic attitude (IDW 2012).

### 2.2. *Involvement of Forensic Specialists in the Annual Financial Statement Audit*

In view of the increasing challenges faced by the auditor, the question arises as to how far the involvement of forensic specialists can make a meaningful contribution to the audit of the annual financial statements through their extensive experience, specialized skills and knowledge as well as special investigation-tools. ISA 240 for example, in case of fraud suspicion, explicitly emphasizes that the auditor needs to refer to the special competence of additional individuals, such as forensic experts (IAASB 2010a). Further, auditing standard (AS) 2401 „Consideration of Fraud in a Financial Statement Audit“ (PCAOB 2015a), requires brainstorming sessions within the audit team on every annual audit in order to improve auditors’ fraud judgement.

Prior research indicates that auditors are generally capable of identifying fraud risk (factors) and recognizing the need for extending and modifying their audit procedures (Glover, Prawitt, Schultz, and Zimbelman 2003; Mock and Turner 2005; Cormier and Lapointe-Antunes 2006; Hammersley 2011) but they fail to adequately expand their audit procedures and transfer their knowledge into an audit plan that effectively considers these factors in order to increase the likelihood of detecting fraud (Asare and Wright 2004; PCAOB 2007; Hammersley, Johnstone, and Kadous 2011). Consultation of forensic specialists may be able to compensate for these deficiencies by further increasing the likelihood of identifying fraudulent behavior on one hand and by improving the adequacy of subsequent measures, such as the conception and execution of additional audit procedures to further investigate indications of potential fraud on the other hand (Asare and Wright 2004; Gold, Knechel, and Wallage 2012). Within this context Boritz, Kochetova-Kozloski, and Robinson (2015) focus on whether the involvement of forensic specialists is suitable within the audit-planning context in means of a beneficial amendment to the audit team and, as a result, would effectively address fraud risk in a revenue cycle. The authors find forensic specialists, in case the client’s risk of fraud is other than low, to recommend on average about twice as many additional procedures as compared to the financial statement auditors. Further, proposed additional procedures of forensic specialists were of a greater variety and in some cases slightly more effective than the additional procedures selected by the “regular” auditors (Boritz et al. 2015). Another perspective considering the involvement of forensic specialists in the annual financial statement audit is shown by Gold et al. (2012). Given the fact that past accounting scandals have led to an increase of formal requirements about audit-team consultations regarding the possibility of fraud (PCAOB 2015a; IAASB 2010a), Gold et al. (2012) report that the strictness of the consultation requirement positively affects auditors’ willingness to consult with firm experts (i.e.

technical/fraud experts) on potential client fraud and the assessment of fraud risks. Hammersley (2011), on the other hand, presumes auditors' performance in fraud-related planning procedures to be influenced by specific auditor and fraud risk factor characteristics. Regarding the specific auditor characteristics, the author further conjectures a significant impact of auditor knowledge and in particular fraud knowledge on auditors' performance in modifying the persistent audit program due to enhanced fraud risk identification as well as hypothesis generation skills.<sup>5</sup>

### 2.3. *Forensic Services and (Knowledge-)Spillover Effects*

As a result of the *Enron* and *WorldCom* accounting frauds in the early 2000s, forensic services emerged as an important and prominent accounting practice all around the world. Increasing cases of different types of fraud such as corruption, procurement frauds, financial statement frauds, asset misappropriations and cybercrimes during the last decade enhanced the demand for specialized accounting services (Association of Certified Fraud Examiners (ACFE) 2016; Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft (EY) 2014; KPMG AG Wirtschaftsprüfungsgesellschaft (KPMG) 2013; PricewaterhouseCoopers (pwc) 2014). Consequently the objective of forensic services is the fight against economic crimes through the provision of (1) preventive consulting services which aim at containing the situations that permit committing fraud, (2) forensic special investigations for the clarification of the facts, the identification of relevant responsibilities as well as the determination of the resulting damage, and often (3) remediation services including juridical activities such as the assistance of the harmed company in legal disputes, protection of the company's value and reputation, representation of clients in court, assistance in the enforcement of claims reimbursement and issuing expert opinions (Wülser 2001; Chwolka and Zwernemann 2012; Zwernemann 2015). In order to satisfy this objective and take into account the different types of fraud, special accounting procedures as well as fraud detection and documentation techniques are required. Historically, fraud detection involves identifying indicators of potential fraud or red flags using a standardized red flag program, logistic regression models to estimate the likelihood of fraudulent financial reporting or generalized qualitative-response models especially in case of management fraud suspicion (e.g. Pincus 1989; Hansen, McDonald, Messier, and Bell 1996; Bell and Carcello 2000; Asare and Wright 2004). While red-flag and fraud indicator approaches are still being used in practice, especially by "regular" financial statement auditors, one major challenge of relying on (standardized) red flags to detect fraud is that the simple presence of

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<sup>5</sup> For forensic experts' classification of fraud risk factors see (Apostolou, Hassell, and Webber 2000; Hansen and Klamm 2004)

particular indicators or identified anomalies must not necessarily imply fraud but might have other explainable reasons (Albrecht, Romney, Cherrington, Payne, Roe, and Romney 1986). Consequently, and given the steady growing complexity of fraud cases, not least in view of the recent big data challenges, forensic service providers apply advanced technologies and techniques to extract and interpret information in order to uncover complex fraud patterns and indicators of possible fraudulent activities. Commonly used forensic data analytic-tools include the use of digital analysis (e.g. Benford's law), data mining and data visualization as well as specified journal entry testing-tools (Fanning and Cogger 1998; Spathis, Doumpos, and Zopounidis 2002; Ngai, Hu, Wong, Chen, and Sun 2011). Forensic data analytics, thereby, allows for analysis of big data sets at a much shorter time as compared to manual reviews while real time red flags can be identified with the use of continuous monitoring (Seow, Pan, and Suwardy 2016). This is an essential condition considering the fact that forensic investigations aim at a complete clarification of the facts which requires a detailed analysis of all data available. While forensic data analytic-tools are essential for identifying certain anomalies and potentially fraudulent accounts, the need of human expert knowledge and experience for subsequent analysis and procedures is indispensable (Durtschi, Hillison, and Pacini 2004).

Exploring the roles of knowledge and the ability in expert performance Bonner and Lewis (1990) determine that various audit tasks require different types of knowledge. The authors differentiate three types of knowledge that can be allocated to the audit practice in general and forensic services accordingly. While *general domain knowledge* can be seen as the general accounting and auditing knowledge gained through instruction and experience by working in a domain, *subspecialty knowledge* focuses on specific knowledge (i.e. fraud knowledge) of a subspecialty, such as forensic services (departments), within a general domain or an industry. This type of knowledge can be crucial to expert performance and is, similar to *general domain knowledge*, acquired by instruction and experience, however, specifically by the people working in the subspecialty. The third type, *world knowledge*, can be seen as additional knowledge, not necessarily gained through domain instruction or experience but rather through individual life experiences and instruction. *World knowledge* is therefore not likely to be possessed equally by persons of equal working experience, however, it is important for good performance in a particular domain or subspecialty (Bonner and Lewis 1990).

Within this context, fraud knowledge can be categorized as subspecialty knowledge since it includes specific understanding of the circumstances and situations that provide an opportunity for fraud, the mechanics of fraud schemes, the indicators that (individually or in combination) imply potential fraud, the recurrence of different fraud schemes within a certain

period of time, the financial-statement implications, and the performance of certain audit procedures that are likely to determine whether fraud is present (Hammersley 2011). Hammersley (2011) expects fraud knowledge to be acquired through personal experience with fraud cases on one hand or from instruction about the nature of fraud as well as the implications of different types of fraud on the other hand. The author further assumes that financial statement auditors need fraud knowledge in order to identify fraud risk factors and respond to those risks with adequate audit procedures.

Audit experience can be seen as an opportunity to gain specific knowledge. Having experience, however, does not in turn guarantee that an auditor has obtained sufficient task-specific knowledge (Davis and Solomon 1989). While statutory auditors usually acquire different types of knowledge through a combination of experience and training, the occasional encounter with fraud provides little opportunity for auditors to take lessons directly from experience on the task. This entails that auditors must develop fraud knowledge indirectly through fraud training or consultation with colleagues (Hammersley 2011). Since audit firms have a reasonable interest in identifying fraud within financial statements, not least because of impending litigation risks (Bonner, Palmrose, and Young 1998), they, as a result, may be most likely to provide specific fraud training for their employees (Hammersley 2011). In fact, most major audit firms have established specific departments with the task of consulting with financial statement auditors about situations within the audit that indicate heightened risk or are technically complex (Gibbins and Emby 1984; Gibbins and Mason 1988; Salterio 1994; Gold et al. 2012). Such consultations may particularly be necessary and desirable in case a client exhibits indications of potential financial statement fraud (Gold et al. 2012). Especially to the extent a fraud is unique or atypical, statutory auditors will experience major difficulties in detecting fraud as they would, if even, rather be familiar with relatively common types of fraud, such as revenue fraud schemes. Additionally, previous studies note that fraud schemes considered as being atypical may also be perceived as less likely (Trotman, Simnett, and Khalifa 2009; Hammersley et al. 2011). Thus, fraud training as a continuous improvement process of statutory auditors' fraud knowledge and consulting with fraud-expert colleagues about challenging situations during the course of an audit engagement should be seen as an integral component of the audit process (Gibbins and Emby 1984; Gibbins and Mason 1988; Salterio and Denham 1997). Within this context, both, Asare and Wright (2004) and Hammersley et al. (2011) analyze the propensity to consult with fraud experts. While Asare and Wright (2004) determine a positive association between auditors' obligatory performance of fraud risk assessments and the desire to consult with fraud experts, Hammersley et al. (2011) show the

need of auditors, who receive information about a material weakness in the client's ongoing control testing, to consult with fraud experts. Further, Heath and Gonzalez (1995) report that auditors' motivation to consult (with specialists) is to justify their decision and/or to increase others' confidence in their decisions. Transferred to the fraud context, this argument can be affirmed due to the fact that auditors may be held accountable for their potential misconduct during the audit process and the resulting erroneous decisions which could have been prevented through the consultation with forensic specialists during the course of the audit engagement. Following the argumentation of Kennedy, Kleinmuntz, and Peecher (1997), the involvement of forensic specialists in the annual financial statement audit may, in the auditors' perception, shift the responsibility for highly sensitive decisions to others and thus reduce the potential for adverse financial repercussions to themselves.

Another essential component, from which, in addition to fraud knowledge and specialized skills, statutory auditors can profit through consultation with forensic specialists, is the attitudinal component of professional skepticism anchored in fraud specialists' daily working methods. Concerning statutory auditors, however, PCAOB inspections release a continuous failure of auditors applying an "appropriate level of professional skepticism when conducting audit procedures and evaluating audit results" (PCAOB 2008, p. 2). Beasley, Carcello, and Hermanson (2001) conclude auditors' failure to detect financial statement fraud of a client, in 60 percent of the cases, is due to insufficient professional skepticism. Nelson (2009) relates professional skepticism to both experience and specialization and determines that specialists and high-knowledge auditors are more likely to identify high-frequency errors as well as complex patterns of evidence that indicate errors and subsequently modify their audit-planning decisions accordingly. Boritz et al. (2015) assume that this conclusion applies to fraud specialists equally. They note that the attitudinal component of increased professional skepticism of fraud specialists, combined with fraud knowledge derived from training and experience as well as specialized skill, *ceteris paribus*, will lead to an increased likelihood of identifying fraudulent behavior (Hammersley et al. 2011), followed by an improved selection of more adequate non-standard audit procedures that specifically address the risk of fraud.

Taken together, discussed aspects of forensic services provided by forensic specialists, including (1) the usage of specialized fraud detection tools, (2) fraud experience, and (3) developed fraud knowledge, combined with (4) professional skepticism as basic attitude and (5) the ability to consult with these specialists, imply mayor advantages due to spillover effects for audit firms that provide forensic services as part of their range of services.

### 3. Hypothesis Development

Based on the above discussion and following the predictions of Boritz et al. (2015), I expect that forensic specialists' experience and hence developed fraud knowledge, specialized skills and techniques as well as professional skepticism affect their judgements during the audit (planning) process. Consequently, the involvement of forensic specialists in the annual financial statement audit will lead to a greater attempt of addressing fraud risk including the selection of more (and especially more effective) audit procedures from standard audit programs as well as additional non-standard audit procedures, as compared to financial statement auditors (Boritz et al. 2015). Thus, the involvement of forensic specialists, as an additional input to the audit process, will increase the overall audit effort. Additional audit effort, in turn, enhances auditors' probability to detect irregularities in the client's financial statements, which reduces the audit firms' litigation risks (e.g. Simunic 1980). Considering the fact that auditors are liable for the losses suffered by clients and third parties if they fail to detect fraud contained in financial statements, the containment of these risks intuitively leads to an improvement of their audit quality (Simunic and Stein 1996; DeFond and Zhang 2014). Further, Caramanis and Lennox (2008) determine that an increasing audit effort leads to a decreasing probability and magnitude of the client company's earnings management, which I use as a proxy for measuring audit quality. Accordingly, I define audit quality following DeFond and Zhang (2014) as "assurance that the financial statements faithfully reflect the firm's underlying economics, conditioned on its financial reporting system and innate characteristics" (DeFond and Zhang 2014, p. 281).

I expect that audit firms will aim at a continuous enhancement of their audit quality, inter alia, through additional audit effort obtained through the existence of forensic services and therefore, the employment of forensic specialists. Zwernemann (2015) provides evidence on this aspect for the German audit market. Results of her survey show that for audit firms that provide forensic services as part of their range of services "increasing audit quality" is one substantial reason why they choose to provide such services compared to audit firms not providing respective services.<sup>6</sup> I hereby state my first Hypothesis:

Hypothesis 1: Audit firms that provide forensic services (FS) exhibit a higher audit quality, than audit firms that do not provide forensic services.

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<sup>6</sup> Other considerable reasons are "demand on the clients' side", "delimitation from competition" and "utilization of synergy effects" (Zwernemann 2015).



Hammersley (2011) argues that auditors' performance in fraud-related planning procedures is influenced by specific auditor and fraud risk factor characteristics. Regarding the specific auditor characteristics, she further conjectures a significant impact of auditor knowledge and in particular fraud knowledge on auditors' performance in modifying the persistent audit program due to enhanced fraud risk identification as well as hypothesis generation skills.<sup>7</sup> I correspondingly assume that an additional effect on audit quality at the audit firm level is caused by certain personal factors of the individual auditor. One particular personal factor is the individual auditors' level of conservatism, which I use as a measure of individual audit partner quality. Similar to Aobdia, Lin, and Petacchi (2015) I define audit partners to be rather conservative, and in turn of higher quality, if discretionary accruals of prior audit engagements are below average over time. Furthermore, I suppose there is a relation between my forensic services measure and the individual audit partner quality variable since I would expect higher quality audit partners to be comparable (1) open-minded towards fraud training in order to enhance their personal fraud knowledge and (2) more willing to consult with forensic specialist colleagues about challenging situations during the course of an audit engagement as well as (3) more receptive to the use of additional audit procedures proposed by forensic specialists. Therefore, I assume a possible simultaneous impact of the forensic services measure and the individual audit partner quality variable on discretionary accruals of audit firm clients. Thus, my second Hypothesis is as follows:

Hypothesis 2: For audit firms that provide forensic services (FS), audit quality will increase even more if, at the same time, the audit firm employs high-quality audit engagement partners.

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<sup>7</sup> For forensic experts' classification of fraud risk factors (Apostolou et al. 2000; Hansen and Klamm 2004)

## 4. Sample Selection and Research Design

### 4.1. Sample Selection

This study focuses on the provision of forensic services within certain audit firms and the expected effects on audit quality. In order to gain the information of interest, I conducted a paper based survey (see Appendix A). The scope of the survey included all German audit firms, which published a transparency report in 2016. To increase my response rate, I, in a second step, called and wrote emails to audit firms that did not respond during the first round of the survey. In total, I sent 68 paper based survey forms to respective audit firms. After multiple rounds, I received 19 paper based survey answers, 15 answers via phone, and 9 answers via email. This leads to 43 answers and a respective response rate of 64 percent. However, only 46 percent provided evaluable information for the empirical analyses. Since I was missing responses from three mayor audit firms serving a big number of public clients in Germany, namely Deloitte & Touche GmbH, KPMG AG and Rödl & Partner GmbH, I hand-collected necessary information with the help of historical webpage search machines and completed the respective survey form.<sup>8</sup> This leads to an overall response rate of 50.7 percent.

I commence my sample with all German enterprises that are listed as public interest companies in the transparency reports 2016 of those German audit firms that draw up group accounts in accordance with IFRS. The respective accounting data for the corresponding enterprises were taken from COMPUSTAT Global for the period 2008 to 2015, leading to a total of 2,965 firm-year observations.<sup>9</sup> To compile some of the lagged variables, I additionally use data from 2007. Consistent with prior research, banks, insurance companies, holding companies, leasing and property companies, and financial service firms (429) were excluded from the sample since they are subject to different reporting regulations. I further drop observations that have short fiscal years (19), observations with missing data items for the model estimation (229), and insufficient observations in SIC Groups 2, 4 and 8 (154). My provisional sample used to estimate audit clients' discretionary accruals (*DiscAcc*), includes 2,134 firm-year observations. To calculate the forensic services measure and test my first Hypothesis, I match my provisional sample with the survey data. After excluding missing survey responses (307) my final sample, used to estimate Hypothesis 1, includes 1,827 firm-year observations.

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<sup>8</sup> See <https://archive.org/web/>

<sup>9</sup> I re-estimated all regressions using accounting data derived from DATASTREAM instead of COMPUSTAT to make sure results are not biased due to an American database.

To test my second Hypothesis, I hand-collected the names of the audit partners signing the audit opinion as well as the date of the audit opinion from companies' annual reports. Characteristics pertaining to the auditor carrying out the final audit, like date of birth, gender and the date of appointment, were drawn from a dataset compiled in August 2016 by the German Chamber of Public Accountants (WPK) and were matched to the respective auditors signing the audit opinion. Considering observations that lack engagement partners' names in the audit opinions, the audit opinion itself as well as ambiguous matches between auditor characteristics and name, I further exclude 303 observations of 9 companies from my sample. Finally, I deleted observations with engagement partners occurring less than two times in the sample, leading to a final sample size of 1,395 firm-year observations of 249 companies to calculate the individual auditor quality variable (*IndivAudQuality*) and estimate my second Hypothesis (see Table 1 for more details on the reduction procedure).

**Table 1.** Sample Selection

	Companies	Observations
Potential sample size if panel data of all companies mentioned in the transparency report 2016 were balanced from 2008 to 2015	537	4,288
Less: Observations with no reported data on COMPUSTAT	(126)	(1,096)
Less: Firm-year observations not in accordance with IFRS consolidated financial statements on COMPUSTAT	(19)	(227)
<b>Equals: Sample of all available unbalanced firm-year observations</b>	<b>392</b>	<b>2,965</b>
Less: Banks, insurance companies, holding companies, leasing and property companies, financial service firms and capital market-oriented corporation without listing (SIC 6000 – 6999)	(59)	(429)
Less: Short fiscal years		(19)
Less: Firm-year observations with missing data items for the model estimation	(13)	(229)
Less: SIC 2, 4 and 8 due to having less than 10 observations per year	(23)	(154)
<b>Equals: Sample of unbalanced firm-year observations used to estimate <i>DiscAcc</i></b>	<b>297</b>	<b>2,134</b>
Less: Missing surveys responses from audit firms to calculate <i>ForensicServicesMeasure (FS)</i>	(26)	(307)
<b>Equals: Sample of firm-year observations used to estimate <i>Hypothesis 1 (Panel A)</i></b>	<b>271</b>	<b>1,827</b>
Less: Missing annual reports, missing audit opinions, or missing engagement partners' names in audit opinions		(19)
Less: No data availability for identifying engagement partners via the WPK database	(8)	(303)
Less: Observations with engagement partners occurring less than two times in the sample	(14)	(110)
<b>Equals: Sample of unbalanced firm-year observations used to estimate <i>IndivAudQuality</i></b>	<b>249</b>	<b>1,395</b>
<b>Equals: Sample of firm-year observations used to estimate <i>Hypothesis 2 (Panel B)</i></b>	<b>249</b>	<b>1,395</b>

#### 4.2. Model Specifications

To measure discretionary accruals, I use the performance-adjusted cross-sectional variation of the modified Jones model as reported by Kothari et al. (2005). In their simulation analysis Kothari et al. (2005) determine that including a constant term and adjusting for performance reduces noise and increases the accuracy of the abnormal accruals measures. Accordingly, my estimate of discretionary accruals is the firm-specific residual from the following regression, calculated by industry (one-digit SIC code)<sup>10</sup> and year for each company:

$$Acc = \beta_0 + \beta_1(1/TA) + \beta_2((\Delta Rev - \Delta Receiv)/TA) + \beta_3(PPE/TA) + \beta_4ROA + \varepsilon \quad (1)$$

where *Acc* are total accruals defined as net income before extraordinary items less operating cash flow for year t scaled by lagged total assets; *TA* are lagged total assets;  $\Delta Rev$  is the change in revenues from year t-1 to t and  $\Delta Receiv$  is the change in receivables from year t-1 to t. The difference of  $\Delta Rev$  and  $\Delta Receiv$  is scaled by lagged total assets. *PPE/TA* represents property, plant, and equipment for year t scaled by lagged total assets and *ROA* is the performance adjusted component calculated as net income for year t divided by total assets.

The following regression model, including industry and year fixed effects, is used to test my first Hypothesis i.e. determine the relation between the existence of forensic services and discretionary accruals, my proxy for measuring audit quality. Standard errors are clustered on firm level according to (Petersen 2009), since clustering by firm will produce unbiased standard errors if panel data include more firms than years:

$$\begin{aligned} DiscAcc = & \beta_0 + \beta_1 ForensicServicesMeasure + \beta_2 OCF + \beta_3 Turnover \\ & + \beta_4 Size + \beta_5 Salesgrowth + \beta_6 Lev + \beta_7 Loss + \beta_8 |Acc_{t-1}| \\ & + \beta_9 Big4 + \sum \beta_{10} Industry + \sum \beta_{11} Year + \varepsilon \end{aligned} \quad (2)$$

Variable descriptions can be found in Appendix B. The dependent Variable, *DiscAcc*, is a proxy variable for the four discretionary accruals measures, whereas *SignDAC* is the signed value of discretionary accruals according to Kothari et al. (2005) calculated for each year and industry separately. To gain further insights about the direction of earnings management, I separate *SignDAC* into firm-year responses that are strictly positive and therefore represent income-increasing earnings management (*PosDAC*) and firm-year responses that are strictly negative,

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<sup>10</sup> I require ten firm-year observations per industry to compute the abnormal accruals measure.

representing income-decreasing earnings management (*NegDAC*). Finally, I also present the absolute value of discretionary accruals (*AbsDAC*). The variable *ForensicServicesMeasure* is a proxy variable, which, for Hypotheses 1 and 2, represents a dummy variable (*FS*) taking the value of 1 if an audit firm offers forensic services in general, and 0 otherwise. With regard to one of the robustness tests performed to verify the reliability of my findings, the *ForensicServicesMeasure* variable represents a dummy variable (*FSDep*) taking the value of 1 if an audit firm offers forensic services within a separate department, and 0 otherwise. For one of the three additional analyses, the *ForensicServicesMeasure* variable represents a categorical variable (*FSScope*) which can range from 0 to 16 dependent on the scope of forensic subservices offered by the respective audit firm. Control variables are also integrated into the model since prior research has shown that other specific company characteristics may also have an impact on companies' discretionary accruals. To control for the possibility that results are caused by firm growth, I include *OCF* as the cash flow from operations (Dechow, Sloan, and Sweeney 1996), and *Turnover* as net sales revenues scaled by total assets. *Size* and *Salesgrowth* control for company size and complexity (Menon and Williams 2004). The variables *Lev* and *Loss* control for a company's leverage and occurrence of loss since these aspects represent a company's financial position which might incentive them to stronger engage in earnings management. As recommended by DeFond and Zhang 2014 and consistent with prior research (e.g. Reichelt and Wang 2010), I include  $|Acc_{t-1}|$  as the absolute value of prior year total accruals. Consistent with DeAngelo (1981) I integrate *Big4* since bigger audit firms are expected to deliver higher audit quality. I further include Industry- and Year-Dummies.

To test my second Hypothesis, that an additional effect on audit quality at the audit firm level is caused by certain personal factors of the individual auditor, I expand regression model (2) by an interaction term with my individual audit partner quality variable (*IndivAudQuality*) as well as by certain additional personal factors of the individual auditor:

$$\begin{aligned}
 DiscAcc = & \beta_0 + \beta_1 ForensicServicesMeasure + \beta_2 IndivAudQuality \\
 & + \beta_3 ForensicServicesMeasures * IndivAudQuality + \beta_4 Age3 \\
 & + \beta_5 Age4 + \beta_6 Experience + \beta_7 Gender + \beta_8 OCF + \beta_9 Turnover \\
 & + \beta_{10} Size + \beta_{11} Salesgrowth + \beta_{12} Lev + \beta_{13} Loss + \beta_{14} |Acc_{t-1}| \\
 & + \beta_{15} Big4 + \sum \beta_{16} Industry + \sum \beta_{17} Year + \varepsilon
 \end{aligned} \tag{3}$$

Most variables are the same as in regression equation (2). *IndivAudQuality* is based on (Knechel, Vanstraelen, and Zerni 2015) and captures the level of individual auditor partner conservatism and aggressiveness by taking the average of financial statements' audit quality from their prior audit engagements. I further integrate controls for individual auditor characteristics to the regression model, such as *Age3* and *Age4* consistent with Sundgren and Svanström (2014). These variables are dummy variables taking the value of 1 for the individual auditor's age being in the third respectively fourth quartile calculated as the natural logarithm of the signing engagement partner's age in years. I separately calculate *Age3* and *Age4* for Big 4 and Non-Big 4 auditors. *Experience* measures the natural logarithm of the number of years that the individual auditor has gained since his/her appointment date to be a certified auditor to the date of signing the books. Controlling for auditing experience is reasonable because audit quality may be influenced by the auditor's professional experience (Cahan and Sun 2014; Ittonen, Johnstone, and Myllymäki 2014). I integrate *Gender* to control for the individual auditor's gender since Fellner and Maciejovsky (2007) find that women are more conservative and risk-averse in finance-related topics.

## 5. Empirical Results

### 5.1. Descriptive Statistics

Table 2 presents the descriptive statistics of all variables used in this study. *SignDAC* has a mean (median) value of -0.002 (-0.00008) and ranges from -0.322 to 0.310, which are similar magnitudes to other recent studies (e.g. He, Pan, and Tian 2017; Lesage, Ratzinger-Sakel, and Kettunen 2017). The percentage of firm-year observations that offer forensic services is 93.1% over the sample period. 91.1% of firm-year observations over the sample period offer forensic services within a separate forensic services department (*FSDep*). The scope of forensic services (*FSScope*) provided by the respective incumbent audit firm for year *t* ranges from 2 to 16. The mean of 13.5 indicates that audit firms that provide forensic services already offer a wide range of different subservices, most of these classified as detection services with a mean of 6.1 followed by prevention services with a mean of 4.3 and remediation services (mean = 3.1). On average, companies within my sample have a mean leverage (*Lev*) of 18.2%. Companies that hire Big Four auditors account for 74% of the research sample. For Panel B the mean value of the individual auditor's quality, measured as the individual auditor's level of conservatism, is 0.335, indicating that most auditors in my sample are of comparatively low quality.

Table 3 reports the correlation matrix of the four abnormal accruals measures, the treatment variables and all control variables. Results indicate that the forensic services measure (*FS*) is negatively and significantly correlated with the signed value of abnormal accruals. For the positive, the negative, and the absolute value of abnormal accruals, I observe an insignificant correlation. I exhibit stronger correlations for my additional treatment variable *FSDep*, which is negatively and significantly correlated with three of the four abnormal accruals measures, namely the signed value, the positive value, and the absolute value. I do not find any correlation between the third *ForensicServicesMeasure* (*FSScope*) and the four abnormal accruals measures. The matrix presents a significant and negative correlation of the individual audit partner quality variable (*IndivAudQuality*) with three of the four abnormal accruals measures, supporting my second Hypothesis, which assumes a possible simultaneous impact of *FS* and *IndivAudQuality* on discretionary accruals of audit firm clients. Generally, the magnitudes of the pairwise correlations among firm-specific control variables do not exceed 0.4. However, I observe a high correlation between *Age4* and *Experience* (0.7513, p-value  $\leq$  0.01). Consequently, I test both variables alternatively. The variance inflation factors (VIF) scores are all below four, suggesting that multicollinearity is not a problem in my multivariate regression.



Table 2. Descriptive Statistics

	Dependent Variables															
	Panel A					Panel B										
	Obs	Mean	SD	Min.	p25	Median	p75	Max	Obs	Mean	SD	Min.	p25	Median	p75	Max
<i>SignDAC</i>	1828	-0.002	0.067	-0.322	-0.034	0.000	0.032	0.310	1395	-0.001	0.066	-0.322	-0.032	0.000	0.030	0.310
<i>PosDAC</i>	912	0.046	0.047	0.000	0.014	0.032	0.060	0.310	701	0.044	0.047	0.000	0.013	0.029	0.058	0.310
<i>NegDAC</i>	916	-0.049	0.049	-0.322	-0.066	-0.034	-0.015	0.000	694	-0.047	0.049	-0.322	-0.059	-0.033	-0.015	0.000
<i>AbsDAC</i>	1828	0.047	0.048	0.000	0.014	0.033	0.062	0.322	1395	0.045	0.048	0.000	0.014	0.031	0.059	0.322
	Treatment Variables															
	Panel A					Panel B										
	Obs	Mean	SD	Min.	p25	Median	p75	Max	Obs	Mean	SD	Min.	p25	Median	p75	Max
<i>FS</i>	1828	0.931	0.254	0	1	1	1	1	1395	0.936	0.244	0	1	1	1	1
<i>FSDep</i>	1828	0.911	0.284	0	1	1	1	1	1395	0.914	0.280	0	1	1	1	1
<i>FSScope</i>	1732	13.520	2.360	2	12	14	16	16	1332	13.642	2.385	2	12	14	16	16
<i>Detection</i>	1732	6.100	1.312	0	6	7	7	7	1332	6.149	1.346	0	6	7	7	7
<i>Remediation</i>	1732	3.121	0.774	0	3	3	4	4	1332	3.170	0.764	0	3	3	4	4
<i>Prevention</i>	1732	4.298	0.636	0	4	4	5	5	1332	4.324	0.638	0	4	4	5	5
<i>FSAudit</i>	1825	0.947	0.224	0	1	1	1	1	1392	0.9519	0.2141	0	1	1	1	1
<i>Indiv.AudQuality</i>									1395	0.335	0.472	0	0	0	1	1
	Control Variables															
	Panel A					Panel B										
	Obs	Mean	SD	Min.	p25	Median	p75	Max	Obs	Mean	SD	Min.	p25	Median	p75	Max
<i>Age3</i>	1395	0.244	0.430	0	0	0	0	0	1395	0.244	0.430	0	0	0	0	1
<i>Age4</i>	1395	0.257	0.437	0	0	0	0	0	1395	0.257	0.437	0	0	0	1	1
<i>Experience</i>	1395	9.762	5.579	0.057	5.194	9.024	13.150	28.156	1395	9.762	5.579	0.057	5.194	9.024	13.150	28.156
<i>Gender</i>	1395	0.156	0.363	0	0	0	0	0	1395	0.156	0.363	0	0	0	0	1
<i>OCF</i>	1395	0.078	0.110	-0.489	0.041	0.084	0.124	0.389	1395	0.078	0.110	-0.489	0.041	0.084	0.122	0.389
<i>Turnover</i>	1395	1.156	0.608	0.001	0.769	1.079	1.422	3.488	1395	1.156	0.608	0.001	0.776	1.083	1.421	3.488
<i>Size</i>	1395	6.143	2.105	1.124	4.320	5.687	7.339	12.480	1395	6.143	2.105	1.124	4.448	5.977	7.522	11.964
<i>Salesgrowth</i>	1395	0.062	0.223	-0.605	-0.023	0.049	0.133	1.158	1395	0.062	0.223	-0.605	-0.025	0.051	0.133	1.158
<i>Lev</i>	1395	0.189	0.153	0	0.043	0.165	0.279	0.666	1395	0.189	0.153	0	0.053	0.175	0.286	0.666
<i>Loss</i>	1395	0.208	0.406	0	0	0	0	1	1395	0.208	0.406	0	0	0	0	1
<i> Acc<sub>t-1</sub> </i>	1395	0.069	0.072	0.001	0.025	0.049	0.088	0.501	1395	0.069	0.072	0.001	0.024	0.047	0.088	0.501
<i>Big4</i>	1395	0.757	0.429	0	1	1	1	1	1395	0.757	0.429	0	1	1	1	1

## II. Spillover Effects of Forensic Services on Audit Quality

**Table 3.** Pearson and Spearman Correlations Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)		
<i>DiscAcc</i>	(1)	1		-0.0211	<b>-0.0528</b>	<b>-0.0531</b>	-0.0315	<b>-0.0541</b>	-0.0246	-0.0063	<b>-0.3182</b>	0.0095		
<i>PosDAC</i>	(2)		1	<b>1.0000</b>	-0.0281	-0.0579	-0.0199	<i>-0.0737</i>	0.0116	0.0370	<b>-0.1763</b>	-0.0271		
<i>NegDAC</i>	(3)			1	-1.0000	0.0332	0.0445	-0.0172	0.0176	-0.0508	-0.0352	<b>-0.1350</b>	-0.0350	
<i>AbsDAC</i>	(4)	-0.0439	<b>1.0000</b>		1	-0.0283	<i>-0.0498</i>	-0.0004	-0.0443	0.0318	0.0363	0.0044	0.0027	
<i>FS</i>	(5)	<b>-0.0544</b>	-0.0553	0.0273		1	<b>0.8509</b>	<b>0.2415</b>	<b>0.2652</b>	<b>0.0631</b>	<b>0.2684</b>	<b>0.0612</b>	-0.0221	
<i>FSDep</i>	(6)	<i>-0.0517</i>	<b>-0.0890</b>	0.0601	<b>-0.0734</b>	<b>0.8509</b>		1	<b>0.3443</b>	<b>0.3855</b>	<b>0.1065</b>	<b>0.2939</b>	0.0393	0.0020
<i>FSScope</i>	(7)	-0.0238	-0.0199	0.0235	-0.0204	<b>0.3702</b>	<b>0.4816</b>		1	<b>0.8973</b>	<b>0.8928</b>	<b>0.8993</b>	<b>0.0891</b>	0.0110
<i>Detection</i>	(8)	-0.0306	<i>-0.0704</i>	<i>0.0690</i>	<b>-0.0680</b>	<b>0.4349</b>	<b>0.5967</b>	<b>0.8980</b>		1	<b>0.6700</b>	<b>0.6560</b>	<b>0.1097</b>	0.0114
<i>Remediation</i>	(9)	-0.0149	0.0355	-0.0315	0.0342	<b>0.0739</b>	<b>0.1198</b>	<b>0.8100</b>	<b>0.5062</b>		1	<b>0.8735</b>	<b>0.0786</b>	0.0123
<i>Prevention</i>	(10)	-0.0067	0.0315	-0.0204	0.0264	<b>0.3780</b>	<b>0.3982</b>	<b>0.8736</b>	<b>0.6412</b>	<b>0.7626</b>		1	<b>0.0702</b>	0.0082
<i>IndivAudQuality</i>	(11)	<b>-0.2790</b>	<b>-0.1528</b>	<b>-0.0968</b>	-0.0042	<b>0.0612</b>	0.0393	<b>0.0911</b>	<b>0.0778</b>	<b>0.0779</b>	<b>0.0830</b>		1	0.0092
<i>Age3</i>	(12)	0.0081	-0.0232	-0.0094	-0.0078	-0.0221	0.0020	0.0053	0.0021	0.0135	-0.0006	0.0092		1
<i>Age4</i>	(13)	0.0335	-0.0250	<b>0.0942</b>	<b>-0.0602</b>	-0.0006	0.0227	0.0357	<b>0.0615</b>	0.0089	-0.0072	0.0054	<b>-0.3348</b>	
<i>Experience</i>	(14)	0.0348	-0.0509	<b>0.0935</b>	<b>-0.0734</b>	0.0243	0.0424	0.0255	<b>0.0668</b>	-0.0041	-0.0405	-0.0126	<b>0.1060</b>	
<i>Gender</i>	(15)	<i>-0.0459</i>	0.0037	<b>-0.1046</b>	<b>0.0558</b>	<i>0.0473</i>	<b>0.0752</b>	<b>0.0591</b>	<b>0.0712</b>	0.0167	<i>0.0507</i>	0.0008	<b>-0.0600</b>	
<i>OCF</i>	(16)	<b>-0.6232</b>	<b>-0.5103</b>	<b>-0.5126</b>	-0.0161	<i>0.0463</i>	<b>0.0572</b>	0.0364	<i>0.0494</i>	0.0070	0.0235	<b>0.2229</b>	<b>-0.0617</b>	
<i>Loss</i>	(17)	-0.0115	<i>0.0664</i>	<b>-0.1260</b>	<b>0.0958</b>	<b>-0.0759</b>	<b>-0.0696</b>	<b>-0.0558</b>	<b>-0.0763</b>	-0.0208	-0.0227	-0.0235	0.0333	
<i>Size</i>	(18)	0.0283	<b>-0.2198</b>	<b>0.2656</b>	<b>-0.2423</b>	<b>0.1994</b>	<b>0.2420</b>	<b>0.2777</b>	<b>0.3274</b>	<b>0.1134</b>	<b>0.2116</b>	0.0068	<i>0.0479</i>	
<i>Turnover</i>	(19)	-0.0163	0.0233	-0.0102	0.0178	0.0152	-0.0064	-0.0194	<i>-0.0496</i>	0.0086	0.0217	0.0329	-0.0387	
<i>Salesgrowth</i>	(20)	0.0039	0.0507	-0.0548	<i>0.0523</i>	0.0159	0.0055	0.0346	0.0300	0.0252	0.0359	-0.0221	-0.0113	
<i>Lev</i>	(21)	0.0327	0.0273	0.0105	0.0075	0.0092	0.0014	<b>0.0720</b>	0.0402	<b>0.1004</b>	<b>0.0640</b>	0.0063	-0.0371	
$ ACC_{t,t} $	(22)	<b>0.1358</b>	0.0351	<b>0.2102</b>	<b>-0.0768</b>	-0.0321	-0.0081	-0.0092	-0.0195	0.0062	-0.0007	<b>-0.2223</b>	-0.0174	
<i>AbsAcc Lag</i>	(23)	<b>-0.1225</b>	<b>0.1166</b>	<b>-0.3613</b>	<b>0.2383</b>	0.0190	-0.0028	0.0275	-0.0010	<b>0.0606</b>	0.0324	<b>0.1863</b>	<i>-0.0446</i>	
<i>Big4</i>	(24)	<b>-0.0626</b>	<b>-0.1264</b>	<i>0.0629</i>	<b>-0.0934</b>	<b>0.4607</b>	<b>0.5415</b>	<b>0.5563</b>	<b>0.6951</b>	<b>0.1499</b>	<b>0.4337</b>	<i>0.0521</i>	-0.0277	

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	
<i>DiscAcc</i>	(1)	0.0313	<i>0.0508</i>	-0.0362	<b>-0.6233</b>	-0.0144	0.0164	-0.0296	0.0145	0.0208	<b>0.1556</b>	<b>-0.1157</b>	<b>-0.0646</b>
<i>PosDAC</i>	(2)	-0.0295	-0.0407	0.0201	<b>-0.4810</b>	0.0576	<b>-0.2522</b>	0.0352	0.0116	-0.0461	<b>0.0819</b>	<b>0.0749</b>	<b>-0.1105</b>
<i>NegDAC</i>	(3)	<b>0.1161</b>	<b>0.1224</b>	<b>-0.1229</b>	<b>-0.4676</b>	<b>-0.1721</b>	<b>0.2676</b>	0.0071	-0.0062	0.0395	<b>0.1432</b>	<b>-0.2196</b>	0.0517
<i>AbsDAC</i>	(4)	<b>-0.0733</b>	<b>-0.0820</b>	<b>0.0725</b>	-0.0009	<b>0.1138</b>	<b>-0.2620</b>	0.0172	0.0102	-0.0436	-0.0334	<b>0.1485</b>	<b>-0.0805</b>
<i>FS</i>	(5)	-0.0006	0.0110	<i>0.0473</i>	0.0331	<b>-0.0759</b>	<b>0.2029</b>	-0.0063	0.0276	<b>0.0554</b>	<i>-0.0446</i>	0.0333	<b>0.4607</b>
<i>FSDep</i>	(6)	0.0227	0.0263	<b>0.0752</b>	<b>0.0531</b>	<b>-0.0696</b>	<b>0.2476</b>	-0.0397	0.0071	0.0376	-0.0151	0.0033	<b>0.5415</b>
<i>FSScope</i>	(7)	<i>0.0465</i>	0.0337	0.0442	0.0327	-0.0403	<b>0.2728</b>	<b>-0.0604</b>	-0.0009	<b>0.0839</b>	-0.0214	0.0360	<b>0.5204</b>
<i>Detection</i>	(8)	<b>0.0734</b>	<b>0.0699</b>	<i>0.0513</i>	<b>0.0668</b>	<b>-0.0678</b>	<b>0.3240</b>	<b>-0.0611</b>	0.0046	<b>0.0718</b>	<i>-0.0485</i>	0.0266	<b>0.6731</b>
<i>Remediation</i>	(9)	0.0144	0.0087	0.0163	0.0076	-0.0130	<b>0.1344</b>	-0.0226	-0.0031	<b>0.0981</b>	-0.0143	<b>0.0543</b>	<b>0.1735</b>
<i>Prevention</i>	(10)	-0.0011	-0.0165	0.0399	0.0120	-0.0113	<b>0.2114</b>	-0.0432	-0.0052	<b>0.0696</b>	-0.0023	0.0366	<b>0.4031</b>
<i>IndivAudQuality</i>	(11)	0.0054	-0.0129	0.0008	<b>0.2362</b>	-0.0235	0.0189	0.0404	-0.0216	0.0196	<b>-0.3019</b>	<b>0.2550</b>	<i>0.0521</i>
<i>Age3</i>	(12)	<b>-0.3348</b>	<b>0.1975</b>	<b>-0.0600</b>	<i>-0.0492</i>	0.0333	<i>0.0443</i>	-0.0407	-0.0263	-0.0314	-0.0062	-0.0254	-0.0277
<i>Age4</i>	(13)	1	<b>0.7095</b>	<b>-0.1169</b>	-0.0004	<b>-0.0591</b>	<b>0.1683</b>	<b>-0.0601</b>	-0.0108	-0.0124	0.0311	-0.0215	0.0009
<i>Experience</i>	(14)	<b>0.7513</b>	1	<b>-0.0706</b>	-0.0261	-0.0343	<b>0.2484</b>	<b>-0.0871</b>	<b>-0.0546</b>	0.0115	0.0185	-0.0361	-0.0164
<i>Gender</i>	(15)	<b>-0.1169</b>	<b>-0.0711</b>	1	<b>0.0723</b>	0.0433	-0.0084	-0.0054	-0.0060	<b>0.0575</b>	<b>-0.0708</b>	<b>0.0866</b>	<b>0.0726</b>
<i>OCF</i>	(16)	-0.0096	-0.0196	<b>0.1042</b>	1	<b>-0.4198</b>	<b>0.0875</b>	<b>0.1706</b>	<b>0.1646</b>	<b>-0.0611</b>	<b>-0.1110</b>	0.0340	<b>0.1165</b>
<i>Loss</i>	(17)	<b>-0.0591</b>	<i>-0.0505</i>	0.0433	<b>-0.4390</b>	1	<b>-0.2405</b>	<b>-0.2201</b>	<b>-0.2654</b>	<b>0.0622</b>	<b>-0.0572</b>	<b>0.1498</b>	<b>-0.0928</b>
<i>Size</i>	(18)	<b>0.1897</b>	<b>0.2895</b>	-0.0235	<b>0.1292</b>	<b>-0.2306</b>	1	<b>-0.0853</b>	0.0170	<b>0.2968</b>	0.0339	<b>-0.1595</b>	<b>0.4069</b>
<i>Turnover</i>	(19)	<i>-0.0456</i>	<b>-0.0845</b>	-0.0056	<b>0.2250</b>	<b>-0.2236</b>	<b>-0.0583</b>	1	<b>0.1683</b>	<b>-0.0693</b>	0.0261	-0.0437	<i>-0.0463</i>
<i>Salesgrowth</i>	(20)	-0.0032	-0.0330	-0.0195	<b>0.1493</b>	<b>-0.2286</b>	0.0048	<b>0.1625</b>	1	0.0123	0.0164	-0.0266	0.0042
<i>Lev</i>	(21)	-0.0439	-0.0240	<b>0.0761</b>	-0.0322	<b>0.0955</b>	<b>0.2352</b>	<b>-0.1050</b>	0.0172	1	<b>-0.1206</b>	<b>0.0789</b>	<b>0.0561</b>
$ ACC_{t,t} $	(22)	<i>0.0474</i>	0.0131	<b>-0.0565</b>	-0.0310	<b>-0.0917</b>	<b>0.0684</b>	<b>0.0530</b>	<b>0.0755</b>	<b>-0.1236</b>	1	<b>-0.7301</b>	<b>-0.0533</b>
<i>AbsAcc Lag</i>	(23)	-0.0137	-0.0272	<b>0.0728</b>	-0.0048	<b>0.1927</b>	<b>-0.1896</b>	<b>-0.0557</b>	<b>-0.0608</b>	<b>0.1126</b>	<b>-0.5499</b>	1	-0.0086
<i>Big4</i>	(24)	0.0009	0.0104	<b>0.0726</b>	<b>0.1144</b>	<b>-0.0928</b>	<b>0.3945</b>	-0.0059	0.0080	0.0336	<b>-0.0526</b>	-0.0167	1

Italic indicates p-values  $\leq 0.10$ , bold indicates p-values  $\leq 0.05$ , italic and bold indicates p-values  $\leq 0.01$ .

Pearson's correlation coefficients are shown in the lower triangle, including the diagonal, while Spearman's rank correlations appear above the diagonal.

### 5.2. *Multivariate Results*

#### 5.2.1. *The Impact of Forensic Services on Audit Quality*

Table 4 summarizes the results from regressing the absolute and signed measures of discretionary accruals on the forensic services measure. The results show that *FS* is significantly and negatively related to *SignDAC* (p-value < 0.01). This result is consistent with my prediction that audit firms, which provide forensic services, exhibit lower levels of earnings management and hence higher audit quality. A more detailed examination of the results reveals, however, that the effect of *FS* on *SignDAC* is largely driven by the negative value of discretionary accruals *NegDAC* (p-value < 0.05). As shown in Table 4, I observe insignificant results for positive discretionary accruals (*PosDAC*) as well as for the absolute value of discretionary accruals (*AbsDAC*). These results suggest that companies tend to record extreme values of income-decreasing discretionary accruals if the incumbent audit firm provides forensic services. Prior research shows that incentives and opportunities for income-decreasing accruals exist. For example, when managers desire to mitigate the magnitude of a positive earnings surprise (Collins and Hribar 2000). Further, Shackelford and Shevlin (2001) illustrate that managers may seek to decrease earnings in order to minimize taxation, especially in high-tax countries. In addition, Peasnell, Pope, and Young (2005) find strong evidence for the fact that firms with a higher proportion of outside board members are associated with less income-increasing earnings management, however, they do not find evidence that outside directors constrain income-decreasing earnings management. Another possible reason for income-decreasing earnings management might be that larger firms tend to decrease profits for the purpose of reducing political costs. For example, managers in firms under import relief investigation have incentives to manage earnings downward (Jones 1991). Ramanna and Roychowdhury (2010), on the other hand, show a relation between income-decreasing accruals management and a firm's outsourcing activities, which the authors see as a manifestation of latent poor economic performance. Further, Lee, Lev, and Yeo (2007) find that firms with higher organizational complexity, especially with high organizational relatedness, engage in both income-increasing and income-decreasing earnings management since direct monitoring by principals is difficult. Since I do not believe that the existence of forensic services actively supports the engagement in income-decreasing accruals management, I conclude that the simple existence of forensic services and hence the expected spillover effect does not constrain income-decreasing earnings management.

Of the control variables included in the model, the coefficients on *OCF*, *Size*, *Salesgrowth*, and  $|Acc_{t-1}|$  are significant in the expected direction for at least two of the four discretionary accruals measures. The *Loss* coefficient is significant in the expected direction for *NegDAC* but in the opposite direction of that predicted for *SignDAC* and *PosDAC*. The coefficients of the remaining variables are either insignificant and/or in the opposite direction of that predicted for most discretionary accruals measures.

### 5.2.2. *The Impact of Forensic Services on Audit Quality in the Presence of High Quality Auditors*

In this section, I test my second Hypothesis and examine how the offering of forensic services within an audit firm influences audit quality, if, at the same time, the audit firm employs high quality audit partners. To test audit partner quality, I employ a dummy variable, *IndivAudQuality*, which is equal to 1 if the level of average abnormal accruals of the individual auditor's prior conducted audits (at least two observations) lies above the median value and 0 otherwise (Knechel et al. 2015). I suppose there is a relation between the *IndivAudQuality* variable and the *ForensicServicesMeasure* since I expect audit firms that expand their range of services by specified offerings, i.e. forensic services, to place emphasis on service-diversification and good audit quality, which, as prior research shows, is significantly influenced by the individual audit partner's quality.

Further, as shown in Table 3, I exhibit a significant positive correlation between *FS* and *IndivAudQuality* (0.0612 p-value < 0.05). Consequently, I assume that the effect of *FS* on discretionary accruals of audit firm clients is influenced by the *IndivAudQuality* variable. In order to assess a possible simultaneous impact of both variables on discretionary accruals, I examine the presence of interactions between these factors and compare them with the respective main effects. To model the respective interaction effects, I include multiplicative terms of the two presumably interacting variables in regression model (3). I further include controls for individual auditor characteristics such as *Age*, *Experience* and *Gender*.

I present the results of regression equation (3) with *IndivAudQuality* and *IndivAudQuality\*FS* in Table 5. Thereby, *FS* captures the effect on discretionary accruals if the incumbent audit firm generally offers forensic services and the individual audit partner's quality is low. The variable *IndivAudQuality*, on the other hand, captures the general impact on clients' discretionary accruals if the individual audit partner's quality is defined as high.

**Table 4.** The Impact of Forensic Services on Audit Quality

	Expected Signs	SignDAC		PosDAC		NegDAC		AbsDAC	
		$\beta$	p-value	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value
<i>FS</i>	?	-0.0177 <sup>***</sup>	0.004	-0.0028	0.612	-0.0143 <sup>**</sup>	0.012	0.0064	0.345
<i>OCF</i>	-/+	-0.5076 <sup>***</sup>	0.000	-0.3133 <sup>***</sup>	0.000	-0.3308 <sup>***</sup>	0.000	-0.0017	0.962
<i>Turnover</i>	-/+	0.0133 <sup>***</sup>	0.000	0.0112 <sup>***</sup>	0.000	0.0055 <sup>***</sup>	0.121	0.0037	0.234
<i>Size</i>	-/+	0.0019 <sup>*</sup>	0.054	-0.0016 <sup>*</sup>	0.085	0.0035 <sup>***</sup>	0.000	-0.0040 <sup>***</sup>	0.000
<i>Salesgrowth</i>	+/-	0.0041	0.671	0.0155 <sup>**</sup>	0.049	-0.0207 <sup>*</sup>	0.077	0.0172 <sup>***</sup>	0.009
<i>Lev</i>	+/-	0.0069	0.537	0.0100	0.440	-0.0002	0.986	0.0016	0.899
<i>Loss</i>	+/-	-0.0570 <sup>***</sup>	0.000	-0.0348 <sup>***</sup>	0.000	-0.0409 <sup>***</sup>	0.000	0.0027	0.618
$ ACC_{t-1} $	+/-	0.0047	0.879	0.0724 <sup>**</sup>	0.012	-0.1245 <sup>***</sup>	0.000	0.1300 <sup>***</sup>	0.000
<i>Big4</i>	-/+	0.0031	0.547	0.0014	0.750	0.0046	0.374	-0.0023	0.623
Constant		0.0399 <sup>***</sup>	0.000	0.0590 <sup>***</sup>	0.000	-0.0071	0.529	0.0498 <sup>***</sup>	0.000
Industry Fixed Effects		included	included	included	included	included	included	included	included
Year Fixed Effects		included	included	included	included	included	included	included	included
Observations		1.827		912		915		1.827	
Adjusted R <sup>2</sup>		0.529		0.403		0.467		0.124	
F		24.8708		12.1263		16.9616		7.9362	
p-value		0.000		0.000		0.000		0.000	

<sup>\*</sup>, <sup>\*\*</sup>, <sup>\*\*\*</sup> Indicates statistical significance at the p-value  $\leq 0.10$ ,  $0.05$ , and  $0.01$  (two-tailed) levels, respectively. Standard errors are clustered on firm level according to (Peterson 2009). +/- indicates that the expected sign is + for the three abnormal accruals measures (*SignDAC*, *PosDAC*, and *AbsDAC*) and - for *NegDAC*. Variables are winsorized at the top and bottom 1 percentiles to reduce the effect of outliers. The sample comprises 1,827 observations of 271 German enterprises from 2008 to 2015. This table reports results given by the following regression model (2) to investigate the impact of the provision of forensic services on audit quality:

$$DiscAcc = \beta + \beta ForensicServicesMeasure + \beta OCF + \beta Turnover + \beta Size + \beta Salesgrowth + \beta Lev + \beta Loss + \beta |ACC_{t-1}| + \beta Big4 + \sum \beta Industry + \sum \beta Year + \varepsilon$$

with variables: *DiscAcc* = Discretionary accruals according to Kothari et al. (2005); *PosDAC* = Positive value of discretionary accruals; *NegDAC* = Negative value of discretionary accruals; *AbsDAC* = Absolute value of discretionary accruals; *FS* = Indicator variable equal to 1 if the incumbent audit firm offers Forensic Services in year  $t$ , 0 otherwise; *OCF* = Operating Cash Flow for year  $t$  scaled by lagged total assets; *Turnover* = revenues divided by lagged total assets; *Size* = The natural logarithm of total assets at the end of year  $t$ ; *Salesgrowth* = Difference between sales in year  $t$  and sales in year  $t-1$ ; *Lev* = the sum of total long-term debt and total short-term debt divided by total assets at the end of year  $t$ ; *Loss* = Indicator variable equal to 1 if a loss occurs in year  $t$ , 0 otherwise;  $|ACC_{t-1}|$  = Absolute value of lagged total accruals; *Big4* = Indicator variable equal to 1 if audited by a Big 4 firm, 0 otherwise.

The incremental effect of the existence of forensic services on clients' discretionary accruals if, at the same time, the audit firm employs high-quality audit partners is captured by  $FS*IndivAudQuality$ . As the empirical results show, the coefficients on  $FS$  and  $IndivAudQuality$  are both negative and highly significant (p-value < 0.10), while the coefficient on  $FS*IndivAudQuality$  is positive and modestly significant (p-value < 0.10) for  $SignDAC$ . These results, on the one hand, indicate that the existence of forensic services significantly decreases clients' discretionary accruals if the incumbent audit firm employs low-quality audit partners. On the other hand, clients' discretionary accruals also significantly decrease if the individual audit partner's quality is high and the audit firm does not offer forensic services. The positive and modestly significant coefficient of the interaction term  $FS*IndivAudQuality$  indicates a mutual weakening of both variables in their combined effect on the level of signed discretionary accruals ( $SignDAC$ ). I also determine a positive and modestly significant coefficient on  $FS*IndivAudQuality$  for income-increasing discretionary accruals ( $PosDAC$ ). Hence, audit quality slightly decreases concerning income-increasing earnings management if audit firms that provide forensic services ( $FS$ ), at the same time, employ high-quality audit engagement partners. I observe insignificant results of the interaction term  $IndivAudQuality*FS$  for negative discretionary accruals ( $NegDAC$ ) as well as for the absolute value of discretionary accruals ( $AbsDAC$ ). Of the control variables included in regression equation (3), the coefficient on  $Age3$  is negative and modestly significant for  $SignDAC$ , indicating that especially younger auditors have a positive influence on clients' earnings management. However, I find slightly stronger results for  $Age3$  (p-value < 0.05) on income-decreasing discretionary accruals ( $NegDAC$ ), which leads to the opposite interpretation that younger auditors have a negative influence on clients' earnings management. I observe a positive influence of  $Gender$  on income-decreasing discretionary accruals (p-value < 0.10), which expresses that women positively influence the level of clients' earnings management.<sup>11</sup> Similar to the results of regression equation (2),  $OCF$ ,  $Size$ , and  $|ACC_{t-1}|$  are significant in the expected direction for at least two of the four discretionary accruals measures. Again, the  $Loss$  coefficient is significant in the expected direction for  $NegDAC$  but in the opposite direction of that predicted for  $SignDAC$  and  $PosDAC$ . The coefficients of the remaining variables are either insignificant and/or in the opposite direction of that predicted for most discretionary accruals measures.

<sup>11</sup> I also observe a positive influence of  $Gender$  on  $SignDAC$ , however, I assume this positive effect stems from the positive sign of  $NegDAC$ .

**Table 5.** The Impact of Forensic Services on Audit Quality in the Presence of High Quality Auditors

	Expected Signs	SignDAC		PosDAC		NegDAC		AbsDAC	
		$\beta$	p-value	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value
<i>FS</i>	?	-0.0205***	0.005	-0.0070	0.313	-0.0193**	0.011	0.003	0.711
<i>Indiv.AudQuality</i>	?	-0.0334***	0.002	-0.0241***	0.004	-0.0144	0.163	-0.0073	0.425
<i>FS*Indiv.AudQuality</i>	?	0.0194*	0.062	0.0165*	0.058	0.0119	0.264	0.0061	0.528
<i>Age3</i>	-/+	-0.0061*	0.084	-0.0055	0.170	-0.0078**	0.044	0.0004	0.909
<i>Age4</i>	-/+	-0.0011	0.754	0.0011	0.795	-0.0019	0.576	0.0011	0.749
<i>Experience</i>	-/+	-0.0001	0.774	0.0001	0.713	-0.0001	0.664	0.0002	0.543
<i>Gender</i>	-/+	0.0081*	0.073	0.0063	0.136	0.0080*	0.091	0.0037	0.394
<i>OCF</i>	-/+	-0.4920***	0.000	-0.3120***	0.000	-0.3564***	0.000	0.0038	0.925
<i>Turnover</i>	-/+	0.0124***	0.000	0.0113***	0.003	0.0049	0.250	0.0043	0.276
<i>Size</i>	-/+	0.0017*	0.094	-0.0022**	0.028	0.0042***	0.000	-0.0041***	0.000
<i>Salesgrowth</i>	+/-	0.0142	0.127	0.0232***	0.006	-0.0137	0.124	0.013	0.124
<i>Lev</i>	+/-	0.0076	0.527	0.0133	0.353	-0.0041	0.697	0.005	0.722
<i>Loss</i>	+/-	-0.0533***	0.000	-0.0342***	0.000	-0.0442***	0.000	0.0028	0.658
$ ACC_{t-1} $	+/-	-0.0457	0.153	0.0252	0.301	-0.1251***	0.002	0.1217***	0.000
<i>Big4</i>	-/+	0.0016	0.757	0.0022	0.644	0.002	0.734	-0.0031	0.577
Constant		0.0433***	0.000	0.0627***	0.0000	-0.0038	0.778	0.0565***	0.000
Industry Fixed Effects			included		included		included		included
Year Fixed Effects			included		included		included		included
Observations		1,395		701		694		1,395	
Adjusted R <sup>2</sup>		0.549		0.416		0.499		0.126	
F		23.635		10.8823		14.0653		5.2591	
p-value		0.0000		0.0000		0.0000		0.0000	

\*, \*\*, \*\*\* Indicates statistical significance at the p-value  $\leq 0.10, 0.05,$  and  $0.01$  (two-tailed) levels, respectively. Standard errors are clustered on firm level according to (Petersen 2009). +/- indicates that the expected sign is + for the three abnormal accruals measures (*DiscAcc*, *PosDAC*, and *AbsDAC*) and - for *NegDAC*. Variables are winsorized at the top and bottom 1 percentiles to reduce the effect of outliers. The sample comprises 1,395 observations of 249 German enterprises from 2008 to 2015. This table reports results given by the following regression model (3) to measure the impact of forensic services on audit quality in the presence of high quality auditors:

$$DiscAcc = \beta + \beta_{ForensicServices} Measures^{*} Indiv.AudQuality + \beta_{ForensicServices} Measures^{*} Indiv.AudQuality + \beta_{Age3} + \beta_{Age4} + \beta_{Experience} + \beta_{Gender} + \beta_{OCF} + \beta_{Turnover} + \beta_{OCF} + \beta_{Salesgrowth} + \beta_{Lev} + \beta_{Loss} + \beta_{Acct-1} + \beta_{Big4} + \sum \beta_{Industry} + \sum \beta_{Year} + \epsilon$$

with variables: *SignDAC* = Discretionary accruals according to Kothari et al. (2005); *PosDAC* = Positive value of discretionary accruals; *NegDAC* = Negative value of discretionary accruals; *AbsDAC* = Absolute value of discretionary accruals; *FS* = Indicator variable equal to 1 if the incumbent audit firm offers Forensic Services in year  $t$ , 0 otherwise; *Indiv.AudQuality* = Indicator variable equal to 1 if the level of average abnormal accruals of the individual auditor's conducted prior audits (at least two observations) lies above the median value; 0 otherwise (Knechel et al. 2015); *Age3* = Indicator variable taking the value of 1 for the individual auditors' age being in the third quartile, calculated as the natural logarithm of the signing engagement partners' age in years (separately calculated for Big 4 and Non-Big 4 auditors); *Age4* = Indicator variable taking the value of 1 for the individual auditors' age being in the fourth quartile, calculated as the natural logarithm of the signing engagement partners' age in years (separately calculated for Big 4 and Non-Big 4 auditors); *Experience* = The natural logarithm of the number of years of the signing engagement partners' experience since their certification date; *Gender* = Indicator variable equal to 1 if the individual auditor is female; 0 otherwise; *OCF* = Operating Cash Flow for year  $t$  scaled by lagged total assets; *Turnover* = revenues divided by lagged total assets; *Size* = The natural logarithm of total assets at the end of year  $t$ ; *Salesgrowth* = Difference between sales in year  $t$  and sales in year  $t-1$ ; *Lev* = The sum of total long-term debt and total short-term debt divided by total assets at the end of year  $t$ ; *Loss* = Indicator variable equal to 1 if a loss occurs in year  $t$ , 0 otherwise;  $|ACC_{t-1}|$  = Absolute value of lagged total accruals; *Big4* = Indicator variable equal to 1 if audited by a Big-4 firm, 0 otherwise.

## 6. Robustness

To further increase the robustness and verify the reliability of my findings, I conduct several sensitivity tests. First, I use a different proxy for my *ForensicServicesMeasure*, namely *FSDep*, to investigate whether the existence of a forensic services department has a different impact on audit quality than the pure existence of particular forensic services. Second, I perform two alternative tests to measure discretionary accruals: (1) the performance-matched modified Jones (1991) model as described by Kothari et al. (2005) and (2) the modified Jones (1991) model, as extended by Ball and Shivakumar (2006). For the performance-matched modified Jones (1991) model as described by Kothari et al. (2005) I control for performance differences across firms by ranking the firms within each one-digit SIC code into deciles based on their prior year's ROA. I then compute the performance adjusted discretionary accruals measures (*SignADAC*, *PosADAC*, *NegADAC*, *AbsADAC*) as the value of the difference between the firm's *DiscAcc* and the median *DiscAcc* for its ROA decile. With the modified Jones (1991) model, as extended by Ball and Shivakumar (2006), I incorporate a nonlinear accruals model that controls for the asymmetric timely recognition of gains and losses. Third, I perform an alternative test to measure audit quality by calculating accruals quality instead of discretionary accruals. For the calculation of accruals quality I use the Dechow and Dichev (2002) model as modified by McNichols (2002). Fourth, I re-calculate my total accruals variable *Acc* using the balance sheet approach rather than the cash flow approach for the estimation of discretionary accruals in regression equation (1). Fifth, I present alternative measures for some of the control variables. For instance, I use the natural logarithm of companies' sales in year *t* (*LogSales*) as a different proxy to capture company size (e.g. Francis, Michas, and Seavey 2013; Lesage et al. 2017). Further, I replace the absolute value of prior year total accruals ( $|Acc_{t-1}|$ ) by the signed value of prior year total accruals ( $Acc_{t-1}$ ), by the absolute value of current year total accruals ( $|Acc_t|$ ), and by prior year ROA ( $ROA_{t-1}$ ). Finally, due to the high correlation between the *ForensicServicesMeasure* variables and the *Big4* variable as well as the high percentage of firm year observations audited by Big Four audit firms, which might bias the results, I re-estimate regression model (2) and regression model (3) without *Big4*.<sup>12</sup>

For most robustness tests described above, the empirical results of section 5 continue to hold. The only exceptions are the insignificant results I achieve from measuring audit quality through accruals quality using the Dechow and Dichev (2002) model as modified by McNichols

<sup>12</sup> The German setting does not allow to use other proxies of output-based audit quality measures, such as material misstatements or going concern opinions, since these events have very limited occurrence in Germany, which would result in a lack of sufficient variance for these variables.



(2002)<sup>13</sup> as well as negative but insignificant results for the interaction terms of Hypothesis 2 if I re-calculate *Acc* using the balance sheet approach. Thus, I conclude that my empirical results are robust to a variety of sensitivity tests. For the purpose of brevity, I do not tabulate the results of my robustness tests.

Due to potential endogeneity concerns, I present a lagged variables approach (Fich and Shivdasani 2006; Krishnan, Wen, and Zhao 2011) to further examine the relation between the existence of forensic services and audit quality and address the possibility of reverse causality. Thus, I re-estimate regression equation (2) using 1-year lagged values of *FS* and regression equation (3) using 1-year lagged values of *FS* and *IndivAudQuality*. For brevity, I again do not tabulate these results. Regarding Hypothesis 1, the coefficient of the lagged *FS* variable (*FS\_Lag*) is significant and negative for *SignDAC* and *NegDAC*, which is consistent with my main results. The results on re-estimating the second Hypothesis show a significant and negative coefficient of *FS\_Lag* for *SignDAC* and *NegDAC*, negative although insignificant coefficients of the *IndivAudQuality* variable, as well as positive although insignificant coefficients of the interaction term *IndivAudQuality\*FS*. The weaker results regarding the *IndivAudQuality* variable and the interaction term *IndivAudQuality\*FS* might be due to the decreased number of observations entailed by performing the lagged variables approach. Overall, these results suggest, that my main results are not driven by endogeneity.

## 7. Additional Analysis

In this section, I describe three additional analyses. The first analysis explores the effects of the scope of forensic subservices offered by the respective audit firm. I thus rerun regression equations (2) and (3) using *FSScope* as proxy variable for the *ForensicServicesMeasure*. *FSScope* represents a categorical variable which can range from 0 to 16 dependent on the scope of forensic subservices offered by the respective audit firm. In addition, I re-measure both models by dividing forensic subservices into three categories: detection services (*Detection*), remediation services (*Remediation*), and prevention services (*Prevention*). Results reveal a significant and negative relation between *FSScope* and negative discretionary accruals (*NegDAC*) and a significant positive relation between *FSScope* and the absolute value of discretionary accruals (*AbsDAC*). The further division of *FSScope* into the three sub-categories shows that the significant and negative relation between *FSScope* and negative discretionary

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<sup>13</sup> One explanation for these weaker results is given by Aobdia, Lin, and Petacchi (2015), who state that the Dechow and Dichev (2002) model only focuses on short-term working capital accruals. Consequently, the model is unable to measure the impact of forensic services on clients' long-term accruals.

accruals (*NegDAC*) is reflected in all three sub-categories of the scope of forensic services (*Detection* p-value < 0.10, *Remediation* p-value < 0.01, *Prevention* p-value < 0.01). Two out of the three sub-categories, namely *Remediation* (p-value < 0.10) and *Prevention* (p-value < 0.01), further reflect the significant positive relation between *FSScope* and the absolute value of discretionary accruals (*AbsDAC*). Considering Hypothesis 2, results of my additional analysis show insignificant interaction terms for all four discretionary accruals measures, indicating that there is no relation between the scope of forensic services if, at the same time, the individual auditor is of high quality and the discretionary accruals measures. Dividing *FSScope* into the three sub-categories, I find a positive and significant coefficient for the interaction term *Detection\*IndivAudQuality* (p-value  $\leq$  0.05) for *PosDAC*, indicating a mutual weakening of both variables in their combined effect on the level of income-increasing discretionary accruals. Hence, audit quality decreases with regards to income-increasing earnings management if audit firms provide a range of detection services (*Detection*) and at the same time, employ high-quality audit engagement partners. I do not find significant coefficients on the interaction term for the other two sub-categories.

My second supplement analysis investigates a rather direct relation between forensic services and the quality of the annual financial statement audit. Thus, I replace the *ForensicServicesMeasure* by an indicator variable (*FSAudit*) which equals 1 if the incumbent audit firm (occasionally) consults in-house forensic services specialists within the scope of the annual financial statement audits; 0 otherwise. If I re-measure regression equations (2) and (3) with the new variable, I receive results that are almost identical to the results determined in the main analysis, using *FS* as *ForensicServicesMeasure*. Regarding regression equation (2) *FSAudit* is negative and modestly significant related to *SignDAC* (p-value < 0.10). This negative effect of *FSAudit* on *DiscAcc* is again largely driven by the negative value of discretionary accruals *NegDAC* (p-value < 0.01). As for the main analysis, I observe insignificant results for positive discretionary accruals (*PosDAC*) as well as for the absolute value of discretionary accruals (*AbsDAC*). Of the control variables included in the model, the coefficients on *OCF*, *Size*, *Salesgrowth*, *Lev* and  $|Acc_{t-1}|$  are significant in the expected direction for at least two of the four discretionary accruals measures. *Loss* and *Turnover* are significant in the opposite direction of that predicted for *SignDAC*, *PosDAC* and *AbsDAC*. The coefficients of the remaining variables are insignificant for most discretionary accruals measures. For regression equation (3) I find a positive and moderate significant coefficient for the interaction term *FSAudit\*IndivAudQuality* (p-value  $\leq$  0.10) for *PosDAC*, indicating a mutual weakening of both variables in their combined effect on the level of income-increasing discretionary accruals.

However, results further reveal a positive and significant coefficient for the interaction term  $FSAudit*IndivAudQuality$  (p-value  $\leq 0.05$ ) for  $NegDAC$ , indicating a mutual strengthening of both variables in their combined effect on the level of income-decreasing discretionary accruals. Hence, audit quality increases concerning income-decreasing earnings management if the incumbent audit firm declares to (occasionally) consult in-house forensic services specialists within the scope of the annual financial statement audit and, at the same time, employs high-quality audit engagement partners. I observe insignificant results of the interaction term  $FSAudit*IndivAudQuality$  for signed discretionary accruals ( $SignDAC$ ) as well as for the absolute value of discretionary accruals ( $AbsDAC$ ).

The final additional analysis explores the effects of the professional compositions i.e. the expert structure of forensic services (departments) in my sample. I therefor asked each audit firm within my sample to declare the type of specialists in accordance with one of the following professions: Auditor, Tax Consultant, Lawyer, Criminologist, IT Specialist, Psychologist, Economist, Other. I re-estimate regression equation (2) by replacing the *ForensicServices Measure* with variables representing each of the mentioned professions. Table 6 shows the results of regressing the number of specialists in each of the given professions on the four discretionary accruals measures. Results reveal significant and negative coefficients for all professions besides Psychologists for  $SignDAC$  and  $NegDAC$  and insignificant coefficients for all professions for  $PosDAC$  and  $AbsDAC$ . These findings correspond to the main results using *ForensicServicesMeasure* as treatment variable instead of the individual professions.

## II. Spillover Effects of Forensic Services on Audit Quality

**Table 6.** The Impact of Forensic Services Experts on Audit Quality

	SignDAC		PosDAC		NegDAC		AbsDAC	
	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value	$\beta$	p-value
<i>Lawyer</i>	-0.0156**	0.028	0.0001	0.982	-0.0189***	0.003	0.0096	0.218
<i>TaxConsultant</i>	-0.0171**	0.017	-0.0015	0.82	-0.0191***	0.002	0.009	0.240
<i>Auditor</i>	-0.0168**	0.016	-0.0017	0.797	-0.0189***	0.003	0.0091	0.254
<i>Criminologist</i>	-0.0103	0.134	-0.0017	0.797	-0.0108*	0.091	0.0049	0.393
<i>ITSpecialist</i>	-0.0094**	0.043	0.0004	0.934	-0.0108**	0.019	0.0046	0.338
<i>Psychologist</i>	0.0003	0.939	-0.0021	0.546	0.0065*	0.073	-0.0015	0.647
<i>Economist</i>	-0.0187***	0.009	-0.0027	0.672	-0.0191***	0.002	0.0086	0.259
<i>OCF</i>	-0.5161***	0.000	-0.3199***	0.000	-0.3361***	0.000	-0.0005	0.987
<i>Turnover</i>	0.0130***	0.000	0.0109***	0.001	0.0057	0.109	0.0033	0.262
<i>Size</i>	0.0016*	0.090	-0.0015*	0.094	0.0036***	0.000	-0.0039***	0.000
<i>Salesgrowth</i>	0.0043	0.660	0.0161**	0.046	-0.0202*	0.070	0.0176***	0.008
<i>Lev</i>	0.0061	0.578	0.0062	0.625	-0.0013	0.894	-0.0016	0.894
<i>Loss</i>	-0.0562***	0.000	-0.0342***	0.000	-0.0415***	0.000	0.0027	0.604
$ ACC_{t-1} $	-0.0641**	0.020	0.0253	0.305	-0.1251***	0.000	0.1343***	0.000
<i>Big4</i>	0.0011	0.822	-0.0003	0.936	0.0044	0.366	-0.004	0.294
Constant	0.0461***	0.000	0.0584***	0.000	-0.002	0.854	0.0520***	0.000
Industry Fixed Effects	included		included		included		included	
Year Fixed Effects	included		included		included		included	
Observations	1,826		914		912		1,826	
Adjusted R <sup>2</sup>	0.535		0.409		0.475		0.129	
F	24.6561		12.2221		17.569		8.8666	
p-value	0.000		0.000		0.000		0.000	

\*, \*\*, \*\*\* Indicates statistical significance at the p-value  $\leq 0.10$ , 0.05, and 0.01 (two-tailed) levels, respectively. Standard errors are clustered on firm level according to (Petersen 2009). The variables *Lawyer* through *Economist* represent indicator variables equal to 1 if the incumbent audit firm (occasionally) consults respective in-house specialists for forensic services-related questions or employs respective specialists within their forensic services department in year  $t$ ; 0 otherwise. All variable definitions can be found in Appendix B.

## 8. Conclusion and Limitations

In this paper, I examine whether the provision of forensic services and therefore, in a wider perspective, the employment of forensic specialists within an audit firm, is associated with higher audit quality of the annual financial statement audit. Thereby, my aim is to consider whether the pure presence of forensic services within an audit firm can improve the quality of the regular annual financial statement audit due to multiple "spillover effects". Assuming that an additional effect on audit quality at the audit firm level is caused by certain personal factors of the individual auditor, I control for a simultaneous impact of the provision of forensic services and certain personal characteristics of the individual auditors. I conduct my analysis using data from Germany, which allows to control for relevant personal factors of the individual auditors who sign the relevant audit opinions.



My empirical results do not correspond with my prediction. I find that companies tend to record extreme values of income-decreasing discretionary accruals if the incumbent audit firm provides forensic services within its range of services. This suggests that the simple existence of forensic services and hence the expected spillover effect does not constrain clients' income-decreasing earnings management while it has no impact on income-increasing earnings management as well as the absolute value of discretionary accruals. Concerning the results of Hypothesis 2, I find positive and modestly significant coefficients of the interaction term  $FS*IndivAudQuality$  for signed discretionary accruals (*SignDAC*) as well as for income-increasing discretionary accruals (*PosDAC*). These results indicate a mutual weakening of both variables in their combined effect on the level of *SignDAC* and *PosDAC*. Hence, audit quality slightly decreases with regards to the signed and the positive value (income-increasing earnings management) of discretionary accruals if audit firms that provide forensic services (*FS*), at the same time, employ high-quality audit engagement partners.

This study is subject to several caveats. First, leveraging the statutory survey method the validity of my results depends on the accuracy of the survey data. One mayor concern in this context are self-serving responses, in which the respondents may tend to (intentionally) overstate the audit firms' offering of forensic services in general, in temporal terms or concerning the actual range/scope of (sub-)services. In addition, respondents may have reasons to (intentionally) understate or even disclose the audit firms' offering of forensic services, as illustrated by the refusal of Deloitte & Touche GmbH, KPMG AG and Rödl & Partner GmbH to complete the questionnaire. Since I hand-collected the missing information for those three mayor audit firms, with the help of historical webpage search machines, to complete the respective survey forms, the results are limited in this regard and should be interpreted with

appropriate caution. Second, the percentage of firm-year observations that offer forensic services is 93.1% over the sample period. This leads to a very low number of firm-year observations without this characteristic of interest, which might bias my regression results. Third, due to limitations on data availability and missing survey responses, the sample is relatively small compared to many archival studies examining earnings management. Future studies could use larger sample sizes by expanding the scope of the survey towards a greater range of German audit firms. Finally, the measures of earnings management may not adequately capture the underlying construct. While I do examine a wide range of different earnings management measures within the robustness tests, future studies may want to consider whether real earnings management measures provide additional insights. Further, adding the book-to-market ratio to regression equation (1) to controls for expected growth in operations and identify discretionary accruals that are associated with lower future earnings and lower future stock returns may be a useful amendment.

With these caveats in mind, this research contributes to a deeper understanding of the determinants of fraud knowledge and fraud experience, on the one hand, and the usefulness of seeking the assistance of a fraud specialist within the scope of the annual financial statement audit, on the other hand. Further, and to my best knowledge, this is the first study to address the provision of forensic services by audit firms in an audit quality context over several years. Besides the above-mentioned model and research design amendments, an interesting avenue for future research might be the deeper examination of the actual delivery of forensic services and its various characteristics instead of the spillover effect of the pure presence of these services within an audit firm.

**Appendix A: Questionnaire**

	
<p><b>Questionnaire:</b></p> <p><b>I. Information on the Audit Firm and on your person:<sup>1</sup></b></p> <p>Name of the Audit Firm: _____</p> <p>Your Position: _____</p> <p>Your Competence Area: _____</p> <p><b>II. General questions about the offer of <i>Forensic Services</i> and/ or <i>Compliance Services</i></b></p> <p>II.1 Does your audit firm offer <i>Forensic Services</i> and/ or <i>Compliance Services</i>?</p> <p><input type="checkbox"/> Yes, <i>Forensic Services</i>    <input type="checkbox"/> Yes, <i>Compliance Services</i>    <input type="checkbox"/> No    <input type="checkbox"/> Don't know</p> <p>II.2 Since which (calendar) year does your audit firm offer <i>Forensic Services</i> and/ or <i>Compliance Services</i>?</p> <p>Yes, <i>Forensic Services</i>: _____    Yes, <i>Compliance Services</i>: _____    <input type="checkbox"/> Don't know</p> <p>II.3 Does your audit firm offer <i>Forensic Services</i> and/or <i>Compliance Services</i> through a specialist department?</p> <p><input type="checkbox"/> Yes, <i>Forensic Services</i>    <input type="checkbox"/> Yes, <i>Compliance Services</i>    <input type="checkbox"/> No    <input type="checkbox"/> Don't know</p> <p>II.4 Since which (calendar) year does your audit firm offer <i>Forensic Services</i> and/or <i>Compliance Services</i> through a specialist department?</p> <p>Year, <i>Forensic Services</i>: _____    Year, <i>Compliance Services</i>: _____    <input type="checkbox"/> Don't know</p> <p>II.5 To which service line(s) is (are) this (these) specialist department(s) assigned to?</p> <p><input type="checkbox"/> Advisory (Beratung)    <input type="checkbox"/> Assurance / Audit (Wirtschaftsprüfung)    <input type="checkbox"/> Law / Legal (Rechtsberatung)</p> <p><input type="checkbox"/> Sonstige: _____    <input type="checkbox"/> Don't know</p> <p>II.6 Does your audit firm call in individual specialists or a specialist department for special issues within the annual audit to deliver <i>Forensic Services</i> and/or <i>Compliance Services</i>?</p> <p><input type="checkbox"/> Yes, occasionally <i>Forensic Services</i>    <input type="checkbox"/> Yes, occasionally <i>Compliance Services</i></p> <p><input type="checkbox"/> No    <input type="checkbox"/> Don't know</p> <p><b>III. Scope of the offered partial services</b></p> <p>Does your audit firm offer the partial services listed in the following table?</p> <p>Please consider the following criteria when answering the question:</p> <ul style="list-style-type: none"> <li>- If you offer a certain partial service, please also mark the years in which the partial service <b>was offered</b> with a hook (✓).</li> <li>- If you have <b>not (yet) offered</b> a partial service in a certain year, please leave the box for the relevant year <b>empty</b>.</li> <li>- If you are <b>not able to evaluate this question or to give a concrete statement</b>, please mark the relevant box for each year and line with the <b>abbreviation "n.a."</b>.</li> </ul> <p><small><sup>1</sup> This data is treated in strict confidence, is not passed on or made available to third parties and is only used in an aggregated and anonymized form within a research publication.</small></p>	

## II. Spillover Effects of Forensic Services on Audit Quality

Partial Service	Yes	No	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>III.1 Audit and Analysis (Detection)</b>											
Clarification of Facts											
Forensic Accounting											
Data Analysis											
Forensic Technology Solutions (IT-Forensic)											
Compliance Audits											
Audit of Business Partners (Intelligence Services)											
Other: -----											
<b>III.2 Representation of Interests (Remediation)</b>											
Client Representation before Courts											
Assistance with Repatriation of Damage (Asset Tracing)											
Preparation of jurisdictional Statements of Facts											
Quantification of Damages											
Other: -----											
<b>III.3 Consultancy and Implementation (Prevention)</b>											
Prevention Counselling (Compliance- und Anti-Fraud-Management)											
Implementation of Prevention Measures (Compliance- und Anti-Fraud-Management)											
Implementation of Fraud Risk Assessments											
Employee Training (Fields: Anti-Fraud, Compliance- and/or Value Management)											
Other: -----											



**IV. Personnel Structure**

	2008	2009	2010	2011	2012	2013	2014	2015	2016
How many permanent employees are employed at your audit firm in Germany?									
How many permanent employees are employed at your audit firm in Germany in the fields of <i>Forensic Services</i> and <i>Compliance Services</i> ?									

**V. Expert Structure**

Which of the following **specialists** does your audit firm call in for *Forensic Services* and/ or *Compliance Services* or is employed in a specialist department in your audit firm for those services?

Please consider the following criteria when answering the question:

- If you call in one of the following specialists, please also mark the years in which the specialist **was called in** with a hook (✓).
- If you have **not (yet) called in** a specialist in a certain year, please leave the box for the relevant year **empty**.
- If you are **not able to evaluate this question or to give a concrete statement**, please mark the relevant box for each year and line with the **abbreviation „n.a.“**.

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Auditor									
Tax Consultant									
Lawyer									
Criminologist									
IT Specialist									
Psychologist									
Economist									
Other: -----									

**We want to thank you for your valuable contribution and your willingness to participate in this questionnaire.**

**For further inquiries, please contact:**

**Miss Katrina Kopp (Katrina.Kopp@uni-passau.de)**

**Suggestions and/or comments:**

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**If you want to be informed about the aggregated results of the questionnaire, please provide us with your contact details below:**

**Name**

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**Mail**

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**Phone**

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**Appendix B: Variable Description**

Variable	Definition
<b>Dependent Variables</b>	
<i>DiscAcc</i>	<p>Discretionary accruals according to Kothari et al. (2005) as the residual of the following regression estimate calculated by industry and year for each company:</p> $Acc_{it} = \beta_0 + \beta_1(1/TA_{it-1}) + \beta_2((\Delta Rev_{it} - \Delta Receiv_{it})/TA_{it-1}) + \beta_4(PPE_{it}/TA_{it-1}) + \beta_5ROA_{it} + \varepsilon_{it}$ <p>where <i>Acc</i> = total accruals defined as net income before extraordinary items less operating cash flow for year t scaled by total assets; <i>TA<sub>t-1</sub></i> = total assets for t-1; <math>\Delta Sales/TA_{t-1}</math> = change in sales from year t-1 to t scaled by total assets for year t-1; <math>\Delta Receiv/TA_{t-1}</math> = change in receivables from year t-1 to t scaled by total assets for year t-1; <i>PPE/TA<sub>t-1</sub></i> = property, plant, and equipment for year t scaled by total assets for year t-1.</p>
<i>SignDAC</i>	Signed value of discretionary accruals according to Kothari et al. (2005) calculated for each year and industry separately.
<i>PosDAC</i>	Strictly positive value of discretionary accruals according to Kothari et al. (2005) calculated for each year and industry separately.
<i>NegDAC</i>	Strictly negative value of discretionary accruals according to Kothari et al. (2005) calculated for each year and industry separately.
<i>AbsDAC</i>	Absolute value of discretionary accruals according to Kothari et al. (2005) calculated for each year and industry separately.
<b>Dependent Variables used in Robustness Checks and Additional Analysis</b>	
<i>SignADAC</i>	Performance adjusted signed value of discretionary accruals calculated as the value of the difference between the firm's <i>DiscAcc</i> and the median <i>DiscAcc</i> for its ROA decile according to Kothari et al. (2005).
<i>PosADAC</i>	Performance adjusted positive value of discretionary accruals calculated as the value of the difference between the firm's <i>DiscAcc</i> and the median <i>DiscAcc</i> for its ROA decile according to Kothari et al. (2005).
<i>NegADAC</i>	Performance adjusted negative value of discretionary accruals calculated as the value of the difference between the firm's <i>DiscAcc</i> and the median <i>DiscAcc</i> for its ROA decile according to Kothari et al. (2005).

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Variable	Definition
<i>AbsADAC</i>	Performance adjusted absolute value of discretionary accruals calculated as the value of the difference between the firm's <i>DiscAcc</i> and the median <i>DiscAcc</i> for its ROA decile according to Kothari et al. (2005).
<b>Independent Variables</b>	
Individual Auditor Conservatism Measures	
<i>IndivAudQuality</i>	Indicator variable equal to 1 if the level of average abnormal accruals of the individual auditor's conducted prior audits (at least two observations) lies above the median value; 0 otherwise (Knechel et al. 2015).
Forensic Services Measures	
<i>FS</i>	Indicator variable equal to 1 if the incumbent audit firm offers forensic services in year $t$ ; 0 otherwise.
<i>FSDep</i>	Indicator variable equal to 1 if the incumbent audit firm has a forensic services department in year $t$ ; 0 otherwise.
<i>FSAudit</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house forensic services specialists for ordinary annual audits in year $t$ ; 0 otherwise.
<i>FS_Lag</i>	Indicator variable equal to 1 if the incumbent audit firm offers forensic services in year $t-1$ ; 0 otherwise.
<i>FSScope</i>	Categorical variable ranging from 0 to 16 dependent on the scope of forensic subservices provided by the incumbent audit firm for year $t$ .
<i>Detection</i>	Categorical variable ranging from 0 to 7 dependent on the scope of forensic detection services provided by the incumbent audit firm for year $t$ .
<i>Remediation</i>	Categorical variable ranging from 0 to 4 dependent on the scope of forensic remediation services provided by the incumbent audit firm for year $t$ .
<i>Prevention</i>	Categorical variable ranging from 0 to 5 dependent on the scope of forensic prevention services provided by the incumbent audit firm for year $t$ .

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<b>Variable</b>	<b>Definition</b>
<b>Expert Structure Measures</b>	
<i>Lawyer</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house lawyers for forensic services-related questions or employs lawyers within their forensic services department in year $t$ ; 0 otherwise.
<i>TaxConsultant</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house tax consultants for forensic services-related questions or employs tax consultants within their forensic services department in year $t$ ; 0 otherwise.
<i>Auditor</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house auditors for forensic services-related questions or employs auditors within their forensic services department in year $t$ ; 0 otherwise.
<i>Criminologist</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house criminologist for forensic services-related questions or employs criminologist within their forensic services department in year $t$ ; 0 otherwise.
<i>ITSpecialist</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house IT specialists for forensic services-related questions or employs IT specialists within their forensic services department in year $t$ ; 0 otherwise.
<i>Psychologist</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house psychologist for forensic services-related questions or employs psychologist within their forensic services department in year $t$ ; 0 otherwise.
<i>Economists</i>	Indicator variable equal to 1 if the incumbent audit firm (occasionally) consults in-house economists for forensic services-related questions or employs economists within their forensic services department in year $t$ ; 0 otherwise.
<b>Control Variables</b>	
<i>Acc<sub>it</sub></i>	Total accruals defined as net income before extraordinary items less operating cash flow for year $t$ scaled by lagged total assets of company $i$ .

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<b>Variable</b>	<b>Definition</b>
$ Acc_{t-1} $	Absolute value of prior year total accruals of company $i$ .
$Acc_{t-1}$	Signed value of prior year total accruals of company $i$ .
$TA_{it}$	Total assets for year $t$ of company $i$ .
$Size_{it}$	The natural logarithm of total assets at the end of year $t$ of company $i$ .
$Lev_{it}$	The sum of total long-term debt and total short-term debt divided by total assets at the end for year $t$ of company $i$ .
$PPE_{it}$	Property, plant and equipment for year $t$ scaled by total assets of company $i$ .
$\Delta Receiv_{it}$	Change in receivables from year $t-1$ to $t$ of company $i$ .
$\Delta Rev_{it}$	Change in revenues from year $t-1$ to $t$ of company $i$ .
$ROA_{it}$	Return on assets for year $t$ of company $i$ , measured as the ratio of income before taxes scaled by total assets.
$ROA_{it-1}$	Return on assets for year $t-1$ of company $i$ , measured as the ratio of income before taxes scaled by total assets.
$OCF_{it}$	Operating Cash Flow for year $t$ of company $i$ scaled by total assets.
$Big4_{it}$	Indicator variable equal to 1 if audited by a Big 4 firm; 0 otherwise.
$Salesgrowth_{it}$	Difference between sales in year $t$ and sales in year $t-1$ scaled by sales in year $t-1$ of company $i$ .
$LogSales_{it}$	Natural logarithm of sales in year $t$ of company $i$ .
$Turnover_{it}$	Net sales revenues scaled by total assets for year $t$ of company $i$ .
$Loss_{it}$	Indicator variable equal to 1 if a loss occurs in year $t$ of company $i$ ; 0 otherwise.
$Age3$	Indicator variable taking the value of 1 for the individual auditor's age being in the third quartile, calculated as the natural logarithm of the signing engagement partners' age in years (separately calculated for Big 4 and Non-Big 4 auditors)

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<b>Variable</b>	<b>Definition</b>
<i>Age4</i>	Indicator variable taking the value of 1 for the individual auditor's age being in the fourth quartile, calculated as the natural logarithm of the signing engagement partner's age in years (separately calculated for Big 4 and Non-Big 4 auditors)
<i>Experience</i>	The natural logarithm of the number of years of the signing engagement partner's experience since their certification date.
<i>Gender</i>	Indicator variable equal to 1 if the individual auditor is female; 0 otherwise.
<i>Industry</i>	Industry indicator variables equal to 1 for each industry; 0 otherwise.
<i>Year</i>	Year indicator variables equal to 1 for each year; 0 otherwise.
<i>Controls</i>	Control variables mentioned in regression equation (2) and (3).

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### III. Firms' Reputation (Re-)building Management in Response to Financial Violations\*

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**ABSTRACT** This paper examines the complex nature of firms' reputation (re-)building management in response to financial violations and how this process is associated with managing multiple (stakeholder) reputations. To display financial violation, I rely on (1) firms with financial restatements – DPR firms – as disclosed by the German Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)) and (2) firms associated with fraud – Fraud firms – as disclosed by the *LexisNexis WorldCompliance Online Search Tool*. I procure all press releases published by the denounced firms as well as all press releases of their respective matched control firms over a time period of six months prior (PRE-restatement period) and one year after (POST-restatement period) the initial restatement date. I expect that both, DPR firms and especially Fraud firms have incentives to improve their reputation with their stakeholders and thus increase the frequency of external communication (i.e. press releases) in general and reputation-building measures in particular, after the release of a financial restatement. Further, I assume an immediate effect of firms' reputation (re-)building management on capital market reactions. The results show an overall increase in the frequency of reputation-building measures by DPR firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched control firms (i.e. Non-DPR firms), however, the results are not significant. Analysis of the effectiveness of firms' reputation (re-)building reveals that findings are consistent with my overall predictions. Comparing Fraud firms and matched control firms (i.e. Non-Fraud firms) indicates that Fraud firms issue a significantly higher average amount of total press releases and engage in significantly higher average numbers of reputation-building measures in the POST-restatement period (firm-specific effect). However, there is no significant effect between reputation-building measures in the PRE-restatement period compared to the POST-restatement period (time-specific effect) for neither group of firms. Analysis of the effectiveness of Fraud firms' reputation (re-)building also reveals a significant firm-specific effect, but no time-specific effect. These results lead to the assumption that Fraud firms' reputation repair behavior is independent of the actual DPR restatement announcement date.

**Keywords:** Restatements, Enforcement, Fraud, Forensic Accounting Research, Corporate Reputation, Reputation Repair

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#### 1. Introduction

Following numerous financial (accounting) scandals and the resulting demands from politics and the public for appropriate sanction measures, a two-stage enforcement system involving the German Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)) was implemented in 2004 as part of the adopted Financial Reporting Enforcement Act (Bilanzkontrollgesetz (BilKoG)). The primary objective of the Federal Government's implementation of this mechanism was to re-strengthen investors' confidence in the German capital market, the information content of financial reporting and Germany as a financial center in international competition. In addition, the enforcement system serves as a sanctioning instrument for firms in the event of an error detection and subsequent adverse error disclosure via the German federal registry (elektronischer Bundesanzeiger) and at least one financial newspaper. This so-called "name and shame" mechanism is based on the assumption that relevant stakeholders sanction a firm's financial misconduct accordingly. The sometimes far-reaching sanctions resulting from the adverse disclosure and the negative publicity of an error detection can have noticeable impact on corporate reputation. Within the context of this paper, corporate reputation is the stakeholder's expectation of the management to perform its duties and fulfill its explicit and implicit commitments properly. This includes not only the ability, but also the intention of the management to represent the company in the best possible way. Thus, the effects of an error detected in a firm's financial reporting by the German DPR or the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)) are reflected in a decline of the firm's so-called "reputation capital". Thereby, reputation capital can be described as an intangible asset since it generates economic benefit for the firm (Fombrun 1996).

In this context, results of a survey of board members by the international agency Weber Shandwick show that the share of a firm's market value, which is due to reputation, is estimated at 60% on average (Shandwick 2012). Further, a survey conducted in 2009 by Pricewaterhouse Coopers (pwc) and Deutsche Aktieninstitut e.V. (DAI) based on the experiences of capital market-oriented firms with the DPR shows that firms are not concerned about the punishment of the error announcement in primarily monetary areas. Rather, 87% of the surveyed firms fear that a DPR/BaFin error announcement damages their reputation compared to only 53% who fear adverse effects on the share price (PWC/DAI 2009). In addition, Karpoff, Lee, and Martin (2008) empirically analyze the reputational penalties of accounting errors by the market. They find that reputation-based sanctions by the market are on average 7.5 times higher than penalties imposed by the legal system. These reputational damages are apparently even more severe in

the case of supposed intentional misreporting as pointed out by Hennes, Leone, and Miller (2008). The authors find that market reactions in response to intentional misreporting are much stronger compared to market reactions following an apparently unintentional misapplication of accounting standards. Further, Chakravarthy, deHaan, and Rajgopal (2014) examine a variety of reputation repair actions taken by firms after a restatement through analyzing firms' press releases. This analysis was conducted using an American firm sample.

Based on this, the objective of the present paper is an empirical analysis of German firms' reputation (re-)building management in response to financial violations and how this process is associated with managing multiple (stakeholder) reputations. In particular, I investigate the actions taken by firms to rebuild their reputation after a DPR/BaFin error announcement (in the following also referred to as "DPR restatement"). Based on the findings of Chakravarthy et al. (2014) for American firms, I expect that German firms denounced by the DPR or BaFin have incentives to improve their reputation with their stakeholders and thus increase the frequency of external communication (i.e. press releases) in general and reputation-building measures in particular, after the release of a DPR restatement. Further, I assume an immediate effect of firms' reputation (re-)building management, measurable by short-window market reactions surrounding the publications of reputation-building measures, depending on time- and firm-specific aspects.

I conduct my empirical analysis using enforcement releases published by the electronic version of the German federal registry (elektronischer Bundesanzeiger), which has been the mandatory channel of disclosure for German firms. I collect all releases that have been published since the establishment of the DPR/BaFin enforcement mechanism in July 2005 until April 2018, leading to an initial sample of 260 error announcement. After necessary sample adjustments, as described in section 4.1, the final DPR firm sample consists of 79 restatement firms. In order to identify respective control firms, I use all firms listed on the German Composite Deutscher Aktienindex (CDAX)), excluding firms with DPR/BaFin enforcement releases and firms with missing data within the sample period, and perform a propensity score matching (PSM). My first sample (DPR firms vs. Non-DPR firms) finally consists of 79 DPR firms and 79 matched control firms. I procure all press releases published by the 79 DPR firms as well as all press releases of their respective matched control firms over a time period of six months prior (PRE-restatement period) and one year after (POST-restatement period) the initial restatement date. This leads to a total number of 3,428 single press releases for DPR firms and 2,679 single press releases for matched control firms. In a next step, I immediately allocate each obtained press release to the appropriate pre-defined reputation-building measures, as described

by section 4.2. For my second sample, which represents a subsample of my first sample, I further distinguish between firms with expected unintentional misreporting (Non-Fraud firms) and firms with verifiable intentional misreporting (Fraud firms). In the following, I refer to this second sample as “Fraud firms vs. Non-Fraud firms”. To obtain the relevant information about the firms in scope, I make use of the *LexisNexis WorldCompliance Online Search Tool*. The resulting sample consists of ten firms that can be associated with fraud (Fraud firms) within two years prior and one year after the first announcement date of the financial restatement (Fraud-sample period). For the respective control firms (Non-Fraud firms) I rely on the final sample of matched control firms, with obtained press releases, as within my first sample (Non-DPR firms). However, I eliminate three firms due to fraud-related information in the *LexisNexis WorldCompliance Database* within the set fraud-sample period. This leads to a final control sample of 76 Non-Fraud firms. Within my empirical analysis, I evaluate the frequency and effectiveness of firms' reputation (re-)building management by analyzing the DPR firms' and Fraud firms' POST-restatement announcements relative to similar announcements of the same firms during the PRE-restatement period and compared to announcements from matched control firms during both periods.

With regard to my first sample (DPR firms vs. Non-DPR firms), the results in principle show an overall increase in the frequency of reputation-building measures by DPR firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched Non-DPR firms (control firms), however, the results are not significant and therefore only present a tendency. Analyzing the effectiveness of firms' reputation (re-)building reveals that, following a DPR restatement, the announcements of DPR firms' reputation-building measures directed at its elementary stakeholders generate positive abnormal market returns compared to similar announcements of matched control firms. Thus, these findings are consistent with my overall predictions.

Findings of my second sample (Fraud firms vs. Non-Fraud firms) reveal that Fraud firms issue a significantly higher average amount of total press releases and engage in significantly higher average numbers of reputation-building measures in the POST-restatement period relative to Non-Fraud firms. However, there is no significant effect between reputation-building measures in the PRE-restatement period compared to the POST-restatement period for neither of the sample groups. Analysis of the effectiveness of Fraud firms' reputation (re-)building reveals that the announcements of Fraud firms' reputation-building measures directed at its elementary stakeholders generate positive abnormal market returns for some of the measures in the POST-restatement period while similar announcements in the PRE-restatement period

provoke positive as well as negative abnormal market returns for almost double the number of the respective measures. Control firms show noticeably fewer significant market reactions to comparable reputation-building measures.

To my best knowledge, this is the first study that investigates the actions that firms conduct in order to repair their multiple-stakeholder reputations following a reputation-damaging event (i.e. a financial restatement) in Germany and at the same time expands the definition of a financial violation by distinguishing errors from fraud. Hence, findings of my analysis are aimed at (1) contributing to a better understanding of the desired sanctioning mechanism of the German enforcement system, (2) creating an enhanced awareness of the trade-offs associated with a firm's specific reputations, (3) improving managers' ability to protect and rebuild these specific reputations when they are threatened, and (4) drawing attention to the importance of distinguishing errors from fraud in German restatement research.

The remainder of this paper is structured as follows. Section 2 outlines the relevant theoretical background, beginning with a description of the German enforcement system and followed by the distinction between fraud and error. Moreover, within section 2 I derive the present paper's underlying definition of firm reputation, describe specific reputations with multiple stakeholder groups as well as the impact of a DPR restatement and the subsequent process of reputation (re-)building. Section 3 provides an overview of the related literature and derives my hypotheses. Section 4 outlines the research design and presents the methodology of the paper. In section 5 I present the empirical findings. To increase the robustness of my results, I provide a sensitivity analysis in section 6 before I conclude in section 7 and point out the paper's limitations as well as avenues for future research.

## 2. Institutional and Theoretical Background

### 2.1. *The German Enforcement System*

With the introduction of the Financial Reporting Enforcement Act (Bilanzkontrollgesetz (BilKoG)) in December 2004, a new enforcement procedure was established in Germany. The enforcement is organized as a two-stage system. The first stage involves the Financial Reporting Enforcement Panel (Deutsche Prüfstelle für Rechnungslegung (DPR)), a newly established private organization primarily assigned to conduct the reviews. In a second stage, the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)) has the sovereign authority to order the publication of an error ("error announcement") and if necessary, to force the cooperation of the denounced firms in the review process (DPR 2015; Kumm 2009). The new mechanism was installed to enforce accounting standard compliance (especially with the International Financial Reporting Standards (IFRS)) by regular reviews of disclosed financial statements. It thus acts as a further and more independent supervisory body of the previous statutory audits by internal and external bodies, i.e. supervisory board and audit firm, and therefore constitutes another institution to ensure the reliability of accounting (Beyhs, Kühne, and Zülch 2012; Bundesministerium der Finanzen 2004; Hitz, Ernstberger, and Stich 2012). According to paragraph (par.) 342b (2) sentence (sent.) 2 German Commercial Code (Handelsgesetzbuch (HGB)), this enforcement mechanism addresses all firms whose financial instruments are admitted to trading on regulated segments of a German stock exchange, hence capital market-oriented companies. Furthermore, the firm's country of origin needs to be the Federal Republic of Germany. However, the term "country of origin" is not solely tied to a firm's location of the head office, it rather depends on the fact that the firm issues its securities on the regulated market in Germany. As a result, the German enforcement procedure does not only apply to domestic companies, but also to foreign companies (Köhler and Marten 2008). Firms in scope are periodically reviewed every 8 to 10 years, index-listed firms (i.e. all firms listed within the German Composite Deutscher Aktienindex (CDAX)) regularly every 4 to 5 years (Hitz et al. 2012).

With regard to its procedure, its regulatory framework and its objective, an audit by the DPR or BaFin deliberately differs from the regular financial statement audit. While the main subject of the regular financial statement audit, in accordance with paragraph 317 (1) HGB, concentrates on the client's accounting, the annual or consolidated financial statements as well as the management report (par. 317 (2) HGB), the scope of the examination by the DPR or BaFin is limited to specific subject areas and depends on the reason of initiation. There are two main reasons for the initiation of an examination: First, the so called "examination with cause"

and second the “random sampling examinations”. An “examination with cause” is ordered if there are actual indications of violations of financial reporting standards and consequently concentrates on the review of specific accounting treatments of certain critical areas. The “random sampling examinations”, which constitute the majority of investigations, are conducted without any concrete cause and focus on “main focus areas” which are published by the DPR on an annual basis. The determination of the “main focus areas” is generally based on prior deficiencies (frequently recurring errors) and the anticipated challenging interpretation and application of certain IFRS. In both review-cases the DPR might extend the scope of investigations, if it deems necessary (DPR 2018; DPR 2019). Therefore, a previous unqualified audit opinion by the audit firm may result in an error finding due to the different approaches used in specific audit procedures of the DPR or BaFin (Beyhs et al. 2012). The DPR’s finalized examination result is reported to the reviewed firm and the BaFin (par. 342b (6) HGB). If the firm agrees with the findings of the examination, the BaFin will, in accordance with par. 37q (2) sent. 1 Wertpapierhandelsgesetz (WpHG), dispose the publication of the errors. In case that the firm contradicts the error conclusions, BaFin will start its own (second-stage) examination process which will either lead to a confirmation or a refusion of the DPR’s error findings. As in the first case, the BaFin will order the publication of confirmed errors to finalize the enforcement procedure (par. 37q (2) sent. 1 WpHG). The publication of errors must be affected without delay and is proceeded via the German federal registry (elektronischer Bundesanzeiger) and either in a national stock exchange compulsory journal or via an electronically operated information distribution system which is widespread. This adverse disclosure is the main instrument of the intended “name and shame” sanctioning mechanism (par. 37q (2) sent. 4 WpHG). In the reminder of this paper, I refer to the mandatory ordered publication of error findings as “errors”, “DPR errors” or, in accordance to international research, I synonymously use the term “restatements” or “DPR restatements”.<sup>1</sup>

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<sup>1</sup> Firms that are subject to DPR error findings I accordingly refer to as “DPR firms” or “restating firms”.

#### 2.2. *Distinction between Fraud and Error*

Accounting research on the causes and consequences of financial restatements primarily focuses on restatements that arise from some kind of misapplication of the respective accounting standard and do not further investigate the firms supposed intention (Chakravarthy et al. 2014; Desai, Hogan, and Wilkins 2006; Hitz et al. 2012; Srinivasan 2005). Hence, most restatement research samples consist of both, unintentional misapplication “errors” and intentional misapplications “fraud” of accounting standards. Since this paper investigates a firm’s reputation repair strategy in response to a financial violation, the further distinction between “error” and “fraud” might deliver further insights on a firm’s reputation repair behavior depending on the cause. According to the International Accounting Standard (IAS) 8.5, errors are omissions and/or misstatements of items that result from the non-application or misapplication of trusted information (IASB 2003). Errors can occur during the recognition, the measurement or the presentation in the balance sheet. The materiality of an error serves as a quantitative component while the firms supposed intention serves as a qualitative component in the determination of the error. Insignificant errors therefore do not lead to DPR error finding. However, the threshold from which a misstatement is material is difficult to standardize since the relevant facts and accounting standards can be very complex in individual cases. Consequently, the scope of interpretation in determining the materiality of an error has great potential for conflict between the DPR and the reviewed firms. If the misapplication of accounting standards was intentional in order to obtain a certain view of the assets, liabilities, financial position and profit or loss of the firm, the affected financial statement is, according to IAS 8.41, not in line with IFRS (Zülch, Beyhs, Hoffmann, and Krauß 2012). If stakeholders of the firm are consequently influenced in their decision-making, the financial statements are objectionable (Küting, Keßler, and Weber 2007). The described process of auditing a rule compliant standard application is summarized in Figure 1.

For the systematization and distinction of the diverse manifestations of fraudulent economic actions and thus the relevant distinction between "error" and "fraud" there are numerous proposals and attempts in the existing literature (e.g. Sell 1999; Schiel 2011; Hauser 2000). Within the scope of this paper, I refer to the systematization proposal of the German Institute of Public Auditors (Institut der Wirtschaftsprüfer in Deutschland (IDW)) as described in Auditing Standard (Prüfungsstandard (PS)) 210 “for the detection of irregularities within the framework of the annual financial statement” (IDW 2012).

**Figure 1:** Audit of a rule compliant standard application

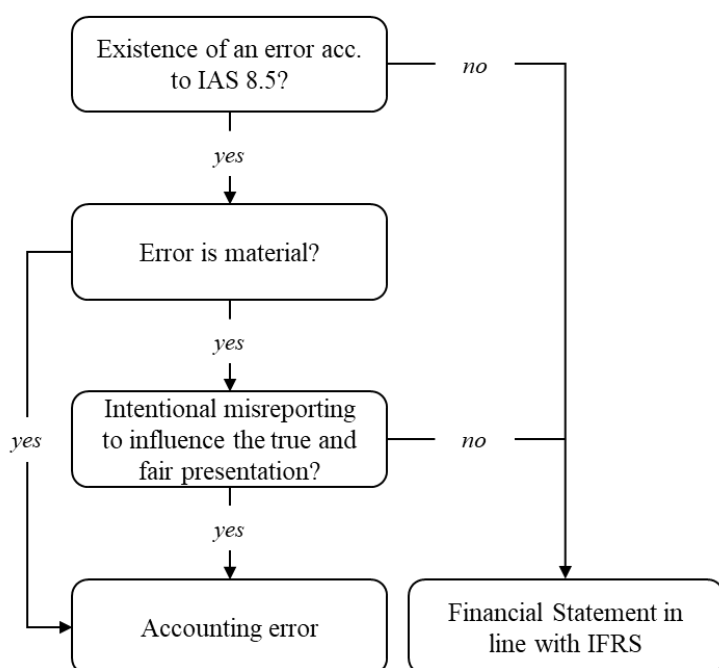


Figure 1 presents the audit of a rule compliant standard application based on the illustration of Küting, Keßler, and Weber (2007).

This approach, at a first level, focuses on the term *irregularities* and further distinguishes between *incorrect information in accounting* and *no false information in accounting*, on a second level. It thereby builds on the auditing process of IAS 8.5 described above, considering the corresponding differences in criminal liability. On a third level, *incorrect information in accounting* is further differentiated in *accidental inaccuracies* (“errors”) and *intentional violations* (“fraud”) while *no false information in accounting* is specified as *other legal violations* whether accidental or intentional. In the case of intentional violations (“fraud”), the IDW continues to distinguish between *deception*, i.e. the deliberate manipulation of the financial statement or its foundations, as well as *asset misappropriation and violations of the law*, which in particular include embezzlement and theft. Since, viewed conversely, “errors” and “fraud” both result in *incorrect information in accounting*, they provoke *consequences for the auditor’s report* as well as *the audit opinion*. *Other legal violations*, on the other hand, are actions by employees which are not in compliance with applicable laws or regulations. These violations, however, do not result in false information in accounting and therefore only provoke *consequences for the auditor’s report* (Schiel 2011; IDW 2012).



**Figure 2:** Summary overview of the concept of irregularities in the sense of the IDW

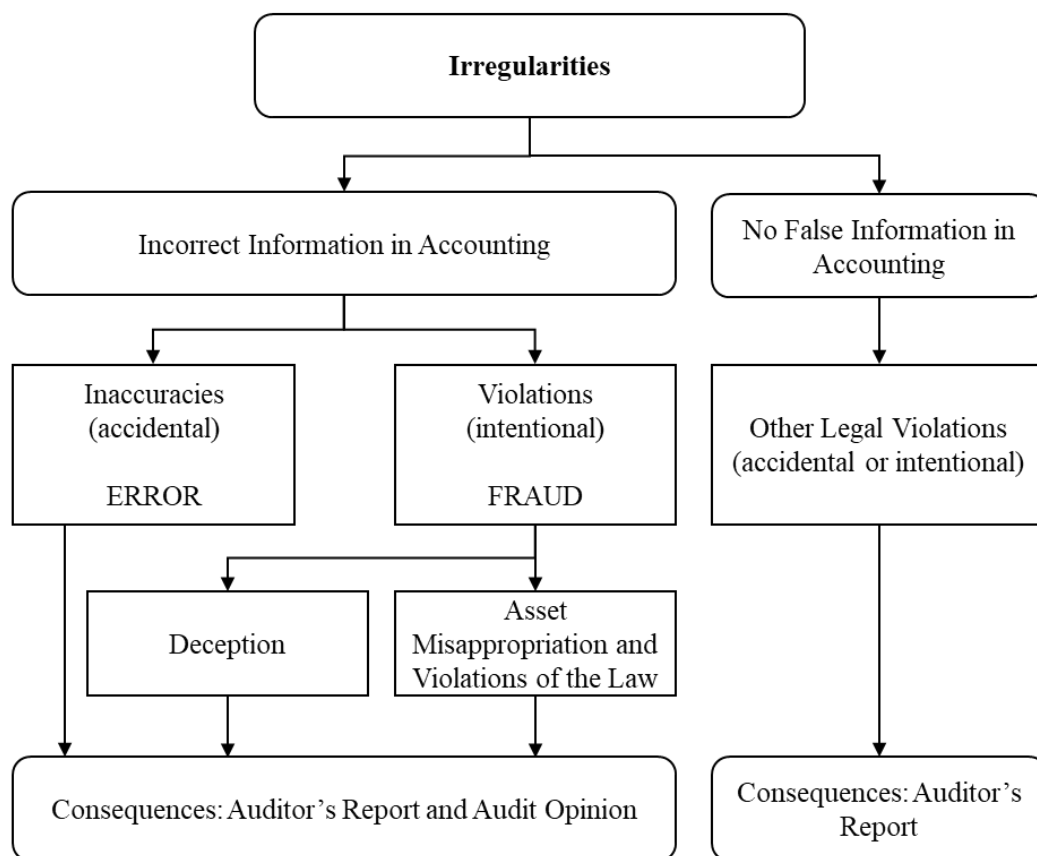


Figure 2 presents a summary overview of the concept of irregularities in the sense of the IDW based on the illustration of IDW PS 210 (IDW 2012)

### 2.3. Firm Reputation

Over the last two decades the concept of organizational reputation has attracted scientific attention from a diverse set of research areas, including economics (financial and political), marketing and management, sociology, communications, and psychology (e.g. Barnett, Jermier, and Lafferty 2006; Cao, Myers, and Omer 2012; Lange, Lee, and Dai 2010; Pfarrer, Pollock, and Rindova 2010; Rhee and Valdez 2009; Rindova, Williamson, Petkova, and Sever 2005). Fundamentally, the idea of organizational reputation is intuitive and simple in its common usage. However, the deeper meaning of organizational reputation is rather complex when applied and re-examined in each specific area of research, as evidenced by the numerous definitions, conceptualizations, and operationalizations that have emerged from distinct research focuses of the various studies. Consequently, a conclusive definition of the construct has yet to emerge (Barnett et al. 2006; Fischer and Reuber 2007; Gotsi and Wilson 2001; Lange et al. 2010; Rindova et al. 2005). Prior research often relies on a *social constructionist perspective* to define firm reputation, to explain its perceptual nature, and to describe the

recursive process by which it is gained, maintained, and possibly lost (Rhee and Valdez 2009; Rindova et al. 2005; Lange et al. 2010; Fombrun 1996). Following this approach, as stakeholders interact with a firm, they develop expectations about the value of a firm's outcomes. Hence, a firm that consistently delivers valuable outcomes consequently develops a positive reputation among stakeholders. Others, specifically management research, treat reputation as an *intangible asset* since it generates economic benefit for the firm (Fombrun 1996). This notion appears to be broadly accepted and has led to a large body of research that determined the effect of firm reputation on firm performance (Deephouse 2016; Rao 1994; Roberts and Dowling 2002; Rindova et al. 2005).

A variety of the earliest work on reputation that influenced management research stems from economic research, using game-theoretical perspectives to examine how player behavior in the past affects future strategic interactions. Scientists working from this perspective characterize reputation as beliefs in the strategic type of an organization, such as its competitiveness or the ability to produce good quality (Milgrom and Roberts 1982; Shapiro 1983; Weigelt and Camerer 1988). Thus, this perspective, also called "*signaling perspective*", accentuates that reputation creates value by providing information about otherwise unobservable firm characteristics. This information improves the predictability of the economic exchanges between the firm and a particular set of players (e.g. stakeholders) who are interested in anticipating the behavior of the firm with regard to a specific attribute they value (Reuber and Fischer 2005; Rindova et al. 2005; Weigelt and Camerer 1988). Hence, the same firm may have different reputations for distinct attributes with diverse stakeholder (groups), as different types of actions are appreciated, evaluated and, in return, valued differently by each individual stakeholder (group). This perspective implies that each firm can largely control and direct its reputation by determining which type of actions it will take and consequently which reputational signal it will send (Weigelt and Camerer 1988; Shapiro 1983; Rindova et al. 2005; Basdeo, Smith, Grimm, Rindova, and Derfus 2006; Lange et al. 2010). Thus, the signaling perspective provides the fundamental direction for the assumptions of this paper.

Further, Barnett et al. (2006) divide the multitude of definitions from scientific articles into three basic approaches. The first approach sees reputation as a state of *awareness*. Within this approach reputation is mostly described as an accumulation of perceptions or as representations of emotions and/or knowledge, indicating an awareness of a specific firm. Thereby the stakeholders perceive reputation in a rather general way without evaluating it. The second approach defines reputation as *assessment*, hence from a judgmental (*assessing*) perspective. The authors summarize all definitions of organizational reputation within this

approach that describe a process in which stakeholders evaluate or assess the firm's reputation. The third approach depicts reputation as something valuable and relevant to the firm and is therefore labeled as *asset*. It accumulates all definitions that describe reputation as a resource or as an intangible-, financial-, or economic asset in the form of *reputation capital*. While Barnett et al. (2006) point out that the approaches may overlap slightly on some points, they also emphasize that definitions that cluster reputation as a state of *awareness* or as an *assessment* do not support the idea that a firm's reputation has real value (Barnett et al. 2006). This approach of defining organizational reputation is also supported by numerous empirical studies proving the positive impact of reputation on company value. Furthermore, Karpoff (2012) takes up this fact by describing the concept of reputation from an entrepreneurial perspective. Therefore, the author defines reputation as the present value of the cash flow stream which a firm can generate if not acting opportunistic and by fulfilling its explicit and implicit contractual obligations to its stakeholders. Thus, reputation can be seen as the value of the quasi-rents that stakeholders pay by having confidence in the firm's commitments and that it will not act opportunistically towards them. Karpoff (2012) derives the basis for this approach from the theoretical models of Klein and Leffler (1981) and Shapiro (1983), which, as mentioned above, define reputation as an intangible asset.

Within this paper I follow the view of the third approach of Barnett et al. (2006) with the corresponding amendments of Karpoff (2012) and define reputation as *reputation capital*, since it is precisely this approach that takes into account the firm's loss in value in response to a reputation-damaging event (i.e. financial violation, and explicitly DPR restatements).

#### 2.4. Reputation with Multiple Stakeholder Groups

A firm's reputation, and changes in its reputation, influence the firm's relationships with its stakeholders. Thus, it is important to identify and recognize a firm's multiple and perhaps conflicting reputations with its multiple stakeholder groups, depending on their unique reputational judgements. Research that has studied the social construction of firm reputation distinguishes two primary ways of describing stakeholders' reputation judgements (e.g. Lange et al. 2010; Mishina, Block, and Mannor 2012; Rindova et al. 2005; Fombrun 2012). The first perspective considers stakeholders' reputation judgement as a *specific judgement* depending on stakeholders' idiosyncratic expectations and perceptions of a firm. Thus, stakeholders construct multiple reputations based on a firm's past behavior and outcome that are most salient to them (Carter and Deephouse 1999; Love and Kraatz 2009). Within that scope, a firm may have a specific reputation that creates economic value among financial stakeholders, or a specific

reputation that creates social value among socially-conscious stakeholders. The second perspective views stakeholders' reputation judgement as a more *general assessment* of a firm's overall favorability among its stakeholders. Thereby, reputation constitutes a global impression of a firm which is generally shared across stakeholder groups and is based on a firm's overall ability to satisfy broad social expectations and to meet its overall commitments. In this sense, general reputation can be understood as public perceptions of a firm's generic terms of being "good" or "bad" (e.g. Lange et al. 2010; Fombrun 1996 Rindova et al. 2005).

Within this paper, I focus on stakeholders' *specific reputation judgement*, i.e. a firm's *specific reputations* with its stakeholders. While a firm can have many specific reputations, as implied by the definition above, I focus on two primary types. First, *financial reputation*, which reflects the firm's ability to consistently deliver financial value over time and which is considered one of the most salient specific reputations of a firm. Thereby, financial value can, for example, be derived from meeting financial analysts' forecasts and targets, providing reliable accounting measures, or predictable and positive stock market returns (Mishina et al. 2012; Lamin and Zaheer 2012; Mahon 2002). Second, *social reputation*, which is based on the firm's ability to consistently deliver social value through a reliable demonstration of social responsibility and integrity in its interactions with stakeholders (Mishina et al. 2012; Lamin and Zaheer 2012). Examples for social reputation are, among others, a consistently fair treatment of its employees, a proactive and sustainable relationship with the environment, an attentive and encouraging behavior towards consumers, as well as keeping its commitments about the quality of products and services (Klein and Leffler 1981; Love and Kraatz 2009; Lamin and Zaheer 2012). In the remainder of this paper, I refer to stakeholders with a primary interest in a firm's financial reputation, such as shareholders, creditors and suppliers, as "capital providers" (CP), and stakeholders with a focus on a firm's social reputation, such as customers, employees and communities, as "non-capital providers" (NCP).

#### 2.5. *The Impact of a DPR Restatement and Reputation (Re-)building*

In accordance with the underlying definition of organizational reputation of this paper, a firm's reputation and its derived benefits depend on the assumption of stakeholders that the firm does not act opportunistically. In case of a DPR restatement a firm's actions deviate from stakeholders' expectations and result in the nonfulfillment of explicit and implicit commitments (Burgoon and Le Poire 1993; Cornell and Shapiro 1987). Consequently, stakeholders engage in a cognitive evaluation process to reconcile the violation with their typical expectations and reputational judgement of the firm. This reconciliation process can influence stakeholders'

perceptions of the firm in a negative manner and may lead to a loss of reputation (Elsbach 2003; Mishina et al. 2012).

With respect to a firm's specific reputations, thus previously distinguished stakeholder groups, a restatement violates a firm's explicit commitments towards capital providers to consistently deliver financial value over time and provide materially correct financial statements. Within this context, Hribar and Jenkins (2004) as well as Kravet and Shevlin (2010) determined an increasing cost of financing for restating firms, while Jensen and Meckling (1976) find that restating firms are exposed to higher monitoring and bonding costs as well as residual forfeits in their financing modalities. Chakravarthy et al. (2014) conclude that, following a restatement, suppliers anticipate uncertainties regarding the timely repayment ability and future purchase obligations of the firm. Consequently, they increase their prices and offer less generous payment conditions.

Regarding a firm's more socially-conscious stakeholders, hence non-capital providers, a DPR restatement impacts stakeholders' perception of a firm's social responsibility and integrity in its interactions (Mishina et al. 2012; Lamin and Zaheer 2012). Chakravarthy et al. (2014) emphasize that stakeholders may consider the announcement of prior misreporting as a signal of the firm's willingness to (categorically) act opportunistically, thus also in other situations that directly affect them. The authors conclude, that from a stakeholder's perspective, a restatement increases the likelihood of the firm to *ex post* renegeing its implicit and explicit commitments but also damages the previously established reputation for competence and integrity. With special regard to a firm's customers, Bowen, DuCharme, and Shores (1995) represent the opinion that customers base their implicit expectations about the quality and characteristics of a firm's products and services at the offered purchase prices. In addition, the continuous availability of spare parts and services over the life-cycles of the goods also plays a key role. In order to maintain the present value that a firm derives from its reputation, it must meet these implicit expectations and continuously fulfil its commitments. As a result of a restatement, skepticism about whether a company still pursues the intention or has the ability to fulfill its commitments increases, while customer demand declines (Chakravarthy et al. 2014). Focusing on a firm's employees, Jones (1995) emphasizes that humans go through a self-selection process by evaluating whether a firm fundamentally shares their ethics and values. Thus, the employment arrangement contains implicit claims about a firm's principles and the terms of employment. Following a restatement, a firm might experience fluctuation of workforce, reduced motivation and hence lower productivity in its existing personnel, and prospectively may have difficulties attracting high quality employees since its reputation for

honoring its commitments is damaged (Jones 1995; Chakravarthy et al. 2014). Finally, a firm makes implicit obligations to its local operating community, such as environmental concessions or encouraging local employment, development and infrastructure. Thus, after a restatement, firms might experience a retrograde support of the local community, since local constituents might assume opportunistic behavior and question the firm's overall integrity.

In order to regain reputation and stakeholders' confidence in the firm's credibility after a restatement, a firm often uses reputation repair strategies. To ensure an effective reconciliation process a firm needs to target each stakeholder group's specific expectations, i.e. stakeholders' specific reputations (Elsbach 2003; Pfarrer, Smith, Bartol, Khanin, and Zhang 2008; Rhee and Valdez 2009). Previous literature identifies three distinct mechanisms for developing and, in turn, repairing firm reputation, each of which can also be combined (Petkova 2012; Klöhn and Schmolke 2016). The first mechanism, a rather short-term approach of reputation repair, is called *reputation-borrowing*. Thereby a firm "borrows" reputation through affiliations and strategic alliances with established industry players (Petkova 2012; Cravens, Oliver, and Ramamoorti 2003), cooperation with reputable executives (Graffin, Pfarrer, and Hill 2012), venture capital investors (Pollock, Chen, Jackson, and Hambrick 2010) or investment banks (Gulati and Higgins 2003). Second, on a more medium-term perspective, firms can also repair their affected reputation through an approach called *reputation by endowment*, which is based on the personal reputational capital of the firm's founders and the executive management team (Petkova 2012; Klöhn and Schmolke 2016). The third and most sustainable approach for reputation remediation is called *reputation building*. Thereby, a firm targets its specific stakeholder groups through purposive entrepreneurial actions and specifically focused communication strategies. This method should be designed on a long-term perspective, since sustainable reputation rebuilding requires that stakeholders thoughtfully assess and redefine the firm's principles, behaviors and values (Barnett et al. 2006; Fombrun and Shanley 1990; Petkova 2012).

Within this paper, I focus on the third approach of reputation repair, since, as indicated by its definition, it is the most promising and sustainable in the long run.

## 3. Literature Review and Hypothesis Development

### 3.1. Frequency and Effectiveness of Reputation (Re-)building

#### – DPR Firms vs. Non-DPR Firms

Many international scholars have dedicated their research to firm reputation (e.g. Barnett et al. 2006; Lange et al. 2010; Pfarrer et al. 2010; Rhee and Valdez 2009; Rindova et al. 2005). Meanwhile also a large number specifically focuses on the impact of restatements on firm reputation (e.g. Cao et al. 2012; Chakravarthy et al. 2014; Hribar and Jenkins 2004; Kravet and Shevlin 2010; Palmrose, Richardson, and Scholz 2004; Karpoff et al. 2008; Dechow, Sloan, and Sweeney 1996; Karpoff, Lee, and Martin 2014). For example, Wiedman and Hendricks (2013) investigate the extent to which financial reporting credibility improves in the period following a restatement compared to the previous period. The authors find that firms deliberately signal improved reporting credibility following a restatement through higher accruals quality and lower real earnings management. Wilson (2008), on the other hand, measures the information content of earnings over several years surrounding restatements to examine potential specific characteristics of the decline in the information content of earnings. Results indicate that the information content of earnings declines significantly following restatements, although the loss is temporary. In addition, Karpoff et al. (2008) express the reputation-related sanctions of accounting restatements as imposed by the market through the expected loss in the present value of future cash flows due to lower sales and higher contracting and financing costs. They find that reputation-based sanctions imposed by the market are on average 7.5 times higher than penalties imposed by the legal system.

Other scholars focus on investigating the personnel consequences, such as CEO and/or other management-turnover (e.g. Leone and Liu 2010; Desai et al. 2006; Karpoff et al. 2014) as well as the impact on market reactions (e.g. Palmrose et al. 2004; Karpoff et al. 2008, Karpoff et al. 2014) in response to a restatement. In addition to internal personnel consequences, Srinivasan (2005) examines the change of outside directors, in particular members of the Audit Committee, after a financial restatement. While judicial consequences are rather exceptional for outside directors, personnel turnover within these bodies can be a plausible result (Srinivasan 2005). Further, a majority of studies in this field have concentrated on the change of the currently responsible audit firm in response to a restatement (e.g. Mande and Son 2013; Files, Sharp, and Thompson 2014; Wilson 2008).

As outlined above, there are numerous international studies, though primarily American, on the topic of financial restatements in accounting and management literature. The scientific consideration of the subject in the German literature, however, remains comparatively rare.

Only a few studies take up the topic and respond to related issues. In a rather general study, Eisenschmidt and Scheel (2015) analyze the most frequent sources of financial restatements in the years 2005 to 2014. The authors note that the rate of error announcements declines from over 20% in the first years to 14% in 2014. This effect was previously also demonstrated by Müller and Reinke (2010), who analyze the years 2005-2009 with regard to the improved application of IFRS. The study by Laschewski, Möller, and Risse (2014), on the other hand, deals with the relation between error announcements and auditors' fees. Results show that, following restatement, auditors' fees rise, which the authors explain as associated with an increased audit risk. Frey, Möller, and Weinzierl (2016) established a possible relation between restatements and the subsequent change of the currently responsible audit firm. In contrast to Ebner, Hottmann, and Zülch (2017), whose research results do not show a higher tendency in the change rate of the audit firm for restating firms compared to the control group. Further, Ernstberger, Stich, and Vogler (2012) discuss the economic consequences of the German accounting enforcement reforms. The authors note that the introduction of the new two-stage enforcement process has limited the scope of earnings management for capital market-oriented firms and increased the liquidity of their shares as well as their market value. Hitz et al. (2012) provide capital market based evidence on investor reactions by investigating the short- and long-term market reactions to error announcements. Results show that abnormal returns become negative as a result of an error announcement, which approves that the desired "name and shame mechanism" of the enforcement system has its desired effect. Finally, Strohmenger (2014) compares firms that are subject to enforcement releases (DPR firms) with respective control companies in terms of various financial key figures. Results show that DPR firms are less profitable, have a higher debt-to-equity ratio and show an overall weaker operating performance compared to control companies.

Although past studies<sup>2</sup> have paid considerable attention to the examination of the processes by which relationships with the stakeholders can be damaged, to the effects of relationship damage (e.g. higher cost of capital) as well as firms' reputations, only few have investigated the actions that firms conduct following a reputation-damaging event (i.e. a financial restatement) in order to repair their reputation (Karpoff 2012). By examining the correlation between the credibility of a firm's financial reporting system and the quality of its governance mechanisms, Farber (2005) shows that firms change the composition of their board of directors after a restatement. The authors further find that these actions are associated with positive long-window abnormal returns. Cheng and Farber (2008) investigate whether firms

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<sup>2</sup> The most fundamental ones to this paper have been mentioned above.



redesign the contracts of their CEOs to reduce their option-based compensation subsequently to a restatement. Results prove that reducing a CEO's option-based compensation leads to a diminished incentive of taking excessively risky investments and in turn to improved profitability. In addition to measuring the information content of earnings surrounding a restatement, Wilson (2008) further emphasizes that restating firms experience a comparatively faster recovery of their reporting credibility if they dismiss their CEO or change their auditor following a restatement. Finally, Chakravarthy et al. (2014) examine a variety of reputation repair actions taken by firms after a restatement through analyzing firms' press releases. Thereby, the authors differentiate reputation repair actions targeting capital providers and actions specifically aimed at other (non-capital) stakeholder groups. Results indicate that firms engage in substantially more reputation-building actions in the post-restatement period compared to the pre-restatement period, as well as relative to matched control firms. Further, Chakravarthy et al. (2014) show that the announcements of reputation repair actions by restating firms in the post-restatement period generate positive abnormal returns, while comparable actions generate zero or negative abnormal return for matched control firms. On that note, Chakravarthy et al. (2014) are the first ones to follow the call of Karpoff (2012) for pursuing how firms repair their damaged reputations.

I expand the approach of Chakravarthy et al. (2014) in the following ways: First, to reduce the sample collection effort, the authors randomly selected 94 firms out of the total sample available for examination of U.S. restatement firms for the years 1997 to 2006. Although recognizing the high cost of acquiring hand-collected data, random selection might bias the overall effect and lead to divergent results. Within this paper, I originate my sample of German restatements from the entire population of DPR firms over the entire period, hence since the introduction of the enforcement in Germany until August of 2018. Second, Chakravarthy et al. (2014) solely include those press releases into their analysis that specifically announce one of their pre-defined reputation-building actions. In contrast, I use a slightly different approach by obtaining all press releases issued by the firms in scope (within the defined period) and allocating each to the appropriate pre-defined reputation-building measures, without pre-evaluating their potential of triggering stakeholders' reconciliation process and hence reputation repair capability. Instead I assume that each time a firm decides to communicate information externally, it provokes some kind of reaction from its stakeholders. Third, I adjust and expand the set of specific reputation-building measures to take adequate account of certain specifications in the German corporate environment. In accordance with the assumption of this paper that restating firms have incentives to improve their post-restatement reputation with their

stakeholders, I initially expect an overall increase of the amount of total press releases (*Total Press Releases*) after the release of a restatement.<sup>3</sup> Therefore, I propose the following, rather general, first Hypothesis:

**H1a:** DPR firms issue a higher average amount of total press releases following a DPR restatement and relative to matched control firms.

Besides the overall increase of external communication measured by firms' total press releases, I assume an increasing frequency of reputation-building measures within the press releases of a firm, after the release of a restatement. Results expectedly diverge from the pure measurement of the average amount of firm total press releases since firms may undertake multiple reputation-building actions within one press release directed at distinct stakeholder groups. As stated previously, targeting a firm's specific reputations (financial and social reputation), through focused communication strategies, is essential for a sustainable reputation rebuilding process. Thus, and in its basic principles following the predictions of Chakravarthy et al. (2014) for the American market, I propose the following Hypothesis for German DPR firms:

**H1b (H1c):** DPR firms engage in a higher average amount of reputation-building measures directed at capital providers (non-capital providers) following a DPR restatement and relative to matched control firms.

The occurrence of a DPR restatement is likely to cause great uncertainty among stakeholders about managers' future operations as well as the firm's general ability and intention to fulfill its commitments. This often lasts for a great amount of time. As outlined in section 2.5, targeting specific stakeholder groups through purposive entrepreneurial actions and specifically focused communication strategies, hence reputation-building measures, may counteract stakeholders' uncertainty (Barnett et al. 2006; Fombrun and Shanley 1990; Petkova 2012) and in turn generate positive abnormal market returns. In the absence of a DPR restatement, however, defined reputation-building measures are, on average, likely to be perceived as the firm's attempt of maintaining the current level of reputation capital with its stakeholders and should therefore not be reflected in the abnormal returns. Actions such as the dismissal of a CEO or other top manager turnover as well as turnover of outside directors, on the other hand, can be understood as an indication of weaknesses of the firm and accordingly

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<sup>3</sup> Without encoding the press releases with respective reputation-building measures.

lead to a reduction of reputation and added value. This in turn may generate negative abnormal market returns (Chakravarthy et al. 2014).

Building on the investigation of an increasing frequency of reputation-building measures within the scope of Hypotheses H1a to H1c, I further follow the approach of Chakravarthy et al. (2014) by examining the effectiveness and hence the immediate valuation effect of a firm's reputation-building measures with each stakeholder group. I thus state the following Hypothesis:

**H2a (H2b):** Following a DPR restatement, the announcements of DPR firms' reputation-building measures directed at capital providers (non-capital providers) generate positive abnormal market returns compared to similar announcements of matched control firms.

#### 3.2. *Frequency and Effectiveness of Reputation (Re-)building*

##### *– Fraud Firms vs. Non-Fraud Firms*

While the majority of accounting research on the causes and consequences of financial restatements does not focus on the differentiation between unintentional misreporting (“errors”) and intentional misreporting (“fraud”), Hennes et al. (2008) explicitly point out the importance of distinguishing errors from fraud in restatement research. The authors show that market reactions in response to intentional misreporting are much stronger compared to market reactions following an apparently unintentional misapplication of accounting standards. Results further show a significantly higher turnover of executives for Fraud firms than for Non-Fraud firms (Hennes et al. 2008). In an earlier study, Palmrose et al. (2004) emphasize that stakeholders, derived from their immediate reactions, seem to distinguish between intentional and unintentional misreporting. They report average abnormal returns of -20% for Fraud firms compared to average abnormal returns of -6% for firms with apparently unintentional restatement causes. Fich and Shivdasani (2007) investigate the reputational impact of financial fraud for outside directors. Instead of using a restatement sample, the authors base their research on a sample of firms facing shareholder class action lawsuits. Results show that following a financial fraud lawsuit, outside directors experience a significant decline in board seats of other firms while they do not face abnormal turnover on the board of the sued firm. Further international studies have examined the consequences firms face following financial reporting fraud (e.g. Beneish, Lee, and Nichols 2012; Farber 2005; Marciukaityte, Szewczyk, Uzun, and

Varma 2006). These studies, on the other hand, do not relate to restatement research, but rather use other sample compositions.

Since the systematic distinction of fraud and error among restatements in large samples is difficult to implement, there is very little research on this topic (Hennes et al. 2008). In fact, until today and to my knowledge, there is no research on the impact of restatements on firm reputation and the subsequent reputation repair which at the same time distinguishes between error and fraud. As the above literature suggests, the distinction between error and fraud might expose further insights on a firm's reputation repair behavior and thus its reputation-repair actions directed at distinct stakeholder groups. I therefore build on my previous hypotheses (H1a to H1c) as follows:

**H3a:** Fraud firms issue a higher average amount of total press releases following a DPR restatement and relative to matched control firms.

**H3b (H3c):** Fraud firms engage in a higher average amount of reputation-building measures directed at capital providers (non-capital providers) following a DPR restatement and relative to matched control firms.

**H4a (H4b):** Following a DPR restatement, the announcements of Fraud firms' reputation-building measures directed at capital providers (non-capital providers) generate positive abnormal market returns compared to similar announcements of matched control firms.

#### 4. Sample Selection, Variable Definition and Research Design

##### 4.1. Sample Selection

I investigate enforcement releases published by the electronic version of the German federal registry (elektronischer Bundesanzeiger), which has been the mandatory channel of disclosure for German firms. I collect all releases that have been published since the establishment of the DPR/BaFin enforcement mechanism in July 2005 until April 2018. This leads to an initial sample of 260 error announcements. I eliminate 18 announcements that represent duplicates or rephrased/corrected versions of former published announcements. Further, restatements that were pre-empted by earlier announcements, thus restatements that occur within one year after a previous restatement by the same firm, were aggregated to one single observation, whereas the earlier of both dates is used for the further investigation. This leads to a reduction of 17 restatements. The resulting sample consists of 225 individual restatements. In order to identify respective control firms that do not have a restatement reported in the German federal registry, I perform a propensity score matching (PSM).<sup>4</sup> I therefore delete observations with missing basic financial data necessary for performing the propensity score matching (19 firms) and insufficient observations in SIC Groups 4 and 7 (4 firms). This leads to an error announcement sample used for propensity score matching of 202 firms. After performing the propensity score matching, I drop firm observations with no matched control firms (25 firms) as well as firm observations with poorly matched control firms after application of the nearest neighbor principle with caliper adjustment (68 firms) (Harris and Horst 2016). My provisional sample used for obtaining hand-collected firm press releases includes 109 restatement firms (i.e. DPR firms). Finally, 30 restatement firms must be deleted because of

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<sup>4</sup> I use the following logistic regression model to perform the propensity score model:

$$DPR_{it} = b_0 + b_1 Size_{it} + b_2 IFRS_{it} + b_3 Lev_{it} + b_4 ROA_{it} + b_k \sum Industry_k + b_t \sum Year_t$$

with:  $DPR_{it}$  = dummy variable taking the value of 1 for firms with DPR/BaFin restatements, and 0 otherwise;  $Size_{it}$  = natural logarithm of total assets at the end of year  $t$  of firm  $i$ ;  $IFRS_{it}$  = dummy variable taking the value of 1 if firms use IFRS as their reporting standard; 0 otherwise (e.g. national accounting standards such as HGB);  $Lev_{it}$  = sum of total long-term debt and total short-term debt divided by total assets at the end for year  $t$  of firm  $i$ ;  $ROA_{it}$  = return on assets for year  $t$ , measured as the ratio of income before taxes scaled by total assets;  $Industry_k$  = industry indicator variables equal to 1 for each industry Standard Industrial Classification (SIC) code; 0 otherwise;  $Year$  = year indicator variables equal to 1 for each year; 0 otherwise. After calculating the propensity scores for each firm over several years, I additionally perform the commonly used nearest neighbor (NN) matching principle with caliper adjustment, as recommended by Harris and Horst (2016), to identify the firm that most closely resembles the restating firm. Estimating the propensity score in the region of common support further ensures that the mean propensity score is not different for treated firms (DPR firms) and control firms (Non-DPR firms) and that there is sufficient overlap in the characteristics of both groups to find adequate matches (Harris and Horst (2016). All basic financial data used to perform PSM with NN are extracted from Thomson Reuters Datastream.

lacking availability of firm press releases within the sample period (2005 - 2018). Thus, the final DPR firm sample consists of 79 restatement firms, as illustrated by Table 1.

For the respective control sample (i.e. Non-DPR firms), I use all firms listed on the German Composite Deutscher Aktienindex (CDAX) as of 30 April 2018 (423 firms). I eliminate firms not listed on the CDAX over the whole sample period (2005 - 2018) (30 firms), firms with DPR/BaFin enforcement releases published by the electronic version of the German federal registry (86 firms) as well as firms with missing basic financial data necessary for performing the propensity score matching (4 firms). This leads to a control sample used for propensity score matching of 303 firms. Firms excluded after propensity score matching ("no match in restatement years") equal to 198. The provisional sample used for obtaining hand-collected firm press releases of matched control firms includes 105 firms. Each control firm is assigned an artificial "restatement date" that corresponds with the matched restating firm's actual restatement date. That way it is possible to also provide parallel "PRE-restatement" and "POST-restatement" periods for the matched firms. Since each restatement firm is assigned to one matched control firm – and the other way around – the final sample of matched control firms (Non-DPR firms) with obtained press releases equals the number of the final DPR firm sample with obtained press releases – hence 79 firms. The sample selection process is illustrated by Table 1.

In a next step I procure all press releases published by the 79 DPR firms as well as all press releases of their respective matched control firms over a time period of six months prior (PRE-restatement period) and one year after (POST-restatement period) the initial restatement date. To obtain all available firm press releases within the sample period, I rely on the following sources in the following order: (1) active company websites, (2) archived company websites found at <https://web.archive.org/>, (3) German council on foreign relations (Deutsche Gesellschaft für Auswärtige Politik e. V. (DGAP))<sup>5</sup>, (4) Presseportal.de<sup>6</sup>. This leads to a total number of 3,428 single press releases for DPR firms and 2,679 single press releases for matched control firms.<sup>7</sup> Within this collection process, I immediately allocate each obtained press release

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<sup>5</sup> The DGAP provides important news and background information in the areas of company financials, equities, stock markets, economics as well as stock prices.

<sup>6</sup> Presseportal.de is a subsidiary of dpa division "news aktuell" and is a large and high-reach PR portal in Germany and one of the most important PR bodies. Further information can be found at <https://www.newsaktuell.de/ueberuns/>.

<sup>7</sup> Considering the *stable unit treatment value assumption*, Figures 6 of Appendix E illustrates the distribution of the total number of collected press releases for DPR and Non-DPR firms and over the entire investigation period. For the months up to PRE – M2 and the months from POST – M8 there are no noticeable differences in the frequency of issuing press releases between DPR and Non-DPR firms, so that for the following difference-in-differences approach, the implicit assumption of an equal trend of the two observation groups without the event of a DPR restatement appears plausible (e.g. Frey et al. 2016; Legewie, 2012).

to the appropriate pre-defined reputation-building measures. Thereby, a single press release can be allocated to multiple reputation-building measures. Besides, press releases that include the initial news regarding the financial restatement are separately disclosed in a variable (*First*), while follow-up press releases that are associated with the restatement are coded with the variable *Other*. If firms report about the announcement of a restatement themselves, prior to the publication of the restatement via the German federal registry, I use the date of the respective firm press release as the official announcement date of the restatement since it would otherwise bias the further analysis.

My second sample, which compares Fraud firms with Non-Fraud firms, represents a subsample of the total sample (DPR firms vs. Non-DPR firms) described above. In order to distinguish between firms with expected unintentional misreporting (Non-Fraud firms) and firms with verifiable intentional misreporting (Fraud firms), I make use of the *LexisNexis WorldCompliance Online Search Tool* to obtain relevant information about the firms in scope. This includes, for example, information aggregated from the most important sanction lists worldwide, information received from worldwide enforcement lists and court filing as well as a comprehensive compilation of adverse media, drawn from an extensive proprietary database of firm profiles that have been linked to illicit activities from over 35,000 news sources worldwide.<sup>8</sup> The hand collected information from the search tool reveals ten firms (Fraud firms) that can be associated with fraud within two years prior and one year after the first announcement date of the financial restatement (fraud-sample period).<sup>9</sup> Three out of the ten firms additionally admit to fraud in their own firm press releases prior to the DPR announcement, while two firms mention fraud (precisely in German “dolose Handlungen”) within their actual DPR restatement release. For the remaining five out of the ten firms, however, it cannot be determined conclusively whether the reported fraud is directly related to the DPR error message.

The respective control sample (Non-Fraud firms) consists of the final sample of matched control firms (i.e. all Non-DPR firms) with obtained press releases. However, I eliminate three firms due to fraud-related information in the *LexisNexis WorldCompliance Database* within the set fraud-sample period. This leads to a final Fraud firm sample of 10 firms versus a Non-Fraud firm sample of 76 firms.

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<sup>8</sup> For further information see <https://risk.lexisnexis.com/products/worldcompliance-online-search-tool>

<sup>9</sup> I expand the initial sample period by 18 months prior to the initial announcement date since initial investigations into fraud and other adverse media about the firm being involved in illicit activities can occur many months before a definitive restatement is publicly announced (Hennes et al. 2008).

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

Within my robustness test (section 6) I substitute the control sample by using all residual DPR firms – instead of Non-DPR firms – without fraud-related information within the fraud-sample period (Non-Fraud firms). This leads to a Fraud firm sample of 10 firms versus a Non-Fraud firm sample of 69 firms.

**Table 1:** Sample Selection (DPR Firms vs. Non-DPR Firms)

<b>DPR Firm Sample</b>	<b>Firms</b>
Published error announcements between July 2005 and April 2018 (Source: German Federal Registry (eBundesanzeiger))	260
Less: Duplicates and rephrased versions of earlier announcements	(18)
Less: Restatements that occur within one year of a previous restatement	(17)
Equals: Utilizable error announcements	225
Less: Missing basic financial data necessary for Propensity Score Matching	(19)
Less: SIC 4 and SIC 7 for the years 2005 till 2008 due to having less than 10 observations per year	(4)
Equals: Error announcement sample used for Propensity Score Matching	202
Less: No matched control firm in restatement year after Propensity Score Matching	(25)
Less: Eliminated firm matches after application of nearest neighbor principle with caliper adjustment	(68)
Equals: Error announcement sample used for obtaining firm press releases	109
Less: No press releases available within sample period (2005 – 2018)	(30)
<b>Equals: Final error announcement sample (DPR Firm Sample)</b>	<b>79</b>
<b>Control Sample (Non-DPR Firm Sample)</b>	<b>Firms</b>
Composite DAX (CDAX) firms as of 30.04.2018	423
Less: Firms not listed on the CDAX over the whole sample period (2005 – 2018)	(30)
Less: DPR restatement firms within CDAX	(86)
Less: Missing basic financial data necessary for propensity score matching	(4)
Equals: Control sample used for propensity score matching	303
Less: Observations excluded after Propensity Score Matching (“no match in restatement years”)	(198)
Equals: Control sample used for obtaining firm press releases	105
<b>Matched control firms with obtained press releases (Non-DPR Firm Sample)</b>	<b>79</b>



#### 4.2. Reputation (Re-)building Measures

The following section outlines the pre-defined reputation (re-)building measures (in the following referred to as reputation-building measures), each being an independent binary variable of the later empirical model. As stated above, I allocate each press release to the appropriate pre-defined reputation-building measures since I assume that each time a firm decides to communicate information externally it provokes some kind of reaction at its stakeholders. Also, a single press release can be allocated to various reputation building measures as illustrated in Appendix C. With respect to the previously defined specific stakeholder groups, I subsequently distinguish reputation-building measures directed at capital providers (*CP\_Measures*) from reputation-building measures directed at non-capital providers (*NCP\_Measures*).

Reputation building measures focusing *capital providers* include actions that announce an improvement of the board of directors and/or the supervisory board (*Board\_Opt*). This involves statements about strengthening the independence of the board of directors or the supervisory board, the optimization of corporate governance and corporate control, precise re-allocations of roles and areas of responsibility, as well as additional appointments of board members (of both bodies) or the replacement of an inside director with an outside director. Since the supervisory board in Germany, in contrast for example to the United States of America (USA), does not have any executive responsibility but solely fulfills supervisory functions according to par. 111 (4) sent. 1 German Stock Corporation Act (Aktiengesetz (AktG)), *Board\_Opt* explicitly considers both bodies. Several studies have found evidence for correlations between these actions and positive stakeholder reactions (e.g. Farber 2005; Dechow et al. 1996; Chakravarthy et al. 2014). As outlined in section 3, many scholars prove the personnel consequences, such as CEO, CFO and/or other management-turnover in response to financial restatements (e.g. Karpoff et al. 2008; Desai et al. 2006; Wilson 2008). Therefore, I include a variable (*Lead\_Chng*) that considers actions announcing the dismissal/replacement of members of the board of directors. Changes of other key leadership/key management positions, not part of the board of directors (i.e. other C-suites; leadership of subsidiaries), are captured in a separate variable (*Mngt\_Chng*). To take adequate account of the German two-tier system, I include a separate variable considering actions that announce the dismissal/replacement of outside directors that are members of the supervisory board (*OD\_Change*). Moreover, Srinivasan (2005) found considerable evidence for an increasing outside director turnover and significant labor market penalties, following a restatement. Since the change of the currently responsible audit firm, in response to a financial restatement, has

attracted many scholars' attention, especially also in German literature (e.g. Frey et al. 2016; Ebner et al. 2017), I integrate a variable (*Auditor\_Chng*) to capture actions that announce the change of the current auditor. Financial restatements, whether accidental or intentional, signal a lacking or inefficient internal control system. Furthermore, misreporting can be the result of managers' adjustments to meet certain variable compensation thresholds (Dechow, Ge, and Schrand 2010). Announcements that mention a change to internal control procedures or incentive/compensation systems are reflected by the variable *ControlSyst\_Chng*. The variable *Strategy* considers all firm announcements that refer to any kind of restructuring process, changes in strategic direction, new company sites and product segments, new alliances or partnerships ("*reputation borrowing*"), new major contracts with great impact on future business, firm acquisitions as well as quality certificates (e.g. certificates by the German technical inspection association – Technischer Überwachungsverein (TÜV)) and company awards. Chakravarthy et al. (2014) emphasize that a firm may initiate a repurchase of its own shares to signal a present undervaluation by the market, drawn from the undervaluation of the firm's reputation. The authors obtain this view from Lie (2005), who concludes that firms engage in stock repurchase programs to signal a better future operating performance than currently anticipated by the capital market. Announcements referring to stock repurchases are reflected by the variable *RS*. Finally, *IR* captures all announcements that refer to a firm's investor relation reports, unique dividends, changes in the firm's capital structure, stock purchase recommendations, special research projects/studies relevant to the capital market, registration of a patent or licenses, major contracts with predicted stock value increase, symposiums as well as referencing to some kind of criminal/civil proceedings.

For reputation building measures targeting *non-capital providers*, I mainly concentrate on announcements directed at customers (*CU*), employees (*EM*), and the community (*CO*). There are a number of studies that investigate how firms repair their specific reputation with customers in response to a product-related crisis (e.g. Blaney, Benoit, and Brazeal 2002; Elsbach 1994; Rhee and Valdez 2009; Fombrun and Shanley 1990; Fischer and Reuber 2007), however, according to Chakravarthy et al. (2014) only very little on reputation repair after violations that are non-product-related. Within my study, *CU* captures all firm announcements that are customer and product related.<sup>10</sup> Concerning a firm's specific reputation with current and potential future employees (*EM*), Cascio (2014) refers to the so-called employer branding. The aim is that current and potential employees, similar to a product brand, associate a certain employer-image with a specific company name. Once established, firms can increase the value

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<sup>10</sup> The detailed list of specific actions that I defined as targeting a firm's customers can be found in Appendix A.

of their corporate employer brand. The diverse employee-oriented actions for the establishment and maintenance of employer branding include for example performance management strategies that help employees to develop expertise that maximizes their potential, social-learning tools, specific trainings, and mentoring programs (Gillespie and Dietz 2009), awards of employees as well as student and apprenticeship programs.<sup>11</sup> The variable *CO* counts all measures taken by a firm that are directed to the members of the community in which they operate. These include, in particular, donations and events in favor of charitable organizations, local sponsorship, aid projects, local research projects, and country studies as well as environmental protection projects (e.g. Fombrun and Shanley 1990; Gillespie and Dietz 2009; Gillespie, Dietz, and Lockey 2014; O'Connor 2002). Finally, I integrate a variable (*NCP\_Other*) to identify announcements of reputation building measures directed towards *non-capital providers* that do not directly or solely target one of the three stakeholder groups mentioned, but rather the general public as a whole. In particular *NCP\_Other* captures announcements of criminal and/or civil incidents and proceedings. Further details on the definitions of all variables mentioned above are provided in Appendix B.

#### 4.3. Model Specifications

Hypothesis 1 (H1a, H1b, H1c) examines the frequency of the reputation-building measures carried out in terms of time- (PRE-restatement period vs. POST-restatement period) as well as firm-specific (DPR firms vs. Non-DPR firms) aspects. In this context, I distinguish five different dependencies constituted by five panels.<sup>12</sup> Panel A illustrates the average number of total press releases (H1a) as well as reputation-building measures directed at capital providers (H1b) and non-capital providers (H1c) per quarter for both, DPR firms and Non-DPR firms, in the PRE- and POST-restatement period.

Panel B measures the within-firm differences through the comparison of the PRE- and POST-period with regard to reputation-building measures carried out by DPR firms. Thus, I examine the influence of the variable *Post* – a binary variable taking the value of 1 for measures within the POST-restatement period, and 0 otherwise – on the number of *Total Press Releases*, *CP\_Measures* and *NCP\_Measures*.

$$Measures = \alpha_1 + \beta_1 Post + \varepsilon \quad (\text{for } DPR = 1) \quad (1)$$

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<sup>11</sup> The detailed list of specific actions that I defined as targeting a firm's employees can be found in Appendix A.

<sup>12</sup> These panel titles correspond to the titles in Table 4 and 6, however not to the panel titles used within the descriptive statistics.

$$Measures = \{Total\ Press\ Releases, CP\_Measures, NCP\_Measures\}$$

In addition, to the influence of time (i.e. comparison of PRE- and POST-period) and to differentiate the possible cause-effect correlation, Panel C measures the immediate impact of a DPR restatement through comparison of DPR and control firms within the POST-period (matched-pair differences). Thus, I examine the influence of the variable *DPR* – a binary variable taking the value of 1 for measures of DPR restatement firms, and 0 otherwise – on the number of *Total Press Releases*, *CP\_Measures* and *NCP\_Measures*.

$$Measures = \alpha_1 + \beta_1 DPR + \varepsilon \quad (\text{for } Post = 1) \quad (2)$$

$$Measures = \{Total\ Press\ Releases, CP\_Measures, NCP\_Measures\}$$

Panel D compares the time-specific (PRE- vs. POST period) and firm-specific (DPR firm vs. Non-DPR firm) differences within the same model. Therefore, I use a difference-in-differences (DID) estimator, represented by the interaction term *Post\*DPR*, in the following regression model:

$$Measures = \alpha_1 + \beta_1 Post + \beta_2 DPR + \beta_3 Post*DPR + \varepsilon \quad (3)$$

$$Measures = \{Total\ Press\ Releases, CP\_Measures, NCP\_Measures\}$$

The last Panel, Panel E, compares the average within-firm differences of the POST-period of DPR restatement firms. More precisely, Panel E examines the frequency and timing of reputation-building measures within the second, third, and fourth quarter compared to the first quarter (*Quarter1*) after the publication date of the restatement.

$$Measures = \alpha_1 + \beta_1 Quarter1 + \varepsilon \quad (\text{for } Post = 1 \ \& \ DPR = 1) \quad (4)$$

$$Measures = \{Total\ Press\ Releases, CP\_Measures, NCP\_Measures\}$$

Hypothesis 2 (H2a, H2b) examines the effectiveness of the reputation-building measures carried out by DPR and Non-DPR firms in the PRE- compared to the POST-restatement period on the two-day cumulative abnormal return *CAR2* (0; +1), surrounding each type of reputation-building measure. Thus, the objective is to investigate an unexpected change in firms' stock returns, triggered by the announcement of new information (here: DPR announcement). This approach is also referred to as an "event study". The calculation of the two-day cumulative abnormal return is based on the daily total return indices (TRI) of the shares of all DPR and control firms within the sample over a period of six months before and six months after the

announcement date.<sup>13</sup> Since daily total return indices are constituted by absolute values (in Euros) instead of percentage returns, I, in a further step, determine the associated discrete stock return ( $r_{i,t}$ ) as the growth rate of the total return index values ( $TRI_{i,t}$ ) over time (Auer and Rottmann 2011):

$$r_{i,t} = \frac{TRI_{i,t} - TRI_{i,t-1}}{TRI_{i,t-1}} = \frac{TRI_{i,t}}{TRI_{i,t-1}} - 1 \quad (5)$$

The determined discrete stock returns ( $r_{i,t}$ ) build the basis for carrying out the event study. In a further step, the daily discrete stock return ( $r_{i,t}$ ) of each firm is compared to the return that is considered “fair” according to the underlying asset pricing model ( $r_{f,t}$ ).<sup>14</sup> The difference of both components ( $r_{i,t} - r_{f,t}$ ) is referred to as the daily excess return ( $\alpha_{i,t}$ ). However, a mere consideration of the daily excess return around the announcement date of the DPR restatement is not adequate to obtain reliable results on the triggered market reaction in the course of an event study. This is because it cannot be completely ruled out that a small number of shareholders received the information about the publication of a restatement even before the official publication date. Thus, as this early recognition of the DPR restatement would affect stock returns prior to the actual publication date, simply considering the excess return on the day of the announcement would result in a misinterpretation of the overall impact (Bodie, Kane, and Marcus 2009). To avoid this effect, I use the two-day cumulative excess returns, referred to as two-day cumulative abnormal return ( $CAR2$ ). Since the cumulative abnormal return reflects the sum of the daily excess returns over a set event window – in this study starting at  $t = 0$  and ending at  $t = +1$  surrounding each press release (i.e. each reputation-building measure) for a period of six months prior and six months after the announcement date – it enables the recording of the entire possible impact of the DPR restatement, even in the case of an early recognition by a (limited) group of people (Bodie et al. 2009; Chakravarthy et al. 2014).

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<sup>13</sup> I use the total return index as it considers not only pure share price changes but also all “other earnings components” of a stock by assuming a reinvestment of the same into the respective stock. “Other earnings components” can, for example, be dividend payments or subscription rights in the context of a capital structure measure (e.g. Heese 2013).

<sup>14</sup> Within this study I rely on the Fama and French Three-Factor Model of 1993 that expands on the original capital asset pricing model (CAPM) by adding size risk and value risk factors to the market risk factor in CAPM (Fama and French 1993). The daily returns of the Fama-French factors as well as the associated risk-free interest are taken from a survey of the Humboldt University Berlin ((Humboldt-Universität zu Berlin). In order to reflect the market, I rely on performance data of the CDAX as it comprises all stocks traded on the Frankfurt Stock Exchange that are listed in the General Standard or Prime Standard market segments and thus firms of various size categories and industry sectors.

The cumulative abnormal return is calculated as followed:

$$CAR_{i,t} = \sum_{\tau=0}^t \alpha_{i,\tau} \quad (6)$$

To examine the effectiveness of the reputation-building measures carried out by DPR versus Non-DPR firms in the PRE- compared to the POST-restatement period (difference-in-differences approach) on the two-day cumulative abnormal return  $CAR2$  (0; +1), I follow Chakravarthy et al. (2014) by using the following regression model:

$$\begin{aligned} CAR2 = & \alpha_1 + \alpha_2 Post + \alpha_3 DPR + \alpha_4 Post * DPR + \sum \beta_1 Variables \\ & + \sum \beta_2 Variables * Post + \sum \beta_3 Variables * DPR \\ & + \sum \beta_4 Variables * Post * DPR + \sum \beta_k Year + \varepsilon, \end{aligned} \quad (7)$$

$Variables = \{Bord\_Opt, Lead\_Chng, Mngt\_Chng, OD\_Chng, ST, RS, IR, CU, EM, CO, NCP\_Other\}$

where  $Variables$  are binary variables equal to 1 if a reputation-building measure was assigned to one of the respective pre-defined categories, and 0 otherwise. Following the difference-in-differences approach, I interact  $Post$  with  $DPR$  as well as each variable contained in  $Variables$ , with  $Post$ ,  $DPR$ , and  $Post * DPR$ . The variable  $Year$  is added to the model to control for year-fixed effects.

For my second sample (Fraud firms vs. Non-Fraud firms), thus Hypothesis 3 (H3a, H3b, H3c) and Hypothesis 4 (H4a, H4b) respectively, I use the same models as described above and replace the variable  $DPR$  by the variable  $Fraud$ , as a binary variable equal to 1 for firms that can be associated with fraud within the fraud-sample period, and 0 otherwise. More precisely, I use models (1) to (4), after the respective  $Fraud$  variable adjustment, to test Hypothesis 3 (H3a, H3b, H3c) while model (7) is adjusted to test Hypothesis 4 (H4a, H4b).

## 5. Empirical Results

### 5.1. Descriptive Statistics – DPR Firms vs. Non-DPR Firms

Table 2 presents the summary statistics of all obtained press releases and thus the reputation-building measures divided in the PRE- and POST-restatement period for DPR firms (Panel A) and Non-DPR firms (Panel B), respectively. The summary statistics show that out of the 3,428 single press releases obtained over the entire sample period for all DPR firms in scope, 1,123 fall into the PRE-restatement period while 2,305 fall into the POST-restatement period. However, it is to note that the POST-restatement survey period constitutes of 12 months while the PRE-restatement survey period only consists of six months. Therefore, I calculate the six months average of the POST-restatement period to ensure a better comparability of both periods. This leads to 1,153 single press releases for the POST-restatement period which is only slightly higher than the number that falls into the PRE-restatement period. Comparing DPR firm's average per quarter *Total Press Releases* reveals similar results – 7.11 for the PRE-restatement period versus 7.29 for the POST-restatement period. Also, the comparison of mean, median, minimum and maximum, broken down to a six months average, shows only marginal differences between both periods for DPR firms. Looking at the results for the allocated reputation-building measures, however, Table 2 reveals a clear increase in reputation-building measures directed at capital providers (*CP\_Measures*) in the POST-restatement compared to the PRE-restatement period. While the total number of announcements within this category increases from 719 in the PRE-period to 780.5 – as the six months average – in the POST-period, other figures (i.e. average per quarter, mean, median, minimum and maximum) record the same upward development. Reputation-building measures directed at non-capital providers (*NCP\_Measures*), however, slightly decrease in the POST-restatement period compared to the PRE-restatement period, shown by all figures (e.g. 669 total announcements assigned to *NCP\_Measures* in the PRE-period and 662 in the POST-period). Additionally, press releases that include the initial information regarding the financial restatement (*First*) as well as further press releases that are directly associated with the restatement (*Other*) only occur within the POST-restatement period, as an obvious consequence of the variable's definition. In sum, and despite a slight decrease in *NCP\_Measures*, the total of DPR firms' reputation-building measures increases in the POST-period compared to the PRE-period, as illustrated by the variable *Total\_Measures* (PRE: 1,388 (Avg. quarter/firm: 8.78) vs. POST: 1,442 (Avg. quarter/firm: 9.13)). This can also be illustrated by assessing the total number of reputation-building measures (*Total\_Measures*) in relation to the total number of single press releases issued by DPR firms (*Total Press Releases*). Thereby, press releases in the PRE-restatement

period of DPR firms contain an average of 1.23 reputation-building measures while press releases in the POST-restatement period contain an average of 1.25 reputation-building measures.

Comparing these findings to the results of the respective control sample (Non-DPR firms – Panel B) shows that for the identical extent of survey time – divided in PRE- and POST-restatement periods – control firms record a continuous decrease in the average number of *Total Press Releases* (PRE: 916 (Avg. quarter/firm: 5.80) vs. POST: 882 (Avg. quarter/firm: 5.58)) in the POST-period compared to the PRE-period. This trend is also true for total *CP\_Measures* (PRE: 784 (Avg. quarter/firm: 4.96) vs. POST: 780 (Avg. quarter/firm: 4.94)) as well as for total *NCP\_Measures* (PRE: 512 (Avg. quarter/firm: 3.24) vs. POST: 475 (Avg. quarter/firm: 3.01)) and thus for the average number of *Total\_Measures* (PRE: 1,296 (Avg. quarter/firm: 8.20) vs. POST: 1,255 (Avg. quarter/firm: 7.94)). Furthermore, the results of Table 2 illustrate noticeable more engagement of DPR firms in issuing press releases (*Total Press Releases*)<sup>15</sup> as well as targeting its multiple stakeholders as shown by the average total amount of *Total\_Measures* compared to Non-DPR firms ((DRP-POST-restatement period (12 months): 2,884 vs. Non-DPR-POST-restatement period (12 months): 2,510). This result is mainly due to increasing reputation-building actions targeting non-capital providers (*NCP\_Measures*). These results can be determined for the PRE-restatement period as well as for the POST-restatement period. Assessing the total number of reputation-building measures (*Total\_Measures*) in relation to the total number of single press releases issued by Non-DPR firms (*Total Press Releases*) shows comparatively no variation between the PRE-restatement and the POST-restatement period. For both periods press releases contain an average of 1.42 reputation-building measures, which is slightly higher than the average amount of reputation-building measures per press release for DPR firms. This suggests that DPR firms seem to spread their reputation-building measures by issuing a higher frequency of press releases.

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<sup>15</sup> E.g. DRP firms in POST-restatement period (12 months): 2,305 vs. Non-DPR firms in POST-restatement period (12 months): 1,763.



### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

**Table 2: Press Release Summary Statistics (DPR Firms vs. Non-DPR Firms)**

<b>Panel A</b>						
Press Releases of DPR Firms in the PRE-Restatement Period (79 Firms)						
Type of Announcement	Total Announcements (6 Months)	Average per Quarter per Firm	Mean per Firm (6 Months)	Min. per Firm (6 Months)	Median per Firm (6 Months)	Max. per Firm (6 Months)
<i>Board_Opt</i>	20	0.13	0.25	0	1.00	2
<i>Lead_Chng</i>	34	0.22	0.43	0	1.00	4
<i>Mngt_Chng</i>	23	0.15	0.29	0	1.00	6
<i>OD_Chng</i>	14	0.09	0.18	0	1.00	2
<i>Auditor_Chng</i>	0	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0	0.00	0
<i>Strategy</i>	284	1.80	3.59	0	3.00	26
<i>RS</i>	2	0.01	0.03	0	1.00	1
<i>IR</i>	342	2.16	4.33	0	4.00	12
<b><i>CP_Measures</i></b>	<b>719</b>	<b>4.55</b>	<b>9.10</b>	<b>1</b>	<b>7.00</b>	<b>43</b>
<i>CU</i>	436	2.76	5.52	0	3.00	151
<i>EM</i>	36	0.23	0.46	0	1.50	9
<i>CO</i>	181	1.15	2.29	0	2.00	35
<i>NCP_Other</i>	16	0.10	0.20	0	1.00	3
<b><i>NCP_Measures</i></b>	<b>669</b>	<b>4.23</b>	<b>8.47</b>	<b>0</b>	<b>2.00</b>	<b>195</b>
<b><i>Total_Measures</i></b>	<b>1,388</b>	<b>8.78</b>	<b>17.57</b>	<b>1</b>	<b>9.00</b>	<b>234</b>
<i>First</i>	0	0.00	0.00	0	0.00	0
<i>Other</i>	0	0.00	0.00	0	0.00	0
<b>Total Announcements</b>	<b>1,388</b>	<b>8.78</b>	<b>17.57</b>	<b>1</b>	<b>9.00</b>	<b>234</b>
<b>Total Press Releases</b>	<b>1,123</b>	<b>7.11</b>	<b>14.22</b>	<b>2</b>	<b>8.00</b>	<b>186</b>

<b>Panel B</b>						
Press Releases of Control Firms in the PRE-Restatement Period (79 Firms)						
Type of Announcement	Total Announcements (6 Months)	Average per Quarter per Firm	Mean per Firm (6 Months)	Min. per Firm (6 Months)	Median per Firm (6 Months)	Max. per Firm (6 Months)
<i>Board_Opt</i>	13	0.08	0.16	0	0.00	2
<i>Lead_Chng</i>	29	0.18	0.37	0	0.00	4
<i>Mngt_Chng</i>	11	0.07	0.14	0	0.00	2
<i>OD_Chng</i>	12	0.08	0.15	0	0.00	2
<i>Auditor_Chng</i>	0	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0	0.00	0
<i>Strategy</i>	383	2.42	4.85	0	3.00	32
<i>RS</i>	0	0.00	0.00	0	0.00	0
<i>IR</i>	336	2.13	4.25	0	4.00	16
<b><i>CP_Measures</i></b>	<b>784</b>	<b>4.96</b>	<b>9.92</b>	<b>1</b>	<b>8.00</b>	<b>48</b>
<i>CU</i>	401	2.54	5.08	0	2.00	45
<i>EM</i>	37	0.23	0.47	0	0.00	11
<i>CO</i>	63	0.40	0.80	0	0.00	14
<i>NCP_Other</i>	11	0.07	0.14	0	0.00	3
<b><i>NCP_Measures</i></b>	<b>512</b>	<b>3.24</b>	<b>6.48</b>	<b>0</b>	<b>3.00</b>	<b>70</b>
<b><i>Total_Measures</i></b>	<b>1,296</b>	<b>8.20</b>	<b>16.41</b>	<b>1</b>	<b>11.00</b>	<b>118</b>
<b>Total Press Releases</b>	<b>916</b>	<b>5.80</b>	<b>11.59</b>	<b>1</b>	<b>8.00</b>	<b>84</b>

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**Table 2: Press Release Summary Statistics (DPR Firms vs. Non-DPR Firms) (continued)**

<b>Panel A</b>							
Press Releases of DPR Firms in the POST-Restatement Period (79 Firms)							
Type of Announcement	Total Announcements (12 Months)	Total Announcements (6 Months Avg.)	Average per Quarter per Firm	Mean per Firm (12 Months)	Min. per Firm (12 Months)	Median per Firm (12 Months)	Max. per Firm (12 Months)
<i>Board_Opt</i>	31	15.50	0.10	0.39	0	0.00	3
<i>Lead_Chng</i>	61	30.50	0.19	0.77	0	0.00	7
<i>Mngt_Chng</i>	45	22.50	0.14	0.57	0	0.00	10
<i>OD_Chng</i>	31	15.50	0.10	0.39	0	0.00	7
<i>Auditor_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	5	2.50	0.02	0.06	0	0.00	3
<i>Strategy</i>	690	345.00	2.18	8.73	0	5.00	78
<i>RS</i>	10	5.00	0.03	0.13	0	0.00	2
<i>IR</i>	688	344.00	2.18	8.71	1	8.00	28
<b>CP_Measures</b>	<b>1,561</b>	<b>780.50</b>	<b>4.94</b>	<b>19.76</b>	<b>5</b>	<b>16.00</b>	<b>94</b>
<i>CU</i>	846	423.00	2.68	10.71	0	3.00	226
<i>EM</i>	109	54.50	0.34	1.38	0	0.00	35
<i>CO</i>	349	174.50	1.10	4.42	0	0.00	72
<i>NCP_Other</i>	19	9.50	0.06	0.24	0	0.00	3
<b>NCP_Measures</b>	<b>1,323</b>	<b>661.50</b>	<b>4.19</b>	<b>16.75</b>	<b>0</b>	<b>4.00</b>	<b>295</b>
<b>Total_Measures</b>	<b>2,884</b>	<b>1,442</b>	<b>9.13</b>	<b>37.00</b>	<b>5</b>	<b>20.00</b>	<b>389</b>
<i>First</i>	20	10.00	0.06	0.25	0	0.00	1
<i>Other</i>	10	5.00	0.03	0.13	0	0.00	2
<b>Total Announcements</b>	<b>2,914</b>	<b>1,457</b>	<b>9.22</b>	<b>36.89</b>	<b>5</b>	<b>20.00</b>	<b>389</b>
<b>Total Press Releases</b>	<b>2,305</b>	<b>1,152.50</b>	<b>7.29</b>	<b>29.18</b>	<b>6</b>	<b>17.00</b>	<b>303</b>

<b>Panel B</b>							
Press Releases of Control Firms in the POST-Restatement Period (79 Firms)							
Type of Announcement	Total Announcements (12 Months)	Total Announcements (6 Months Avg.)	Average per Quarter per Firm	Mean per Firm (12 Months)	Min. per Firm (12 Months)	Median per Firm (12 Months)	Max. per Firm (12 Months)
<i>Board_Opt</i>	18	9.00	0.06	0.23	0	0.00	4
<i>Lead_Chng</i>	44	22.00	0.14	0.56	0	0.00	3
<i>Mngt_Chng</i>	36	18.00	0.11	0.46	0	0.00	6
<i>OD_Chng</i>	18	9.00	0.06	0.23	0	0.00	3
<i>Auditor_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>Strategy</i>	784	392.00	2.48	9.92	0	7.00	77
<i>RS</i>	3	1.50	0.01	0.04	0	0.00	2
<i>IR</i>	657	328.50	2.08	8.32	0	8.00	29
<b>CP_Measures</b>	<b>1,560</b>	<b>780</b>	<b>4.94</b>	<b>19.75</b>	<b>6</b>	<b>15.00</b>	<b>116</b>
<i>CU</i>	716	358.00	2.27	9.06	0	3.00	84
<i>EM</i>	62	31.00	0.20	0.78	0	0.00	12
<i>CO</i>	158	79.00	0.50	2.00	0	0.00	33
<i>NCP_Other</i>	14	7.00	0.04	0.18	0	0.00	5
<b>NCP_Measures</b>	<b>950</b>	<b>475</b>	<b>3.01</b>	<b>12.03</b>	<b>0</b>	<b>4.00</b>	<b>129</b>
<b>Total_Measures</b>	<b>2,510</b>	<b>1,255</b>	<b>7.94</b>	<b>31.77</b>	<b>6</b>	<b>19.00</b>	<b>245</b>
<b>Total Press Releases</b>	<b>1,763</b>	<b>881.50</b>	<b>5.58</b>	<b>22.32</b>	<b>6</b>	<b>14.00</b>	<b>174</b>

Table 2 provides the summary statistics of all obtained press releases (*Total Press Releases*) and their allocation to distinct types of reputation-building measures for DPR firms (Panel A) and Non-DPR firms (Panel B) divided in a PRE-restatement period (6 months before the announcement date of a restatement) and POST-restatement period (12 months after the announcement date of a restatement). *CP\_Measures* represents all press releases directed at a firm's capital providers; *NCP\_Measures* represents all press releases directed at a firm's non-capital providers and *Total\_Measures* represents the sum of *CP\_Measures* and *NCP\_Measures*. All other variables are as described in Appendix B. For the descriptive figures minimum (Min), maximum (Max) and Median per firm it is to be noted, that the variables *CP\_Measures*, *NCP\_Measures* and *Total\_Measures* do not represent the sum of the individual types of reputation-building measures of which they are composed but rather show the actual Min/ Max. and Median of the "overall variable" *CP\_Measures* (*NCP\_Measures* and *Total\_Measures*). For example, the maximum of 43 *CP\_Measures* in the PRE-restatement period of DPR firms represents the maximum number of *CP\_Measures* issued by one single DPR firm in the PRE-restatement period.

5.2. *Descriptive Statistics – Fraud Firms vs. Non-Fraud Firms*

Table 3 presents the summary statistics of obtained press releases, and thus the reputation-building measures, in the PRE- and POST-restatement period for Fraud (Panel A) and Non-Fraud firms (Panel B) respectively. The summary statistics show that out of the 3,428 single press releases obtained over the entire sample period for all DPR firms in scope, 285 press releases (8.3 percent) are attributable to the 10 Fraud firms (Panel A) in the PRE-restatement period while 602 press releases (17.6 percent) fall into the 12-months POST-restatement period of respective Fraud firms. In sum (PRE- plus POST-restatement period), press releases issued by the 10 Fraud firms account for 25.9 percent of all press releases obtained for all DPR firms in scope. This noticeable high average amount of press releases is also reflected by Fraud firms' average amount of *Total Press Releases* per quarter (PRE-period: 14.25; POST-period: 15.05). Looking back at Panel A of Table 2, the average amount of *Total Press Releases* per quarter for all DPR firms (79 firms) reveals 7.11 for the PRE-restatement period versus 7.29 for the POST-restatement period. Thus, the quarterly amount of *Total Press Releases* doubles for Fraud firms. Concerning other descriptive statistics, Fraud firms' minimum action per firm – throughout all variables of Panel A – is noticeable higher (Table 3) compared to the minimum action per firm for all DPR firms as of Panel A of Table 2. Looking at the allocated reputation-building measures, Table 3 (Panel A) further shows above-average results for the amount of reputation-building measures directed at capital providers (*CP\_Measures*) and non-capital providers (*NCP\_Measures*) for Fraud firms compared to all DPR firms (Panel A, Table 2). In detail, 24.2 percent (24.6 percent) out of the 719 PRE-period (1,561 POST-period) *CP\_Measures* of DPR firms pertain to the 10 Fraud firms while even 34 percent (32.5 percent) out of the 669 PRE-period (1,323 POST-period) *NCP\_Measures* of DPR firms relate to the 10 Fraud firms. Comparing the PRE-restatement period of Panel A (Table 3) with the POST-restatement period of the same sample (Panel A, Table 3) reveals a continuous (although moderate) higher average amount of firms' minimum and maximum *Total Press Releases* as well as *Total\_Measures* (applicable for *CP\_Measures* and *NCP\_Measures*) for the POST-restatement period. All other figures (Total Announcements, Average per Quarter per Firm, Mean, and Median) show no remarkable differences or continuous trends for any variable in scope. Thus, Fraud firms' reputation-building actions seem to be more or less regardless of the actual DPR restatement announcement date.

The results of the respective control sample (Non-Fraud firms; N = 76) show that – for the identical extent of survey time – control firms on average (i.e. mean per firm) record only 35 percent of *Total Press Releases*, 52 percent of total *CP\_Measures* as well as only 22 percent

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of total *NCP\_Measures* compared to respective variables of the Fraud firm sample (Panel A). In sum, the mean of *Total\_Measures* per firm (PRE: 14.14; POST: 28.16 (12 months)) directed at a firm's multiple stakeholders is 65 percent lower than the mean of *Total\_Measures* per firm (PRE: 40.10; POST: 81.60 (12 months)) for Fraud firms. Comparing the PRE-restatement to the POST-restatement period for Panel B (control sample) reveals no differences for neither variable. This is illustrated best by the figure "average per quarter per firm" for both periods and compared to the results of Panel A.

**Table 3: Press Release Summary Statistics (Fraud Firms vs. Non-Fraud Firms)**

<b>Panel A</b>		Press Releases of Fraud Firms in the PRE-Restatement Period (N = 10 Firms)				
Type of Announcement	Total Announcements (6 Months)	Average per Quarter per Firm	Mean per Firm (6 Months)	Min. per Firm (6 Months)	Median per Firm (6 Months)	Max. per Firm (6 Months)
<i>Board_Opt</i>	5	0.25	0.50	0	0.00	2
<i>Lead_Chng</i>	13	0.65	1.30	0	0.50	3
<i>Mngt_Chng</i>	5	0.25	0.50	0	0.00	1
<i>OD_Chng</i>	4	0.20	0.40	0	0.00	2
<i>Auditor_Chng</i>	0	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0	0.00	0
<i>Strategy</i>	96	4.80	9.60	0	3.00	32
<i>RS</i>	0	0.00	0.00	0	0.00	0
<i>IR</i>	51	2.55	5.10	1	2.00	13
<b><i>CP_Measures</i></b>	<b>174</b>	<b>8.70</b>	<b>17.40</b>	<b>4</b>	<b>6.00</b>	<b>48</b>
<i>CU</i>	136	6.80	13.60	0	2.00	45
<i>EM</i>	23	1.15	2.30	0	0.00	11
<i>CO</i>	60	3.00	6.00	0	1.00	28
<i>NCP_Other</i>	8	0.40	0.80	0	0.00	3
<b><i>NCP_Measures</i></b>	<b>227</b>	<b>11.35</b>	<b>22.70</b>	<b>0</b>	<b>5.50</b>	<b>70</b>
<b><i>Total_Measures</i></b>	<b>401</b>	<b>20.05</b>	<b>40.10</b>	<b>4</b>	<b>11.00</b>	<b>118</b>
<b><i>Total Press Releases</i></b>	<b>285</b>	<b>14.25</b>	<b>28.50</b>	<b>4</b>	<b>8.00</b>	<b>84</b>
<b>Panel B</b>		Press Releases of Control Firms in the PRE-Restatement Period (N = 76 Firms)				
Type of Announcement	Total Announcements (6 Months)	Average per Quarter per Firm	Mean per Firm (6 Months)	Min. per Firm (6 Months)	Median per Firm (6 Months)	Max. per Firm (6 Months)
<i>Board_Opt</i>	13	0.09	0.17	0	0.00	2
<i>Lead_Chng</i>	26	0.17	0.34	0	0.00	4
<i>Mngt_Chng</i>	10	0.07	0.13	0	0.00	2
<i>OD_Chng</i>	11	0.07	0.14	0	0.00	2
<i>Auditor_Chng</i>	0	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0	0.00	0
<i>Strategy</i>	319	2.10	4.20	0	2.00	19
<i>RS</i>	0	0.00	0.00	0	0.00	0
<i>IR</i>	314	2.07	4.13	0	2.00	16
<b><i>CP_Measures</i></b>	<b>693</b>	<b>4.56</b>	<b>9.12</b>	<b>1</b>	<b>4.00</b>	<b>31</b>
<i>CU</i>	305	2.01	4.01	0	1.00	36
<i>EM</i>	23	0.15	0.30	0	0.00	5
<i>CO</i>	43	0.28	0.57	0	0.00	12
<i>NCP_Other</i>	11	0.07	0.14	0	0.00	3
<b><i>NCP_Measures</i></b>	<b>382</b>	<b>2.51</b>	<b>5.03</b>	<b>0</b>	<b>1.00</b>	<b>56</b>
<b><i>Total_Measures</i></b>	<b>1075</b>	<b>7.07</b>	<b>14.14</b>	<b>1</b>	<b>5.00</b>	<b>86</b>
<b><i>Total Press Releases</i></b>	<b>763</b>	<b>5.02</b>	<b>10.04</b>	<b>1</b>	<b>4.00</b>	<b>57</b>

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

**Table 3:** Press Release Summary Statistics (Fraud Firms vs. Non-Fraud Firms) (continued)

Panel A							
Press Releases of Fraud Firms in the POST-Restatement Period (N = 10 Firms)							
Type of Announcement	Total Announcements (12 Months)	Total Announcements (6 Months Avg.)	Average per Quarter per Firm	Mean per Firm (12 Months)	Min. per Firm (12 Months)	Median per Firm (12 Months)	Max. per Firm (12 Months)
<i>Board_Opt</i>	7	3.50	0.18	0.70	0	0.00	2
<i>Lead_Chng</i>	12	6.00	0.30	1.20	0	0.00	4
<i>Mngt_Chng</i>	17	8.50	0.43	1.70	0	0.00	10
<i>OD_Chng</i>	11	5.50	0.28	1.10	0	0.00	3
<i>Auditor_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	3	1.50	0.08	0.30	0	0.00	3
<i>Strategy</i>	202	101.00	5.05	20.20	0	3.00	77
<i>RS</i>	1	0.50	0.03	0.10	0	0.00	1
<i>IR</i>	131	65.50	3.28	13.10	1	2.50	29
<b>CP_Measures</b>	<b>384</b>	<b>192.00</b>	<b>9.60</b>	<b>38.40</b>	<b>13</b>	<b>7.00</b>	<b>116</b>
<i>CU</i>	235	117.50	5.88	23.50	0	3.00	84
<i>EM</i>	55	27.50	1.38	5.50	0	0.00	35
<i>CO</i>	131	65.50	3.28	13.10	0	1.00	72
<i>NCP_Other</i>	9	4.50	0.23	0.90	0	0.00	3
<b>NCP_Measures</b>	<b>430</b>	<b>215.00</b>	<b>10.75</b>	<b>43.00</b>	<b>0</b>	<b>5.00</b>	<b>177</b>
<b>Total_Measures</b>	<b>814</b>	<b>407.00</b>	<b>20.35</b>	<b>81.40</b>	<b>13</b>	<b>9.50</b>	<b>266</b>
<b>Total Press Releases</b>	<b>602</b>	<b>301.00</b>	<b>15.05</b>	<b>60.20</b>	<b>10</b>	<b>8.00</b>	<b>214</b>

Panel B							
Press Releases of Control Firms in the POST-Restatement Period (N = 76 Firms)							
Type of Announcement	Total Announcements (12 Months)	Total Announcements (6 Months Avg.)	Average per Quarter per Firm	Mean per Firm (12 Months)	Min. per Firm (12 Months)	Median per Firm (12 Months)	Max. per Firm (12 Months)
<i>Board_Opt</i>	16	8.00	0.05	0.21	0	0.00	4
<i>Lead_Chng</i>	43	21.50	0.14	0.57	0	0.00	3
<i>Mngt_Chng</i>	30	15.00	0.10	0.39	0	0.00	6
<i>OD_Chng</i>	15	7.50	0.05	0.20	0	0.00	2
<i>Auditor_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>ControlSyst_Chng</i>	0	0.00	0.00	0.00	0	0.00	0
<i>Strategy</i>	664	332.00	2.18	8.74	0	2.00	41
<i>RS</i>	3	1.50	0.01	0.04	0	0.00	2
<i>IR</i>	620	310.00	2.04	8.16	0	2.00	24
<b>CP_Measures</b>	<b>1391</b>	<b>695.50</b>	<b>4.58</b>	<b>18.30</b>	<b>6</b>	<b>4.00</b>	<b>68</b>
<i>CU</i>	575	287.50	1.89	7.57	0	1.00	55
<i>EM</i>	46	23.00	0.15	0.61	0	0.00	10
<i>CO</i>	115	57.50	0.38	1.51	0	0.00	12
<i>NCP_Other</i>	13	6.50	0.04	0.17	0	0.00	5
<b>NCP_Measures</b>	<b>749</b>	<b>374.50</b>	<b>2.46</b>	<b>9.86</b>	<b>0</b>	<b>1.00</b>	<b>78</b>
<b>Total_Measures</b>	<b>2140</b>	<b>1,070</b>	<b>7.04</b>	<b>28.16</b>	<b>6</b>	<b>5.00</b>	<b>146</b>
<b>Total Press Releases</b>	<b>1506</b>	<b>753.00</b>	<b>4.95</b>	<b>19.82</b>	<b>6</b>	<b>4.00</b>	<b>106</b>

Table 3 provides the summary statistics of all obtained press releases (*Total Press Releases*) and their allocation to distinct types of reputation-building measures for Fraud firms (Panel A) and Non-Fraud firms (Panel B) divided in a PRE-restatement period (6 months before the announcement date of a restatement) and POST-restatement period (12 months after the announcement date of a restatement). *CP\_Measures* represents all press releases directed at a firm's capital providers; *NCP\_Measures* represents all press releases directed at a firm's non-capital providers and *Total\_Measures* represents the sum of *CP\_Measures* and *NCP\_Measures*. All other variables are as described in Appendix B. For the descriptive figures minimum (Min), maximum (Max) and median per firm it is to be noted, that the variables *CP\_Measures*, *NCP\_Measures* and *Total\_Measures* do not represent the sum of the individual types of reputation-building measures of which they are composed but rather show the actual Min/Max. and Median of the "overall variable" (*CP\_Measures*, *NCP\_Measures* and *Total\_Measures*). For example, the maximum of 48 *CP\_Measures* in the PRE-restatement period of Fraud firms represents the maximum number of *CP\_Measures* issued by one single Fraud firm in the PRE-restatement period. *Total Announcements* is not included because none of the Fraud firms issued press releases that include the initial news regarding the financial restatement (*First*) or follow-up press releases that are associated with the restatement (*Other*).

5.3. *Frequency of Reputation (Re-)building – DPR Firms vs. Non-DPR Firms*

According to Hypothesis H1a formulated in section 3.1, I expect the average amount of total press releases (*Total Press Releases*) issued by the restating firm, to increase in response to a DPR restatement and compared to matched control firms. Furthermore, and according to hypotheses H1b and H1c, I expect an increase of the average amount of a DPR firm's reputation-building measures directed at its capital providers (non-capital providers), following a DPR restatement. Thus, I assume an overall increase in the frequency of actions by DPR firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched Non-DPR firms (control firms).

Figure 3 and Table 4 Panel A illustrate the average amount of *Total Press Releases*, *CP\_Measures* and *NCP\_Measures* per firm and each individual quarter of the sample period. Since the sample period within this paper begins six months prior (PRE-restatement period) and ends one year after (POST-restatement period) the initial restatement date, I derive two quarters for the PRE-restatement period (PreQ3 and PreQ4) and four quarters for the POST-restatement period (PostQ1, PostQ2, PostQ3 and PostQ4). Comparing the individual quarters shows that DPR firms issue a higher average number of *Total Press Releases* (DPR-PRE: 7.11 vs. Control-PRE: 5.80; DPR-POST: 7.29 vs. Control-POST: 5.58) and engage in more reputation-building measures directed at non-capital providers (*NCP\_Measures* – DPR-PRE: 4.23 vs. Control-PRE: 3.24; DPR-POST: 4.19 vs. Control-POST: 3.01) compared to their control firms throughout the entire sample period. For reputation-building measures directed at capital providers (*CP\_Measures*), results of Table 4 illustrate less engagement by DPR firms than by control firms in the PRE-restatement period (DPR-PRE: 4.55 vs. Control-PRE: 4.96) and a balanced engagement of DPR- and control firms in the POST-restatement period (DPR-POST: 4.94 vs. Control-POST: 4.94). Figure 3, however, visualizes that for the quarter following the announcement date of the restatement (PostQ1) the average amount of *CP\_Measures* of DPR firms increases from 4.65 (PreQ4) to 5.32 (PostQ1) and hence exceeds the average amount of control firms' *CP\_Measures* (PostQ1: 4.94). For the following quarters – PostQ2 to PostQ4 – the average amount of *CP\_Measures* of DPR firms again decreases and stays slightly below the measures of respective control firms. Overall, Figure 3 indicates a rather volatile course of the quarterly average amount of *Total Press Releases* and reputation-building measures directed at capital providers (*CP\_Measures*) for DPR firms – peaking around the announcement date of the restatement (i.e. PostQ1) – compared to a rather steady course for control firms.

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

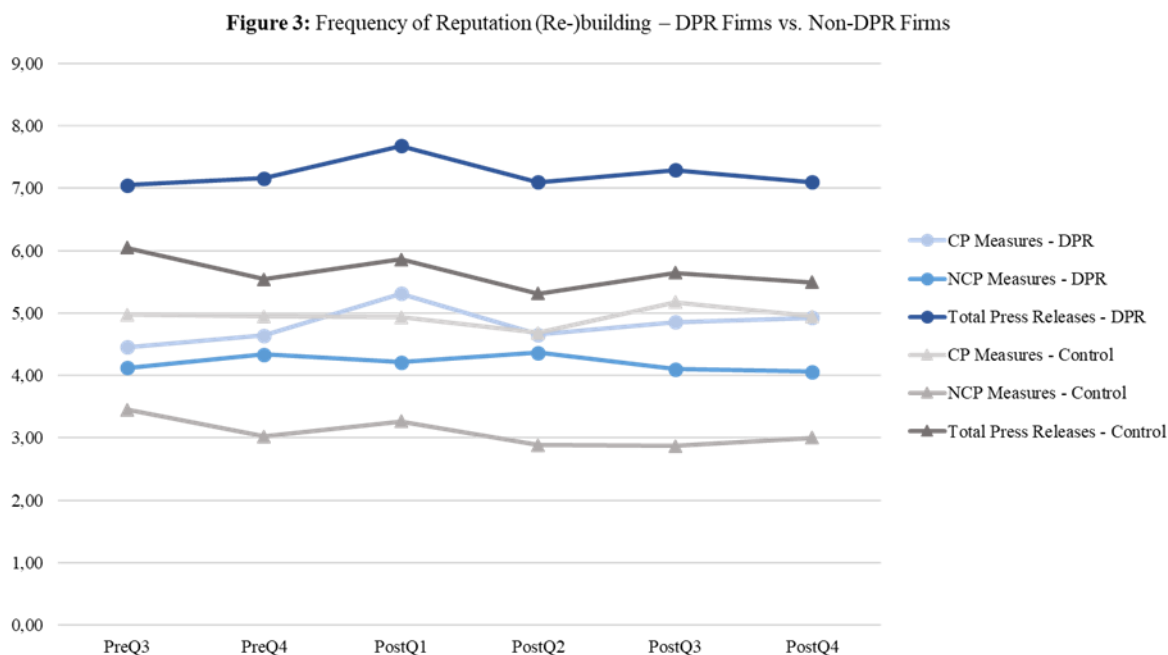


Figure 3 presents the average amount of reputation-building measures of each individual quarter for DPR firms and Control firms in the PRE-restatement period (6 months = 2 quarters) and POST-restatement period (12 months = 4 quarters). The data underlying this figure is provided in Table 4 Panel A. The blue lines with data points denoted by a circle represent all measures taken by DPR firms (dark blue = *Total Press Releases*, light blue = *CP\_Measures*, mid-blue = *NCP\_Measures*) while the grey lines with data points denoted by a triangle illustrate all measures taken by Control firms (dark grey = *Total Press Releases*, light grey = *CP\_Measures*, mid-grey = *NCP\_Measures*). All variable definitions can be found in Appendix B.

Panel B of Table 4 presents the within-firm differences between PRE-restatement and POST-restatement period measures for DPR firms. Results show a significant increase of *CP\_Measures* (p-value = 0.072) in the POST-restatement period relative to the PRE-restatement period. Moreover, the average amount of *Total Press Releases* increases while *NCP\_Measures* decrease in the POST-restatement period relative to the PRE-restatement period. However, both variables are insignificant. Comparing the entire PRE-restatement period to each individual POST-restatement quarter separately reveals similar results for *Total Press Releases* and *NCP\_Measures*, while it provides further insights on the results of *CP\_Measures*. As shown by Table 4 Panel B, the significant increase in reputation-building measures directed at capital providers in the POST-period compared to the PRE-period is due to a significant increase of *CP\_Measures* (p-value = 0.014) within the first quarter after the announcement date of the restatement (i.e. PostQ1). These results are consistent with the findings of Panel A.

Panel C of Table 4 presents the differences between POST-restatement measures for DPR firms and POST-restatement measures for Non-DPR firms (control firms). Though all measures in scope are positive and therefore indicate a tendency of a higher average number of *Total Press Releases* as well as reputation-building measures (*CP\_Measures* and *NCP\_Measures*) for DPR firms in the POST-restatement period relative to Non-DPR firms in the POST-restatement period, none of the variables is significant. Analyzing each individual POST-

restatement quarter separately by comparing a single POST-restatement quarter for DPR firms with the respective quarter for Non-DPR firms reveals the same insignificant results as described above. Solely for the quarters PostQ2 to PostQ4 I find negative, although insignificant, results for the variable *CP\_Measures*, indicating a lower average number of reputation-building measures directed at capital providers (*CP\_Measures*) for DPR firms relative to Non-DPR firms.

Panel D (Table 4) presents the difference-in-differences analysis for DPR firms' periodical differences (PRE-period versus POST-period) relative to Non-DPR firms' periodical differences (PRE-period versus POST-period). Again, all measures in scope are positive but insignificant and therefore solely represent a tendency of a higher average number of *Total Press Releases* as well as reputation-building measures (*CP\_Measures* and *NCP\_Measures*) for DPR firms in the POST-restatement period relative to the PRE-restatement period and relative to the periodical differences (POST minus PRE) of their matched control firms. Results remain the same when analyzing each individual POST-restatement quarter separately. The only exception regarding the sign of the variable can be found in the case of  $\Delta(\text{PostQ1} - \text{PRE})_{\text{DPRvsControl}}$  for *NCP\_Measures*. The negative but insignificant result indicates a tendency of decreasing *NCP\_Measures* within the first quarter after the announcement date (PostQ1) compared to the entire PRE-restatement period for DPR firms relative to Non-DPR firms.

Finally, Panel E of Table 4 represents the difference between POST-restatement measures of DPR firms for PostQ1 versus PostQ2, PostQ3, and PostQ4. In line with my expectations, DPR firm *Measures* in the POST-restatement period, except for *NCP\_Measures* between PostQ1 and PostQ2, decrease over time. Accordingly, DPR firms carry out a higher number of reputation-building measures in the first quarter following the publication of the restatement relative to the subsequent quarters. Again, these results are not significant.

In sum, for nearly all variables the tendency of the results presented by Panel A through Panel E is consistent with my expectations, however, except for the average difference between *CP\_Measures* in PostQ1 and the entire PRE-restatement period (PostQ1 - PRE) as illustrated by Panel B, all variables are consistently insignificant. Thus, Hypotheses H1a, H1b, and H1c cannot be confirmed.



**Table 4:** Frequency of Reputation (Re-)building – DPR Firms vs. Non-DPR Firms

<b>Panel A: Reputation-Building Measures PRE- versus POST-Quarter Results (DPR Firms vs. Non-DPR Firms) (N = 79)</b>															
	<b>DPR Firms</b>					<b>Non-DPR Firms</b>									
	PRE-Restatement Period		POST-Restatement Period		PRE-Restatement Period		POST-Restatement Period		POST-Restatement Period						
	(1) Avg. / Qtr.	(2) PreQ3 PreQ4	(3) Avg. / Qtr.	(4) PostQ1 PostQ2 PostQ3 PostQ4	(5) Avg. / Qtr.	(6) PreQ3 PreQ4	(7) Avg. / Qtr.	(8) PostQ1 PostQ2 PostQ3 PostQ4	(9) Avg. / Qtr.	(10) PostQ1 PostQ2 PostQ3 PostQ4					
<i>CP_Measures</i>	4.55	4.46	4.65	4.94	5.32	4.66	4.86	4.92	4.96	4.97	4.95	4.94	4.68	5.18	4.95
<i>NCP_Measures</i>	4.23	4.13	4.34	4.19	4.22	4.37	4.10	4.06	3.24	3.46	3.03	3.01	3.27	2.89	3.00
<i>Total Press Releases</i>	7.11	7.05	7.16	7.29	7.68	7.10	7.29	7.10	5.80	6.05	5.54	5.58	5.86	5.32	5.49

<b>Panel B: Difference between PRE-Restatement and POST-Restatement Measures for DPR Firms (N = 79 Firms)</b>									
Avg. Difference Between	POST - PRE	PostQ1 - PRE	PostQ2 - PRE	PostQ3 - PRE	PostQ4 - PRE				
<i>CP_Measures</i>	0.389* (0.072)	0.766** (0.014)	0.108 (0.770)	0.310 (0.316)	0.373 (0.180)				
<i>NCP_Measures</i>	-0.048 (0.897)	-0.019 (0.945)	0.133 (0.763)	-0.133 (0.743)	-0.171 (0.740)				
<i>Total Press Releases</i>	0.187 (0.607)	0.576 (0.162)	-0.006 (0.988)	0.184 (0.635)	-0.006 (0.990)				

<b>Panel C: Difference between POST-Restatement Measures for DPR Firms vs. Non-DPR Firms (N<sub>DPR</sub> = 79 Firms; N<sub>Control</sub> = 79 Firms)</b>									
Avg. Difference Between	POST <sub>DPR</sub> - POST <sub>Control</sub>	PostQ1 <sub>DPR</sub> - PostQ1 <sub>Control</sub>	PostQ2 <sub>DPR</sub> - PostQ2 <sub>Control</sub>	PostQ3 <sub>DPR</sub> - PostQ3 <sub>Control</sub>	PostQ4 <sub>DPR</sub> - PostQ4 <sub>Control</sub>				
<i>CP_Measures</i>	0.003 (0.996)	0.380 (0.554)	-0.025 (0.974)	-0.316 (0.660)	-0.025 (0.973)				
<i>NCP_Measures</i>	1.180 (0.371)	0.949 (0.501)	1.481 (0.280)	1.228 (0.345)	1.063 (0.418)				
<i>Total Press Releases</i>	1.715 (0.244)	1.823 (0.194)	1.785 (0.275)	1.646 (0.283)	1.608 (0.271)				

**Table 4: Frequency of Reputation (Re-)building – DPR Firms vs. Non-DPR Firms (continued)**

<b>Panel D: Difference-in-Differences for DPR Firms vs. Non-DPR Firms (N<sub>DPR</sub> = 79 Firms; N<sub>Control</sub> = 79 Firms)</b>					
Avg. Difference Between	$\Delta(\text{POST} - \text{PRE})_{\text{DPR vs Control}}$	$\Delta(\text{PostQ1} - \text{PRE})_{\text{DPR vs Control}}$	$\Delta(\text{PostQ2} - \text{PRE})_{\text{DPR vs Control}}$	$\Delta(\text{PostQ3} - \text{PRE})_{\text{DPR vs Control}}$	$\Delta(\text{PostQ4} - \text{PRE})_{\text{DPR vs Control}}$
<i>CP_Measures</i>	0.415 (0.239)	0.791 (0.102)	0.386 (0.475)	0.095 (0.841)	0.386 (0.397)
<i>NCP_Measures</i>	0.187 (0.683)	-0.044 (0.920)	0.487 (0.382)	0.234 (0.664)	0.070 (0.906)
<i>Total Press Releases</i>	0.405 (0.395)	0.513 (0.379)	0.475 (0.403)	0.335 (0.551)	0.297 (0.631)

<b>Panel E: Difference between POST-Restatement Measures for DPR Firms for PostQ1 versus PostQ2, PostQ3, and PostQ4 (N = 79 Firms)</b>					
Avg. Difference Between	PostQ1 - PostQ2	PostQ1 - PostQ3	PostQ1 - PostQ4		
<i>CP_Measures</i>	0.658 (0.121)	0.456 (0.238)	0.392 (0.261)		
<i>NCP_Measures</i>	-0.152 (0.713)	0.114 (0.704)	0.152 (0.695)		
<i>Total Press Releases</i>	0.582 (0.186)	0.392 (0.248)	0.582 (0.140)		

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 4 reports the results of the analysis of the frequency of reputation (re-)building measures for DPR and Non-DPR firms illustrated by five Panels. Panel A differentiates between reputation-building measures in the PRE- versus the POST-restatement period divided into quarters for DPR and Non-DPR firms. (1) presents the average amount of *Measures* per firm for DPR firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (2) presents the average amount of *Measures* per firm for DPR firms during each individual quarter in the PRE-restatement period; (3) presents the average amount of *Measures* per firm for DPR firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (4) presents the average amount of *Measures* per firm for DPR firms during each individual quarter in the POST-restatement period; (5) presents the average amount of *Measures* per firm for Non-DPR firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (6) presents the average amount of *Measures* per firm for Non-DPR firms during each individual quarter in the PRE-restatement period; (7) presents the average amount of *Measures* per firm for Non-DPR firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (8) presents the average amount of *Measures* per firm for Non-DPR firms during each individual quarter in the POST-restatement period. Panel B illustrates the average within-firm differences between PRE-restatement and POST-restatement *Measures* for DPR firms. Panel C reports the average differences between POST-restatement *Measures* of DPR Firms and POST-restatement *Measures* of Non-DPR Firms. Panel D presents the difference-in-differences results as the firm-specific delta between DPR firms' PRE- versus POST-restatement change in *Measures* less the matched Non-DPR firms' PRE- versus POST-restatement change in *Measures*. Panel E outlines the average differences between POST-restatement *Measures* for DPR firms for PostQ1 relative to PostQ2, PostQ3, and PostQ4. All variable definitions can be found in Appendix B.

#### 5.4. Effectiveness of Reputation (Re-)building – DPR Firms vs. Non-DPR Firms

Table 5 presents the estimation results of model (7). According to Hypothesis H2a (H2b) formulated in section 3.1, I expect DPR firms' announcements of reputation-building measures directed at capital providers (non-capital providers) to generate positive abnormal market returns, following a DPR restatement. Thus, I predict that the coefficient sums, which constitute point estimates of the two-day abnormal market return ( $CAR2$ ) around each reputation-building measure, are positive for the POST-restatement period of DPR firms and consequently for the respective periodical differences (Diff) as well as for the difference-in-differences (DID).

The results of Table 5 column (1) show that out of the seven reputation-building measures targeting capital providers in the POST-restatement period, *Strategy* (p-value = 0.016), *RS* (p-value = 0.000), and *IR* (p-value = 0.000) are associated with significantly positive market reactions, with returns of 5.6 percent, 35.6 percent and 10.4 percent, respectively. Column (1) further presents that two out of the four variables representing reputation-building measures directed at non-capital providers in the POST-restatement period, namely customers (*CU*) and communities (*CO*), are associated with positive and statistically significant (p-value = 0.000 and 0.015, respectively) abnormal returns. The value effects are 12.1 percent for *CU* and 6.5 percent for *CO*. Further, the coefficients of the variables *CP\_Measures* and *NCP\_Measures* – representing the sum of all individual reputation-building measures directed at capital providers and non-capital providers, respectively – are both positive and highly significant (p-value = 0.002 and 0.000), with returns of 6.1 percent and 8.5 percent.

Looking at stock market reactions to corresponding reputation-building measures during the PRE-restatement period of DPR firms, as presented by column (2) of Table 5, results reveal only two variables with statistically significant coefficients. *Board\_Opt*, representing measures that announce an improvement of the board of directors and/or the supervisory board, is significantly negative (p-value = 0.025) and therefore is associated with a negative stock market reaction with an average valuation effect of 2.5 percent. This result is not surprising and in line with my predictions since stakeholders would not expect changes in the composition or strategic re-organizations of the board of directors and/or the supervisory board in the absence of a confounding (i.e. negative) event. Hence, market reactions to such announcements in the PRE-restatement are likely to be negative. Furthermore, returns to *EM* are positive but only marginally significant (p-value = 0.089). All remaining coefficients in column (2) are insignificant, indicating no abnormal market reaction to most reputation-building measures in the PRE-restatement period of DPR firms, which corresponds to my predictions.

Column (3) of Table 5 represents the differences between the PRE-restatement and the POST-restatement period regarding the stock market returns to reputation-building measures of DPR firms. All variables with statistically significant coefficients (all with p-values < 0.05) are positive. Thus, announcements of reputation-building measures represented by the variables *RS*, *IR*, *CU*, *CO* as well as the respective sums represented by the variables *CP\_Measures* and *NCP\_Measures* are associated with value-increasing capital market reactions in the POST-restatement compared to the PRE-restatement period. Also, capital market returns in response to *Board\_Opt* announcements are significantly positive (p-value = 0.049; average valuation effect = 17.7 percent) after the announcement of a restatement compared to the period before such an event (PRE-restatement), where results showed negative market returns.

With respect to the matched control sample, column (4) of Table 5 presents the results of the coefficient sums of reputation-building measures for Non-DPR firms in the POST-restatement period. Except for one single variable, namely *EM*, all variables in scope show insignificant estimated coefficients with inconsistent signs, indicating no abnormal returns to any of these variables in the POST-period in the absence of a DPR restatement. Solely measures directed at employees seem to be associated with significantly positive abnormal stock market returns (p-value = 0.042) in the POST-restatement period of matched control firms.

Looking at stock market reactions to corresponding reputation-building measures during the PRE-restatement period of Non-DPR firms, as presented by column (5) of Table 5, results reveal that most coefficients are statistically insignificant. However, two variables, *Mngt\_Chng* and *CO*, show marginally significant estimated coefficients (p-value = 0.085 and 0.062, respectively). Also, column (6) of Table 5, representing the differences between the PRE-restatement and the POST-restatement period regarding the stock market returns to reputation-building measures of Non-DPR firms, presents primarily insignificant coefficients. Again, solely measures directed at employees (*EM*) are associated with significantly positive abnormal market returns (p-value = 0.058) in the POST-restatement compared to the PRE-restatement period of Non-DPR firms.

Finally, column (7) presents the estimated difference-in-differences coefficients. Results show that only two out of the seven reputation-building measures directed at capital providers and taken by DPR firms in the POST-restatement period, namely *Strategy* and *RS*, are associated with significant value-increasing market returns (p-value = 0.055 and 0.000, respectively) relative to the control group. For measures targeting non-capital providers, none of the individual measures shows significant results. However, the sum of the individual capital- and non-capital provider measures, *CP\_Measures* and *NCP\_Measures*, are both positive and

statistically significant with a p-value of 0.01 for *CP\_Measures* and a p-value of 0.049 for *NCP\_Measures*. Thus, the results of Table 5 are consistent with my overall predictions that, following a DPR restatement, the announcements of DPR firms' reputation-building measures directed at its capital providers (non-capital providers) generate positive abnormal market returns compared to similar announcements of matched control firms.

Table 5: Regression of Two-Day Cumulative Abnormal Return (CAR2) on Reputation-Building Measures (DPR Firms vs. Non-DPR Firms)

$$CAR2 = \alpha_1 + \alpha_2 Post + \alpha_3 DPR + \alpha_4 Post * DPR + \sum \beta_1 Variables + \sum \beta_2 Variables * Post + \sum \beta_3 Variables * DPR + \sum \beta_4 Variables * Post * DPR + \sum \beta_k Year + \epsilon$$

Variables = {Board\_Opt, Lead\_Chang, Mngt\_Chang, OD\_Chang, ST, RS, IR, CU, EM, CO, NCP\_Other, CP\_Measures, NCP\_Measures}

	Coefficient Sums: DPR Firms (N = 79 Firms)				Coefficient Sums: Control Firms (N = 79 Firms)				Diff-in-Diffs ( $\beta_4$ )
	(1) POST	(2) PRE	(3) DIF	(4) POST	(5) PRE	(6) DIF	(7) Diff-in-Diffs		
	Exp. Sign	Exp. Sign	Exp. Sign	Exp. Sign	Exp. Sign	Exp. Sign	Exp. Sign	Exp. Sign	
<i>Board_Opt</i>	(+) 0.0557 (0.438)	(?) -0.1210** (0.025)	(?) 0.177** (0.049)	(?) 0.0083 (0.962)	(?) -0.0960 (0.229)	(?) 0.1040 (0.587)	(?) 0.1040 (0.734)	(+) 0.0722 (0.734)	
<i>Lead_Chang</i>	(+) 0.0020 (0.965)	(?) 0.0411 (0.466)	(+) -0.0391 (0.592)	(?) -0.0786 (0.337)	(?) -0.0074 (0.860)	(?) -0.0713 (0.438)	(?) -0.0713 (0.438)	(+) 0.0321 (0.785)	
<i>Mngt_Chang</i>	(+) -0.0019 (0.979)	(?) -0.0263 (0.624)	(?) 0.0243 (0.786)	(?) 0.0630 (0.477)	(?) 0.0811* (0.085)	(?) -0.0181 (0.856)	(?) -0.0181 (0.856)	(+) 0.0425 (0.752)	
<i>OD_Chang</i>	(+) 0.0020 (0.965)	(?) 0.0411 (0.466)	(?) -0.0391 (0.592)	(?) -0.0786 (0.337)	(?) -0.0074 (0.860)	(?) -0.0713 (0.438)	(?) -0.0713 (0.438)	(+) 0.0321 (0.785)	
<i>Strategy</i>	(+) 0.0565** (0.016)	(?) 0.0193 (0.275)	(?) 0.0372 (0.203)	(?) -0.0378 (0.138)	(?) 0.0059 (0.729)	(?) -0.0437 (0.152)	(?) -0.0437 (0.152)	(+) 0.0809* (0.055)	
<i>RS</i>	(+) 0.356*** (0.000)	(?) 0.0665 (0.383)	(?) 0.2899*** (0.001)	(?) -0.0511 (0.215)	(?) 0.0665 (0.383)	(?) -0.1180 (0.178)	(?) -0.1180 (0.178)	(+) 0.407*** (0.000)	
<i>IR</i>	(+) 0.104*** (0.000)	(?) 0.0111 (0.600)	(?) 0.0926*** (0.009)	(?) 0.0301 (0.459)	(?) 0.0216 (0.383)	(?) 0.0085 (0.858)	(?) 0.0085 (0.858)	(+) 0.0841 (0.157)	
<i>CU</i>	(+) 0.121*** (0.000)	(?) 0.0274 (0.159)	(?) 0.0935*** (0.003)	(?) 0.0298 (0.395)	(?) 0.0096 (0.650)	(?) 0.0202 (0.621)	(?) 0.0202 (0.621)	(+) 0.0733 (0.156)	
<i>EM</i>	(+) 0.0536 (0.261)	(?) 0.0585* (0.089)	(?) -0.00489 (0.934)	(?) 0.0274 (0.395)	(?) -0.0105 (0.802)	(?) 0.1600* (0.058)	(?) 0.1600* (0.058)	(+) 0.0796 (0.109)	
<i>CO</i>	(+) 0.0652** (0.015)	(?) -0.0090 (0.648)	(?) 0.0742** (0.025)	(?) 0.0546 (0.205)	(?) 0.0600* (0.062)	(?) -0.0054 (0.920)	(?) -0.0054 (0.920)	(+) 0.0796 (0.208)	
<i>NCP_Other</i>	(+) 0.0875 (0.411)	(?) -0.0730 (0.290)	(?) 0.1600 (0.205)	(?) 0.0258 (0.860)	(?) 0.0455 (0.342)	(?) -0.0197 (0.898)	(?) -0.0197 (0.898)	(+) 0.1800 (0.366)	
<i>CP_Measures</i>	(+) 0.0611*** (0.002)	(?) -0.0003 (0.986)	(?) 0.0614** (0.013)	(?) -0.0344 (0.167)	(?) 0.0018 (0.903)	(?) -0.0362 (0.208)	(?) -0.0362 (0.208)	(+) 0.0975*** (0.010)	
<i>NCP_Measures</i>	(+) 0.0849*** (0.000)	(?) 0.0101 (0.536)	(?) 0.0748*** (0.003)	(?) 0.0107 (0.655)	(?) 0.0106 (0.484)	(?) 0.0001 (0.998)	(?) 0.0001 (0.998)	(+) 0.0748** (0.049)	
Adjusted R <sup>2</sup>	0.244								
Observations	3839								

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 5 presents the results of regressing the two-day cumulative abnormal return (CAR2) on each individual reputation-building measure (days 0, +1), whereas each observation relates to a single firm-day. *Post* is a binary variable taking the value of 1 for *Measures* within the POST-resistance period, and 0 otherwise. *DPR* is a binary variable taking the value of 1 for *Measures* of DPR restatement firms, and 0 otherwise. The variables *Board\_Opt*, *Lead\_Chang*, *Mngt\_Chang*, *OD\_Chang*, *ST*, *RS*, *IR*, *CU*, *EM*, *CO*, *NCP\_Other*, *CP\_Measures*, and *NCP\_Measures* are categorical variables that comprise all reputation-building measures directed at capital providers and non-capital providers, respectively, announced within one firm-day. Results of regression equation (7) are presented as coefficient sums that provide point estimates of CAR2 around each *Measure*. Exp. Sign indicates the predicted coefficient sign. Control variables *First* and *Other* as well as year fixed effect coefficient estimates are omitted for brevity. All variable definitions can be found in Appendix B.

#### 5.5. Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms

According to Hypothesis H3a formulated in section 3.2, I expect the average amount of total press releases (*Total Press Releases*) issued by the Fraud firm to increase in response to a DPR restatement and compared to respective control firms. Further, and according to hypotheses H3b and H3c, I expect an increase of the average amount of a Fraud firm's reputation-building measures directed at its capital providers (non-capital providers), following a DPR restatement and relative to matched control firms. Thus, I assume an overall increase in the frequency of actions by Fraud firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched Non-Fraud firms (control firms).

Figure 4 and Table 6 Panel A illustrate the average amount of *Total Press Releases*, *CP\_Measures* and *NCP\_Measures* per firm and each individual quarter of the sample period. Comparing the individual quarters shows that Fraud firms issue a considerably higher average number of *Total Press Releases* (Fraud-PRE: 14.25 vs. Control-PRE: 5.02; Fraud-POST: 15.05 vs. Control-POST: 4.95) and engage in noticeably more reputation-building measures directed at capital providers (*CP\_Measures* – Fraud-PRE: 8.70 vs. Control-PRE: 4.56; Fraud-POST: 9.60 vs. Control-POST: 4.58) compared to matched control firms throughout the entire sample period. This discrepancy between Fraud and Non-Fraud firms is even higher for reputation-building measures directed at non-capital providers (*NCP\_Measures* – Fraud-PRE: 11.35 vs. Control-PRE: 2.51; Fraud-POST: 10.75 vs. Control-POST: 2.46). Figure 4 further visualizes that for the quarter following the announcement date of the restatement (PostQ1) the average amount of *Total Press Releases* as well as *CP\_Measures* and *NCP\_Measures* of Fraud firms decreases from 14.50, 9.30 and 11.30, respectively in PreQ4 to 13.70, 8.00 and 9.70, respectively in PostQ1. Against this decreasing development in PostQ1 and contrary to the course of Figure 3 (*DPR Firms vs. Non-DPR Firms*), all *Measures* (i.e. *Total Press Releases*, *CP\_Measures* and *NCP\_Measures*) of Fraud firms peak in PostQ2 and only slightly decline in the subsequent quarters compared to a steady course with considerable lower average *Measures* for Non-Fraud firms. Overall, Figure 4 indicates a much more volatile course of all *Measures* for Fraud firms compared to a steady course of all *Measures* for matched control firms.

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

**Figure 4:** Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms

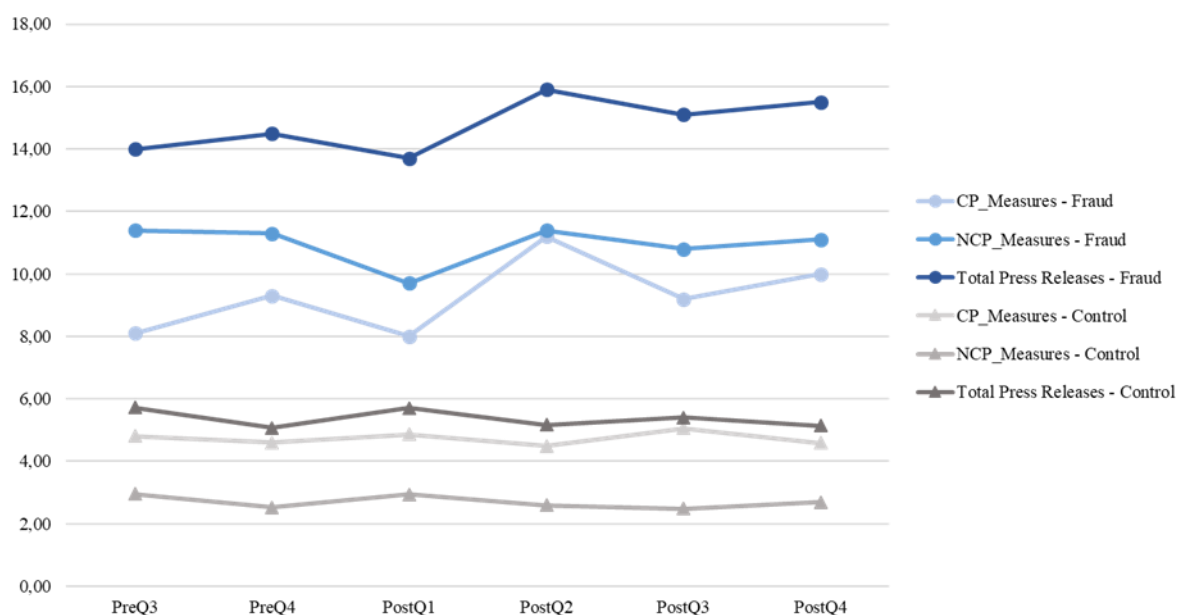


Figure 4 presents the average amount of reputation-building measures of each individual quarter for Fraud firms and Control firms in the PRE-restatement period (6 months = 2 quarters) and POST-restatement period (12 months = 4 quarters). The data underlying this figure is provided in Table 6 Panel A. The blue lines with data points denoted by a circle represent all measures taken by Fraud firms (dark blue = *Total Press Releases*, light blue = *CP\_Measures*, mid-blue = *NCP\_Measures*) while the grey lines with data points denoted by a triangle illustrate all measures taken by Control firms (dark grey = *Total Press Releases*, light grey = *CP\_Measures*, mid-grey = *NCP\_Measures*). All variable definitions can be found in Appendix B.

Panel B of Table 6 presents the within-firm differences between PRE-restatement and POST-restatement period *Measures* for Fraud firms. Results show no significant average differences between the two periods and in neither of the subdivided quarters.

Panel C of Table 6 presents the differences between POST-restatement measures for Fraud firms and POST-restatement measures for Non-Fraud firms (control firms). Comparing the entire POST-restatement periods ( $POST_{\text{Fraud}} - POST_{\text{Control}}$ ), all *Measures* in scope are positive and statistically significant at the  $p < 0.10$  level. These results indicate a significantly higher average number of *Total Press Releases* as well as reputation-building measures (*CP\_Measures* and *NCP\_Measures*) for Fraud firms in the POST-restatement period relative to Non-Fraud firms in the POST-restatement period. Analyzing each individual POST-restatement quarter separately by comparing a single POST-restatement quarter for Fraud firms with the respective quarter for Non-Fraud firms reveals significantly ( $p < 0.10$ ) positive average differences for all *Measures* in PostQ2 ( $PostQ2_{\text{Fraud}} - PostQ2_{\text{Control}}$ ) and PostQ3 ( $PostQ3_{\text{Fraud}} - PostQ3_{\text{Control}}$ ). For the differences of PostQ1 ( $PostQ1_{\text{Fraud}} - PostQ1_{\text{Control}}$ ) only *Total Press Releases* is significant at the  $p < 0.10$  level. Both reputation-building measures are positive but insignificant. The differences of PostQ4 ( $PostQ4_{\text{Fraud}} - PostQ4_{\text{Control}}$ ) are again positive for all *Measures* and statistically significant for *CP\_Measures* and *Total Press Releases* ( $p < 0.10$ ).



Panel D (Table 6) presents the difference-in-differences analysis for Fraud firms' periodical differences (PRE-period versus POST-period) relative to Non-Fraud firms' periodical differences (PRE-period versus POST-period). All *Measures* in scope are insignificant with inconsistent signs. Thus, no tendency can be deduced from the difference-in-differences analysis of this sample.

Finally, Panel E of Table 6 represents the difference between POST-restatement measures of Fraud firms for PostQ1 versus PostQ2, PostQ3, and PostQ4. Against my expectations and in line with Figure 4, Fraud firms' *Measures* in the POST-restatement period increase on the basis of PostQ1. Accordingly, Fraud firms issue less press releases and engage in less reputation-building measures in the first quarter following the publication of the restatement (PostQ1) but increase all actions in the subsequent quarters (PostQ2 to PostQ4) on the basis of PostQ1. Again, these results are not significant.

In sum, Fraud firms issue a significantly higher average amount of *Total Press Releases* and engage in significantly higher average numbers of reputation-building measures in the POST-restatement period relative to Non-Fraud firms (Panel C). However, there is no significant effect between PRE-restatement and POST-restatement period *Measures* for neither of the sample groups, which leads to insignificant results of Panel B and Panel D. Hence, Fraud firms' reputation repair behavior seems to be independent of the DPR restatement announcement date and rather extends over a period presumable related to the actual fraudulent action. This in turn also explains the results of Panel E. Since Hypothesis 3 (H3a, H3b, H3c) examines the frequency of the reputation-building measures carried out in terms of time- (i.e. PRE- versus POST-restatement period) as well as firm-specific (i.e. Fraud firms vs. Non-Fraud firms) aspects, I cannot entirely confirm the three Hypotheses but only the firm-specific component.

**Table 6:** Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms

<b>Panel A: Reputation-Building Measures PRE- versus POST-Quarter Results (Fraud Firms vs. Non-Fraud Firms)</b>															
<b>Fraud Firms (N = 10)</b>						<b>Non-Fraud Firms (N = 76)</b>									
PRE-Restatement Period		POST-Restatement Period		PRE-Restatement Period		POST-Restatement Period		PRE-Restatement Period		POST-Restatement Period					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)				
Avg. / Qtr.	PreQ3	PreQ4	Avg. / Qtr.	PostQ1	PostQ2	PostQ3	PostQ4	Avg. / Qtr.	PreQ3	PreQ4	Avg. / Qtr.	PostQ1	PostQ2	PostQ3	PostQ4
<i>CP_Measures</i>	8.70	8.10	9.30	9.60	11.20	9.20	10.00	4.56	4.67	4.45	4.58	4.67	4.28	4.84	4.51
<i>NCP_Measures</i>	11.35	11.40	11.30	10.75	9.70	11.40	10.80	11.10	2.51	2.71	2.32	2.76	2.29	2.30	2.50
<i>Total Press Releases</i>	14.25	14.00	14.50	15.05	13.70	15.90	15.10	15.50	5.02	5.32	4.72	4.95	4.66	5.00	4.83

<b>Panel B: Difference between PRE-Restatement and POST-Restatement Measures for Fraud Firms (N = 10 Firms)</b>											
Avg. Difference Between	POST - PRE	PostQ1 - PRE	PostQ2 - PRE	PostQ3 - PRE	PostQ4 - PRE						
<i>CP_Measures</i>	0.900 (0.485)	-0.700 (0.643)	2.500 (0.348)	0.500 (0.601)	1.300 (0.410)						
<i>NCP_Measures</i>	-0.600 (0.705)	-1.650 (0.242)	0.050 (0.973)	-0.550 (0.746)	-0.250 (0.915)						
<i>Total Press Releases</i>	0.800 (0.706)	-0.55 (0.768)	1.650 (0.548)	0.85 (0.708)	1.250 (0.628)						

<b>Panel C: Difference between POST-Restatement Measures for Fraud Firms vs. Non-Fraud Firms (N<sub>Fraud</sub> = 10 Firms; N<sub>Control</sub> = 76 Firms)</b>											
Avg. Difference Between	POST <sub>Fraud</sub> - POST <sub>Control</sub>	PostQ1 <sub>Fraud</sub> - PostQ1 <sub>Control</sub>	PostQ2 <sub>Fraud</sub> - PostQ2 <sub>Control</sub>	PostQ3 <sub>Fraud</sub> - PostQ3 <sub>Control</sub>	PostQ4 <sub>Fraud</sub> - PostQ4 <sub>Control</sub>						
<i>CP_Measures</i>	4.853* (0.079)	3.139 (0.118)	6.706* (0.084)	4.149* (0.088)	5.418* (0.097)						
<i>NCP_Measures</i>	8.076* (0.085)	6.763 (0.100)	8.805* (0.063)	8.319* (0.084)	8.416 (0.108)						
<i>Total Press Releases</i>	9.696* (0.082)	7.991* (0.078)	10.740* (0.081)	9.695* (0.093)	10.360* (0.089)						

**Table 6:** Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms (continued)

<b>Panel D: Difference-in-Differences for Fraud Firms vs. Non-Fraud Firms (N<sub>Fraud</sub> = 10 Firms; N<sub>Control</sub> = 76 Firms)</b>					
Avg. Difference Between	$\Delta(\text{POST} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ1} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ2} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ3} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ4} - \text{PRE})_{\text{Fraud vs Control}}$
<i>CP_Measures</i>	0.856 (0.473)	-0.858 (0.545)	2.709 (0.260)	0.152 (0.872)	1.420 (0.331)
<i>NCP_Measures</i>	-0.540 (0.712)	-1.853 (0.149)	0.189 (0.892)	-0.297 (0.851)	-0.199 (0.926)
<i>Total Press Releases</i>	0.844 (0.665)	-0.860 (0.622)	1.884 (0.454)	0.844 (0.688)	1.509 (0.524)

<b>Panel E: Difference between POST-Restatement Measures for Fraud Firms for PostQ1 versus PostQ2, PostQ3, and PostQ4 (N = 10 Firms)</b>				
Avg. Difference Between	PostQ1 - PostQ2	PostQ1 - PostQ3	PostQ1 - PostQ4	
<i>CP_Measures</i>	-3.200 (0.266)	-1.200 (0.470)	-2.000 (0.339)	
<i>NCP_Measures</i>	-1.700 (0.192)	-1.100 (0.513)	-1.400 (0.400)	
<i>Total Press Releases</i>	-2.200 (0.344)	-1.400 (0.537)	-1.800 (0.413)	

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 6 reports the results of the analysis of the frequency of reputation (re-)building measures for Fraud and Non-Fraud firms illustrated by five Panels. Panel A differentiates between reputation-building measures in the PRE- versus the POST-restatement period divided into quarters for Fraud and Non-Fraud firms. (1) presents the average amount of *Measures* per firm for Fraud firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (2) presents the average amount of *Measures* per firm for Fraud firms during each individual quarter in the PRE-restatement period; (3) presents the average amount of *Measures* per firm for Fraud firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (4) presents the average amount of *Measures* per firm for Fraud firms during each individual quarter in the POST-restatement period; (5) presents the average amount of *Measures* per firm for Non-Fraud firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (6) presents the average amount of *Measures* per firm for Non-Fraud firms during each individual quarter in the PRE-restatement period; (7) presents the average amount of *Measures* per firm for Non-Fraud firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (8) presents the average amount of *Measures* per firm for Non-Fraud firms during each individual quarter in the POST-restatement period. Panel B illustrates the average within-firm differences between PRE-restatement and POST-restatement *Measures* for Fraud firms. Panel C reports the average differences between POST-restatement *Measures* of Fraud firms and POST-restatement *Measures* of Non-Fraud firms. Panel D presents the difference-in-differences results as the firm-specific delta between Fraud firms' PRE- versus POST-restatement change in *Measures* less the matched Non-Fraud firms' PRE- versus POST-restatement change in *Measures*. Panel E outlines the average differences between POST-restatement *Measures* for Fraud firms for PostQ1 relative to PostQ2, PostQ3, and PostQ4. All variable definitions can be found in Appendix B.

#### 5.6. Effectiveness of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms

Table 7 presents the estimation results of model (7) with the respective *Fraud* variable adjustments. According to Hypothesis H4a (H4b) formulated in section 3.2, I expect Fraud firms' announcements of reputation-building measures directed at capital providers (non-capital providers) to generate positive abnormal market returns, following a DPR restatement and compared to matched control firms.

The results of Table 7 show, out of the seven reputation-building measures targeting capital providers in the POST-restatement period of Fraud firms, as illustrated by column (1), *Board\_Opt* (p-value = 0.000), *Strategy* (p-value = 0.020), and *RS* (p-value = 0.000) are associated with significant, positive market reactions, with returns of 34.9 percent, 9.2 percent, and 25.9 percent, respectively. On the contrary, the four variables representing reputation-building measures directed at non-capital providers in the POST-restatement period all have negative coefficients and are statistically insignificant, indicating no abnormal returns to any of these variables in the POST-period. Column (1) further presents a positive and significant coefficient of the variable *CP\_Measures* (p-value = 0.070), with a return of 6.3 percent. *NCP\_Measures*, as the sum of all individual reputation-building measures directed at non-capital providers, is also negative and insignificant.

Looking at stock market reactions to corresponding reputation-building measures during the PRE-restatement period of Fraud firms, as presented by column (2) of Table 7, shows three variables representing reputation-building measures directed at capital providers with positive estimated coefficients that are statistically significant. *Lead\_Chng* (p-value = 0.082), representing measures that announce the dismissal/replacement of members of the board of directors, *OD\_Chng* (p-value = 0.082), considering actions that announce the dismissal/replacement of outside directors that are members of the supervisory board, and *RS* (p-value = 0.000) as announcements referring to stock repurchases. Against the result of column (1), *Board\_Opt* is significantly negative (p-value = 0.013) and thus is associated with a negative stock market reaction with an average valuation effect of 2.6 percent in the PRE-restatement period. As outlined already in section 5.4 (DPR firms vs. Non-DPR firms), this result is not surprising and in line with my predictions since stakeholders would not expect changes in the composition or strategic re-organizations of the board of directors and/or the supervisory board in the absence of a confounding (i.e. negative) event. Hence, market reactions to such announcements in the PRE-restatement are likely to be negative. Further, two variables representing reputation-building measures directed at non-capital providers in the PRE-restatement period, namely *CU* and *NCP\_Other*, reveal statistically significant negative results

with p-values of 0.032 and 0.091, respectively. Finally, the coefficient of *NCP\_Measures* corroborates these results with a highly significant (p-value = 0.003) and negative estimated coefficient for the PRE-restatement period of Fraud firms.

Column (3) of Table 7 represents the differences between the PRE-restatement and the POST-restatement period regarding the stock market returns to reputation-building measures of Fraud firms. As in column (1), *Board\_Opt* (p-value = 0.000) and *Strategy* (p-value = 0.073) are associated with significant, positive market reactions, with returns of 61 percent and 8.3 percent, respectively. *RS* is omitted because of collinearity, since there is only one single observation of this variable within the Fraud firm sample. *Lead\_Chng* and *OD\_Chng* are significantly negative (p-values = 0.079) and therefore associated with a negative stock market reaction in the POST-restatement compared to the PRE-restatement period. The sum of reputation-building measures directed at capital providers, as presented by the variable *CP\_Measures*, is associated with value-increasing capital market reactions in the POST-restatement relative to the PRE-restatement period with a p-value of 0.060.

With respect to the matched control sample, column (4) of Table 7 presents the results of the coefficient sums of reputation-building measures for Non-Fraud firms in the POST-restatement period. Except for two variables, namely *IR* and *EM*, which are statistically significant and positive (p-value = 0.088 and 0.032, respectively), all other variables in scope show insignificant estimated coefficients with inconsistent signs, indicating no abnormal returns to any of these variables in the POST-restatement period of matched control firms.

Looking at stock market reactions to corresponding reputation-building measures during the PRE-restatement period of Non-Fraud firms, as presented by column (5) of Table 7, reveals similar results as column (4). Two variables, *Mngt\_Chng* and *CO*, show significant, positive estimated coefficients (p-value = 0.020 and 0.000, respectively) and returns of 8.1 and 12.5 percent. Also, column (6) of Table 7, representing the differences between the PRE-restatement and the POST-restatement period regarding the stock market returns to reputation-building measures of Non-Fraud firms, presents primarily insignificant coefficient results. Solely measures directed at employees (*EM*) are associated with positive and marginally significant abnormal market returns (p-value = 0.086) in the POST-restatement compared to the PRE-restatement period of Non-Fraud firms. Again, *RS* is omitted because of collinearity since the variable is based on only two observations within the Non-Fraud firm sample.

Finally, column (7) presents the estimated difference-in-differences coefficients. Results show that only two out of the seven reputation-building measures directed at capital providers and taken by Fraud firms in the POST-restatement period, namely *Board\_Opt* and *Strategy*, are

associated with significant value-increasing market returns (p-value = 0.013 and 0.039, respectively) relative to the matched control group. For measures targeting non-capital providers, none of the individual measures shows significant results. In turn, only the variable representing the sum of individual capital provider measures (*CP\_Measures*) is positive and statistically significant with a p-value of 0.066.

In sum, the results of Table 7 show that there is no transparent and verifiable effect between PRE-restatement and POST-restatement period *Measures* (time-specific effect) for neither of the sample groups, regarding abnormal market returns around each reputation-building measure. Thus, also the effectiveness of Fraud firms' reputation repair behavior seems to be independent of the DPR restatement announcement date and rather extends over a period presumable related to the actual fraudulent action. In view of my predictions that, following a DPR restatement, the announcements of Fraud firms' reputation-building measures directed at its capital providers (non-capital providers) generate positive abnormal market returns compared to similar announcements of matched control firms, I can only confirm the firm-specific component (i.e. Fraud firms vs. Non-Fraud firms) but not the time-specific effect (PRE-restatement period vs. POST-restatement period). Hence, I cannot entirely confirm Hypothesis 4 (i.e. H4a and H4b).

Table 7: Regression of Two-Day Cumulative Abnormal Return (CAR2) on Reputation-Building Measures (Fraud Firms vs. Non-Fraud Firms)

$$CAR2 = \alpha_1 + \alpha_2 Post + \alpha_3 Fraud + \alpha_4 Post * Fraud + \sum \beta_1 Variables + \sum \beta_2 Variables * Post + \sum \beta_3 Variables * Fraud + \sum \beta_4 Variables * Post * Fraud + \sum \beta_k Year + \epsilon$$

Variables = {Board\_Opr, Lead\_Chng, Mngt\_Chng, OD\_Chng, ST, RS, IR, CU, EM, CO, NCP, Other, CP\_Measures, NCP\_Measures}

	Coefficient Sums: Fraud Firms (N = 10 Firms)				Coefficient Sums: Control Firms (N = 76 Firms)				Diff-in-Diffs ( $\beta_4$ )	
	Exp. Sign	(1) POST	(2) PRE	(3) Diff	Exp. Sign	(4) POST	(5) PRE	(6) Diff		Exp. Sign
<i>Board_Opr</i>	(+)	0.349*** (0.000)	-0.261** (0.013)	0.610*** (0.000)	(?)	-0.007 (0.964)	-0.102 (0.181)	0.0948 (0.584)	(+)	0.515** (0.013)
<i>Lead_Chng</i>	(+)	-0.0452 (0.522)	0.149* (0.082)	-0.195* (0.079)	(?)	-0.0678 (0.416)	-0.0024 (0.956)	-0.0654 (0.486)	(+)	-0.129 (0.373)
<i>Mngt_Chng</i>	(+)	-0.0510 (0.521)	-0.0614 (0.509)	0.0104 (0.933)	(?)	0.0334 (0.711)	0.0809** (0.020)	-0.0474 (0.624)	(+)	0.0578 (0.710)
<i>OD_Chng</i>	(+)	-0.0452 (0.522)	0.149* (0.082)	-0.195* (0.079)	(?)	-0.0678 (0.416)	-0.00240 (0.956)	-0.0654 (0.486)	(+)	-0.129 (0.373)
<i>Strategy</i>	(+)	0.0923** (0.020)	0.0085 (0.743)	0.0838* (0.073)	(?)	-0.0335 (0.218)	0.0001 (0.996)	-0.0336 (0.303)	(+)	0.117** (0.039)
<i>RS</i>	(+)	0.259*** (0.000)	0.259*** (0.000)	(?)	(?)	-0.0337 (0.450)	-0.0337 (0.450)	(?)	(+)	(?)
<i>IR</i>	(+)	0.0203 (0.688)	0.0495 (0.230)	-0.0292 (0.653)	(?)	0.0727* (0.088)	0.0084 (0.741)	0.0644 (0.190)	(+)	-0.0936 (0.251)
<i>CU</i>	(+)	-0.0492 (0.280)	-0.0773** (0.032)	0.0281 (0.624)	(?)	0.0539 (0.130)	0.0062 (0.772)	0.0477 (0.250)	(+)	-0.0196 (0.782)
<i>EM</i>	(+)	-0.0857 (0.172)	-0.0672 (0.174)	-0.185 (0.816)	(?)	0.182** (0.032)	0.0105 (0.844)	0.171* (0.086)	(+)	-0.190 (0.137)
<i>CO</i>	(+)	-0.0239 (0.614)	0.0104 (0.784)	-0.0344 (0.571)	(?)	0.0535 (0.257)	0.125*** (0.000)	-0.0714 (0.205)	(+)	0.0370 (0.655)
<i>NCP_Other</i>	(+)	-0.0333 (0.707)	-0.112* (0.091)	0.0783 (0.477)	(?)	0.0708 (0.645)	0.0333 (0.475)	0.0375 (0.815)	(+)	0.0408 (0.834)
<i>CP_Measures</i>	(+)	0.0630* (0.070)	-0.0137 (0.542)	0.0768* (0.060)	(?)	-0.0243 (0.363)	-0.0075 (0.618)	-0.0168 (0.581)	(+)	0.0935* (0.066)
<i>NCP_Measures</i>	(+)	-0.0222 (0.534)	-0.0802*** (0.003)	0.0580 (0.190)	(?)	0.00977 (0.694)	0.0209 (0.179)	-0.0111 (0.703)	(+)	0.0691 (0.192)
Adjusted R <sup>2</sup>		0.292								
Observations		1954								

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 7 presents the results of regressing the two-day cumulative abnormal return (CAR2) on each individual reputation-building measure of Fraud and Non-Fraud firms, as illustrated by regression model (7). The dependent variable CAR2 is calculated as the cumulative two-day abnormal returns around the announcement of each individual reputation-building measure (days 0; +1), whereas each observation relates to a single firm-day. Post is a binary variable taking the value of 1 for Measures within the POST-restatement period, and 0 otherwise. Fraud is a binary variable taking the value of 1 for Measures of Fraud firms, and 0 otherwise. The variables Board\_Opr through NCP\_Other are binary variables equal to 1 on days for which a new reputation-building measure is announced, and 0 otherwise. Variables CP\_Measures and NCP\_Measures are categorical variables that comprise all reputation-building measures directed at capital providers and non-capital providers, respectively, announced within one firm-day. Results of regression equation (7) are presented as coefficient sums that provide point estimates of CAR2 around each Measure. Exp. Sign indicates the predicted coefficient sign. Control variables First and Other as well as year fixed effect coefficient estimates are omitted for brevity. All variable definitions can be found in Appendix B.

## 6. Robustness Checks

Since, in particular, the results of my second sample (Fraud firms vs. Non-Fraud firms) deviate from my expectations, regarding the time-specific effect, I carry out a sensitivity test to increase the robustness and verify the reliability of my findings. I therefore substitute the control sample (Non-Fraud firms) by using all residual DPR firms – instead of Non-DPR firms – without fraud-related information within the fraud-sample period. This leads to a Fraud firm sample of 10 firms versus a Non-Fraud firm sample of 69 firms. For brevity, results of Figure 5, Table 8, and Table 9 are presented in Appendix D.

With regard to the analysis of the frequency of reputation (re-)building, results of the robustness analysis (Figure 5 and Table 8 of Appendix D) are relatively similar to the results of Figure 4 and Table 6, respectively. Figure 5 and Panel A of Table 8 illustrate that Non-Fraud firms, as defined within this sensitivity analysis (i.e. residual DPR firms without fraud-related information), issue a higher average amount of *Total Press Releases* throughout the entire sample period compared to Non-Fraud firms, as defined within the main analysis (Hypotheses 3 and 4) of this paper (i.e. Non-DPR firms without fraud-related information as illustrated by Figure 4). However, Figure 5 visualizes that Fraud firms still issue a considerable higher average number of *Total Press Releases* compared to the adjusted control sample (Non-Fraud firms). Figure 5 and Table 8 (Panel A) further outline a slight increase of *CP\_Measures* in PostQ1 for Non-Fraud firms within this analysis. Again, Figure 5 indicates a much more volatile course of all *Measures* for Fraud firms compared to a rather steady course of all *Measures* for Non-Fraud firms.

Table 8 shows that for Panels B, D, and E, results do not deviate from the results of Table 6. Solely Panel C presents slightly insignificant results for *NCP\_Measures* and *Total Press Releases* throughout all investigated quarters as well as for *CP\_Measures* for the differences in PostQ4 ( $\text{PostQ4}_{\text{Fraud}} - \text{PostQ4}_{\text{Control}}$ ). In turn, results for *CP\_Measures* in PostQ1 ( $\text{PostQ1}_{\text{Fraud}} - \text{PostQ1}_{\text{Control}}$ ), PostQ2 ( $\text{PostQ2}_{\text{Fraud}} - \text{PostQ2}_{\text{Control}}$ ), PostQ3 ( $\text{PostQ3}_{\text{Fraud}} - \text{PostQ3}_{\text{Control}}$ ) as well as the entire POST-restatement periods ( $\text{POST}_{\text{Fraud}} - \text{POST}_{\text{Control}}$ ) remain positive and statistically significant at the  $p < 0.10$  level.

Table 9 presents the robustness analysis results of measuring the effectiveness of reputation (re-)building with respective adjustments of the Non-Fraud sample group. While results of the unchanged Fraud firm sample (columns (1) - (3)) only slightly differ from the results in Table 7, columns (4) – (6), which represent the results of the adjusted control sample (Non-Fraud firms), reveal the main differences between Table 7 and Table 9. Column (4) of Table 9 presents the results of the coefficient sums of reputation-building measures for Non-



Fraud firms in the POST-restatement period. Out of the variables representing reputation-building measures directed at capital providers, *Strategy* (p-value = 0.005), *RS* (p-value = 0.000), and *IR* (p-value = 0.000) are associated with significant, positive market reactions, with returns of 7.2 percent, 42 percent, and 13 percent, respectively. Moreover, coefficients of *CU* (p-value = 0.000), *EM* (p-value = 0.045), and *CO* (p-value = 0.005) – representing variables of reputation-building measures directed at non-capital providers in the POST-restatement period – are all positive and statistically significant. Finally, the coefficients of the variables *CP\_Measures* and *NCP\_Measures* – representing the sum of all individual reputation-building measures directed at capital providers and non-capital providers, respectively – are both positive and highly significant (p-value = 0.001 and 0.000), with returns of 7.7 percent and 10.7 percent, respectively. Comparing these results to the results of Table 7, column (4), illustrates that only two out of all variables in scope, namely *IR* and *EM*, show significant and positive coefficients. On the contrary, looking at column (5) of Table 9 – representing the returns to reputation-building measures for control firms in the PRE-restatement period – reveals insignificant coefficients for all variables in scope. Whereas column (5) of Table 7 at least show two variables, *Mngt\_Chng* and *CO*, with significantly positive estimated coefficients. Consequently, the differences between the PRE-restatement and the POST-restatement period results, regarding the stock market returns to reputation-building measures of Non-Fraud firms, presented in column (6) of Table 9, reveals significant coefficient results for most of the significant variables of column (4). More precisely, *RS* (p-value = 0.000), *IR* (p-value = 0.007), *CU* (p-value = 0.001), and *CO* (p-value = 0.017) as well as the coefficients of the variables *CP\_Measures* (p-value = 0.035) and *NCP\_Measures* (p-value = 0.002) all are positive and highly significant, contrary to the results of column (6) of Table 7.

Finally, column (7) presents the estimated difference-in-differences coefficients. Results of Table 9 show that only two out of all reputation-building measures in scope and taken by Fraud firms in the POST-restatement period, namely *Board\_Opt* and *IR*, are associated with significant market returns (p-value = 0.006 and 0.022, respectively) relative to the matched control group. However, *IR* releases value-decreasing market returns, as illustrated by the negative coefficient sign. Comparing these results to the results of the same column of Table 7 shows nearly identical results for *Board\_Opt*, while *Strategy* as well as *CP\_Measures* are both positive and significant.

Overall, results of my robustness check basically summarize some of the previous findings regarding Fraud firms' reputation repair behavior. The main difference in adjusting the respective control sample by substituting Non-DPR firms without fraud-related information

with DPR firms without fraud-related information, are illustrated by comparing the results of Table 7 and to the results of Table 9. Thereby, columns (4) to (6) of Table 7 overall present noticeable less capital market reactions in form of abnormal market returns to reputation-building measures of control firms (i.e. Non-DPR firms), while columns (4) to (6) of Table 9 show significant differences between capital market reactions to reputation-building measures in the PRE-restatement compared to the POST-restatement period of control firms (i.e. DPR firms). This again emphasizes that there is a considerable time-specific effect (PRE-restatement period vs. POST-restatement period) for DPR firms while there is only a firm-specific effect (i.e. Fraud firms vs. Non-Fraud firms) for Fraud firms.

#### **7. Conclusion and Limitations**

This paper examines the complex nature of firms' reputation (re-)building management in response to financial violations and how this process is associated with managing multiple (stakeholder) reputations. From an organizational perspective, an enhanced awareness and sensitivity of the trade-offs associated with a firm's specific reputations should enhance managers' ability to protect and rebuild these specific reputations when they are threatened.

Using financial restatements as a substitute to display financial violations is commonly used in accounting literature. Since this paper specifically analyzes reputation repair behavior of German firms, I rely on a sample of firms denounced by the German two-tier enforcement system involving the financial reporting enforcement Panel. Further, this sample is divided into firms with presumable unintentional financial misreporting "errors" and intentional financial misreporting "fraud". I believe that this distinction and separate analysis of so-called "Fraud firms" might expose further insights on a firm's reputation rebuilding behavior. Within this study, I compare pre-defined reputation (re-)building measures, each presumed to target identified elementary stakeholder groups, regarding time-specific effects (i.e. PRE-restatement period vs. POST-restatement period) as well as focusing firm-specific aspects (i.e. treatment firms vs. control firms).

With regard to my first sample (DPR firms vs. Non-DPR firms), the findings in principle show an overall increase in the frequency of reputation-building measures by DPR firms in the POST-restatement period compared to the PRE-restatement period and relative to the matched Non-DPR firms (control firms), however, the results are not significant and therefore only present a tendency. Analyzing the effectiveness of firms' reputation (re-)building reveals that, following a DPR restatement, the announcements of DPR firms' reputation-building measures

directed at its elementary stakeholders (i.e. capital providers and non-capital providers) generate positive abnormal market returns compared to similar announcements of matched control firms. Thus, these findings are consistent with my overall predictions.

Findings of my second sample (Fraud firms vs. Non-Fraud firms) reveal that Fraud firms issue a significantly higher average amount of *Total Press Releases* and engage in significantly higher average numbers of reputation-building measures in the POST-restatement period relative to Non-Fraud firms. However, there is no significant effect between PRE-restatement and POST-restatement period *Measures* for neither of the sample groups (Fraud firms vs. Non-Fraud firms). Analyzing the effectiveness of Fraud firms' reputation (re-)building reveals that the announcements of Fraud firms' reputation-building measures directed at both, capital providers and non-capital providers, generate positive abnormal market returns for some of the *Measures* in the POST-restatement period. Similar announcements in the PRE-restatement period, however, provoke positive as well as negative abnormal market returns for almost the double amount of *Measures*. Control firms show noticeable fewer significant market reactions to comparable reputation-building measures.

These results lead to the assumption that Fraud firms' reputation repair behavior is independent of the actual DPR restatement announcement date. This may have various reasons. First, the actual fraudulent action of determined Fraud firms is widely independent of the erroneous financial statement denounced by the financial reporting enforcement Panel. Second, firms deliberately communicate over a longer period of time – hence start earlier and last longer – to rebuild their more severely damaged reputation. Third, presuming that the fraudulent action is associated with the DPR restatement, it cannot be excluded that media and other communication channels (e.g. social media) get early notice of the violation especially in the case of fraud. Thus, firms must respond accordingly and take early actions. On the basis of the fact that three out of the ten Fraud firms within this paper admit to fraud within their own firm press releases prior to the DPR announcement while two firms mention fraud within their actual DPR restatement release, this last presumption appears obvious.

Limitations of this paper's approach and methodology arise as most relevant data used for testing the hypotheses is hand collected and allocated to self-defined, although literature based, reputation (re-)building measures. Hence, performed investigations are to a great extent based on my subjective assessment. Furthermore, even if using financial restatements – as imposed by the German financial reporting enforcement Panel – as a substitute to display financial violations is a commonly used approach in accounting literature, it implies certain constraints. Thus, financial restatements can occur for many reasons, including errors and

misinterpretations of complex and sometimes burdensome accounting rules and regulations. This procedure, however, is due to the fact that there is no satisfactory alternative on the German accounting market for the investigation of financial violation but to rely on financial restatements. Within this paper, I strive to address this limitation by further dividing the DPR firm sample into firms with unintentional financial misreporting “errors” and firms with intentional financial misreporting “fraud”. Therefore, I make use of the *LexisNexis WorldCompliance Online Search Tool* to obtain relevant information about the firms in scope. However, out of the 10 firms that can be associated with fraud within the set sample period, for five of the firms it cannot be determined conclusively whether the reported fraud is directly related to the DPR restatement. Finally, firms may undertake reputation-building measures without announcing them in a press release. These actions can consequently not be identified in my sample. This may specifically be the case for measures directed at employees, which a firm may presumably communicate strictly internally. Regarding measures directed toward the residual stakeholders, however, this concern seems to be rather small because a firm's public reputation (re-)building management depends on an open and consequently external communication strategy. Further, unannounced *Measures* affect both, the frequency of DPR firms' (Fraud firms') *Measures* as well as the frequency of Control firms' *Measures*, in both the PRE-restatement and POST-restatement period

Described limitations at the same time point out avenues for future research. The present work gives an initial overview of the impact of a DPR restatement publication on firm reputation and of firms' reputation (re-)building behavior for the German market. However, many relationships remain unexplored and therefore provide opportunities for future studies in this area. First, a bigger Fraud firm sample would be desirable. Second, especially in the age of digitalization, social media platforms and firms' communication strategies through these channels can serve as a useful and decisive complement to the presented research design. Finally, the German federal government recently decided on a nationwide corruption registry that aims at serving as a blacklist of German firms with committed fraudulent activities. This could serve as a good basis for future research on firms' fraudulent involvements, the subsequent causes as well as their reputation (re-)building management.

Appendix A: Overview Reputation-Building Measures

Reputation-Building Measures												
Capital Provider (CP) Measures					Non-Capital Provider (NCP) Measures							
<i>Boord_Oprt</i>	<i>Lead_Chng</i>	<i>Migt_Chng</i>	<i>OD_Chng</i>	<i>Auditor_Chng</i>	<i>Control_Syst_Chng</i>	<i>Strategy</i>	<i>RS</i>	<i>IR</i>	<i>CU</i>	<i>EM</i>	<i>CO</i>	<i>NCP_Other</i>
Strengthening of the independence of the Board of Directors or the Supervisory Board.	Change of Members of the Board of Directors	Change of Leadership/ Management (C-Sites; Leadership of Subsidiaries)	Turnover of Outside Directors	Change of Audit Firm	Change of Internal Control- or Incentive System	New Strategic Orientation	Repurchase of Company Shares	(Annual) Investor Relation Reports (e.g. Financial Statements)	Advertisement, Fair, Trade Show	Training, Mentoring	Charity	Criminal/ Civil Proceedings
Re-Allocation of Roles/ Areas of Responsibility	Dismissals/ Cancellations	Dismissals/ Cancellations	Dismissals/ Cancellations (especially of Supervisory Board Members)	Dismissals/ Cancellations	Certificates	New Company Sites		Unique Dividends	Promotions, Offerings	Change in Human Resources Policy	Environment	Avoidance of a legal dispute
Additional Appointments	New Appointments/ Replacements	New Appointments/ Replacements	New Appointments/ Replacements	New Appointments/ Replacements		New Product Segments		Change of Capital Structure	Awards of Products/ Services	Rankings and Employee Surveys	Sustainability	
Replacement of an inside director with an outside director						New Alliances or Partnerships		External and Internal Stock Purchase Recommendation	New Products in Product Segment and Rebranding	Women's Quota	Donations, Sponsorship	
						Innovations		Research Projects; Studies	Product Service Improvement	Benefit Programs	Aid Projects	
						New Major Contracts		Patents; Licences	Competitions/ Lottery	Awards of Employees	New Business Branches in the Environment Sector	
						Restructuring		Major Contracts with Stock Value Increase	Warranty extension and additional	Acknowledgments	Improved Technology	
						Acquisitions		Symposiums	Avoidance of litigation (product quality)	New Jobs/ Employee Positions	Country Studies/ Research Projects	
						(Quality-) Certificates (e.g. TÜV)		Criminal/ Civil Proceedings	New Major (Product) Contracts	Apprenticeship Positions	Avoidance of a dispute (environment)	
						Company Awards					Ideas Competition	

**Appendix B: Variable Definition**

Variable	Definition
<b>Dependent Variables</b>	
<b>Proxies Relating to Reputation (Re-)building Measures (<i>Measures</i>)</b>	
<i>Total Press Releases</i>	Binary variable taking the value of 1 each time a firm issues a press release within the defined period.
<i>Total_Measures</i>	Categorical variable that comprises all reputation-building measures directed at capital providers and non-capital providers within each press release.
Proxies Relating to Capital Provider Measures	
<i>Board_Opt</i>	Binary variable taking the value of 1 for each press release that includes actions that announce an improvement of the board of directors and/or the supervisory board.
<i>Lead_Chng</i>	Binary variable taking the value of 1 for each press release that includes actions announcing the dismissal/replacement of members of the board of directors.
<i>Mngt_Chng</i>	Binary variable taking the value of 1 for each press release that includes changes of other key leadership/key management positions, not part of the board of directors (i.e. other C-suites; leadership of subsidiaries).
<i>OD_Chng</i>	Binary variable taking the value of 1 for each press release that includes actions that announce the dismissal/replacement of outside directors that are members of the supervisory board.
<i>Auditor_Chng</i>	Binary variable taking the value of 1 for each press release that includes actions that announce the change of the current auditor.
<i>ControlSyst_Chng</i>	Binary variable taking the value of 1 for each press release that includes announcements that mention a change to internal control procedures or incentive/ compensation systems.
<i>Strategy</i>	Binary variable taking the value of 1 for each press release that includes announcements that refer to any kind of restructuring process or changes in strategic directions.

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

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<b>Variable</b>	<b>Definition</b>
<i>RS</i>	Binary variable taking the value of 1 for each press release that includes announcements referring to stock repurchases.
<i>IR</i>	Binary variable taking the value of 1 for each press release that includes further investor relation information.
<i>CP_Measures</i>	Categorical variable that comprises all reputation-building measures directed at capital providers within each press release.

#### Proxies Relating to Non-Capital Provider Measures

<i>CU</i>	Binary variable taking the value of 1 for each press release that includes announcements that are customer and/or product related.
<i>EM</i>	Binary variable taking the value of 1 for each press release that includes information directed at current and/or potential future employees.
<i>CO</i>	Binary variable taking the value of 1 for each press release that includes information directed to the members of the community in which the firm operates.
<i>NCP_Other</i>	Binary variable taking the value of 1 for each press release that includes information that does not directly or solely target one of the three stakeholder groups mentioned, but rather the general public as a whole.
<i>NCP_Measures</i>	Categorical variable that comprises all reputation-building measures directed at non-capital providers within each press release.

#### Proxies Relating to Capital Market Reactions

<i>CAR2</i>	Two-day cumulative abnormal return.
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#### Independent Variables

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<i>Post</i>	Binary variable taking the value of 1 for measures within the POST-restatement period, and 0 otherwise.
<i>DPR</i>	Binary variable taking the value of 1 for firms with DPR/BaFin restatements, and 0 otherwise.

### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

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<b>Variable</b>	<b>Definition</b>
<i>Fraud</i>	Binary variable taking the value of 1 for firms with identified fraudulent actions within the sample period, and 0 otherwise.
<i>Quarter1</i>	Binary variable taking the value of 1 for measures within the first quarter after the publication date of the restatement, and 0 otherwise.

#### **Control Variables**

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<i>Initial</i>	Binary variable taking the value of 1 for press releases that include the initial news regarding the financial restatement, and 0 otherwise.
<i>Other</i>	Binary variable taking the value of 1 for follow-up press releases that are associated with the restatement, and 0 otherwise.

#### **Variables Used in Matching Control Firms**

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<i>IFRS<sub>it</sub></i>	Binary variable taking the value of 1 if firms use IFRS as their reporting standard; 0 otherwise (e.g. national accounting standards such as HGB).
<i>Size<sub>it</sub></i>	The natural logarithm of total assets at the end of year $t$ of firm $i$ .
<i>Lev<sub>it</sub></i>	The sum of total long-term debt and total short-term debt divided by total assets at the end for year $t$ of firm $i$ .
<i>ROA<sub>it</sub></i>	Return on assets for year $t$ , measured as the ratio of income before taxes scaled by total assets of firm $i$ .
<i>Year<sub>it</sub></i>	Year indicator variables equal to 1 for each year $t$ of firm $i$ ; 0 otherwise.
<i>Industry<sub>it</sub></i>	Industry indicator variables equal to 1 for each industry Standard Industrial Classification (SIC) code; 0 otherwise.



### III. Firms' Reputation (Re-)building Management in Response to Financial Violations

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<b>Variable</b>	<b>Definition</b>
<b>Variables Used in Calculating the Cumulative Abnormal Returns</b>	
$CAR_{i,t}$	Sum of the daily spread between the firm's daily discrete stock return and the return that is considered "fair" according to the underlying asset pricing model from $t - 65$ to $t + 65$ trading days surrounding the announcement date.
$TRI_{i,t}$	Daily total return indices of firm $i$ on day $t$ .
$TRI_{i,t-1}$	Lagged daily total return indices of firm $i$ one day before (i.e. $t-1$ )
$r_{i,t}$	Daily discrete stock returns.
$r_{f,t}$	Risk-free interest - return that is considered "fair" according to the underlying asset pricing model.
$\alpha_{i,t}$	Daily excess return.

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#### Appendix C: Examples of Press Releases with Distinct Reputation-Building Measures

Example of *Strategy* and *CU*:

Wirecard AG

WKN: 747206    ISIN: DE0007472060    Land: Deutschland
Nachricht vom 16.06.2008   07:01
<b>Creditreform und Wirecard AG bieten Zahlungsgarantie: 'PayShield' verringert das Risiko im Online-Handel</b>
<b>Wirecard AG / Produkteinführung</b>
Veröffentlichung einer Corporate News, übermittelt durch die DGAP - ein Unternehmen der EquityStory AG. Für den Inhalt der Mitteilung ist der Emittent / Herausgeber verantwortlich.
Neuss / Grasbrunn b. München, 16. Juni 2008; Ab sofort erhalten Distanzhändler mit 'PayShield' eine Zahlungsgarantie. 'PayShield', eine gemeinsame Produktentwicklung der CEG Creditreform Consumer GmbH und der Wirecard AG, ist eine umsatzsteigernde und kostensparende Lösung für den Distanzhandel.
Die Umsätze im Internet nehmen jährlich zu: Allein in Europa stieg 2007 der Handelsumsatz mit Konsumenten im Vergleich zum Vorjahr um 24 Prozent. 63 Prozent der europäischen Online-Shopper bevorzugen dabei die Bezahlung per Kreditkarte, wobei in Deutschland Lastschrift und Rechnung dominieren. Für die Händler bedeutet dies ein Dilemma: Einerseits fordern Kunden eine Vielzahl verschiedener Bezahlmöglichkeiten, andererseits bringen diese unterschiedlich hohe Ausfallrisiken mit sich. Kurz: Umsatz oder Sicherheit.
'PayShield' macht nun beides möglich: Auf Basis der beim Einkauf bzw. Bezahlvorgang übermittelten Daten und aktuellen Bonitätsinformationen wird ein 'Risikoprofil' erstellt. Der Händler erhält daraufhin die Auskunft, welche Zahlungsmöglichkeiten er dem Konsumenten anbieten darf und ob die Zahlungsgarantie für diese Transaktion übernommen wird. Die Vorteile liegen auf der Hand: Der Händler kann mehrere Zahlungsoptionen einbinden und dadurch die Abbruchquote beim Bezahlvorgang verringern, ohne jedoch sein Risiko zu erhöhen.
Darüber hinaus wird der Händler auch beim Forderungsmanagement entlastet: Wird eine Zahlungsgarantie in Anspruch genommen, übernimmt 'PayShield' alle nachfolgenden Prozesse, wie beispielsweise das Inkasso.
'Wir arbeiten mit der Wirecard AG bereits seit einigen Jahren sehr erfolgreich zusammen. Gemeinsam haben wir nun ein Lösungspaket entwickelt, das sowohl kleinen als auch großen Händlern Planungssicherheit gibt. Damit bieten wir auch den über 125.000 Unternehmen, die Mitglied bei Creditreform sind, die Möglichkeit ihre Umsätze mit Hilfe eines innovativen Produkts zu erhöhen', so Dr. Carsten Uthoff, Vorstand der Creditreform AG.
Dr. Markus Braun, Vorstandsvorsitzender der Wirecard AG ergänzt: 'Mit 'PayShield' haben wir die Kernkompetenzen beider Unternehmen miteinander verknüpft. Händler profitieren so von unseren Erfahrungswerten und können sich auf ihre Kernkompetenzen konzentrieren, indem sie den gesamten Zahlungsprozess auslagern.

Example of *Strategy*:

Wirecard AG



WKN: 747206 ISIN: DE0007472060 Land: Deutschland

Nachricht vom 18.06.2008 | 08:46

#### Wirecard AG und Symmetric Systems schließen strategische Partnerschaft

**Wirecard AG / Kooperation**

Veröffentlichung einer Corporate News, übermittelt durch die DGAP - ein Unternehmen der EquityStory AG.  
Für den Inhalt der Mitteilung ist der Emittent / Herausgeber verantwortlich.

Seattle, München/Grasbrunn, 18. Juni, 2008; Wirecard AG übernimmt im Rahmen einer strategischen Partnerschaft die Abwicklung und Akzeptanz (Acquiring) europäischer Zahlungstransaktionen für die Symmetric Systems, LLC. Symmetric Systems, Entwickler der Zahlungsplattform vitalpay.com, zählt zu den führenden Zahlungsverkehrsdienstleistern der USA.

'VitalPay verfügt über eine der umfangreichsten Zahlungsplattformen im ePayment-Markt', sagt Matt Jackson, CEO von Symmetric Systems. 'Mit der Wirecard AG haben wir den idealen Partner für das internationale Geschäft unserer Kunden gefunden, insbesondere aufgrund ihrer führenden Position am europäischen Markt sowie ihrer Finanz- und Acquiring-Dienstleistungen.'


Rüdiger Trautmann, Vertriebs- und Marketingvorstand der Wirecard AG betont: 'Wir freuen uns, Symmetric Systems in Europa mit unseren Zahlungsverkehrsdienstleistungen unterstützen zu können. Unser Leistungsspektrum umfasst sowohl regionale, als auch internationale Zahlungsverfahren und bietet ein integriertes Risikomanagement. Bankdienstleistungen, wie etwa die Akzeptanz von Kreditkarten über die Konzerntochter Wirecard Bank AG, ermöglichen das Angebot eines einzigartigen Lösungspakets für unsere Partner und Kunden.'

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**Über Wirecard:**

Die Wirecard AG ist einer der führenden internationalen Anbieter elektronischer Zahlungs- und Risikomanagementlösungen. Weltweit unterstützt Wirecard über 9.000 Unternehmen aus unterschiedlichen Branchen bei der Automatisierung ihrer Zahlungsprozesse und der Minimierung von Forderungsausfällen. Die Wirecard Bank AG bietet Konten- und Kreditkarten-Dienstleistungen sowohl für Geschäfts- als auch Privatkunden

Example of *OD\_Chng* and *IR*:

Wirecard AG

WKN: 747206    ISIN: DE0007472060    Land: Deutschland
Nachricht vom 24.06.2008   18:58
<b>Wirecard AG: Kapitalerhöhung aus Gesellschaftsmitteln / Wechsel im Aufsichtsrat</b>
<b>Wirecard AG / Kapitalerhöhung/Personalie</b>
Veröffentlichung einer Ad-hoc-Mitteilung nach § 15 WpHG, übermittelt durch die DGAP - ein Unternehmen der EquityStory AG. Für den Inhalt der Mitteilung ist der Emittent verantwortlich.
<p>Grasbrunn bei München, den 24. Juni 2008 - Die Hauptversammlung der Wirecard AG ('Gesellschaft') hat heute beschlossen, das Grundkapital der Gesellschaft aus Gesellschaftsmitteln von EUR 81.431.868,00 um EUR 20.357.967,00 auf EUR 101.789.835,00 durch Umwandlung eines Teilbetrages von EUR 20.357.967,00 der in der Bilanz der Gesellschaft zum 31. Dezember 2007 ausgewiesenen Kapitalrücklage in Grundkapital zu erhöhen. Die Kapitalerhöhung erfolgt durch Ausgabe von 20.357.967 neuen auf den Inhaber lautenden Stückaktien an die Aktionäre der Gesellschaft. Die neuen Aktien stehen den Aktionären im Verhältnis 4:1 zu, so dass auf vier bestehende Stückaktien eine neue Stückaktie entfällt. Die neuen Aktien sind ab dem 01.01.2008 gewinnberechtigt. Nach erfolgter Eintragung dieser Kapitalmaßnahme in das zuständige Handelsregister wird der Vorstand unverzüglich alle weiteren Maßnahmen in die Wege leiten, damit den Aktionären auf der Grundlage ihres dann bestehenden Depotbestandes die auf sie entfallende Stückzahl von neuen Aktien gutgeschrieben wird.</p> <p>Des Weiteren wurde Herr Wulf Matthias heute von der Hauptversammlung der Gesellschaft zum Mitglied des Aufsichtsrates und in der anschließenden konstituierenden Sitzung des Aufsichtsrates der Gesellschaft zu dessen Vorsitzenden gewählt. Der bisherige Aufsichtsratsvorsitzende Klaus Rehnig hatte sein Amt als Mitglied des Aufsichtsrats mit Wirkung zum Ende der heutigen Hauptversammlung der Gesellschaft niedergelegt.</p>
Wirecard AG Investor Relations Iris Stöckl Tel.: +49 (0)89-4424-8424 E-mail: <a href="mailto:iris.stoeckl@wirecard.com">iris.stoeckl@wirecard.com</a> <a href="http://www.wirecard.de">http://www.wirecard.de</a> ISIN DE0007472060
24.06.2008    Finanznachrichten    übermittelt durch die DGAP
Sprache:    Deutsch Emittent:    Wirecard AG

Example of *Board\_Opt* and *OD\_Chng*:

## Company News

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May 20, 2015

### **SENATOR Entertainment AG: Personelle Umbildung im Aufsichtsrat**

- Vorsitzender des Aufsichtsrats Dr. Andreas Pres legt sein Amt zum 15. Juni 2015 nieder und scheidet aus dem Aufsichtsrat aus
- Bisheriger Stellvertreter Wolf-Dieter Gramatke soll Vorsitz übernehmen
- Aufsichtsrat soll um Pierre Tattevin, Benjamin Waisbren und Hans Mahr aufgestockt werden

Berlin, 20.5.2015 – Die SENATOR Entertainment AG („Senator“) bildet ihren Aufsichtsrat um.

Der bisherige Vorsitzende, Dr. Andreas Pres, legt sein Mandat zum 15. Juni 2015 nieder. Er stand dem Aufsichtsrat der Senator seit August 2011 vor. Der Aufsichtsrat beabsichtigt, den bisherigen Stellvertreter im Amt des Aufsichtsratsvorsitzenden, Wolf-Dieter Gramatke, als Nachfolger von Dr. Andreas Pres zu wählen. Zudem endet das Mandat von Norbert Kopp mit Ablauf der Hauptversammlung am 30. Juni 2015. Der Aufsichtsrat wird der Hauptversammlung Pierre Tattevin, Paris, Benjamin Waisbren, Chicago, sowie Hans Mahr, Köln, zur Wahl in den Aufsichtsrat vorschlagen. Dr. Andreas Pres begründet seinen Rückzug wie folgt: „Die Tätigkeit bei Senator war insbesondere in den vergangenen 18 Monaten intensiv: Durch Kapitalerhöhungen und den Zusammenschluss mit Wild Bunch konnte eine große Aufgabe abgeschlossen werden. Vorstand und Aufsichtsrat der Senator ist es mit Hilfe der Aktionäre gelungen, die Senator deutlich zu vergrößern und zu stabilisieren. Diesen Meilenstein möchte ich zum Anlass nehmen, mich wieder ganz auf meine Haupttätigkeit als Unternehmens- und Restrukturierungsberater zu konzentrieren. Ich bedanke mich sehr herzlich bei den Kollegen im Aufsichtsrat und dem Vorstand für die vertrauensvolle und produktive Zusammenarbeit und wünsche Senator und Wild Bunch eine exzellente Entwicklung für die Zukunft.“

Vincent Grimond, Senator-Vorstandsvorsitzender, dankt Dr. Andreas Pres und ordnet die Umbildung im Aufsichtsrat ein: „Im Namen der neuformierten Gruppe möchte ich mich herzlich bei Dr. Andreas Pres für seine Tätigkeit im Aufsichtsrat bedanken. Durch seine Expertise, gerade im Bereich der Sanierung, und seine verbindliche Amtsführung konnten wir insbesondere in den Verhandlungen über den Zusammenschluss vielen Herausforderungen frühzeitig begegnen und Lösungen sachgerecht erarbeiten. Der Vorstand freut sich nun auf die Zusammenarbeit mit Wolf-Dieter Gramatke. Seine lange Aufsichtsratszugehörigkeit und seine Funktion als bisheriger stellvertretender Vorsitzender gewährleisteten Kontinuität in der Arbeit des Aufsichtsrats. Mit Pierre Tattevin und Ben Waisbren, die beide über herausragende internationale Erfahrung im Filmgeschäft verfügen, gewinnt der Aufsichtsrat entsprechend unserer insgesamt internationaleren Ausrichtung sowohl in Hinblick auf den

Example of *Strategy* and *IR*:

# Company News

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August 31, 2015  
**Wild Bunch AG veröffentlicht Ergebnisse des ersten Halbjahres 2015 und bekräftigt Wachstumsstrategie**

**PRESSEMITTEILUNG**

**Wild Bunch AG veröffentlicht Ergebnisse des ersten Halbjahres 2015 und bekräftigt Wachstumsstrategie**

- Unternehmen ist in einem herausfordernden Geschäftsjahr auf dem Weg seine Kernziele zu erfüllen – organisatorische Integration, finanzielle Restrukturierung und dauerhafte Umkehr der zuletzt negativen Gewinnentwicklung
- Geschäftsentwicklung im Rahmen der Erwartungen
- Unternehmen prüft weitere Wachstumsmöglichkeiten

Berlin/Paris, 31. August 2015 – Nach dem erfolgreichen Unternehmenszusammenschluss mit Wild Bunch S.A. im Februar 2015 hat sich die ehemalige Senator Entertainment AG („Senator“) deutlich verändert und den Schritt von einem bedeutenden Akteur auf dem deutschen Markt hin zu einem führenden pan-europäischen Unternehmen für Produktion, Vertrieb und Verleih vollzogen. Nach erfolgter Umbenennung hat die Wild Bunch AG („Wild Bunch“) heute eine einzigartige internationale Ausrichtung und ein umfassendes Portfolio vom weltweiten Vertrieb bis hin zum elektronischen Direktvertrieb und ist dabei auf den wichtigsten Filmmärkten Europas vertreten (Deutschland, Frankreich, Italien, Spanien). Das Unternehmen verfügt über eine Rechtebibliothek von mehr als 2.200 Titeln.

Diese Veränderung wird durch die erzielten Ergebnisse im ersten Halbjahr 2015 eindrucksvoll belegt.

Im Vergleich zu den im Vorjahr von Senator veröffentlichten Halbjahreszahlen haben sich die Umsätze in den ersten sechs Monaten des Geschäftsjahres 2015 mit € 68,0 Mio. mehr als versiebenfacht, der Bruttogewinn hat sich ebenfalls deutlich auf € 11,1 Mio. erhöht. Das EBITDA betrug im Berichtszeitraum € 26,5 Mio. im Vergleich zu € -0,6 Mio. der ehemaligen Senator-Gruppe im Vorjahreszeitraum. Die Filmrechte des Unternehmens belaufen sich zum 30. Juni 2015 auf € 107,1 Mio. und liegen damit ebenfalls deutlich über dem Wert der Filmrechte der Senator zum 30. Juni 2014 mit rund € 14,4 Mio.

Finanzkennzahlen im Überblick:

1 Das bereinigte EBIT stellt den Betriebsgewinn vor Einmaleffekten und außerordentlichen Posten dar. Die Anpassungen des EBIT beinhalten Einmaleffekte, wie erhebliche Restrukturierungskosten, Transaktionskosten sowie die Auswirkungen von Verkauf, Verwertung oder Wertminderung einer Unternehmensbeteiligung oder einer Anlage.

Hinsichtlich der vom Unternehmen im ersten Halbjahr 2015 herausgebrachten Filme sind insbesondere die Filme "La tête haute" in Frankreich und "Victoria" in Deutschland hervorzuheben, zudem war der Film "Verstehen Sie die Bellés?", der gemeinsam von den italienischen und spanischen Distributionsgesellschaften der Wild Bunch erworben wurde, in beiden Ländern sehr erfolgreich. In Hinblick auf den internationalen Vertrieb war das erste Halbjahr 2015 gekennzeichnet durch den Gewinn von drei Auszeichnungen beim Filmfestival in Cannes, darunter die Goldene Palme für den französischen Wettbewerbsbeitrag "Dheepan". Zudem wurde die Gründung des neuen Vertriebslabels Insiders mit Sitz in Los Angeles bekanntgegeben, das sich auf US-Independent-Filme spezialisiert, die weltweit, mit Ausnahme der USA, vermarktet werden sollen.

Das Geschäftsjahr 2015 steht weiterhin im Zeichen der Herausforderungen im Zusammenhang mit dem Zusammenschluss von Wild Bunch S.A. und Senator. Zum einen wird die Integration innerhalb der neu geschaffenen Gruppe vorangetrieben und werden Synergiepotentiale realisiert. Des Weiteren stehen die Refinanzierung des Unternehmens sowie die Steigerung der zuletzt bei Senator unter Druck geratenen operativen Profitabilität im Mittelpunkt.

Die vorgelegten Halbjahresergebnisse machen deutlich, dass sich das Unternehmen auf dem richtigen Weg befindet: So konnten die zuvor getrennt voneinander agierenden deutschen Organisationseinheiten nahtlos in eine Organisation überführt werden. Das bereinigte EBIT in Höhe von € 1,0 Mio. zeigt eine nicht unerhebliche Verbesserung im Vergleich zu € -1,7 Mio. bei Senator zum 30. Juni 2014. Hinsichtlich der Refinanzierungspläne hat das Unternehmen bereits aktive Gespräche mit seinen Partnern aufgenommen.

Die Erreichung dieser Ziele ist zwar unverzichtbar, spiegelt aber nicht den vollen Umfang der Zielerwartungen des Unternehmens: Mit einem ergänzten, sehr erfahrenen Vorstand, einem erneuerten Aufsichtsrat und mit neuem Namen will Wild Bunch eine herausragende Position in der zukünftigen Entwicklung der Filmindustrie einnehmen.

Mit dem Ausbau und der Erschließung neuer Vertriebsstandorte, der Erweiterung seines Angebots von Kino- und TV-Inhalten und seiner Spitzenposition im digitalen Wandel, beabsichtigt Wild Bunch durch internes und externes Wachstum, seine Unternehmensgröße in den kommenden fünf Jahren mindestens zu verdoppeln.

Mit der Unterstützung seiner Aktionäre hat Wild Bunch bereits Verhandlungen zum Erwerb von Vertriebs- und Koproduktionsgesellschaften in Großbritannien und Australien aufgenommen. Diese Gespräche sind deutlich fortgeschritten und sollten vor Jahresende abgeschlossen sein. Parallel dazu führt Wild Bunch Gespräche mit einem italienischen Film-Unternehmen, mit dem es vielfältige und vielversprechende Ansätze zu einer Unternehmenskombination in Erwägung zieht, welche die Präsenz Wild Bunchs in Italien erheblich stärken würde. Die Umsetzung dieser Transaktionen sollte sich unmittelbar ertragssteigernd auswirken und die Vermögens- und Ertragslage des Unternehmens in den kommenden Jahren positiv beeinflussen. Sie würden vor allem aber wichtige erste Schritte zur

Appendix D: Robustness Check Results

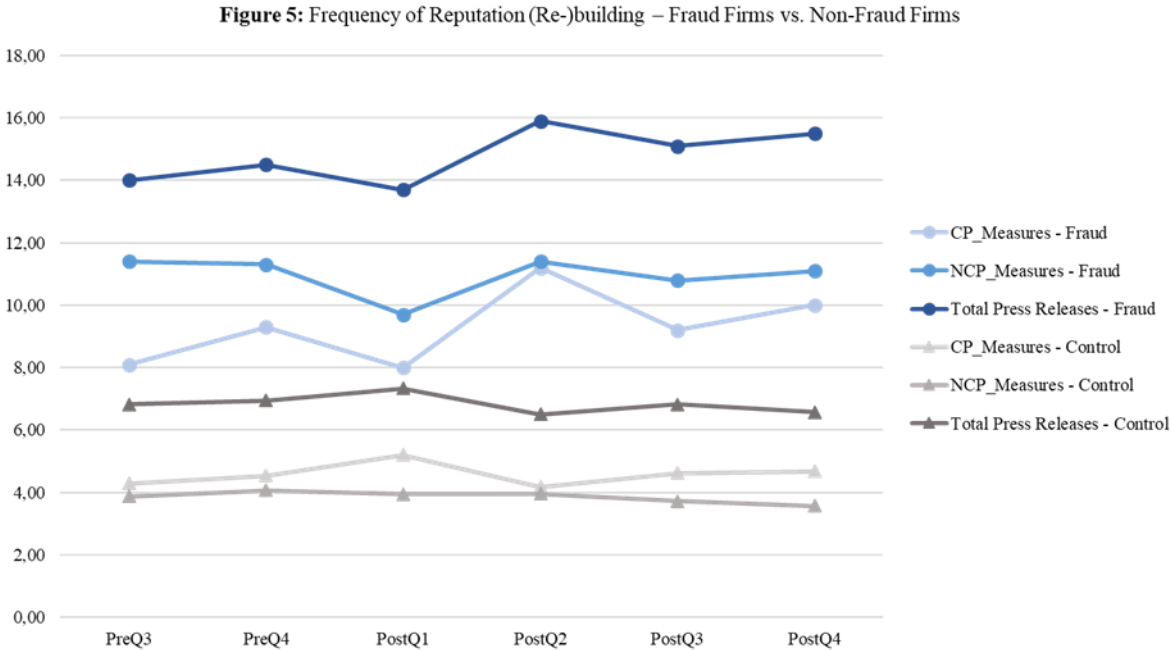


Figure 5 presents the average amount of reputation-building measures of each individual quarter for Fraud firms and Control firms in the PRE-restatement period (6 months = 2 quarters) and POST-restatement period (12 months = 4 quarters). The data underlying this figure are provided in Table 6 Panel A. The blue lines with data points denoted by a circle represent all measures taken by Fraud firms (dark blue = Total Press Releases, light blue = CP\_Measures, mid-blue = NCP\_Measures) while the grey lines with data points denoted by a triangle illustrate all measures taken by Control firms (dark grey = Total Press Releases, light grey = CP\_Measures, mid-grey = NCP\_Measures). All variable definitions can be found in Appendix B.



**Table 8: Robustness Check - Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms**

<b>Panel A: Reputation-Building Measures PRE- versus POST-Quarter Results (Fraud Firms vs. Non-Fraud Firms)</b>															
<b>Fraud Firms (N = 10)</b>					<b>Non-Fraud Firms (N = 69)</b>										
PRE-Restatement Period		POST-Restatement Period			PRE-Restatement Period			POST-Restatement Period							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)								
Avg. / Qtr.	PreQ3	PreQ4	Avg. / Qtr.	PostQ1	PostQ2	PostQ3	PostQ4	Avg. / Qtr.	PreQ3	PreQ4	Avg. / Qtr.	PostQ1	PostQ2	PostQ3	PostQ4
<i>CP_Measures</i>	8.70	8.10	9.30	9.60	11.20	9.20	10.00	4.42	4.29	4.54	4.67	5.21	4.18	4.63	4.68
<i>NCP_Measures</i>	11.35	11.40	11.30	10.75	9.70	11.40	10.80	11.10	3.97	3.88	4.07	3.80	3.94	3.72	3.57
<i>Total Press Releases</i>	14.25	14.00	14.50	15.05	13.70	15.90	15.10	15.50	6.88	6.82	6.94	6.81	7.33	6.50	6.82

<b>Panel B: Difference between PRE-Restatement and POST-Restatement Measures for Fraud Firms (N = 10 Firms)</b>									
Avg. Difference Between	POST - PRE	PostQ1 - PRE	PostQ2 - PRE	PostQ3 - PRE	PostQ4 - PRE				
<i>CP_Measures</i>	0.900 (0.485)	-0.700 (0.643)	2.500 (0.348)	0.500 (0.601)	1.300 (0.410)				
<i>NCP_Measures</i>	-0.600 (0.705)	-1.650 (0.242)	0.050 (0.973)	-0.550 (0.746)	-0.250 (0.915)				
<i>Total Press Releases</i>	0.800 (0.706)	-0.55 (0.768)	1.650 (0.548)	0.85 (0.708)	1.250 (0.628)				

<b>Panel C: Difference between POST-Restatement Measures for Fraud Firms vs. Non-Fraud Firms (N<sub>Fraud</sub> = 10 Firms; N<sub>Control</sub> = 69 Firms)</b>									
Avg. Difference Between	POST <sub>Fraud</sub> - POST <sub>Control</sub>	PostQ1 <sub>Fraud</sub> - PostQ1 <sub>Control</sub>	PostQ2 <sub>Fraud</sub> - PostQ2 <sub>Control</sub>	PostQ3 <sub>Fraud</sub> - PostQ3 <sub>Control</sub>	PostQ4 <sub>Fraud</sub> - PostQ4 <sub>Control</sub>				
<i>CP_Measures</i>	4.926* (0.077)	2.792 (0.167)	7.019* (0.072)	4.575* (0.063)	5.319 (0.104)				
<i>NCP_Measures</i>	6.951 (0.149)	5.756 (0.180)	7.442 (0.127)	7.078 (0.151)	7.531 (0.157)				
<i>Total Press Releases</i>	8.244 (0.148)	6.367 (0.171)	9.400 (0.135)	8.281 (0.159)	8.931 (0.148)				

**Table 8: Robustness Check - Frequency of Reputation (Re-)building – Fraud Firms vs. Non-Fraud Firms (continued)**

<b>Panel D: Difference-in-Differences for Fraud Firms vs. Non-Fraud Firms (N<sub>Fraud</sub> = 10 Firms; N<sub>Control</sub> = 69 Firms)</b>					
Avg. Difference Between	$\Delta(\text{POST} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ1} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ2} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ3} - \text{PRE})_{\text{Fraud vs Control}}$	$\Delta(\text{PostQ4} - \text{PRE})_{\text{Fraud vs Control}}$
<i>CP_Measures</i>	0.643 (0.586)	-1.492 (0.291)	2.736 (0.255)	0.292 (0.753)	1.036 (0.472)
<i>NCP_Measures</i>	-0.426 (0.775)	-1.622 (0.205)	0.064 (0.964)	-0.300 (0.852)	0.153 (0.945)
<i>Total Press Releases</i>	0.876 (0.654)	-1.001 (0.569)	2.032 (0.419)	0.913 (0.664)	1.563 (0.514)

**Panel E: Difference between POST-Restatement Measures for Fraud Firms for PostQ1 versus PostQ2, PostQ3, and PostQ4 (N = 10 Firms)**

Avg. Difference Between	PostQ1 - PostQ2	PostQ1 - PostQ3	PostQ1 - PostQ4
<i>CP_Measures</i>	-3.200 (0.266)	-1.200 (0.470)	-2.000 (0.339)
<i>NCP_Measures</i>	-1.700 (0.192)	-1.100 (0.513)	-1.400 (0.400)
<i>Total Press Releases</i>	-2.200 (0.344)	-1.400 (0.537)	-1.800 (0.413)

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 8 reports the results of the robustness checks of the frequency of reputation (re-)building measures for Fraud and Non-Fraud firms illustrated by five Panels. Panel A differentiates between reputation-building measures in the PRE- versus the POST-restatement period divided into quarters for Fraud and Non-Fraud firms. (1) presents the average amount of *Measures* per firm for Fraud firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (2) presents the average amount of *Measures* per firm for Fraud firms during each individual quarter in the PRE-restatement period; (3) presents the average amount of *Measures* per firm for Fraud firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (4) presents the average amount of *Measures* per firm for Fraud firms during each individual quarter in the POST-restatement period; (5) presents the average amount of *Measures* per firm for Non-Fraud firms during the PRE-restatement period (i.e. average of two PRE-restatement quarters); (6) presents the average amount of *Measures* per firm for Non-Fraud firms during each individual quarter in the PRE-restatement period; (7) presents the average amount of *Measures* per firm for Non-Fraud firms during the POST-restatement period (i.e. average of four POST-restatement quarters); (8) presents the average amount of *Measures* per firm for Non-Fraud firms during each individual quarter in the POST-restatement period. Panel B illustrates the average within-firm differences between PRE-restatement and POST-restatement *Measures* for Fraud firms. Panel C reports the average differences between POST-restatement *Measures* of Fraud firms and POST-restatement *Measures* of Non-Fraud firms. Panel D presents the difference-in-differences results as the firm-specific delta between Fraud firms' PRE- versus POST-restatement change in *Measures* less the matched Non-Fraud firms' PRE- versus POST-restatement change in *Measures*. Panel E outlines the average differences between POST-restatement *Measures* for Fraud firms for PostQ1 relative to PostQ2, PostQ3, and PostQ4. All variable definitions can be found in Appendix B.

**Table 9:** Robustness Check - Regression of Two-Day Cumulative Abnormal Return (CAR2) on Reputation-Building Measures (Fraud Firms vs. Non-Fraud Firms)

$$CAR2 = \alpha_1 + \alpha_2 Post + \alpha_3 Fraud + \alpha_4 Post * Fraud + \sum \beta_1 Variables + \sum \beta_2 Variables * Post + \sum \beta_3 Variables * Post + \sum \beta_4 Variables * Post * Fraud + \sum \beta_k Year + \epsilon$$

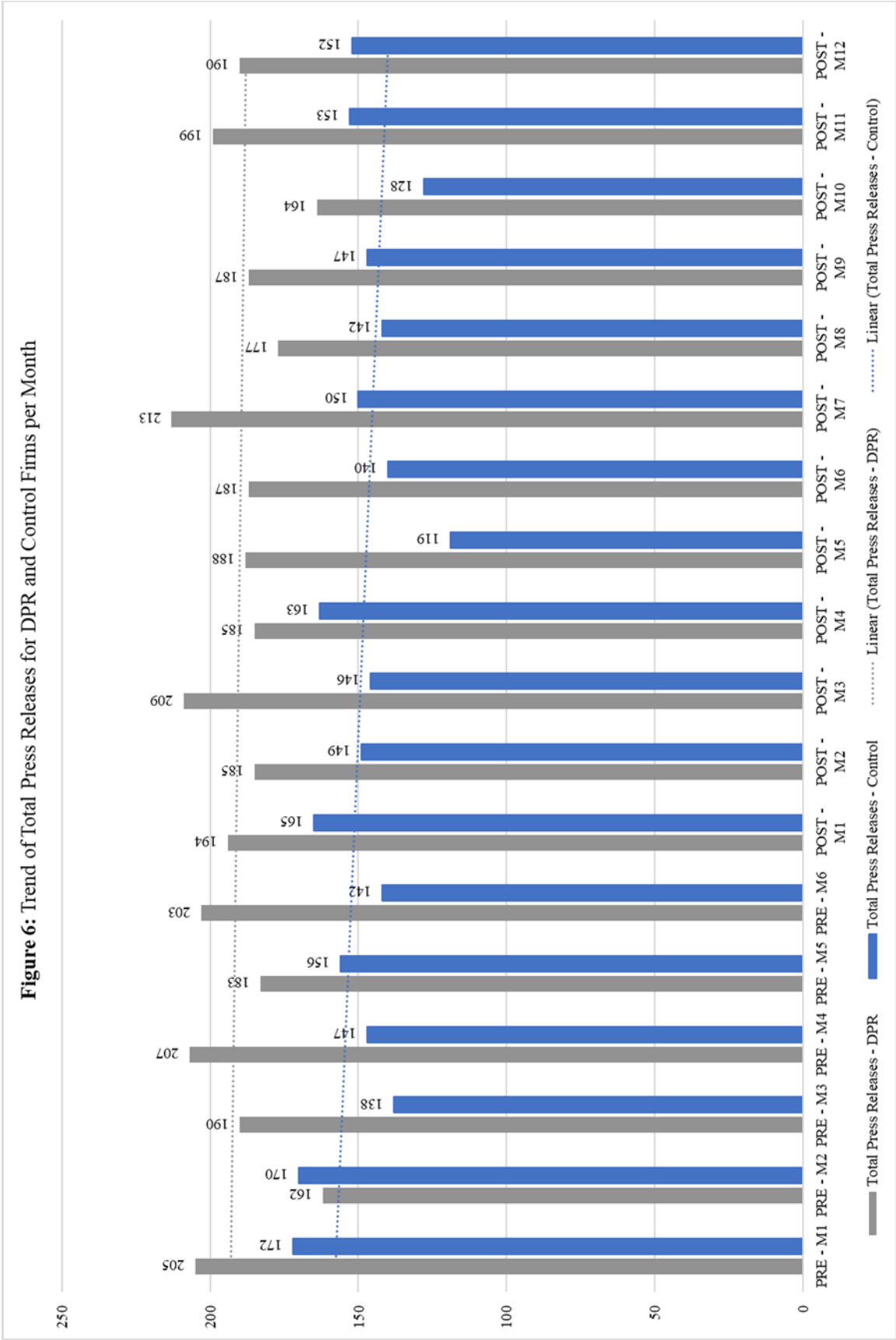
Variables = {Board\_Opt, Lead\_Chng, Mngt\_Chng, OD\_Chng, ST\_RS\_IR\_CU\_EM\_CO\_NCP\_Other, CP\_Measures, NCP\_Measures}

	Coefficient Sums: Fraud Firms (N = 10 Firms)				Coefficient Sums: Control Firms (N = 69 Firms)				Diff-in-Diffs ( $\beta_4$ )
	Exp. Sign	(1) POST	(2) PRE	(3) Diff	Exp. Sign	(4) POST	(5) PRE	(6) Diff	
<i>Board_Opt</i>	(+)	$\beta_1 + \beta_2 + \beta_3 + \beta_4$ 0.232*** (0.000)	-0.271** (0.026)	0.503*** (0.000)	(?)	-0.0092 (0.902)	-0.0702 (0.263)	0.0611 (0.530)	(+)
<i>Lead_Chng</i>	(+)	-0.116 (0.134)	0.114 (0.150)	-0.230** (0.037)	(?)	0.0215 (0.685)	0.0323 (0.638)	-0.0109 (0.900)	(+)
<i>Mngt_Chng</i>	(+)	-0.0344 (0.666)	-0.1460 (0.138)	0.1110 (0.380)	(?)	0.0542 (0.586)	-0.0126 (0.835)	0.0668 (0.566)	(+)
<i>OD_Chng</i>	(+)	-0.116 (0.134)	0.114 (0.150)	-0.230** (0.037)	(?)	0.0215 (0.685)	0.0323 (0.638)	-0.0109 (0.900)	(+)
<i>Strategy</i>	(+)	0.0940** (0.015)	0.0125 (0.619)	0.0815* (0.071)	(?)	0.0727*** (0.005)	0.0295 (0.148)	0.0432 (0.185)	(+)
<i>RS</i>	(+)	0.108** (0.017)	-0.237*** (0.006)	0.345*** (0.000)	(?)	0.42*** (0.000)	0.0752 (0.222)	0.345*** (0.000)	(+)
<i>IR</i>	(+)	-0.0226 (0.636)	0.0413 (0.311)	-0.0639 (0.307)	(?)	0.130*** (0.000)	0.0251 (0.280)	0.105*** (0.007)	(+)
<i>CU</i>	(+)	-0.0220 (0.606)	-0.0479 (0.164)	0.0259 (0.635)	(?)	0.136*** (0.000)	0.0251 (0.249)	0.111*** (0.001)	(+)
<i>EM</i>	(+)	-0.0707 (0.238)	-0.0504 (0.231)	-0.0202 (0.782)	(?)	0.135** (0.045)	0.0654 (0.156)	0.0696 (0.394)	(+)
<i>CO</i>	(+)	-0.0212 (0.634)	-0.0257 (0.496)	0.0045 (0.938)	(?)	0.086*** (0.005)	-0.0044 (0.846)	0.0904** (0.017)	(+)
<i>NCP_Other</i>	(+)	-0.0730 (0.275)	-0.196** (0.024)	0.123 (0.261)	(?)	0.130 (0.453)	0.0291 (0.792)	0.101 (0.623)	(+)
<i>CP_Measures</i>	(+)	0.0459 (0.148)	-0.0234 (0.344)	0.0693* (0.080)	(?)	0.0771*** (0.001)	0.0187 (0.284)	0.0585** (0.035)	(+)
<i>NCP_Measures</i>	(+)	0.0024 (0.942)	-0.0748*** (0.005)	0.0772* (0.067)	(?)	0.107*** (0.000)	0.0188 (0.305)	0.0881*** (0.002)	(+)
Adjusted R <sup>2</sup>		0.259							
Observations		2,410							

p-values in parenthesis \* p ≤ 0.1, \*\* p ≤ 0.05, \*\*\* p ≤ 0.01 (two-tailed). Standard errors are clustered on firm level.

Table 9 presents the results of regressing the two-day cumulative abnormal return (CAR2) on each individual reputation-building measure of Fraud and Non-Fraud firms, as illustrated by regression model (7). The dependent variable CAR2 is calculated as the cumulative two-day abnormal returns around the announcement of each individual reputation-building measure (days 0; +1), whereas each observation relates to a single firm-day. Post is a binary variable taking the value of 1 for days for which a new reputation-building measure is announced, and 0 otherwise. Fraud is a binary variable taking the value of 1 for Measures of Fraud firms, and 0 otherwise. The variables Board\_Opt through NCP\_Other are binary variables equal to 1 on providers, respectively, announced within one firm-day. Results of regression equation (7) are presented as coefficient sums that provide point estimates of CAR2 around each Measure. Exp. Sign indicates the predicted coefficient sign. Control variables First and Other as well as year fixed effect coefficient estimates are omitted for brevity. All variable definitions can be found in Appendix B.

Appendix E: Stable Unit Treatment Value Assumption



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