”The Influence of Firm characteristics, Auditing and Corporate Governance on the Correctness of Reports provided by publicly listed international and local Firms”

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Abstract

This research project investigates the influence on firm characteristics on the overall correctness of all disclosed information provided in reports by publicly listed firms. Moreover, we search for a relation between the occurring errors, material changes in the information content of the reports and official restatements. Moreover, the analyses conducted look at changing patterns over time to gain new insights of impact of external control and other governance mechanisms on reporting outcomes.

First, we try to link firm characteristics, like firms performance or the internationalization of a firm, and Corporate Governance characteristics to erroneous reporting outcomes (Larcker et al. 2007). Second, we shed more light on the origins and basic reasons for the occurrence of restatements, to complement the vast body of restatement literature (Callen et al. 2006; Ernstberger et al. 2012). Third, we investigate if foreign firms behave different from local firms. Our research builds also on some specific European research related to the impact of financial reporting (Alves and Santos 2008) and enforcement literature (Hitz et al. 2012).

1. INTRODUCTION

This research project investigates the influence of external control and Corporate Governance on the correctness of disclosed information provided in reports by publicly listed companies. It observes changes of the correctness of reports due to a change in external control and other factors as well as establishing an overall feeling for the errors occurring and reoccurring in reports of publicly listed companies. Consequently, we invent a new approach to analyze the overall correctness of published annual reports.

Therefore, we exploit a special research setting present at the Frankfurt (German) Stock Exchange (FSE) that gives insights about the correctness of reports by publicly listed firms. It makes use of a special feature of the online reporting system (ERS) of the Deutsche Boerse AG (DB AG), carrier of the FSE. Using this system is mandatory for firms, who issue shares in the most reputable market segment (DB AG 2008). It requires those firms by public law to provide their quarterly and annual financial statements online on the homepage of the stock exchange. Via an online calendar, registered stakeholders are immediately informed about the publication. However, in this research setting firms can replace their officially published report with a new version. This replacement is unofficial and not traceable by outside stakeholders. No market reaction was detected in a subsample analysis around the exchange date of the reports. Consequently, this study focuses on the exchanges itself.

First, the analysis of the changes made to the new version of the reports provides an overview of the spectrum of types of errors that occur. Such types of changes include, for example, layout-changes, correction of typos, spelling mistakes and other errors, rephrasing of words, changes of paragraphs that alter the content of the paragraph as well as changes of values in the balance sheet. Therefore, a conclusion about the correctness of the information provided by the firm can be drawn. Consequently, we try to identify the general correctness behind financial reporting and investigate the general occurrence and frequency of a whole spectrum of reporting errors

Second, based qualitative, structured expert interviews, all identified types of changes are categorized and the severity of the change is ranked. The changes made are used to measure the overall correctness of the report. Additionally, severe cases of changes that could potentially influence an investor's decision have been highlighted and are used as a basis for a second proxy for the correctness of the reports. Third, a panel regression analyzing the relationship between external control, Cooperate Governance characteristics, the international background of the firm and the correctness of the reports provided has been conducted.

This study shall contribute to the discussion to what degree external audit and other Corporate Governance characteristics really matter. The high importance of financial information for correct and effective functioning of capital markets has been highlighted and discussed widely in the research literature and general media, especially during the ongoing financial crisis. Therefore, regulators attempt to improve the correctness of reports with special focus on annual financial statements (e.g. IAS 8 2009; EU Green Paper 2010). Moreover, stakeholders are fundamentally interested in the amount, timing, and uncertainty of a firm´s future net cash flow (FASB 1978). Of particular importance is the publication of annual and interim reports. They reduce information asymmetries in capital markets (Diamond and Verrecchia, 1991) and the increased levels of disclosure should lower the information asymmetry component of the firm's cost of capital (Leuz and Verrecchia 2000). Users of financial information assume that particular audited financial reports are complete and factually correct. Alves and Santos (2008), for example, found evidence that mandatory audited reports announcements spur more significant price reactions than mandatory unaudited financial reports.

Moreover, academic literature shows that the correctness of reports is influenced by certain firm characteristics. For example, larger firms have better average disclosure quality (Lang and Lundholm 1993) whereas firms that are more complex and have a higher degree of internationlization shows a negative association with the likelihood of producing defective

accounting (Ernstberger et al. 2012b). Moreover, better performing firms provide a higher correctness (Li 2008). Therefore, we want to contribute to this debate by linking the correctness of reports to certain firm characteristics, like size, audit quality, firm complexity or compliance to regulating rules.

Due to similarities of the setting with official restatements this study complements this body of theory (Ernstberger et al. 2012a). Furthermore, it links the correctness of reports to certain firm characteristics by using new and complex measurement approach. Since our research setting is closely related to stock exchanges and their regulatory environment, our findings can be helpful for users of capital market information and regulators and stock exchanges that could adapt their guidelines and IT-systems.

Our results show an unexpected high occurrence of replacements of nearly one third of all reports. The changes made in the replacements are very broad. In 16% of the replaced cases, changes to the audited part have been made. 7% of the replaced cases have been qualified as severe. We find a significant, negative correlation between the correctness of reports and non-compliance to other regulatory guidelines. Also other significant relations between the correctness of reports and firm characteristics, like the firm auditor or firm performance have been found.

Moreover, our first regression results point out a significant correlation between highly erroneous reports and firms that had to restate their financial statements officially, underling the relevance of our investigation for investors and other stakeholders.

2. LITERATURE REVIEW

This study is connected to various parts of academic literature, who deal with the correctness of annual financial statements. If audited information is used, approaches to measure the correctness of reports are frequently based on numerical values provided in the financial statements, like the standard deviation of the firm-level residuals proposed by Dechow and Dichev (2002). Narrative correctness of annual reports is often measured by the readability of financial statements or other

parts like the letter to shareholders (Smith et al. 2006) and linked to firm characteristics (Li 2008; Courtis 1995).

This paper relates and builds on the findings of audit, restatement and enforcement literature, which is subsequently discussed after an introduction about the general relevance of reporting.

The quality of quarterly financial reporting has been a matter of concern, concluding that timely reviews by auditors are of great importance (Das & Shroff 2002; Myers et al. 2004). Quarterly reports are especially associated with significant stock price reactions when quarterly reports are the first public source of earnings information (Easton & Zmijewski 1993). However, the average quarterly announcement is just associated with approximately 1% to 2% of total annual information, thus providing a modest but not overwhelming amount of incremental information to the market (Ball et al. 2009).

Alves & Santos (2008) find that unaudited first and third quarter financial reports that include condensed income statements and balance sheets convey new information to the market, spurring significant price and trading reactions in their European setting. Also Basu et. al (2013) conclude more generally that earnings announcements are an important source of new information in the equity market. Therefore, the correctness of reports provided is of vital importance for investors and a main goal of national and international regulators (EU-Green Paper 2010; IAS 8).

Early literature argued for the existence of a private, or in other words, market demand for auditing (Watts & Zimmerman 1986). More recent research confirms that a variety of evidence that audited financial reporting and voluntary disclosure of managers' private information are complements (Ball et al. 2012). Literature about the influence of auditor coverage shows that auditors and firms carefully calculate the inclusion of auditor reports and other assurances of the correctness in quarterly, interim and annual reports (Krishnan & Zhang 2005). Krishnan and Zhang (2005) show that the inclusion of a review report influences investor's reactions on the publication of a report. Moreover, the timing of the auditor´s review of an interim report

influences the association between quarterly returns and earning (Manry et al. 2003). Ettredge et al. (2000) support the claim that timely reviews reduce the deferral of adjustments to the fourth quarter. If the auditor reviews interim earnings on a timely basis and not in retrospective with the annual report, this association is predominantly contemporaneous and so timely reviews help ensure that a firm's quarterly earnings reflect economic information embedded in concurrent stock returns (Manry et al. 2003). Moreover, evidence is provided that forecasting accuracy and audit activity levels also are positively correlated (Ball et al. 2012). This further proves the relevance of the inclusion of an audit review in the interim report. To conclude, this literature stream has provided extended evidence that auditing is more than a commodity mandated by regulation (Francis 2004; Ball et al. 2012).

Research shows that professional investors prefer to view PDF-formatted quarterly reports - the data format this paper is using for investigation - and tend to rely directly on the financial statements, compared with non-professional investors who prefer to view HTML-formatted reports and have a tendency to rely more on management's discussion of the quarter's results (Hodge & Pronk 2006).

Ball et al. (2012) show that the market reaction to the disclosure of management forecasts increases with an increase in resources committed to financial statement verification (excess audit fees), consistent with investors perceiving the credibility of voluntary disclosures to be a function of the resources spent on independent verification of subsequent outcomes. Overall, voluntary disclosure of private information and audited financial statement outcomes appear to play complementary roles in communicating information (Ball et al. 2012). Firms with greater litigation risk both make more disclosures (Skinner 1994; Field et al. 2005) and pay higher audit fees (Shu 2000).

Finally, Corporate Governance characteristics have also proven to have an important influence on financial reporting quality (De Vlaminck and Sarens 2015).

3. EMPIRICAL PREDICTIONS

The theory about restatements of financial statements is also connected to the measurement of report correctness. This study contributes to this body of literature because the exchanges analyzed in this study have certain features of restatements. The most frequent reasons for their occurrence are executive stock ownership, desire to obtain favorable financing, lack of financial accounting expertise and lack of oversight by auditor (Flanagan et al. 2008).

Kothari (2001) points out that financial accounting information is impounded in the stock price and the stock price, in turn, guides managers and investors in making efficient resource allocation decisions. Prior research also finds evidence that the number of transactions increases significantly around annual reports, peaking four to five trading days after the annual report release dates (Cready and Mynatt 1991). Alves and Santos (2008) state, mandatory audited reports announcements spur more significant price reactions than mandatory unaudited financial reports. This raises the question whether some annual reports related to this research project have been deliberately changed and addresses an ongoing corporate governance debate (Daily et al. 2003).

Prior studies investigating the consequences of restatements provide evidence on negative investor reactions for publicly restating firms with regards to SEC enforcement actions (Karpoff et al. 2009). Furthermore, restatements are connected with high turnover for outside directors (Shrinivasan 2005) and significantly higher turnover for top managers (Desai et al. 2006). The reactions to restatements are generally negative, with an enhanced effect in times of declining profits (Callen et al. 2006). Additionally, analysts partly stop covering restating firms after the restatement as they estimate an errors decrease in their forecasts (Griffin, 2002). Recent research in the German setting shows that market reactions to error announcements represent new negative information to the capital market and, moreover, that the market penalty increases with the severity of the errors and the threat of follow-up legal costs (Ernstberger et al. 2012a). If the replacement has been planned all along and has been made consciously, the desire to gain external

financing at low costs is seen as the primary motivation for earnings manipulation. Ernstberger et al. (2012b) for example, use the average number of errors per error announcement to measure error severity. Other restatement studies measure error severity and link restatements to certain firm characteristics (Ernstberger et al. 2012a). Consequently, their findings can later be compared to the results of this investigation.

Independent of the measurement approach, the quality of information provided in annual reports is often linked to certain firm characteristics. Generally, literature finds that managers withhold bad news and tend to leak good news (Kothari et al. 2009).

Moreover, governance quality shows a negative association with the likelihood of producing defective accounting (Ernstberger et al. 2012b). Various approaches have been developed to measure governance quality, like the formation of an audit committee (Köhler 2005). We try a different approach by investigating, if the violations of certain regulatory requirements correlate with the overall correctness of the reports provided.

Theory also discusses the influence of firm complexity on the correctness of reports provided. Bushman et al. (2004) state that a greater number of segments increases the likelihood for segments to have conflicting corporate cultures or conflicting operational styles. This demands higher levels of managerial talent. Even more important for this analysis, a multi-segment firm faces an information aggregation problem when combining financial data from diverse segments to consolidated financial statements, which might be prone to (unintentional) accounting errors. Similarly, a multi-national firm also has to deal with informational complexities due to different languages, cultures, legal systems, currencies, auditing requirements, and standards (Denis et al. 2002). Additionally, firm complexity shows a negative association with the likelihood of producing defective accounting (Ernstberger et al. 2012b). For instance, a firm that has more subsidies and a higher internationalization degree, doing business in various countries with

different regulatory accounting regimes, faces a more complex task of creating a correct annual report. Therefore, the likelihood of errors also increases with a higher firm complexity.

Consequently, the following hypotheses are stated.

H1: Companies with a poor economic performance are more likely to provide higher error occurrence in their annual reports.

H2: Firms that violate regulation requirements provide higher error occurrence in their annual reports.

H3: Firms that are more complex and have a higher internalization degree provide higher error occurrence in their annual reports.

H3a: Local firms have a higher error occurrence than foreign firms.

H.4: Firms with better Corporate Governance characteristics show a lower error occurrence.

H.5: Voluntary audited reports show a lower error occurrence compared to non-audited reports.

The results last two hypothesis have been analyzed based on a different data set and this analysis is not included in this paper due to length restrictions. However, in the next version of this paper the full analysis will be included.

4. RESEARCH SETTING AND DATA

Since 2003, listing under the prime standard is a prerequisite for inclusion in a major stock index (DAX, MDAX, TecDAX, and SDAX) and requires the use of international financial reporting standards. Moreover, issuers in the Prime Standard have the additional obligation to submit their interim and annual financial statements, and a corporate calendar in electronic form via the so called Exchange Reporting System (ERS®) (DB AG 2007). Since this study uses a setting based on features of the ERS, it focuses on companies listed in the Prime Standard market segment. These companies are the best known German firms with the highest internationalization degree, which should make the findings of this study more generalizable.

The ERS functions as follows. First, the firms upload the annual financial statements, in almost all cases annual reports, in pdf-format by logging on the ERS via the internet. The reports are then immediately made available for download to investors and other stakeholders through the homepage of the DB AG. After submission, the firm receives a confirmation or an error message. Reasons for the latter can be the exceeding of the maximum file size or that the file is not a copy protected, so it cannot be altered by an external party (DB AG 2007). The files are not controlled in any regards to its information content. If the files fulfill the technical requirements, they are provided for public download on the official homepage of the stock exchange. This is particularly interesting because subscribed stakeholders are automatically notified about the first publication by an interactive financial calendar connected to the ERS. Consequently, they are able to download the document via the homepage of the DB AG immediately.

In contrast to systems like EDGAR - the system of the U.S. Securities and Exchange Commission - the ERS allows firms to replace their already submitted files without constraints. So, the data files can be replaced by the companies continuously as often as they want without further notification via the financial calendar or any other identification mark. Additionally, no statement or other information about the replacement or its reason can be found on the homepage of the DB. Also, the filename itself gives no indication as to whether that is a replaced report or the first uploaded version. Therefore, it is highly unlikely that an external stakeholder realizes the replacement of a document.

It is noteworthy that annual financial statements have to be submitted no later than four months after the end of the fiscal year. This is a requirement by public law (§ 50 of the Exchange Rules (BörsO), § 22 II 2 Exchange Act (BörsG)). Therefore, the date of first publication on the ERS is of particular importance. Theoretically, firms have the possibility to explicitly change certain values or other information content and coordinate this modification with the required entry in the German commercial register (Handelsregister). As for the ERS, this entry has to be provided four

months after the end of the fiscal year, but cannot be changed without an official notification. In case of legal actions, this entry is relevant.

4.1. Research setting

Insert Figure 1 about here

Figure 1 visualizes the research setting of exchangeable reports. The dotted lined objects mark the measurement approaches taken as proxies in this study, the oval objects represent variables, whereas the other objects illustrate the basic facts of the research setting. At the top of figure 1, the replacement of the report shown in the central arrow builds the core of this study, because it primarily investigates the differences between the original and the substitute documents and its possible consequences with regards to changes in the information content. The date has to be seen as example for a typical fiscal year end that marks the beginning of the four-month time frame. A replacement after the four month deadline is a violation against the deadline and public law. However, documents replaced within the four month deadline also have the potential to mislead stakeholders since information users are likely to process the information shortly after publication (Cready and Mynatt 1991), irrespective whether this is timely close to the deadline or not. Since there is no possibility for a statement about the replacement on the DB AG homepage, we control if the firms provide information about a replacement and the updated information directly in the new reports.

The discussion in the literature review showed that firm characteristics influence reporting behavior and error occurrence in reports. This connection is illustrated below the arrow and analyzed by the three main proxies for measurement of error occurrence, respectively information quality: Besides the violation of the deadline criteria and the frequency of exchanges, the main proxy for severity of changes is highlighted.

Moreover, if the qualitative analyses reveal so severe changes to the information content that it could mislead stakeholders in their decision making process, the company is marked in the data via a dummy variable, representing especially high error occurence and the changes are documented via a screenshot. This variable will be used as second dependent variable in the regression analysis, besides the before discussed categorization. Examples of such severe changes in the audited disclosure part are discussed in qualitative interviews with analysts, auditors and other experts. Consequently, a subsample of firms is created and additional regression analyses are conducted with that sample. Moreover, these interviews shall verify the measurement approach and the categorization for practical relevance.

4.1. Description of the data source

A pretest of the annual financial statements of 2008 showed that over 90% of all files are annual reports. The others are mostly simple financial statements. Because the same rough composition of such reports is basically used by nearly all firms, all annual reports can be divided into two parts, an unaudited first one and an audited part. Information presented in the unaudited part is provided voluntarily, although some information can be found as expected from investors since they traditionally are part of every annual statement and a basic feature of public relation communication (letters to shareholders). Since the last decade, some unaudited parts of the annual report are required to be published by stock exchange rules or other guidelines and often integrated in an annual report (corporate governance report). In this research setting, the information difference between the original and the replaced report could occur in every part of the annual report.

Our approach to measure error occurrence in annual reports is based on the alteration of various types of information provided. In a nutshell, we focus on the information difference between the original and the replacement and consider various perspectives to conclude with an overall statement about the error occurrence of the firm´s reporting behavior. As figure 2 shows, this

analysis includes and considers all exchanged graphical, numerical and written content, changes with and without impact on the basic information content, changes in the audited part as well as unaudited provided information. Moreover, we investigate (1) the timing of the replacement with regards to the four month deadline, (2) the timespan till the replacement, (3) the frequency of the replacements made of a certain report in one business year.

Insert Figure 2 about here

The changes between the original and the substitute document will be analyzed in detail by comparing the two pdf-files. The main aim is to categorize the replacements along the lines of severity of the change in information content. Although there will be no investigation about influences on the stock price or other market reactions due to the exchanges, the analysis of the replacements tries to answer the following question: What types of changes have been made and to what extent?

Prior research shows the existence of plenty of incentives to avoid costly restatements, e.g. a form of equity penalty (Hee and Chan 2010), and negative publicity in general. As a result, there could be various reasons and motivations for a replacement. In this research setting, a new file could be uploaded most likely because of the following situations: (1) Violation of technical ERS criteria: The original file does not fulfill the technical criteria required by the ERS and therefore an exchange is requested by the DB AG. Required criteria are for example that the pdf-file is password protected against modification or that it does not exceed a certain file size. (2) Correction of unintended errors: The firm made errors in their reports due to time pressure or lack of accounting resources. After detection of these errors, it uploads a new, corrected file. Examples for such mistakes could be spelling errors or numerical typos. Or the firm reported unintentionally wrong information due to a wrong information basis. After having acquired a better information basis, it corrects the error by uploading a new, corrected file. (3) Correction of intended errors with regards to content: The firm uses the possibility to silently replace reports in the ERS to

manipulate the information basis of potential stakeholders. It does not state that the report is replaced, or what information has been corrected in the new report.

For the last case (3), we suspect the following logic. At first, an incorrect report is uploaded. The stakeholders get informed via the online financial calendar or a press release, download the report timely and process the information. Afterwards, the original file is replaced by a substitute report that provides the correct information. This last report is available online and can be compared to other information sources like the German *Handelsregister* that are relevant in case of legal activities. The reports on the firm homepage could be replaced accordingly. Another reason for the replacement could be that firms aware of the possibility of a hidden replacement decide in a situation of uncertainty to first publish the more favorable information. If the unfavorable scenario materializes, a corrected report is simply replaced without any notice. In this case, potential users of the information have most likely already read the positive but false scenario. However, even if all the changes made to the replacements are based on unintentional errors, the changes made should give interesting insights in error sources of annual reports and firms that are willing to correct these errors in hindsight.

4.2. Measurement of error occurrence

The following categorizations and approaches for measurement have been developed after a test phase, in which a subsample of the data has been analyzed and the results discussed.

To validate the categorization, 8 expert interviews with a structured questionnaire were conducted, three in December 2013 and after a small revision of the questionnaire, five interviews in the period between May 2014 and October 2014. The duration of the interviews lasted between 27:00 and 41:00 minutes. The experts were questioned about their general evaluation of changes, in our research setting. Afterwards examples of the changes made were discussed in detail.

Overall the experts pointed out that the relevance of changes depends on the relation to the overall picture of the firm. According to all experts, changes in the audited part of the annual report were

the most relevant, followed by changes in quarterly and interim reports. The opinion on changes in the unaudited part of the report varied. Compared to the audited part, the evaluation of this part of the annual report was seen as less relevant. In the general evaluation of errors, the experts agreed that every change below the materiality threshold can be seen as minor and is, thus, negligible. Also changes of the layout and format of the report have been regarded as negligible, because the tools used by analysts simply ignore them. The numerical and textual changes above the materiality threshold are seen as highly relevant. The numerical content in the audited part has been seen as most important and some experts stated that any alteration of it should be seen as a red flag for stakeholders. Based on discussions with researchers and the results of the expert interviews, the following measurement approach has been conducted.

At first, those companies that replace one or more documents in a certain business year are allocated in the replacement group. Conversely, all other companies that just uploaded one report in a certain business year are allocated in the control group. After the copy protection of all originals and replaced documents has been removed, the documents are compared with their predecessors using a pdf-file and word comparison software (Adobe Acrobate X Pro and Microsoft Word). This software highlights the difference between the original and the substitute. For example, it marks changed words, numbers or sentences in color, points out missing sentences and paragraphs as well as inserted ones. Moreover, it highlights changed graphical content of pictures or graphs. During the test phase 44 different types of changes in the replacement documents have been found and a catalogue has been created (see appendix – table 7). These 44 types of changes are the basis of our categorization to analyze the relative error occurrence in annual and quarterly reports which is described as follows.

To analyze the different changes companies made in their new uploaded documents, the following six categories are defined:

- Category 0 – No document replaced – control group
- Category I – No changes in the information content - the annual reports are identical

    - E.g. A copy protection has been added..
- Category II – formatting changes
    - E.g. Resolution of graphics has been reduced, font changes, layout revisions.
- Category III –- changes without any substantive relevance
    - E.g. Reformulation of individual words; correction of spelling errors.
- Category IV – unaudited part - changes of the narrative information content
    - E.g. modification of complete sentences.
- Category V - audited part - changes of the numeric information content that is audited
    - E.g. Changes to numbers in the balance sheet

Consequently, every replaced document is categorized by this proxy in the range from 0 to five. This is also the error occurrence proxy score for the reporting firm for the related business year. If a firm replaces more than one document, the highest score of the replaced documents is attributed. For example, a firm that replaces three times with its documents scoring an error occurrence proxy of one, three and five. The firm is attributed a score of five in the related business year.

5. DESCRIPTIVE RESULTS

5.1. Sample description

The main database consists of all annual reports uploaded in the ERS of the DB AG for the business years 2005 – 2008. These are the most recent reports available to us with courtesy of the DB AG. This collection includes all original reports and all their replacements.

In a first step, all reports uploaded by firms not listed in the Prime Standard have been excluded. The remaining reports form our overall sample. In a next step, the firm-year-observations have been allocated to the control group and the replacement group. For the firm year observations of the replacement group, data has been hand-collected directly from the reports to run sub-sample regression analysis with these data. Examples are the numbers of pages of the reports, the earnings per share or the auditor of the report. This data will be later referred to as hand-collected. Additionally, data with regards to firm characteristics has been downloaded from the Orbis database (former Amadeus) for all firm year observations.

Insert Table 1 about here

Table 1 describes the sample size for the overall observations on the left side, as well as for firms that have been observed during all four years in the right side. The groups differ for various reasons. For example, firms could have been dropped out of the Prime Standard or been listed later than 2005.

The distinction has been made to run the regression models with both, a balanced and an unbalanced panel. During the four years, 1,334 firm-year-observations have been detected by companies listed in the Prime Standard. 439 (33%) of those firm-year-observations have been replaced, sometimes multiple times within one year. For 250 firms we have a complete sample over the whole time span. However, the size of the replacement group stays quite similar in both panel groups, 33% vs 30%. The data show that the size of the replacement group decreases slowly over the time span in both sample groups.

5.2. Descriptive results of the error occurrence measure

As outlined before, the changes made to the documents have been analyzed and documented in detail. All changes found have been described and are traceable via document and page number. Additionally, Category VI reports have been documented through screen shots. Some severe examples of changes in the mandatory disclosure part have been discussed in qualitative interviews and been labeled as potentially influencing an investors firm evaluation (see impact category in the results). The categorization of the annual reports for the business years from 2005 to 2008 shows the following results for all firm-year-observations.

Insert Table 2 about here

Table 2 shows that 207 firm-year-observations (16%) have made changes in the audited part of the report, whereas 17% of the replacements have only been altered in the unaudited part. 91 firm-year-observations (7%) show systematic changes in the information content that could influence

an investor's decision. Examples of this category have also been discussed in three interviews with auditors and analyst; all of them are also working with firms that are present on the FSE.

As found in the pre-test, 44 different types of changes have been found in the replacement documents (see appendix – table 7). To get a better understanding for how often certain changes occur, table 3 shows the most frequent changes within one business year.

Insert Table 3 about here

After the descriptive results had been analyzed, we conducted eight interviews with experts between November 2013 and May 2014. The aim of these interviews has been to verify our categorization and to discuss examples of the most severe cases of changes made. Additionally, questions about the setting have been included in the guided interviews. Every expert has been asked the same questions. These cases are used as a proxy for error occurrence measurement (*variable error occurrence II*).

5.3. Description of variable measurement of the panel regression

The following regression results are based on four different subsamples of the unbalanced panel data set. These samples vary in two dimensions: The database of the control variables and the used proxy for error occurrence, which serves as dependent variable. This chapter starts with a description of the used variables and the used databases. Then the results of the four panel regressions are presented.

Table 4 gives an overview of the variables used in the regression analysis. Afterwards, the exact measurement of the variable is outlined.

Insert Table 4 about here

Error occurrence - As stated, we measure error occurrence with two variables. *Error occurrence I* is the main categorization which ranks from 0-6 and is a scaled variable, in which 6 represents the most severe error occurrence. *Error occurrence II* refers to the impact category, which is a

scaled variable ranging from 0-2. 0 stands for no replacement, 1 for a replacement with no severe changes that could potentially influence a stakeholder, 2 for a replacement that that could potentially influence a stakeholder. These variables serve as the dependent variables in our panel regression analysis.

Firm characteristics – The compliance with regulatory guidelines is also measured with two variables. *Regulatory compliance I* is a scale variable ranging from 0-3 with regards to the deadline violation. 0 stands for no replacement, 1 stands for a replacement before the deadline, 2 stands for a replacement after the deadline and 3 stands for a deadline violation of the first report and the following replacement. *Regulatory compliance II* is related to official restatements. It is a dummy variable. The variable is 1, if the company has an official restatement in the regarding firm year and 0 if not. This information has been hand-collected from the *Deutsche Bundesanzeiger* homepage, which offers an online database about all restatements occurring in Germany (www.bundesanzeiger.de, accessed on 5 August 2013).

Firm complexity is measured by the number of subsidiaries of a firm in the business year 2008, collected from the Orbis database.

Firm performance is measured by two variables. *Firm performance I* is a dummy variable and 1, if the EBIT of the firm in the business year is positive, and 0, if not. The regression model will also be tested with the absolute number of the EBIT. This variable has been collected from the Orbis database. *Firm performance II* is also a dummy variable and 1, if the EBIT of the firm in the business year is positive, and 0, if not. Contrary to *firm performance I*, this variable has been hand-collected from the annual reports. In a later analysis, more complex measurements for firm performance like ROA or Tobin´s Q shall also be included.

Control variables – *Firm size* is measured by three variables. *Firm size II* is the natural logarithm of the revenue in the related business year. *Report size* is measured by the number of pages of the annual report, hand-collected from the reports of the replacement group. In most cases, the number

of pages is the same for the original document and the replacement. If the numbers of pages differ, the page number of the original report has been used. *Local vs Foreign* is measured via a dummy variable and is 0, if the company is based in Germany and 1, if it is based in another country. It has been tracked via the ISIN-Number, which is part of the filename and, therefore, available for the complete data sample. *Finance structure* is measured by the percentage of debt of a firm and has been hand-collected from the reports of the replacement group. *Auditor* is measured as a dummy variable that is 1, if the firm has a BIG 4 auditor in the related business year, and 2, if the firms have another auditor. *Replacement frequency* measures the frequency of replacements made by a firm in the related business year.

5.4. Regression results

The correlation matrix for the overall sample shows that both variables for error occurrence correlate significantly with the compliance to regulatory guidelines (not included due to page restrictions). This result is also confirmed for the sub-sample analysis of the replacement group. So there seems to be a significant positive correlation between severe error occurrence and the violation of regulatory guidelines. Moreover, the sub-sample analysis shows a significant connection between the auditor and severe changes found in the replaced document. This data has been hand-collected from the exchanged annual reports itself. Therefore, just the replacement group has been included in the sub-sample-analysis.

For our preliminary analysis, we conduct a random-effects GLS regression four all four regression models. The following regression models have been based on the unbalanced panel data set, since it is simply the larger and more complete sample. The tests have also been conducted with the balanced panel data set and the results are robust and similar. Table 5 shows the regression results of the overall sample for both dependent variables.

Insert Table 5 about here

Like seen in the correlation analysis, the correlation between the violation of the deadline, *regulatory compliance variable I*, and both variables for error occurrence is significant. However, there is no significant relation for error occurrence and an official restatement of the report.

Insert Table 6 about here

The sub-sample analysis confirm the findings of the overall sample analysis with regard to the deadline violation. Moreover, the results presented in table 6 show that within the replacement group, there exists a highly significant correlation between official restatements and the severe changes of the impact category, which speaks for the categorization itself. Moreover, also the replacement frequency shows a significant correlation with both error occurrence variables. Interestingly, having a non-BIG 4 auditor correlates positively and significantly with replacements with severe changes.

Further analysis will focus on the difference between mandatory audited, voluntary audited and unaudited reports in terms of reporting quality. Therefore, a database of 270 companies with twelve consecutive submitted reports ranging from the annual report of 2007 to the 3rd quarter report of 2009 is examined. Because of this, a time series analysis will investigate if the reporting quality changes over time and if the different audit requirements have a significant influence on it.

6. DISCUSSION

6.1. Discussion of the qualitative interviews

The intent of the eight qualitative interviews has been to develop and verify our measurement approach, discuss the detected changes in the information provided and give reasons for the occurrence of erroneous reporting. They give the following insights.

The experts state that the publication on the homepage gives the reports an additional feeling of credibility, since the reports are provided via a third party of high reputation. Moreover, the experts agree that the connection with the online calendar is very relevant for the timeliness of the

replacement. They stated that people of their profession would download the report as soon as possible, normally within the first day of publication. However, the homepage of the DB AG is not the primary information channel for all experts. They concluded that they would prefer the homepage of the firm or other information channels to get access to the annual reports. Moreover, the experts suggested that errors as found during the analysis are very common due to the often given pressure of finishing and publishing an annual report in time and the complex task of creating an annual report itself. Although errors like spelling mistakes and rounding issues are seen as annoying, they are not seen as a problem in terms of a possible influence on an investment decision. Furthermore, changes in the numeric content are not seen as an attempt of manipulation per se, they are seen as a normal error that is considered as embarrassing, but not uncommon. It always depends on the relation between the amount and firm characteristics like firm size, the balance sheet total and the industry context. It is also not seen as necessary that the replacement has to have a newly dated audit report as long as the overall picture of the firms´ prospects has not changed. Moreover, they identify most of the types of changes as irrelevant for investors' decisions. Even changes in the numerical content of the balance sheet have to be put in relation to the firm context. However, severe examples of conducted changes were clearly identified as misleading and, therefore, even considered of a potential reason for a lawsuit.

All experts wondered why firms replace their reports just to correct minor errors. Two interview partners pointed out that this might be explained by the German cultural phenomenon of sticking strictly to rules and general perfectionism. Changes in the unaudited and audited part are seen as nearly equally important since also the unaudited part covers important content that is used by analysts and other stakeholders. Especially changes in key performance ratios and industry relevant ratios have been pointed out as highly relevant.

The reasons given by experts for the frequency in erroneous reporting vary. First and foremost, problems in the communication processes within the firm and between the firm and the auditor

were named as most frequent. Communication problems can result out of an insuffcient-structured reporting process or simply imply personal problems between the responsible actors in the firm that lead to less interaction and control. Second, time pressure as the major external driver for erroneous reporting has been named. Third, firm characteristics like size as an indicator for resources and firm age as an indicator for experience were named as influential factors.

6.1. Discussion of descriptive and regression results

The descriptive results show an unexpectedly high use of the possibility to replace reports. Although, a majority of the replacements have been corrected for minor errors and other details, still, a third of the first published annual reports have been seen as worthy to be updated by the own firm. This numbers as well as the following discussions with experts prove that the creation of an annual report is a challenging task for the majority of firms and time pressure combined with a underfunded accounting staff and an increasing regulatory regime often put the persons involved and responsible for the annual report publishing to their limits. A significant, positive correlation between firm performance and the error occurrence provided, as state in literature, cannot be found in all regression analysis (Peasnell et al. 2001). Just the analysis of the overall sample with regards to severe changes could confirm *H1*. However, since good performing firms have in general more to lose when reporting bad news, the incentives of making severe changes to the report to preserve the positive image of the firms could be very high (Kothari et al. 2009). Following that reasoning, the found results could be justified. However, since the other three regressions paint a completely different picture this notion remains sole and unconfirmed and has to be taken very carefully. Additionally, it contradicts the general notion in literature which is based on the use of different measurement methods that better performing firms also provide better error occurrence.

All regression results confirm *H2*, mostly with highly significant results. Consequently, there is a strong link between the error occurrence and the overall compliance with regulatory guidelines.

This finding supports various findings in the restatement literature about governance quality and error occurrence (Ernstberger et al. 2012b). The fact that the replacement frequency is significantly correlated with both error occurrence variables also supports this finding, because it shows that replacing a document more often lowers the bar for more severe changes. Especially, the correlation between the official restatements and our categorization highlights the relevance of our measurement approach. If external stakeholders could have detected those exchanges beforehand, they could have anticipated an official restatement. Such restatements result often in a decrease of a firm´s market value. Consequently, the stakeholder could have sold the firm´s shares beforehand. The significant correlation between our error occurrence proxy and firms that had to restate their financial statements officially is underling the relevance of our investigation for investors and other stakeholders.

H3 and the connected findings in literature cannot be confirmed, for firm complexity or internationalization degree (Bushman et al. 2004). However, the results for *H3a* are interesting. Foreign firms show a significantly higher error occurrence than firms based in Germany. One reason could be that they don´t face such high reputational concerns. Another reasons was given by some experts stating that the German culture is very keen on correctness and therefore German firms are more likely to correct errors. With regards to *H4* and *H5* we find mixed results for various Corporate Governance variables. Board size and board meetings have no significant influence on error occurrence. However, the variable shareholder loyalty taken from the DataStream database has a significant negative impact on error occurrence. If a quarterly report is voluntary audited it also has a significant influence on error occurrence, showing the importance of external control. This results will be presented in more detail in the next paper version.

Interestingly, subsample analysis of the replacement group show a significant influence of the auditor on error occurrence for the severe cases found. This supports the general notion in

literature that a BIG 4 auditor is more independent, has better knowledge and, consequently, has a positive influence on the error occurrence provided.

We also tested if market reactions occur during the time of the replacement but could not find any for our 2008 sample. This is not surprising since these replacements are not traceable by third parties and the majority of them did not change the information provided significantly.

7. CONCLUSION

We are confident that our results give new insights about the error occurrence in reports in various ways. First, the high percentage of replacements and, consequently, errors found shed light on the production of an annual report itself. Our descriptive results, especially the various types of errors identified, and the measurement of their frequency highlight general problems during report production, give a basic understanding of potential error sources and encourage further research to investigate this process further. Furthermore, these findings encourage investigating the decision process involved in the creation of financial statements in general and bringing more insights about the various departments and professions involved.

Overall, the error occurrence is significantly more severe, if a firm also does not comply with other regulatory guidelines. So a violation of a regulatory requirement can be seen as a red flag for reporting behavior. This result is significant and consistent through all analyses conducted and confirms and extends existing literature, especially connected to restatements. It can be important for stock exchanges and regulators alike and should encourage them to take a closer look at firms as soon as they show non-compliance with any guidelines or requirements. Moreover, the possibility of hidden replacements could have a generally negative impact on the error occurrence of the first published report and should be reexamined. We are confident that the results of our error occurrence proxy can support some of the existing findings in literature, especially the body of theory in the restatement literature.

In the next version of this paper, we will include full panel data regression results for *H4* and *H5*.

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9. APPENDIX – Tables and figures

Figure 1 - The research setting and the measurement approach

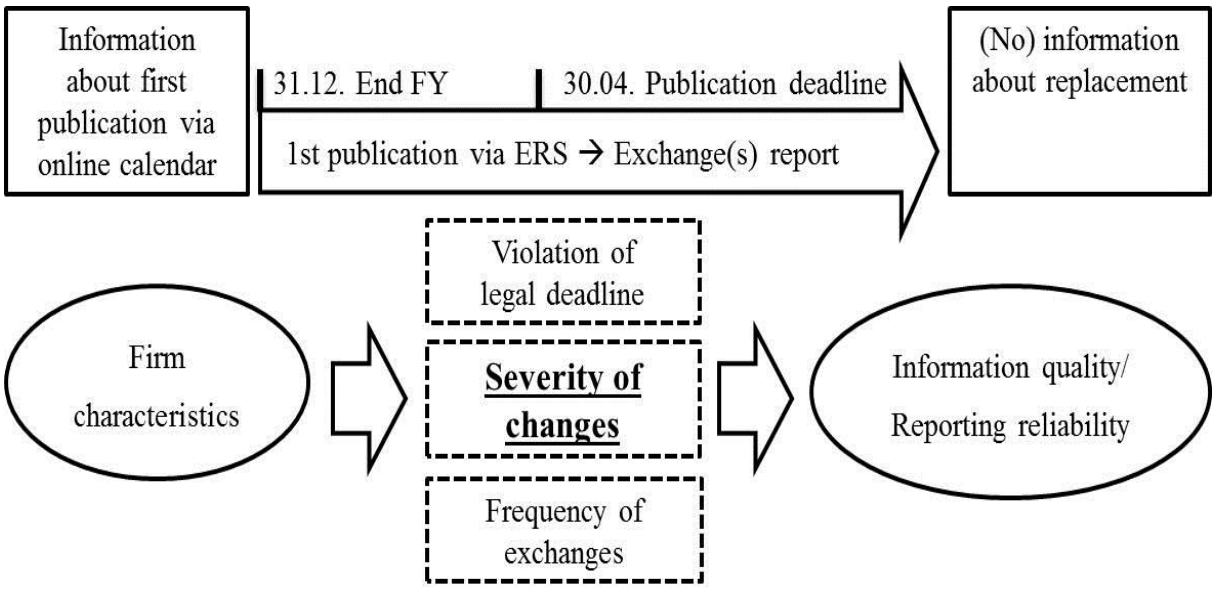

Figure 2 - Factors that influence the information quality/error occurrence of an annual report

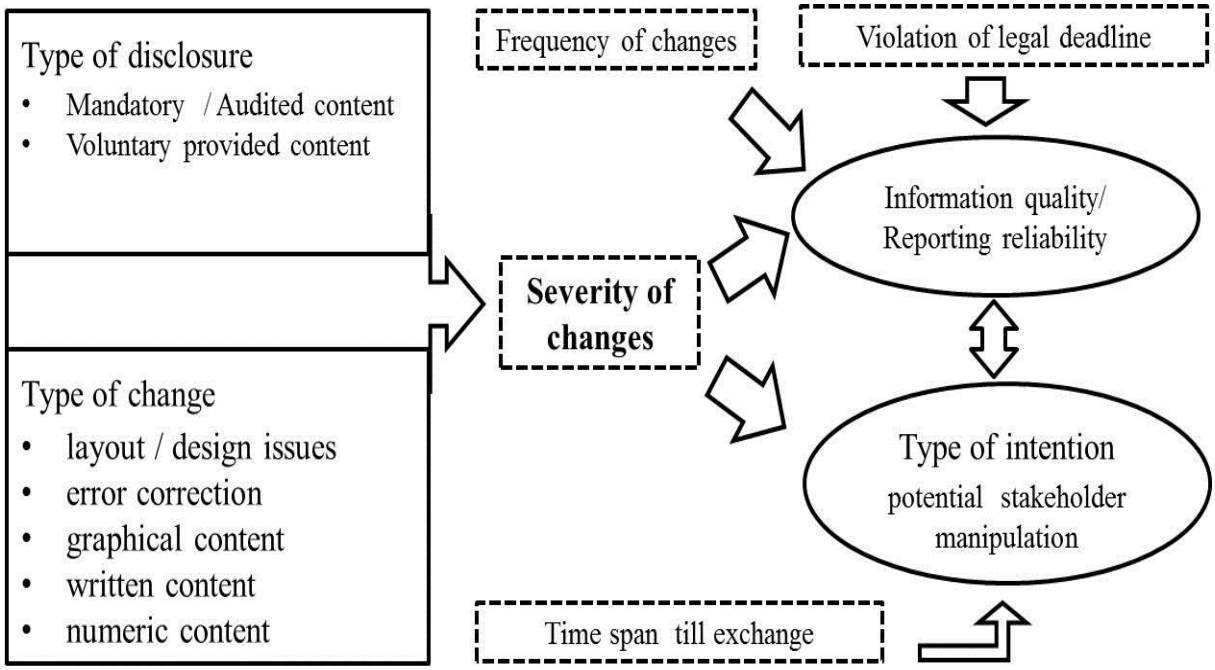

Table 1 - Panel Data Sample

Related business year	Total	Unbalanced panel Control group	Unbalanced panel Replacement group	Total	Balanced panel Control group	Balanced panel Replacement group
2005	333	218 (66%)	115 (34%)	250	165 (66%)	85 (34%)
2006	326	219 (67%)	107 (33%)	250	172 (69%)	78 (31%)
2007	348	227 (65%)	121 (35%)	250	179 (72%)	71 (28%)
2008	327	231 (71%)	96 (29%)	250	182 (73%)	68 (27%)
Total	1334	895 (67%)	439 (33%)	1000	698 (70%)	302 (30%)

Table 2 - Results of error occurence measurement and the impact category

Related business year	2005	2006	2007	2008	Firm-year-observations
No replacement	218	218	227	232	895 (67%)
No changes (I) + minor changes part (II-III)					
Category I	30	25	31	11	97 (7%)
Category II-III	39	29	26	41	135 (10%)
Changes audited part (IV-V)					
Category IV-V	46	53	64	44	207 (16%)
Potentially influencing changes (Included in audited part)					
Impact category	24	22	30	15	91 (7%)
Total	333	325	348	328	1.334

Table 3 - Frequency of the type of changes in 2006

Type of change	Occurrence	Category
Corrected spelling mistakes	27	III
Changed formatting	25	II
Added copy protection to file	20	I
Change in layout	20	II
No change	18	I
Chapter added	18	V
Rephrasing in charts changed – a.	13	V
Numerical values in charts changed – a.	10	VI
Chapter added - a.	9	VI
Rephrasing	8	IV
Numerical values in text changed – a.	8	VI
Place holder document	8	I

Table 4 - Variables of panel regression

Variable	Measurement	N (HC/Orbis)	Mean	Stand dev.
Measurement of error occurence (dependent variable)				
Categorization (0-VI)	interval scale variable	1334	1.26	2.097
Impact category	dummy variable	1334	0.07	0.25
Measurement of regulatory violation				
Regulatory violation I	interval scale 0-3	1292	0.44	0.70
Regulatory viol. II	dummy variable	1291	0.032	0.177
Firm characteristics				
Firm performance I	dummy variable (ebit)	856 (Orbis)	0.82	0.37
Firm performance II	earnings p share	424 (HC)	1.22	4.30
Internationalization	Subsidiaries	859 (Orbis)	104	415
Local vs Foreign	ger. vs non-ger.	1334 (SC)	0.32	0.28
Control variables				
Firm size I	ln (total assets)	856 (Orbis)	12.9	2.35
Firm size II	ln (revenue)	395 (HC)	19	2.68
Report size	pages / report	433 (HC)	118	54
Debt ratio	% debt	428 (HC)	0.89	5.2
Delay in exchange	days	439 (HC)	20	69
Auditor	BIG 4 auditor dummy	437 (HC)	1.32	0.47

Table 5 – overall sample

Results of random-effects GLS regression (n=854 observations) [a] / (n=270 groups)

	Model I (error occurrence categories 0-6)		Model II (Impact category 0-2)	
Dependent variable	Coefficient (Std. Err.)	P>|z|	Coefficient (Std. Err.)	P>|z|
Regulatory comliance I	2.488** (0.068)	0.000	0.786** (0.016)	0.000
Regulatory comliance II	-0.110 (0.172)	0.524	-0.040 (0.042)	0.337
Firm complexity	0.000 (0.000)	0.779	0.000 (0.000)	0.560
Firm performance	0.057 (0.120)	0.636	0.058* (0.029)	0.041
Local vs Foreign	0.623* (0.294)	0.034	0.110 (0.072)	0.127
Firm size I	-0.030 (0.030)	0.333	-0.002 (0.008)	0.781
Firm size II	-2.590 (1.210)	0.983	-1.660 (2.970)	0.576
R^2 within	0.602		0.729	
R^2 overall	0.639		0.756	
Hausman (prob>chi²)	0.480		0.998	

[†] $p < 0.1$; $*$ $p < 0.05$; $**p < 0.01$.

[a] Values reported are unstandardized coefficients, with standard errors in parentheses.

Table 6 - sub-sample – replacement group

Results of random-effects GLS regression (n=386 observations) [a] / (n=250 groups)

	Model I (Error occurrence categories 0-5)		Model II (Impact category 0-2)	
Dependent variable	Coefficient (Std. Err.)	P>|z|	Coefficient (Std. Err.)	P>|z|
Regulatory compliance I	0.310† (0.181)	0.087	0.152** (0.037)	0.000
Regulatory compliance II	0.372 (0.306)	0.223	0.087** (0.058)	0.133
Firm performance II	(-0.024) 0.232	0.917	0.013 (0.047)	0.781
Local vs Foreign	0.641 (0.403)	0.112	0.011 (0.078)	0.886
Firm size II	0.020 (0.048)	0.675	0.008 (0.009)	0.392
Report size	-0.002 (0.002)	0.368	-0.001** (0.000)	0.002
Debt ratio	-0.027 (0.020)	0.180	-0.000 (0.004)	0.939
Auditor	-0.225 (0.235)	0.340	0.090† (0.047)	0.056
Replacement frequency	0.475** (0.120)	0.000	0.050† (0.025)	0.053
Constant	2.212 (0.985)	0.025	0.152 (0.192)	0.000
R^2 within	0.034		0.052	
R^2 overall	0.088		0.142	
Hausman (prob>chi²)	0.283		0.813	

† $p < 0.1$; ∗ $p < 0.05$; $p < 0.01$.

[a] Values reported are unstandardized coefficients, with standard errors in parentheses.

Table 7 offers a complete list of types of found changes, including the categorization of the error occurrenc. If a change is found in the audited part it is marked with an a.

Table 7 - Complete list of all 44 types of exchanges found

Code	Cat.	Modes of change	Code	Cat.	Modes of change
1.	I	Password proteced	23.	V	Paragraph added
2.	I	No change	23a.	VI	Paragraph added – a.
3.	I	Added copy protection to file	25.	V	Paragraph deleted
4.	II	Changed formatting	25a.	VI	Paragraph deleted – a.
5.	II	Change in layout	27.	V	Chapter added
6.	III	Picture exchange - no regards to content	27a.	VI	Chapter added - a.
7.	V	Picture exchange - with regards to content	29.	V	Chapter deleted
8.	III	Corrected spelling error	29a.	VI	Chapter deleted – a.
9.	IV	Change of measurement unit	31.	IV	Information about management/company changed
9a.	V	Change of measurement unit - audited part (a.)	31a.	VI	Information about management/company changed - a.
11.	IV	Rephrasing	33.	IV	German / English language errors corrected
11a.	V	Rephrasing – audited part	33a.	V	German-English language errors corrected – a.
13.	IV	Change in the order of information	35.	IV	Rephrasing in charts changed
13a.	V	Change in the order of information - a.	35a.	V	Rephrasing in charts changed – a.
15.	IV	Change of date specification	37.	V	Numerical values in charts changed
15a.	V	Change of date specification - a.	37a.	VI	Numerical values in charts changed – a.
17.	IV	Change of chronical information	39.	V	Numerical values in text changed
17a.	V	Change of chronical information – a.	39a.	VI	Numerical values in text changed – a.
19.	III	Word added/deleted	41.	V	New document – Mode of document changed
19a.	V	Word added/deleted – a.	41a.	VI	New document - Single company report vs. Group report
21.	IV	Sentence added/deleted	43.	I	Place holder document
21a.	V	Sentence added/deleted – a.	44.	II	Double content that is identical deleted