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**Financial restatements: Trends, Reasons for
Occurrence, and Consequences
- A Survey of the Literature -**

Financial restatements: Trends, Reasons for Occurrence, and Consequences -A Survey of the Literature-

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First version: [October 7 2017](#)

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Abstract

This state-of-the-art paper summarizes findings on restatement papers mainly covering years 2001 to 2017. Our review provides a comprehensive picture on financial restatement research mainly for U.S., its trends, reasons for occurrence, and consequences for affected parties (e.g., investors, auditors). Furthermore, we outline reputation-rebuilding measures undertaken after a restatement and their effect on the information content of earnings. Moreover, the scope, versatility, and universality of restatements as a single proxy for financial reporting and audit quality are presented. We carefully illustrate nuances in restatement types. Overall, this paper aims at helping institutional standard setters understanding the meaning of an increase in restatements and giving shareholders an insight on the severity of various corrections. Finally, researchers learn about chances and limitations when financial restatements are applied as an alternate proxy for low financial reporting and low audit quality.

JEL classification: G1, K4, M4

Keywords: survey, financial restatement, firm value, cost of equity, auditing

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1 Introduction

A financial restatement corrects formerly incorrect published financial data, on which readers have mistakenly relied upon during the misreporting period. The nature of misreporting can either be of intentional or of unintentional nature. [Pomeroy and Thornton \(2008\)](#) identify restatements and AAERs (Auditing Enforcement Releases) as a proxy for lowest financial reporting quality ([Abbott et al. 2004](#); [Agrawal and Chadha 2005](#); [Beasley 1996](#)), while [Christensen et al. \(2016\)](#) note that restatements potentially are “the most readily available signal of low audit quality”.

Our motivation for writing this review article is driven by three key questions. First, how do restatement firms differ from those that do not restate? Second, which factors increase the likelihood of a restatement? Third, which consequences do restatement firms face and how do they react to those? Additionally, there is one question that we did not ask ourselves *ex ante*, but now feel it is essentially the most important one to answer before reading any restatement related literature: How homogenous are observed restatements in terms of severity?

While from 2001 to 2006 the number of restatements in the U.S. has risen from 625 cases p.a. to its peak of 1,853 cases p.a., it has decreased to 671 restatements in 2016 ([Whalen et al. 2017](#)). This decrease is accompanied by a decline regarding the severity of restatements ([Whalen et al. 2017](#)). On average, restatement firms are smaller, less profitable, more leveraged, and slower growing than their counterfactuals ([Kinney and McDaniel 1989](#)). CEOs of restatement firms receive higher stock option-based compensation before the restatement was announced compared to non-restatement companies ([Burns and Kedia 2006](#)). [Richardson \(2005\)](#) provides some modest evidence that governance structures at the time of misreporting were weak relative to selected benchmarks. Once, a restatement is announced, affected companies experience a decrease in market value ([Palmrose et al. 2004](#)) and a drop in the information content of earnings ([Chen et al. 2014b](#)). To repair reputational damage, restatement firms change their CEOs twice as often as the control group ([Arthaud-Day et al. 2006](#)). Auditors experience a higher turnover, too ([Hennes et al. 2014](#)). CEOs’ compensation in the form of stock options declines significantly in the two years after the restatement ([Cheng and Farber 2008](#)). Restatement firms are less likely to issue quarterly earnings forecast suggesting the litigation risk outweighs transparency benefits ([Ettredge et al. 2013](#)). These findings indicate that restatements influence the decisions by affected parties. A brief overview of further selective findings is systematically presented in Table 1. Some results, however, may vary in severity of restatements. Table 2 illustrates possible variations in restatements. The paper by [Karpoff et al. \(2017\)](#) is the closest article that could be classified as a review article. However, since [Karpoff et al. \(2017\)](#) focus on financial misconduct database issues regarding 4 databases, out of which 2 include restatements, the reader is informed about each database, but not about the restatement literature with all its facets. Hence, we are the first to our knowledge to provide a comprehensive summary on restatements regarding reasons and consequences, containing information on findings from 160 restatement related articles, out of which 65 carry the term “restatement” in the title. Researchers may learn about potential gaps in the restatement literature and apply restatements to control for audit and reporting quality, be it in robustness checks or primary analyses. Investors gain information on factors that trigger restatements and learn about consequences regarding the market value of restatement companies. Standard setters gain knowledge about effectiveness of past regulations and may assess potential requirements for further improvements to protect investors. Analysts receive advice on firm’s disclosure behaviour after restatements and may adjust their forecasts. The debt market obtains essential information on

whether the cost of debt increases, and which restatement factors drive these costs. Lastly, companies may learn how to protect themselves from restatements and how to recover from consequences of reporting failure.

The remainder of this paper is structured as follows: Sect. 2 describes the selection process of the reviewed literature. Sect. 3 systemises restatements while Sect. 4 informs about current trends. Sect. 5 describes characteristics of restatement companies while Sect. 6 to 9 outline the consequences in terms of market value, information content of earnings, cost of capital and litigation risk. Additionally, we provide findings that refer to the audit committee and auditors in Sect. 9 and 10. Contagion-effects are presented in Sect. 11 and the summary is included in the last section.

-----[Please insert Table 1 approximately here](#)-----
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2 Review approach

The search for restatement related literature was conducted between July and December 2017. First, we identified top-ranked journals from which we planned to extract restatement related literature. To ensure the relevance and quality of selected literature, we utilized the Scimago Journals & Country Rank to identify top-ranked journals. The search has been performed using the following parameters: “Business, Management, and Accounting; Accounting; all regions; journals; 2016”. As of July 2017, the most recent ranking was for the year 2016. The entire ranking comprised 120 journals. The quality cut-off was made at the median of the Scimago Journal Rank (SJR median was 0.5035) to guarantee journal quality as in previous literature reviews (Bouncken et al. 2015; Köhn 2017). Hence, 60 journals remained.

Second, EBSCO Business Source Complete and Web of Science were searched for the term “restatement” in the title, abstract and subject and respectively in the title and topic. Alternatively, related and broader search terms would have been possible (fraud, manipulation, error, irregularity, financial misconduct, SEC investigation, litigation, AAER). However, since we aim to focus on restatements, we consciously did not extend our search. The search results provided us with 842 papers from EBSCO Business Source Complete and 1,220 papers from Web of Science.

Third, we executed a quality cut-off by keeping only articles from top ranked-journals that have a SCImago Journal Rank above 0.5035, leaving us with 217 papers from EBSCO Business Source Complete and 257 papers from Web of Science. The aggregated sample (217+257) was reduced by redundant articles (167) resulting in 307 unique restatement related papers.

Fourth, we performed a relevance cut-off. After going through each paper, we found that some research did not refer strong enough to restatements as for example by Desir (2012). Discussion papers, abstracts and papers on corporate governance, were subtracted. Exclusion of corporate governance papers may seem critical, but helps us to focus on audit and accounting related literature. The final sample comprises 160 restatement related articles. These 160 articles are spread across 16 journals (see: Figure 1).

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The number of restatement related articles has increased on average compared to the last decade (see: Figure 2). Out of 160 papers 65 carry the term “restatement” in the title. These 65 articles

mainly rely on GAO (United States General Accounting Office) and AA (Audit Analytics) data for its primary source of restatement related data.

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We also include 18 working papers, which are not the result of our primary search described. Even though working papers do not qualify regarding quality assurance, we find some particular working papers to reappear on a regular basis as citations in top-ranked restatement literature. Core findings from papers referring to non-US samples are presented separately in Table 11 in the appendix.

3 Identification, definition and classification of restatements

In this section, we outline characteristics of restatements. This understanding is fundamental to many findings, as these often vary in the severity of a restatement or the prompter of a restatement announcement. In general, following a legal definition by the SEC (2004), a firm shall restate its financial statement as soon as “the company’s previously issued financial statements ... no longer should be relied upon because of an error in such financial statements...”.

3.1 Identification of restatements

Once misreporting is identified (e.g., by the company, an independent audit firm and/or the Securities and Exchange Commission), the company itself may publish this announcement via a press release, an 8-K, 10-K, 10-K/A, 10-Q or 10-Q/A report (Scholz 2014; Whalen et al. 2015). An 8-K report informs shareholders about relevant events such as accounting restatements and/or the departure of a CEO/CFO (Carter and Soo 1999). Since 2005 material financial restatements in the USA are filed under the item 4.02 (“Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review”) within the 8-K report. Before the introduction of the item 4.02 in August 2004, restatements had been mentioned in item 5 (“other information”) within the 8-K report. While 4.02 restatements reflect high severity, non-4.02 restatements are referred to as revision restatements indicating less severity (Whalen et al. 2015). False financial statements are eventually corrected by the issuance of reports on Form 10-K/A and/or Form 10-Q/A (Scholz 2014). Non-4.02 restatements are corrected within regular 10-K- and 10-Q-reports instead of separate amended statements. Both types of restatements are publicly available through SEC’s EDGAR database. The EDGAR database is used by investors as well as database providers (Whalen et al. 2015). Drake et al. (2015b) observe that within the EDGAR database the annual accounting report (10-K reports) (21%) is the most commonly requested filing followed by the current report (8-K reports) (19%) and the quarterly accounting report (10-Q) (16%). Restatement announcements, however, trigger the highest investors’ interest in the EDGAR database (Drake et al. 2015b). Although not required by GAAP or the SEC, most restating companies issue additionally press releases that comment on the restatement’s nature (Acito et al. 2009). Mistakes may relate to issues concerning revenues, expenses, taxation, investment and finance (Scholz 2014). Myers et al. (2013) illustrate that 61% of their restatement sample are announced via form 8-K or press releases, while the remaining 39% are made public through amended or scheduled 10-K or 10-Q reports. Their sample includes 1,773 restatements announced from 2002 through March 31, 2008. Based on our own analysis we find that as of January 1, 2018 in the AA data about 31.92% of all restatements are disclosed via form 8-K or press releases.

3.2 Definition of restatements

A restatement has various dimensions regarding its reasons (e.g., revenue corrections) for occurrence and initiators (e.g., SEC) making it challenging to find an universal definition for all restatements. While often considered as potential “earmarks of fraudulent activities” (Perino 2012) it is also possible that restatements are of minor severity. According to an email that was replied to Karpoff et al. (2014) by the AA, a restatement is

“an adjustment to previously issued financial statements as a result of an error, fraud, or GAAP misapplication [and] does not include restatements caused by the adoption of new accounting principles or revisions for comparative purposes as a result of mergers and acquisitions”.

The AA definition explicitly excludes adjustments made due to new accounting principles and differentiates between an error and a fraud.

3.3 Classification of restatements based on severity

3.3.1 Restatement vs. fraud

Fraud is used to describe a fraction of a restatement sample that has been caused by intentionally made mistakes (manipulation) in some studies. Despite the fact that an intentional mistake does not automatically translate to a fraud case, the “distinction between fraud and irregularities has become blurred over the years” (Karpoff et al. 2017). 26.4% of the GAO restatements are identified as irregularities, suggesting intentional misstatements (Hennes et al. 2008), and are thus fraud related in a broader sense. The AA database includes a variable (RES_FRAUD) to identify fraud. According to Karpoff et al. (2017), only 1.7% of the AA restatements are fraud related.

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Each database may have its particular definition of fraud. The PCAOB (Public Company Accounting Oversight Board) states that the primary factor to distinguish an error from fraud is the intention of misstating (PCAOB 2017, AS 2401). AAERs¹, which are partially fraud related and securities class action lawsuits², which are completely fraud related overlap with restatements too, suggest an overlap of restatements and fraud (see: Figure 3³).

Lee and Lo (2016) state that AAER (Auditing Enforcement Releases) are often triggered by a restatement or lead to a restatement after the AAER revelation and the misstated amount is typically material. Agrawal and Cooper (2017) find that turnover for CEOs and CFOs is higher when a restatement is accompanied by AAERs and trigger securities class action lawsuits. Rice et al. (2015) document that class action lawsuits are more likely for restatement cases when control weaknesses had been reported before the restatement announcement. Land (2010) reveals that restatement firms with CEO turnover are more likely to face a subsequent AAER, “indicating that financial fraud has occurred”. These findings show the interaction of fraud and restatements, however “according to Cornerstone Research only about 13% of class action securities litigation coincides with restatements” (Autore et al. 2014).

3.3.2 Form 8-K vs. non-form 8-K

Restatement announcements via form 8-K cause a more negative market reaction compared to other disclosures and indicate high transparency (Hogan and Jonas 2016; Myers et al. 2013). Moreover, Myers et al. (2013) unveil that 8-K reports are associated with high institutional ownership, many analysts following the firm, and restatements announced in the first quarter (when auditors are engaged most). Furthermore, Hogan and Jonas (2016) find that high-transparency disclosures proxied by 8-K reports are negatively associated with the equity proportion of executive pay, suggesting that executives fear negative consequences that 8-K disclosures bear.

3.3.3 Irregularities vs. errors

Hennes et al. (2008) differentiate between errors and irregularities. Irregularities are restatements that embody one of the following aspects (Addy et al. 2009):

- Irregularity or fraud are used to describe the restatement;
- the SEC or DOJ (Department of Justice) are involved;
- an independent investigation is involved in the disclosure.

According to Hennes et al. (2008) studies by Arthaud-Day et al. (2006), Burns and Kedia (2006), Harris and Bromiley (2007), Kedia and Philippon (2009) and Lee et al. (2006) assume their observations retrieved from GAO to focus on intentional misreporting cases only. However, the GAO database is a mix of both, intentional (irregularity) and unintentional misreporting cases (errors). Hennes et al. (2008) show that irregularities have a market reaction of up to -14% measured by cumulative abnormal returns. Errors, on the other hand, have a moderate market reaction with a decrease of -2% in firm value.

3.3.4 High vs. low Cumulative Abnormal Returns (CAR)

A restatement could be classified as severe when the market reaction to a restatement announcement falls below a predefined level such as the CAR median of the entire restatement sample. This categorization is found in four papers (Albring et al. 2013; Ettredge et al. 2014; Larcker et al. 2007; Wilson 2008).

Wilson (2008) subdivides her restatement sample into a low CAR and high CAR subgroup and discovers a decrease in information content (based on the ERC; Earnings Response Coefficient) only for low CAR restatements. She then repeats the very same test for revenue related and non-revenue related restatements and finds similar results only for revenue related restatements. The CAR-based classification is also supported by a discussion established by the Public Company Accounting Oversight Board (PCAOB 2013). Within their discussion on audit quality indicators, it is stated that “[t]he staff believes that the market reaction of restatements is a more relevant factor to measure materiality objectively”. Ettredge et al. (2014) use a composite measure of misstatement severity that includes five severity components (irregularity, scaled cumulative impact of the restatement on net income, revenue relation, misstatement length and CAR). Here one could argue whether the fifth factor, the CAR, does not already embody a substantial amount of information about the first four factors and even proxies for otherwise omitted variables such as firm reputation. Larcker et al. (2007) classify a restatement as “severe” if the market price drops by more than 3%.

3.3.5 Revisions vs. reissuances

Restatements can be subdivided into little r (revisions, e.g., 10-K, 10-K/A, 10-Q and 10-Q/As) and big R (reissuances, 8-K filing with item 4.02) restatements (Hogan and Jonas 2016; Tan and Young 2015). Tan and Young (2015) find that little r firms are more profitable, provide some evidence of stronger corporate governance and have higher audit quality than big R firms. Moreover, little r firms are equipped with lower free cash flows, higher board expertise, and experience a higher CFO tenure compared to big R companies. Little r companies are also less complex, less likely to use a specialist auditor, and less likely to have material weaknesses in their internal controls compared to big R firms (Tan and Young 2015). Doyle et al. (2007) find that firms with weak internal control over financial reporting have more restatements. Ashbaugh-Skaife et al. (2007) document that companies that disclose internal control deficiencies have more prior SEC enforcement actions and financial restatements. In this context, restatements may signal the need for a reassessment of internal controls.

3.4 Classification of restatements based on initiator

A restatement sample may also be subdivided based on the initiator (or prompter as referred to in some part of the literature). The initiator is the party that makes the restatement or the requirement of a correction public. According to Scholz (2014), “[t]he company, the SEC, an independent auditor or a combination thereof can identify the need for a restatement”.

3.4.1 Restatements initiated by the auditor or the SEC

When an auditor discovers that previously issued financial statements are incorrect, he/she “should advise his client to make appropriate disclosure of the newly discovered facts and their impact on the financial statements to persons who are known to be currently relying or who are likely to rely on the financial statements and the related auditor’s report” (PCAOB, 2017, AS 2905).

Restatements are attributed to an external auditor only after the auditor brings the issue to the audit committee and the committee fails to follow auditor’s advice. An auditor is then legally required to disclose the information to the SEC (Jorgenson 2004). According to Arthaud-Day et al. (2006) “[r]estatements prompted by either an external auditor or the SEC should, therefore, pose a particularly serious threat to the regulatory legitimacy of an organization”. Accordingly, Arthaud-Day et al. (2006) argue that restatements prompted by external parties (SEC or auditor) deteriorate public relations so that trust-building measures will be necessary.

3.4.2 Restatements initiated by the company

A large proportion (58%) of the restatements documented within the GAO database is found to be prompted by the companies themselves (GAO 2007). In such a case, a firm’s management, board, or audit committee may have discovered the accounting irregularities (Arthaud-Day et al. 2006). The company can find misstatements through internal audits, period-end closing processes, policy reviews and complaints from employees (Scholz 2014). The problems may even have been first noticed by the external auditor, who brought them to the audit committee’s attention, which in turn instituted corrective action (Arthaud-Day et al. 2006).

While restatements prompted by the SEC and the auditor are a sign of companies' failure, client restatements (restatements by the company) may be a better indicator for low audit quality as these imply that the auditor missed discovering a GAAP misapplication first (Francis et al. 2013). Plumlee and Yohn (2010) list four main explanations for client restatements (internal company error, fraud, transaction complexity, characteristics of accounting standards). Two reasons stand out; "internal company error" and "characteristics of accounting standards" account for 94% of all cases. Francis and Michas (2013) show that audit offices that were associated with client restatements are more likely to face further client restatements in the future (for up to five years).

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3.5 Other

According to Hayes (2014b) "[u]fortunately, while research has developed refined proxies for restatements that correct intentional misstatements (Dechow et al. 2011; Hennes et al. 2008; Plumlee and Yohn 2010), a refined proxy for restatements that correct unintentional error is lacking". Therefore, she executed a keyword search (e.g., "inadvertent" and "unintentional") and identified 2,075 restatements out of 10,623 restatements from the Audit Analytics database as restatements correcting unintentional errors. Moreover, she subdivides unintentional error restatements into eight categories (e.g., recording errors, immaterial, etc.).

Concerning the magnitude of restatements Elayan et al. (2008) document that the mean restatement amount is 3.64 times the net income while the median is only 0.21 times the net income. This finding suggests that a small number of the restatements is large. A further classification is the division of restatements of audited financial reports and restatements of unaudited reports (Lobo and Zhao 2013; Palmrose and Scholz 2004). The restatement sample can also be subdivided into firms that restate multiple times and only once (Files et al. 2014) (see: Table 3). Files et al. (2014) find that 38% of the restating companies in their sample restate at least twice between 2002 and 2008, and 31% of repeat restatement firms restate three or more times during the same period. Hughen (2010) observes that over 100 firms restated due to the misapplication of hedge accounting during the period 2001 through 2007.

This section outlined that restatements, which correct substantial prior mistakes are announced through an 8-K report in the US, while less relevant restatements are published within a regular annual and/or interim report. Despite the fact that restatements are not automatically fraud related, some literature refers to severe restatements as being fraud related in a broader sense because a causal relationship between severe restatements and class action lawsuits exists. We focus exclusively on restatements, but introduce a limited number of fraud-related literature for supportive purposes only. Many findings refer to severe restatements, which are classified as irregularities (not errors), reissuances (not revisions) and firms that experience a large decline in firm value when the restatement is announced, suggesting an intentional misreporting in the past. Moreover, the prompter of a restatement may imply information about the responsibility of each party involved in the restatement.

4 Incentives and trends of restatements

4.1 Incentives for financial restatements

According to [Ozbas \(2008\)](#) “fraud appears to be an attempt to cover up bad investments made in response to the market’s high valuation in the pre-fraud period”. [Dechow et al. \(2011\)](#) argue that misstatements appear to be made with the objective of covering up a slowdown in financial performance to maintain high stock market valuations. [DeFond and Jiambalvo \(1991\)](#) suggest that the negative correlation between lower growth in earnings and the likelihood of overstatement errors are the result of managers responding to economic incentives. [Ettredge et al. \(2010\)](#) expect managers to exploit the leeway within accepted accounting principles (GAAP) as long as such flexibility exists. As these accounting choices accumulate over time, the balance sheet becomes bloated. If the firm performance does not improve, firms eventually have to either allow their previous accounting to reverse, which would lead to decrease in earnings or apply non-GAAP accounting to perpetuate the illusion of a highly profitable company. [Richardson \(2005\)](#) reports that restating firms have been attempting to maintain a string of consecutive positive earnings growth and consecutive positive quarterly earnings surprises. [Donelson et al. \(2013\)](#) document that about 70% of severe restatement firms have met or beat analyst forecasts, however, if they were to report truthfully only about 40% would meet or beat analyst forecast.

[Scholz \(2014\)](#) highlights two economic events; “Recession” in 2000 and “Financial market crash” in 2008. For the first event in 2000 – surrounding the so called dot-com bubble – restatement numbers for the years 1999-2001 are on average twice as high as in years 1997 and 1999 ([Cheng and Farber 2008](#)). [Davidson \(2011\)](#) discover that observed accounting fraud, which closely relates to severe restatements, is increasing in GDP and is at its highest in the periods leading up to an economic peak. [Wang et al. \(2010\)](#) observe that fraud propensity increases with the level of investor beliefs about industry prospects. [Wang et al. \(2010\)](#) further suggest that regulators and auditors should be vigilant for fraud, which closely relates to severe restatements, during booms. While profitable companies are more likely to be capable of meeting extraordinary high market expectations (e.g., in booming times), underperforming companies may struggle to comply with highly optimistic analysts’ forecasts. Thus, CEOs from unprofitable companies may tend to cover up decent performance through earnings management especially in booming times. [Badertscher \(2011\)](#) finds that overvalued firms are more likely to engage in non-GAAP earnings management, as represented by severe restatements, namely irregularities. Non-GAAP earnings management is described as one of the most egregious forms of earnings management and being performed outside the boundaries of GAAP. [Shivdasani and Song \(2011\)](#) discover that in boom markets (e.g., US equity market from 1996 to 2000), issues underwritten by co-led syndicates were more likely to be involved in the securities fraud class-action lawsuit filings and earnings restatements subsequently to a bond issue. The authors assume lower screening incentives because of the free-rider problem between lead underwriters. Furthermore, [Richardson et al. \(2002\)](#) and [Dechow et al. \(1996\)](#) find that a substantial motivation for earnings manipulation is the desire to attract external financing at a lower cost. [DeFond and Jiambalvo \(1994\)](#) document manipulation through higher accruals in the year before a debt covenant violation, indicating that managers desire to align with covenant restrictions. [Kellogg and Kellogg \(1991\)](#) state that the first two reasons for fraud, misrepresentation, and manipulation of financial statements are:

1. Encouraging investors to buy company's stock as owners, or bonds as creditors;
2. increasing the value of the shares, thus increasing firm value.

Generally, severe restatements are the result of covering up unfavourable performance in order to fulfil expectations by current equity holders and creditors. Managers desire to be rewarded economically and hope to receive firm capital at lower cost. Pressure to perform well increases in booming times, while manipulation of financial statements (non-GAAP reporting) represents the last resort to cover up disappointing firm performance.

4.2 Frequency of restatements

While from 2001 the number of restatements in the U.S. has risen from 625 cases p.a. to its peak of 1,853 cases p.a. in 2006, it has decreased to 671 restatements in 2016 (Whalen et al. 2017). This decrease is accompanied by a decline in severity, measured as decreases in restatements announced via item 4.02 on the form 8-K, the impact on net income and the average number of days to file the restatement (Whalen et al. 2017). The occurrence of restatements from U.S. accelerated filers⁴, however, has increased between 2010 to 2014 from 174 to 352 cases p.a. and fallen back to 255 cases in 2016 (Whalen et al. 2017). Boland et al. (2015) document that accelerated filers experienced an increase in the likelihood of restatements following the change of filing deadlines from 90 to 75 days in 2013. This increase, however, was temporary and not found for large accelerated filers who faced a change from 75 to 60 days. Bryant-Kutcher et al. (2013) as well find that the incident of restatements increases for firms that are obliged to file more quickly. Srinivasan et al. (2015) document that the restatement rate of U.S.-listed foreign firms is significantly lower than that of comparable U.S. firms. However, for U.S.-listed foreign firms, less frequent restatements can be a sign of opportunistic reporting and not the lack of accounting errors and irregularities (Srinivasan et al. 2015). Figure 4 illustrates restatement frequencies between 2003 and 2012 based on data provided by Audit Analytics (AA).

-----[Please insert Figure 4 approximately here](#)-----

Burks (2015) discovers that about 6% of non-profit financial statement firms disclose errors from 2006 to 2010. This rate is approximately 60% higher than the restatement rate for publicly traded companies and strongly negatively associated with Big 4 and second-tier auditors. Liangliang et al. (2016) find for bank observations over the period from 1986 through 2006 that an intensification of competition through bank deregulation reduced the frequency restatements and potentially enhanced the capability to monitor banks.

Ghosh et al. (2017) find that Chinese ADRs (American Depositary Receipts) issued by U.S. depositary banks are less likely to restate prior-period financial statements relative to ADRs from other countries than China. Chinese RM (reverse merger) are less likely to restate compared to matched U.S. IPO firms, U.S. RM firms, or Chinese ADR firms. The Chinese ADR and the Chinese RM are common forms if a Chinese firm wants to access the U.S. capital markets (Chen et al. 2016b).⁵

Jorgensen et al. (2007) find that a potential reason for the increase in restatements between 1997 and 2005 is the auditor's and manager's conservative attitude after accounting scandals (WorldCom and Enron), increase in complexity of accounting rules and the SOX reforms that lead to higher scrutiny of accounting numbers. They also state that an analysis suggested that above 50% of restatements are related to books and records deficiencies or misapplications of the accounting standards. Ettredge et al. (2010) reveal that most earnings restatements are blamed on an error, or misunderstanding of GAAP, but suspicion persists that many of these restatements are instead due to intentional earnings management.

The described downward trend in recent years (from 2007 to 2016) is good news for investors – who are typically more concerned about revenue restatements than restatements of other accounts – and for companies because they are more likely to be sued when revenue restatements were announced. [Srinivasan et al. \(2015\)](#) consider two explanations for decreasing rates of restatements, namely a lower incident of mistakes, as well as lax detection and disclosure of misstatements.

5 Characteristics of restatement companies

5.1 Fundamental firm characteristics

[Kinney and McDaniel \(1989\)](#) show that restatement firms are smaller, less profitable, have higher debt, and slower growth compared to non-restatement firms. [Scholz \(2014\)](#) confirms that restatement companies tend to be smaller, and throughout the decade most restatement companies were unprofitable. She also discovers that 4.02 restatements tended to be announced by smaller companies rather than larger businesses in recent years. The average size of firms referring to the item 4.02 in the form 8-K trended downward from \$7.9 billion in total assets in 2006 to \$1.3 billion in 2011. [Lee et al. \(2006\)](#) do not find a positive and significant association between restated amounts and growth. [DeFond and Jiambalvo \(1991\)](#) find that restatement companies often have diffuse ownership, lower growth in earnings and fewer income-increasing GAAP alternatives available. [Richardson et al. \(2002\)](#) document that firms restating earnings have high market expectations for future earnings growth, higher levels of outstanding debt, more frequent external financing needs, and raise larger amounts of cash. [Efendi et al. \(2007\)](#) discover that misstatements are also more likely for firms that are constrained by an interest-coverage debt covenant. [McNichols and Stubben \(2008\)](#) document that firms that restate overinvest substantially during the misreporting period while [Ozbas \(2008\)](#) finds no support for the hypothesis that fraudulent firms waste real resources by overinvesting during periods of fraud to signal value. [Kedia and Philippon \(2009\)](#) discover that after the restatement has been announced, restatement companies grow slower than their counterfactuals. Moreover, in industries with a high incidence of restatements, non-restating firms also face slow growth in investment and employment, together with strong productivity growth. Thus, when firms with low true productivity hire and invest excessively, they distort the allocation of resources in the economy ([Kedia and Philippon 2009](#)). [Bardos and Zaiats \(2012\)](#) document that before a security issuance firms experience abnormally high returns in the restated periods by beating analysts' forecasts. However, the percentage (20%) of the restatement firms that issue securities in restated periods is small.

5.2 Ownership

[Burns et al. \(2010\)](#) state that the likelihood and severity of financial restatements are positively correlated with aggregated institutional ownership. This effect is driven by transient and quasi-indexing institutions. When this effect is controlled for increased concentration reduces the likelihood of misreporting. [Li et al. \(2011\)](#) find that in the pre-Reg-FD (Regulation Fair Disclosure) period before 2000, transient institutional investors practiced abnormal selling of shares of restatement firms one quarter before the restatement was publicly announced. After Reg-FD was promoted by the SEC, no pre-restatement abnormal selling was observed. The Reg-FD intends that material information shall be available to all investors and not only to a few selected investors and analysts through private channels. [Larcker et al. \(2007\)](#) find no significant correlation between

blockholders and restatements. [Dou et al. \(2016a\)](#) show that blockholders in the form of hedge funds decrease the incidence of restatements while activists and pension funds increase the probability of a restatement. [Wongsunwai \(2013\)](#) document that IPO companies backed by higher-quality venture capital firms experience less subsequent financial restatements. [Hui et al. \(2014\)](#) concentrate on an AAER sample. They suggest that investors recognize misstated periods before fraud was revealed. They also find a lower ERC for the misstated periods when the ex-ante probability of fraud is high. In particular, they also find that the ERC during the fraud period is smaller when the number of analyst following and institutional ownership are greater, suggesting that investors are well informed about the risk of fraud.

5.3 M&A (Mergers & Acquisitions)

[Bentley et al. \(2013\)](#) observe that companies following a prospector strategy are more likely to experience financial reporting irregularities than companies following a defender strategy.⁶ In this case, irregularities are defined as cases of AAERs, lawsuits, and restatements ([Bentley et al. 2013](#)). [Kravet et al. \(2015\)](#) discover that managers misreport to facilitate acquisitions. They find that firms misstating their financial statements are more likely to make stock-based acquisitions after the start of the misstatement. [Skaife and Wangerin \(2013\)](#) note that failed targets are more likely to make a restatement announcement soon after the deal fails relative to other firms, suggesting that low earnings quality has been detected by the potential acquirer and thus terminated before the restatement. [Bens et al. \(2012\)](#) report a higher likelihood of earnings restatements after executives make poor M&A decisions as the investment related pressure rises. [Amel-Zadeh and Zhang \(2015\)](#) document that financial restatements have consequences for the allocation of economic resources in the market for corporate control, as restatement firms are subsequently significantly less likely to become takeover targets than non-restating firms. [Kravet et al. \(2015\)](#) document stock price reactions to restatement announcements are more harmful, when stock-based acquisitions were made during the misstatement period.

5.4 Employees

[Bowen et al. \(2010\)](#) report that firms that experience whistle-blowing events reported in the press were more likely to announce a restatement. They, however, were observing only external whistleblowing allegations. [Call et al. \(2017\)](#) reveal that firms with a high-quality workforce experience fewer restatements, higher accruals quality, and fewer internal control violations. These results are most pronounced when employees are located at the firm's headquarters. Moreover, companies are found to engage in ongoing upward earnings management to project an illusion of job security ([Dou et al. 2016b](#)). This is done, as otherwise, companies would have to compensate for the unemployment risk wage premium (e.g., the employee faces an insecure job) and would spend more money to recruit new workers as a replacement for the staff that left the company ([Dou et al. 2016b](#)). [Dou et al. \(2016b\)](#) find that when state unemployment insurance benefits raise and employees potentially demand a lower risk premium, that then firms partially unwind prior upward earnings management. They find that an increase in unemployment insurance benefits significantly predicts a reduction in abnormal accruals, more negative special items and write-downs. The likelihood of income-reducing restatements increases as prior earnings management is partially unwinded. Moreover, [Jun et al. \(2016\)](#) document that financial restatements, especially those caused by unintentional errors, decrease when employee benefits increase.

5.5 Location, geographic distance and religious beliefs

[Barzua and Smith \(2014\)](#) find that companies, who choose Nevada as their corporate home, are 30-40% more likely to announce a restatement. Nevada attracts firms from headquarter states that have laws that are less management-friendly than in Nevada. [McGuire et al. \(2012\)](#) and [Dyrenge et al. \(2012\)](#) discover that firms headquartered in strong religious areas are less likely to restate. Moreover, [McGuire et al. \(2012\)](#) find that managers in religious areas prefer real earnings management over accruals manipulation, perhaps because honesty and risk aversion are embedded in religion ([Dyrenge et al. 2012](#)). [Kedia and Rajgopal \(2011\)](#) show that firms in counties located closer to the SEC offices and in areas with greater past SEC enforcement activity, experience less likely financial restatements. [Ayers et al. \(2011\)](#) discover that a geographically close institutional owner (less than 100 km between firm and owner) is associated with a lower likelihood of future accounting restatement due to managers' intentional errors.

5.6 Tax

Results from [Kuo and Lee \(2016\)](#) suggest that increased book-tax conformity reduces the likelihood of audit failure and the incidence of restatements. Their results are based on a sample including 34 countries. [Badertscher et al. \(2009\)](#) reveal that total book-tax differences and its major component temporary differences are positively associated with restatements. However, if firms keep their book and tax earnings align (small differences) and manipulate upward, then they are also paying tax on upward manipulated earnings. [Erickson et al. \(2004\)](#) estimate that the median firm in their sample paid eight cents for a one-dollar increase in inflated taxable revenues. This translates to \$320 million taxes due to overstated earnings (for the sample), illustrating how far managers are willing to accept negative side effects of earnings management. [Choudhary et al. \(2016\)](#) demonstrate that their constructed measure of tax accrual quality is capable of predicting tax related restatements as well as internal control material weaknesses. The tax accrual quality is perceived as low when the variation of income tax accruals and income tax related cash flows is high.

5.7 Earnings quality

[Ettredge et al. \(2010\)](#) find that balance sheets of companies restating core earnings accounts are significantly more bloated (higher working capital). [Chen et al. \(2016a\)](#) document that companies that switch to a more profitable industry are 39% more likely to restate in the future. An explanation for this finding is that firms may manipulate financial statements to be classified into a more favourable industry. [Amiram et al. \(2015\)](#) show that restated financial statements are more closely conform to Benford's Law than the misstated versions in the same firm-year. [Cao et al. \(2016\)](#) reveal that late filing firms are facing a higher probability of a late filing being restated. [Dechow et al. \(2011\)](#) document that at the time of misstatements, accrual quality is low and both financial and nonfinancial measures of performance are deteriorating. Their sample, however, refers to AAERs. [Doyle et al. \(2007\)](#) find that firms with weak internal control over financial reporting have more restatements. Internal control firms are identified as companies that disclosed a material weakness in internal control under Sections 404 and 302 of the Sarbanes-Oxley Act ([Doyle et al. 2007](#)). [Heese et al. \(2017\)](#) also report that firms that receive a comment letter from the SEC are more likely to restate. [Czerney et al. \(2014\)](#) discover that audit reports with explanatory language are significantly more likely to be restated later than opinions without such language.

5.8 Prediction

Jones et al. (2008) test diverse models for predicting restatements and find that “only the accrual estimation errors estimated from cross-sectional models of working capital changes on past, present, and future cash flows (Dechow and Dichev 2002) and the McNichols 2002 modification of Dechow and Dichev have predictive power for both fraud and nonfraudulent restatements of earnings”.

Collins et al. (2017) propose refined Jones-type models that exhibit a high power in testing for earnings management. The expanded models are capable of identifying earnings management in a sample of restatement firms. Price et al. (2011) find that both the commercial risk measures “Accounting and Governance Risk” and “Accounting Risk” predict future accounting irregularities using numbers reported one year before the misreporting even begins better than academic risk measures. Especially the Accounting and Governance Risk measure outperforms the academic measures in detecting accounting irregularities (Price et al. 2011). Hribar et al. (2014) present an alternative to discretionary accruals. They find that unexplained audit fees are incrementally informative for predicting restatements, fraud, and SEC comment letters.

In this section we learned that restatement firms are slower growing and higher indebted than their counterfactuals. However, higher institutional ownership if controlled for transient and quasi-indexing institutions, more blockholders in the form of hedge funds and a high-quality workforce decrease the likelihood for a restatement. Further incentives of misreporting are subsequent stock-based acquisitions, projecting an illusion of job security and being classified into a more favourable industry. For firms headquartered in strong religious areas and firms with increased book-tax conformity restatements are less likely. Price et al. (2011) find that commercial risk measures predict future accounting irregularities better than academic risk measures. Overall results indicate that restatement firms had a low earnings quality before the restatement announcement.

6 Market reaction

According to Chin and Chi (2009) prior studies find that accounting restatements cause a decrease in expected future earnings through potential penalties (numerator effect) and an increase in firm's cost of equity (denominator effect) (Hribar and Jenkins 2004), both leading to considerable declines in firm value (Palmrose et al. 2004). To assess the market reaction caused by restatements, researchers calculate the cumulative abnormal returns (CAR) surrounding the date when the restatement was first announced (see: Figure 5).

-----[Please insert Figure 5 approximately here](#)-----

6.1 Observation timeframe

Observing the market reaction around 403 restatements announced from 1995 to 1999, Palmrose et al. (2004) find an average abnormal return of about -9.2%. Other reports find a decrease in market value of -10% (GAO 2002) (see: Table 4). Scholz (2014) documents that recent market reactions “are much less negative than the -10% averages reported in the late 1990s”. However, please note that restatement samples that are covering periods before 1997 are more likely to be hand collected, as the earliest restatement data in the GAO database starts in 1997.

-----[Please insert Table 4 approximately here](#)-----

6.2 Severity

Hennes et al. (2008) show that irregularities peak up to -14% while errors have a moderate reaction with a decrease of -2% (Hennes et al. 2008). Scholz (2014) finds market reactions to 4.02 restatements and restatements involving fraud are more harmful to company value on average. In 2012 shares fell by 5.3% (0.6%) for 4.02 restatements (non-4.02 restatements). Palmrose et al. (2004) also find more pronounced reactions to fraud related restatements. Du (2017) finds that fraud cases within a restatement sample are correlated with more negative stock returns. In table 5 market reactions are listed by type of restatement. These results suggest that the stock market pays attention to the severity of restatements.

-----[Please insert Table 5 approximately here](#)-----

Turner et al. (2001) observe a 12% market decrease in firm value when restatements relate to revenues. Anderson and Yohn (2002) find a decrease from -3.5 to -11% if the reason is revenue related. A more recent report by Scholz (2014) finds a negative impact from revenue related restatements with a 4% decrease (see: Table 6).

-----[Please insert Table 6 approximately here](#)-----

The decrease in market value by downward restatements (earnings were reported higher in the past) can be reasoned by its negative impact on future operating cash flows and thus, the adjustment of firm value. However, this argument would not necessarily hold for cases in which earnings are restated upward. Agrawal and Chadha (2005) do not find any market reactions significantly different between market reactions to upward (-3.99%) and downward (-6.02%) revenue adjustments, suggesting that both types cause negative market reactions. In contrast Callen et al. (2006) find that the perceived failure of the accounting system is offset by the upward revisions in future cash flow expectations (see: Table 7).

-----[Please insert Table 7 approximately here](#)-----

Palmrose et al. (2004) report that restatements with more substantial negative corrections of previously reported income are associated with more negative market reactions. According to Agrawal and Chadha (2005) restatements involving substantial changes in earnings (greater than the sample median value) are worse news, as illustrated in the table 8.

-----[Please insert Table 8 approximately here](#)-----

The average misreporting period length can also be taken as a measurement for severity (Whalen et al. 2015). According to Palmrose et al. (2004), returns are significantly worse for restatements that affect more than one quarters' results (-10% vs. - 5%). In contrast restatements involving fewer than four quarters are bad news with a significant negative cumulative average abnormal return of 7.4%, while those involving more quarters are not (Agrawal and Chadha 2005) (see: Table 9).

-----[Please insert Table 9 approximately here](#)-----

According to [Agrawal and Chadha \(2005\)](#) restatements initiated by the company itself or by its auditors are bad news, with a statistically significant market reaction of -6% . Restatements initiated by regulators also appear to be bad news, with a CAAR (cumulative average abnormal return) of about -3.6% . [Palmrose et al. \(2004\)](#) find restatements attributed to the auditor are associated with more negative reactions as shown in table 10. Also [Nguyen and Puri \(2014\)](#) observe that “the auditor-initiated restatements generate far greater abnormal volatility and spreads, and more negative abnormal returns than the management and SEC-initiated restatements”. [Palmrose et al. \(2004\)](#) also find that more negative returns are associated with restatements affecting more accounts and not quantifying the restatement.

-----[Please insert Table 10 approximately here](#)-----

Hirschey et al. (2015) find that the more days it takes the company to provide restated amounts, the greater is the loss in the information content of earnings after the restatement. [Gordon et al. \(2013\)](#) find that a greater level of pre-restatement disclosure is associated with a less negative market reaction to the restatement announcement. One interpretation is that a greater amount of discretionary disclosure indicates managers’ openness to monitoring and effort to reduce information asymmetry, contributing to establishing some level of trust. This is true despite the fact that some of the former disclosures turn out to be erroneous.

[Files et al. \(2009\)](#) indicate that firms may publish a press release disclosing a restatement in the headline (high prominence), with a headline on a different subject (e.g., earnings news) but describe the restatement in the body (medium prominence) or at the end of the press release in a footnote (low prominence). Mean three-day returns differ considerably across categories of prominence (-8.3 , -4.0 and -1.5% , respectively). Furthermore, the likelihood of class action lawsuits is significantly reduced with less prominent disclosure (27%, 16% and 0% for high, medium and low prominence). [Elliott et al. \(2012\)](#) find that when the CEO apologizes and accepts responsibility via video, investors trust the CEO more compared to restatement announcement via text. Their findings are based on an experimental setting. [Richardson et al. \(2002\)](#) find that the stock price reaction to the announcement of earnings restatements is associated with the magnitude of the accruals. The market reaction changes from -10% for firms in the 1st quartile of total accruals to -14% for firms in the 4th quartile. A further differentiation has been made by [Bardos et al. \(2013\)](#), who find a significantly more negative market reaction for restatement cases in which eventually the company is sued. They discover an average two-day abnormal return of about -20% for sued and -4% for non-sued firms. Findings by [Mergenthaler \(2009\)](#) suggest that the magnitude of earnings management is greater when firms violate rules-based standards. [Carcello et al. \(2011\)](#) find that the negative market reaction is attenuated by audit committee independence if the CEO was not involved in selecting board members. [Kravet et al. \(2015\)](#) document stock price reactions to restatement announcements are more harmful, by 770 basis points on average, when stock-based acquisitions were made during the misstatement period, and these acquisitions are significantly more likely to result in goodwill impairments than are stock-based acquisitions made during non-misstatement periods. [Badertscher et al. \(2011\)](#) show significantly less negative reactions to accounting restatements when managers are net purchasers of stock before the restatement and significantly more negative market reactions when managers are net sellers. [Hollie et al. \(2011\)](#) report a 50.3% decrease in operating cash flows, 22.37% increase in investing cash flows, and a 2.55% decrease in financing cash flows after the SEC permitted a one-time reclassification to correct misclassified cash flow items without the obligation to announce a restatement in 2006. The

market reaction to the cash flow reclassification is statistically significantly negative 0.63% at day zero. [Adams et al. \(2017\)](#) focus exclusively on restatements made by real estate investment trusts (REITs) and find the reaction to restatements announced by REITs to be less negative (-0.63%) than those made by non-REIT. In general, REITs are characterized by lower asymmetric information and lower agency costs. They are also less exposed to technologically advanced processes and experience greater monitoring of their financial statements.

[Bardos et al. \(2013\)](#) and other studies vary in estimation models, estimation windows, event windows, event dates and restatement types mostly referring to severity. Recognizing these factors is crucial for interpretation, analysis, verification, and replication. [Akhigbe et al. \(2005\)](#) conclude that “the results suggest that restatements contain valuable information about the valuation of firms, even though the restatements are focused on revising income statement items in a previous period”.

6.3 Regulations

[Burks \(2011\)](#) discovers that initial price reactions to restatement announcements become significantly less negative after SOX. The market appears to have become considerably more efficient at pricing restatements after SOX, as the price drifts are often smaller after SOX than before. [Hirschey et al. \(2010\)](#) investigate restatement effect changes after SOX regarding announcement-period returns, restatement-induced contagion price effects and the information content of post-restatement earnings. They find that SOX has had an impact on all three market measures, suggesting an increase in investors’ perceived reporting credibility for firms admitting to accounting errors. [Hirschey et al. \(2010\)](#) find muted restatement contagion effects, attenuated valuation effects of restatement announcements and a more moderate loss of information content following SOX. [Myers et al. \(2013\)](#) also state that the transparency and timeliness of restatement disclosures have improved especially following the SEC issued “Final Rule: Additional Form 8-K Disclosure Requirements and Acceleration of Filing Date” ([SEC 2004](#)) with some exceptional restatement cases. [Johnson et al. \(2007\)](#) discover that there is a significantly greater correlation between litigation and both earnings restatements and abnormal insider selling after the "Private Securities Litigation Reform Act of 1995”.

6.4 Investigation and misstatement period

The length of the investigation period informs about how long it takes to assess the restatement amount required. [Badertscher and Burks \(2011\)](#) find that when fraud is a factor, the firm typically takes weeks or months to disclose restatement’s earnings impact, likely because investigations are necessary to restore the firm’s ability to produce reliable information. When fraud is not a factor, the firm discloses restatement's impact within a day of the restatement announcement and postpones its quarterly earnings announcement and SEC filing by less than a week ([Anderson and Yohn 2002](#)). Moreover, figure 5 also displays the misstatement period, which is typically the period to be restated and may as well relate to severity. The longer a company misstates, the more negative the market is going to react. [Burns and Kedia \(2006\)](#) find that the mean time lapse between the misstated year and the restatement announcement year is 1.47 years. 25% of the sample have a time-lapse greater than 2.4 years.

6.5 Anticipation

Corporate insiders sell shares for two primary reasons: (i) liquidity/diversification reasons, and (ii) capitalization on private information before it is disclosed to investors (Cheng et al. 2007). Ravina and Sapienza (2010) document that independent directors earn abnormal returns when they sell the firm shares around earnings restatements and before bad news. Griffin (2003) observes 847 companies from 1994 through 2001 that have been sued in a federal securities class action. He documents that analysts are more likely to revise their forecasts down after a corrective disclosure and restatement but not before. However, he finds that insiders, short sellers, and institutional managers are quite active before the corrective disclosure and restatement. These results back the hypothesis that independent directors are better informed than the market. Thevenot (2012) shows that illegal insider trading is increasing in the market reaction to the restatement announcement.

Drake et al. (2015a) suggest that short sellers, in general, respond to, but do not anticipate restatement announcements. Abnormal short selling is significantly higher for restatements announced transparently (i.e., in press releases or 8-Ks). Desai et al. (2006) observe behaviour of short sellers around earnings restatements and document accumulated shorting several months before the restatement. Efendi et al. (2005) also find that the degree of short interest in the restatement announcement month is substantially higher for restating firms than for control firms. According to Efendi et al. (2005), a “statistically significant difference begins 19 months before the announcement date, increases significantly in the six months preceding the restatement announcement, and peaks in the announcement month”. Moreover, authors suggest that short sellers are waiting up to 12 months after the restatement to unwind their position to be sure all negative news has been discovered and revealed. Bardos et al. (2012) find evidence suggesting that investors are initially misled by misstated earnings but start seeing through mistakes as the restatement date approaches. When anticipation of a restatement is taken into account, the effect of the restatement is more than three times its announcement effect (Bardos et al. 2012).

6.6 Event date considerations

Commonly the event date refers to the point in time in which a restatement is first announced. Further dates of interest may refer to restatements’ filing date. This is the date of the actual quantitative correction of a previous mistake after the restatement was first announced (e.g., via press release, form 8-K). Moreover, a restatement case may be accompanied by a class-action lawsuit adding a further date of interest. In most recent restatement researcher papers dates are obtained from the GAO and AA database and refer to the initial announcement date of a restatement.

Despite the importance and GAO’s claim to provide the initial announcement date, some researchers pointed out, that the GAO database (providing 2,705 restatements from 1997 to 2006) does not always report the initial date of a restatement. Badertscher and Burks (2011) document that out of 1,315 restatements included in the GAO database, approximately 17% took place on earlier dates. Burks (2011) also reports that companies’ original restatements dates take place earlier for 250 out of the 1,473 restatements (about 17%). The mean of the time difference between the GAO dates and the actual disclosure was about 47 days, while the median was about 22 days. Gleason et al. (2008) find 24 out of 888 cases, in which the restatements were originally announced earlier than the GAO database documents. GAO dates were compared to companies’ press releases and 8-K filings. Thus, estimating the CAR would potentially result in an understatement of restatements’ effects. According to Karpoff et al. (2017), GAO and AA restatement dates and actual initial dates of restatements are not always identical. In this context, Karpoff et al. (2017) argue

that decreases in firm value were even more severe if actual initial dates instead of GAO and AA dates were applied. [Karpoff et al. \(2017\)](#) define their applied dates as the date when investors first learn about a potential restatement issue. However, we may note, that [Karpoff et al. \(2017\)](#) primarily investigate SEC and DOJ cases, which only partially (22%) represent GAO restatements.

[Ferris and Pritchard \(2001\)](#) study the stock market's reaction to three events in the litigation process: (1) the revelation of potential fraud; (2) the filing of a lawsuit; and (3) the judicial resolution of the lawsuit. They find a large and statistically significant negative reaction to the first event and a smaller but still statistically significant response to the second. This result suggests that the (3) judicial resolution of the lawsuit is already valued by the market at the time of the (1) revelation of potential fraud and (2) the filing of a lawsuit. The revelation of potential fraud refers in a typical case to a restatement announcement ([Ferris and Pritchard 2001](#)).

In summary, this section provides evidence that firm value decreases in severity of restatements around their announcements. Firms that announce revenue related restatements and irregularities (restatements that suggest formerly intentional misreporting) experience highest market value declines. The negative reaction is elevated when the restatement is published in the headline, the audit committee was less independent and the prompter was the auditor. Overall, recent market reactions to restatements are less severe compared to the 90s and have become less severe after SOX.

7 Accounting information

7.1 Information content

Financial statement information and thus the quality is critical to investors for firm valuation ([Ball and Brown 1968](#); [Beaver 1968](#)) and for reducing information asymmetries between managers and investors ([Lee et al. 1993](#)). Prior research documents that high-quality accounting information mitigates information asymmetry between managers and equity holders and favourably impacts the cost of capital and stock liquidity ([Barth et al. 2013](#); [Diamond and Verrecchia 1991](#)). [Cao et al. \(2012\)](#) find that company reputation is associated with higher-quality financial reporting as illustrated by a reduced probability of restatements and higher accruals quality. Regarding the information asymmetry, [Kreps and Wilson \(1982\)](#) and [Milgrom and Roberts \(1982\)](#) find that corporate fraud increases asymmetry as outsiders will not trust the "cheater". [Garrett et al. \(2014\)](#) find that trust is associated with better accrual quality, lower likelihood of internal control material weakness disclosures and lower likelihood of financial restatements. Results suggest restatements impede financial reporting quality. [Dechow et al. \(2010\)](#) find that studies have used various measures as indications of "earnings quality" such as restatements and SEC enforcement releases, signalling low earnings quality. [Dechow et al. \(2010\)](#) find no single conclusion on what earnings quality is because "quality" depends on the decision context. For restatements [Dechow et al. \(2010\)](#) state that "the fact that an external party identifies the misstatement is the source of their greatest advantage, but it is also the source of their greatest disadvantage: a potential bias induced by selection criteria used by the external party." Moreover, restatements signal that accounting information in restating firms' industry is of lower quality than previously assumed ([Gleason et al. 2008](#); [Kravet and Shevlin 2010](#); [Xu et al. 2006](#)).

[Anderson and Yohn \(2002\)](#) compare firms' earnings response coefficients for annual earnings releases before and after the restatement to detect the effect of the restatement on the investors' belief on the firm's earnings releases. They find that market participants will rely less on earnings reports after restatements than on earnings reports before errors were announced. These

results imply a decrease in investors' perceptions about the reliability of the accounting information. The decline in the earnings response coefficient does not, however, appear to be more pronounced for revenue recognition related restatements according to [Anderson and Yohn \(2002\)](#). Their findings also suggest that the increase in information asymmetry is temporary. Thus, the restatement of financial statements does not result in a permanent decrease in information content. [Wu \(2002\)](#) also documents a short-lived drop in the ERC for the first two quarters after a restatement suggesting that the investor loses confidence in reported information. [Wilson \(2008\)](#) finds for more severe restatements, such as those related to revenue recognition and those with more negative stock market reactions, the decline in the ERC is limited to three quarters after restatement announcements. Nevertheless, the duration of the loss of information content of earnings is greater for earnings restatements and restate companies that experience a large decline in share price when the restatement is announced. However, the assumption that the information loss of post-restatement earnings is long lasting is unwarranted ([Wilson 2008](#)). She does not find evidence that replacing the CEO or auditor after the restatements enhances recovery of the information content drop.

However, using a more recent restatement sample [Chen et al. \(2014b\)](#) find that material restatement firms experience a significant decrease in the earnings response coefficient (ERC) over a prolonged period which is close to three years while less severe cases are associated only with a drop of one quarter. [Eng et al. \(2012\)](#) suggest that severe restatements cause investors to lose confidence even for several quarters beyond the restatement. Moreover, [Chen et al. \(2014b\)](#) observe that restatement firms that do not undertake action to improve credibility experience a longer drop in the ERC. [Chen et al. \(2014b\)](#) document that changing the CEO, CFO, auditor and audit committee chair in the year of the restatement announcement shortens the length of the drop in the information content (ERC) down to four quarters after the restatement announcement. They state that restatements are "the major players influencing financial reporting quality". [Hirschey et al. \(2015\)](#) discover that restatement firms with shorter detection periods (time between the end of misstatement and restatement announcement) experience a less severe decline in the information content compared to firms with longer detection periods. [Fang et al. \(2017\)](#) reveal that firms in industries with more prevalent errors have lower earnings response coefficients as well. Additionally [Ye and Yu \(2017\)](#) find that the increase in forecast dispersion and forecast error is mostly found for firms that do not change executives nor auditors. This finding suggests that remedial actions mitigate negative effects ([Ye and Yu 2017](#)). [Nguyen and Puri \(2014\)](#) document that the information asymmetry in the NASDAQ market (dealer market) around the restatement announcement is less pronounced than in the NYSE-AMEX markets (auction market).

7.2 Cost of equity

The relation between accounting information and cost of capital is one fundamental issue in accounting research. [Hribar and Jenkins \(2004\)](#) find that accounting restatements lead to an increase in the firm's cost of equity capital. Depending on the model used, relative percentage increases in the cost of equity capital average between 7% and 19% in the month immediately following a restatement. Restatements initiated by auditors are associated with the largest increase in the cost of capital, and firms with greater leverage experience more significant increases in their cost of capital ([Hribar and Jenkins 2004](#)). For AAERs [Nicholls \(2016\)](#) finds an increase in the cost of equity on the date when they are first announced.

[Kravet and Shevlin \(2010\)](#) examine three years before and after restatement announcements and find an increase in the pricing of discretionary information risk after restatement announcements. Pricing of discretionary information risk is higher if restatements were initiated by auditors and the SEC and if a company restates more than once. Results suggest that restatements influence a set of various corporate decisions such as on firm's capital structure and investment projects, as these are based on firm's cost of equity ([Kravet and Shevlin 2010](#)).

[Kim and Zhang \(2014\)](#) find that firms that restate their prior earnings reports have a steeper implied volatility smirk than firms that do not restate, suggesting that investors believe in future crashes. Also, they show that the results are mainly driven by restatement cases that refer to intentional misstatements.

7.3 External finance

[Stanley and Sharma \(2011\)](#) document that the likelihood of less material misreporting is positively associated with bank borrowing, as firms try to avoid covenant violations. For severe restatements, [Stanley and Sharma \(2011\)](#) do not find any association. Together results by [Stanley and Sharma \(2011\)](#) suggest that banks are not able to detect misreporting. [Richardson \(2005\)](#) finds that firms restating earnings have higher levels of outstanding debt.

[Chen et al. \(2013\)](#) find the likelihood of obtaining external financing is significantly lower after restatements, primarily for firms with material restatements. More importantly, for restatement firms that receive external funding after restatements, [Chen et al. \(2013\)](#) report that restating companies rely more on debt financing and less on equity financing than they did before. [Albring et al. \(2013\)](#) document that companies with severe restatements have lower externally financed growth after the restatement.

[Graham et al. \(2008\)](#) reveal that the number of lenders per loan declines and firms pay higher upfront and annual fees after restatements. [Graham et al. \(2008\)](#) show further that loans initiated after restatements have higher likelihood of being secured and have shorter maturities and more covenant restrictions. Moreover, higher spreads are observed after the restatements ([Graham et al. 2008](#)). The increase in loan spread is significantly larger for fraudulent firms. [Park and Wu \(2009\)](#) find statistically significant negative abnormal loan returns and positive bid-ask spread changes around both the event window and the pre-event window. Also, they document more negative returns and wider spreads for revenue recognition and restatements attributed to outsiders suggesting that revenue recognition and restatements attributed to auditors and the SEC have greater impacts on investors' perceptions of the probability of loan defaults than other reasons and initiators. Their findings are consistent with results from prior literature that documents an association between restatements and the decrease in investors' perceptions of firms' future cash flows and an increase in uncertainty about firms' credibility of financial statements. Overall their results imply that financial restatements raise firm's cost of debt. So does [Cornil \(2009\)](#) find a significant increase in a firm's cost of debt after the restatement has been announced. [Po-Chang \(2016\)](#) compares the period in which numbers were misreported (before a restatement) to the prior period and discovers for bank loans higher loan spread, higher likelihood of being secured by collateral, and higher intensity of restrictive covenants. These findings suggest that banks already anticipate and incorporate low earnings quality in the misreporting period before the restatement was announced. However, [Po-Chang \(2016\)](#) notes that despite the fact that banks react earlier than equity owners, banks impose a significant increase in the loan spread after receiving further information through the restatement announcement.

[Bierey and Schmidt \(2017\)](#) observe that after an intentional restatement announcement credit ratings of misreporting firms are negatively affected for up to 7 years. The effect on a firm's credit rating is most visible in cases in which rating analysts mention concerns about misstatement related violations of covenants ([Bierey and Schmidt 2017](#)). However, while [Costello and Wittenberg-Moerman \(2011\)](#) find that when a firm experiences a material internal control weakness, lenders decrease their use of financial covenants, they do not find this decrease after a restatement. [Hu and Mao \(2017\)](#) document a decreased likelihood of firms having performance pricing loans after financial restatement events, suggesting a lower perceived accounting quality after restatements. The spread in performance pricing loans are based on measures of the borrower's performance (e.g., credit rating).

[Chen et al. \(2016c\)](#) find that auditor's unqualified opinions with explanatory language that mention restatements experience an increase of 25 basis points in the loan spread and smaller loans compared to the preceding year with a clean opinion (unqualified opinion), which is the case when a financial statement is appropriately presented. [Lopez et al. \(2009\)](#) discover that an adverse audit opinion on internal controls over financial reporting compared to a clean opinion is significantly associated with investors anticipating a higher risk of a future restatement, higher cost of capital and higher information asymmetry.

[Du \(2017\)](#) discovers that more positive CDS returns are associated with restatements involving fraud and affecting more accounts. The CDS market is more liquid than the bond and secondary loan markets and hence more efficient in processing information. In fact results by [Du \(2017\)](#) suggest that the CDS market anticipates restatements sooner than the stock market does. While the restatement stocks show abnormal market reaction about 3-5 days before the announcements, the CDS market reaction is noticeable up to 10 days before the restatement announcements. Also, more negative stock returns are correlated with fraud cases. [Marquardt and Wiedman \(2005\)](#) find a weak negative association between restatements and contingent convertible bonds. [Baber et al. \(2013\)](#) observe that the mean municipal debt costs are higher after restatement announcements.

7.4 Corporate reactions to restatements and management forecast behaviour

Restating firms undertake substantially more reputation-building actions after a serious restatement compared to matched firms ([Chakravarthy et al. 2014](#)). These actions are associated with improvements in the restating firm's financial reporting credibility. According to [Chakravarthy et al. \(2014\)](#), undertaken actions include (1) improving governance; (2) firing senior leadership; (3) improving incentive or internal control systems; (4) reorganizing the firm; and (5) repurchasing stock. An increase in quantity and quality regarding published information is a potential solution to decrease information asymmetry. Theory suggests increasing the amount of information via disclosures could help minimize information asymmetry. In contrast to this theory, restate firms, however, decrease disclosure, after restatements announcements ([Ettredge et al. 2013](#); [Rogers and Van Buskirk 2009](#)). For restatements, [Ettredge et al. \(2013\)](#) show that restatement companies experience a decreased likelihood to issue quarterly earnings forecasts following restatements. [Rogers and Van Buskirk \(2009\)](#) as well discover that compared to control firms, restatement companies experience a decreased probability of issuing quarterly earnings forecasts following restatements. They also show that the litigation process encourages companies to reduce the provision of disclosures, as they may be held responsible in the future. [Wiedman and Hendricks \(2013\)](#) report that accrual quality improves significantly following the restatement. This improvement is observed for both earnings and non-earnings error restatements. Moreover, [Ettredge et al.](#)

(2012) show that, following restatements, companies' earnings forecasts tend to be more conservative. [Chen et al. \(2014a\)](#) report that restatement firms adopt conservative financial reporting in the year following financial restatements in the post-SOX era.

In brief, restatements do not only affect the firm value, but also decrease the information content and increase the cost of equity and the cost of debt. Most recent studies find a long-lived decline in the information content for severe restatements, which can be shortened if affected firms replace their CEO, CFO, auditor or audit committee chair in the year of the restatement announcement. After the restatement, the cost of debt increases while the likelihood of obtaining external financing decreases. Results suggest a lower perceived credibility of financial information and less optimistic future prospects after the restatement. Some firms try to restore credibility after the restatement by replacing executives, while others stop issuing quarterly earnings forecasts as they may be held responsible in the future. Financial reporting conservatism increases after the restatement, suggesting improvements in corporate governance.

8 Litigation

[Palmrose et al. \(2004\)](#) report that 37.6% of restating companies are sued. [Autore et al. \(2014\)](#) reveal that firms sued for financial misconduct incur considerable procedural costs and penalties or settlement expenses. Additionally, litigation costs are accompanied by diverse indirect costs. [Jones and Weingram \(1996\)](#) and [Bradley et al. \(2014\)](#) find that restating firms are substantially more likely to be sued compared to control firms. [Lev et al. \(2008\)](#) document that restatements that eliminate or shorten histories of earnings growth increase the likelihood of lawsuits compared to other restatements. [Simmons \(2011\)](#) state that financial restatements are positively correlated with SEC actions. According to [Simmons \(2011\)](#), settlement amounts are increasing in SEC actions and financial restatements. [Rice et al. \(2015\)](#) document that class action lawsuits are more likely for restatement cases when control weaknesses had been reported before the restatement announcement. [Files \(2012\)](#) reports that if a firm cooperates with the SEC staff after a restatement the likelihood of being sanctioned increases. However, cooperation is rewarded with lower monetary penalties.

[Donelson et al. \(2012\)](#) investigate whether rules-based accounting standards compared to principles-based IFRS lead to higher litigation risk. Using a restatement sample [Donelson et al. \(2012\)](#) find that rules-based standards are associated with a lower likelihood of litigation. They classify violations based on the Rules-Based Continuum (RBC) score from [Mergenthaler \(2009\)](#) that relates to individual standards. The higher the RBC score for a standard is, the more rules-based a standard is perceived. They find that a higher score negatively correlates with the incidence of litigation. Thus, violation of rules-based standards decreases the risk of litigation after a restatement has been announced. [Fornaro and Huang \(2012\)](#) provide evidence that a principles-based accounting environment enables earnings management, particularly when standards lack clarity.

If a restatement represents a clean-up of past accounting related problems, it may even decrease litigation risk ([Cao and Narayanamoorthy 2014](#)). Using Directors' and Officers' insurance, [Cao and Narayanamoorthy \(2014\)](#) show that firms that experienced restatements subsequently pay higher insurance premiums. "Core"-restatements are perceived by insurers with fewer concerns than "non-core"-restatements because "non-core"-restatements appear to signal chronic financial reporting problems ([Cao and Narayanamoorthy 2014](#)). [Lin et al. \(2013\)](#) uncover that higher levels of D&O insurance coverage are associated with higher probability of a financial restatement.

[Amel-Zadeh and Zhang \(2015\)](#) find that restatement firms are less likely to become takeover targets. According to [Amel-Zadeh and Zhang \(2015\)](#), this result is not driven by the litigation risk associated with restating firms, but information risk. Moreover, for restatement companies that receive a takeover bid, the likelihood for a bid withdrawal is higher.

In short, restatement firms are more likely to be sued than counterfactuals. However, the violation of rules-based standards compared to principles-based standards decreases the risk of litigation after a restatement. Settlement amounts are higher when a restatement was announced compared to when no restatement was announced. Furthermore, after a restatement firms pay higher Directors' and Officers' insurance premiums.

9 Audit committee

An audit committee is a subcommittee of the board of directors ([Habib and Bhuiyan 2016](#)). It is entrusted with control issues relating to the audit and financial reporting of the firm. The audit committee is responsible for the oversight of audit and internal controls. Section 301 of SOX suggests that the audit committee is responsible for hiring and compensating the external auditor. [DeFond and Jiambalvo \(1991\)](#) find that overstatements of earnings are more likely for firms that have no audit committee.

9.1 Turnover of audit committee directors

An increase in turnover after a restatement would be reasonable, as the market might want to discipline failure. [Srinivasan \(2005\)](#) finds that in the three years after the restatement, director turnover is 48% for firms that restate earnings downward, 33% for a performance-matched sample, 28% for firms that restate upward and only 18% for technical restatement firms. [Srinivasan \(2005\)](#) argues that new directors may signal new leadership and bring with them fresh reputational capital. [Arthaud-Day et al. \(2006\)](#) document that audit committee members of restatement firms experience a 68% higher likelihood of turnover compared to counterfactuals. [Ye et al. \(2013\)](#) observe that audit committee directors are penalized for accounting restatements by shareholders withholding votes in the director election. Withholding votes expresses dissatisfaction with the committee.

[Carver \(2014\)](#) document that the retention of directors on the audit committee is positively associated with the influence of the CEO and his/her involvement in the nominating procedure. CEO influence is measured as a variable taking value 0 to 4 (CEO is chairman, CEO is the founder, etc.). However, the relation between retention and director's qualitative characteristics is weak. [Kachelmeier et al. \(2015\)](#) find that effective audit committee members experience a higher turnover if another member served on the audit committee when financial reporting failures are discovered. This relation is even true when the other member was not a member of the audit committee at the time the misreporting took place.

9.2 Characteristics of audit committee directors

[Abbott et al. \(2004\)](#) reveal that the independence and activity level of the audit committee exhibit a significant and negative association with the occurrence of restatements. They also document a significant negative relationship between an audit committee that includes at least one member with financial expertise and the likelihood of a restatement. Short-term stock option grants for audit committee members are positively associated with the likelihood of restatement ([Archambeault et al. 2008](#)). [Carcello et al. \(2011\)](#) find some evidence that CEO involvement in

the board selection process eliminates the benefits of an apparently independent audit committee and financial expertise. More severe restatements appear to drive these results (Carcello et al. 2011). Carcello et al. (2011) find that the negative market reaction is attenuated by audit committee independence if the CEO was not involved in selecting board members. Farber (2005) finds that audit committees that hold fewer meetings and have fewer financial experts are more likely to be subject to fraud cases, indicating that audit committee influences reporting quality. However, within four years after the fraud case, the sample group number of meetings exceeds the control group number (3.00 vs. 2.33 annual meetings), perhaps trying to restore trust.

For restatement firms, Agrawal and Chadha (2005) find a relatively small proportion of independent directors with an accounting background compared to a matched sample. However, they argue that independence of audit committees without an accounting background is unrelated to the probability of a company restating earnings. Cohen et al. (2014) discover that audit committee members who are both accounting and industry experts perform better as reflected by a lower likelihood of a financial restatement, than those with only accounting expertise. Their results suggest that industry expertise when combined with accounting expertise, can improve the effectiveness of the audit committee in monitoring the financial reporting process.

Krishnan et al. (2011) apply accruals quality and discretionary accruals for financial reporting quality and find that financial reporting quality is positively associated with an audit committee member with legal expertise. Whether legal expertise is negatively associated with restatements is yet unsolved to our knowledge. Badolato et al. (2014) document that audit committees with high status (relative to management status) and financial expertise are associated with lower levels of earnings management, as measured by accounting irregularities and abnormal accruals. Status is measured by the number of public board directorships, private board directorships and degrees from elite institutions. Problem directors are positively correlated with real earnings management, especially when they have been involved in accounting restatements and fraudulent reporting practices (Habib and Bhuiyan 2016). Problem directors are defined as directors that have been already involved in major accounting restatements, corporate bankruptcies, or other accounting scandals (Habib and Bhuiyan 2016).

In short, turnover of audit committee directors is higher after the restatement, suggesting that in some cases replacement is the consequence of failing to prevent misreporting in the first place. The more independent and active the audit committee is, the less likely is the occurrence of restatements. Moreover, audit committee members who are accounting and industry experts correlate with a lower likelihood of a financial restatements.

10 Auditor

Audit standards state that auditors have “a responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud” (PCAOB 2017, AS 1001). Thus, restatements do not exclusively reflect (reporting) failure by the client (Kinney et al. 2004; Stanley and DeZoort 2007) but also potential malfunction by the auditor regardless of restatement severity (Liu et al. 2009; Raghunandan et al. 2003). Christensen et al. (2016) note that investors’ definitions of audit quality focus more on input factors compared to auditors’ definition. Moreover, they find a consensus that auditor characteristics may be the most important determinants of audit quality, and that restatements potentially are “the most readily available signal of low audit quality”. Francis and Michas (2013) define audit failure as a downward restatement. Gaynor et al. (2016) argue that restatements

may be both, a proxy for low audit quality and low financial reporting quality. In contrast, [Srinivasan et al. \(2015\)](#) state that more restatements do not necessarily proxy lower (or higher) financial reporting quality, since restatements depend on the reliable detection and disclosure of misstatements. Nevertheless, higher quality auditors can act as effective monitors ([Pyzoha 2015](#)).

10.1 Auditor turnover

[Lobo and Zhao \(2013\)](#) state that a “[r]estatement is arguably one of the most objective indicators of audit quality”. [Palmrose et al. \(2004\)](#) find that fraud cases and restatements attributed to auditors are associated with more negative market returns.

[Agrawal and Cooper \(2017\)](#) find little systematic evidence that auditor turnover is higher in restating firms. However, [Hennes et al. \(2014\)](#) find higher than normal auditor dismissal rates and a positive market reaction to auditor changes after restatements. Dismissal rates across restatement types (e.g., irregularities vs. errors) do not differ for Big 4 auditors. The opposite is true for non-Big four auditors, finding higher dismissal rates for irregularities as compared to errors. [Hennes et al. \(2014\)](#) find evidence that firms with higher switching costs and fewer replacement auditor choices are less likely to replace their auditors after a restatement. Also, companies that are larger and more complex operationally are found to have lower rates of auditor replacement after a restatement. Market reaction to auditor dismissals for restatement cases involving irregularities (7.6%) is significantly higher compared to errors (1.3%). Based on these results [Hennes et al. \(2014\)](#) conclude that this positive market reaction is consistent with company’s ability to restore credibility by an auditor change. [Huang and Scholz \(2012\)](#) as well find restatements involving fraud, reversing profit to loss, and those disclosed in press releases to experience higher auditor resignation likelihood. Moreover, they discover that companies with relatively severe restatements are more likely to choose smaller future auditors. [Stanley and DeZoort \(2007\)](#) document a shorter auditor tenure for restatement companies compared to the matched sample.

[Rice and Weber \(2012\)](#) find that the probability of reporting existing internal control weaknesses is positively associated with recent auditor changes, auditor effort, and restatements. [Rice et al. \(2015\)](#) find that auditor turnover is more likely for restatement cases when control weaknesses had been reported before the restatement announcement. [Hermanson et al. \(2009\)](#) find that shareholders are less likely to ratify auditors if the company received an adverse Section 404 opinion and had a restatement in the past. Dissatisfaction is found to be greater for companies with material weaknesses reported in Section 404, suggesting shareholders are blaming the auditor for being partly responsible for material weaknesses. Also, results by [Swanquist and Whited \(2015\)](#) suggest that the market penalizes auditors being associated with restatements. In particular, they find that restatements deteriorate the audit office’s ability to attract and retain clients. Eventually offices lose market share after the announcement of a restatement. [Barua et al. \(2017\)](#) find that the incidence of auditor dismissals becomes more likely when shareholders do not ratify the auditor.

[Files et al. \(2014\)](#) find that companies that change auditors between the end of the misstatement period and the restatement announcement are less likely to experience repeat restatements. Their sample includes restating companies that restate at least twice (38%) and firms that restate three or more times (31%) during 2002 and 2008. Since, repeat restatements correlate with lower ex-ante accounting quality, non-restating firms that have their financial statements audited by auditors involved in restatement cases may update their beliefs about auditor’s ability. Indeed, [Irani et al. \(2015\)](#) find that non-restating clients are more likely to dismiss auditors as the number of restatements in which their auditor was involved in increases. They also discover that this likelihood increases with the number of restated items. For firms switching to an auditor of lower

quality after a restatement accrual quality decreases (Wiedman and Hendricks 2013). Pyzoha (2015) observes that executives who face a lower quality auditor are less likely to agree with correcting prior financial statements, which may lead to restatements when a higher proportion of their compensation is incentive-based. This could lead to the conclusion that discovered restatements are likely due to higher quality auditors, and not caused by auditor failure. Keune and Johnstone (2012) find that auditors are less likely to allow managers to waive material misstatements as audit fees increase.

The occurrence of a restatement can reflect both, the ability of the auditor to detect mistakes ex-post (if the prompter is the auditor) or just represent auditors' lack of effort or disability to detect wrongdoings before the restatement (if the prompter is the SEC). Francis et al. (2013) indicate client restatements as a failure by the auditor. However, as the auditor may have advised the client to restate, we do not believe that every restatement prompted by the client proxies a failure by the auditor.

Ghosh and Tang (2015) compare an auditor resignation sample against an auditor dismissal sample and reveal that audit, business, and litigation risks are higher for the resignation sample. Litigation risk is proxied by a dummy variable that is one if the firm experienced a restatement or is involved in a class-action lawsuit one year before the switch. Litigation risk is much higher for Big 4 resignations compared to non-Big four resignations. Laurion et al. (2017) identify U.S. audit partner rotations between 2006 and 2014 and find an increase in restatement discoveries and announcements compared to non-rotation firms suggesting that a fresh look provides updated judgments on certain cases. Lazer et al. (2004) find a significantly higher occurrence and magnitude of quarterly restatements for firms that switched auditor, suggesting that new auditors try to decrease future litigation risk perhaps through unwinding predecessor's earnings management. The predecessor is made culpable for required restatements. According to Huang and Scholz (2012) companies with relatively severe restatements are more likely to choose smaller future auditors, despite the intuition that larger auditors may have more experience.

10.2 Audit fees

Fees represent the expected level of service and effort provided (Whisenant et al. 2003). Blankley et al. (2012) state that higher fees are associated with greater levels of service. Lower audit effort is reflected in abnormally low fees and could eventually result in a restatement. On the other hand, abnormally high fees may influence an auditor's independence, which could lead to a future restatement. It is not clear which direction, if either, dominates.

10.2.1 Total audit fees

Raghunandan et al. (2003) find no significant differences between restatement and control firms for total fees. Kuo and Lee (2016) show that audit fees are positively correlated with restatements. Their sample includes 34 countries. Additionally, Cassell et al. (2011) tabulate a positive and significant association between audit fees and restatements. Kinney et al. (2004) document that audit fees are positively related to material restatements. Stanley and DeZoort (2007) find a positive relation of audit fees and restatements for long tenure audits (≥ 5 years), while for short tenure audits (≤ 3 years) a negative relation between audit fees and restatements is observed. Blankley et al. (2012) recognizes findings by Kinney et al. (2004) and Stanley and DeZoort (2007), but find two limitations. First it is not controlled for internal weaknesses and second, "SOX made audit committees responsible for approving audit fees and prohibited many non-audit services to

strengthen auditor independence” (Blankley et al. 2012). Blankley et al. (2012) find that abnormal audit fees are negatively associated with the likelihood that financial statements are subsequently restated. Blankley et al. (2012) report that results are consistent, as restatements reflect low audit effort or underestimated audit risk in the periods before the restatement year. However, as emphasized by Bell et al. (2001), high business risk increases the number of audit hours, suggesting that audit fees may be high for restatement companies (low earnings quality). This would theoretically result in a positive correlation between audit quality when measured via audit fees, and restatement companies (in cases with high business risk before the restatement announcement). Lobo and Zhao (2013) find a robust negative association between audit effort and the likelihood of annual report restatements. It is critical to control for auditor risk adjustments and to separate restatements based on whether restatements correct mistakes that were found in past audited annual or unaudited interim financial statements. If interim financial statements are restated, the auditor may be perceived as less responsible for this reporting failure as he/she has not verified the accordance to GAAP in the periods that require restated numbers.

According to DeFond et al. (2016) client conservatism is associated with fewer client restatements and lower audit fees. Lee et al. (2015) express that accounting conservatism reduces audit fees. This effect is less pronounced when corporate governance is strong. Ettredge et al. (2014) find fee pressure is positively and significantly associated with accounting misstatements in 2008, the centre of the recession. However, the association between fee pressure and reduced audit quality appears to be restricted to the recession year 2008. Jaggi and Xin (2017) find that auditors from high religious areas charge lower audit fees, especially when clients’ are also headquartered in high religious areas. Dao et al. (2012) reveal that shareholder participation in auditor selection is associated with higher audit fees and less subsequent restatements. Seidel (2017) finds that audit fees are significantly higher when control risk is high in a revenue related area than if the control risk is high in another area. However, more audit effort in response to high control risk assessment in a revenue related area does not decrease the likelihood of restatements.

10.2.2 Non-audit fees

Since 2003, the SEC has required disclosure of audit and non-audit service. Non-audit fees include three categories (audit related fees, tax fees, and all other fees). The effect non audit services (NAS) have on audit quality and restatements is ambiguous. Ferguson et al. (2004), Gul et al. (2007), Basioudis et al. (2008), Blay et al. (2011) find that NAS fees result in economic bonding between an auditor and a client, which leads to reduced audit quality. Markelevich and Rosner (2013) discover that NAS fees are positively associated with the likelihood of AAERs. Agrawal and Chadha (2005) do not find any relation between the provision of NAS by outside auditors and the probability of a company restating earnings. Neither do Sankaraguruswamy and Whisenant (2003) find any significant difference in unexpected non-audit services fees between restatement and control firms. Raghunandan et al. (2003) find no significant differences between restatement and control firms for unexpected NAS.

Kinney et al. (2004) explore some positive association for unspecified NAS and restatements. For litigation cases, Schmidt (2012) unveils that the amount of non-audit service fees and the ratio of non-audit service fees to total fees is positively associated with the propensity that a restatement results in audit litigation. Also, when plaintiff attorneys argue that auditor independence was impaired due to dependence on NAS, restatements are more likely to result in restatement-related audit litigation and larger amounts of settlement (Schmidt 2012).

10.2.3 Non-audit tax service fees

In 2005-2006, the PCAOB introduced rules to limit tax services provided by auditors to improve audit quality. Theoretically, this separation of services may decrease audit quality, as information sharing between the audit and tax side decreases (Lennox 2016). Lennox (2016) finds no change in audit quality (measured by the incidence of a restatement) after the decrease in auditor's tax services provided. Paterson and Valencia (2011) argue that recurring tax services provided by the auditor are the only NAS that are negatively associated with restatements. The classification into recurring and nonrecurring engagements is important as recurring services suggest generation of knowledge that spills over and improves audit quality. Seetharaman et al. (2011) find a significantly negative association between NATS (non-audit tax services) and tax related restatements. Kinney et al. (2004) also tabulate a significant negative association between NATS and restatements.

10.3 Auditor Characteristics

10.3.1 Big N auditors vs. non-Big N auditors

It is well documented that big N auditor expertise enhances financial reporting quality. Files et al. (2014) find that repeat restatements are more likely among clients of non-Big N auditors. Moreover, they find that repeat restatements correlate with lower ex-ante accounting quality. Francis et al. (2013) find that client restatements only occur less frequently for Big 4 audited companies when the largest Big 4 offices (top quartile) are included in the sample. Concerning the period after the restatement Chen et al. (2014a) find that restatement firms with a negative market reaction and a Big N auditor report their financial statements more conservatively in the year after the financial restatement. When a company receives a 10-K comment letter from the SEC the probability of a restatement increases when the company engaged a small audit firm (Cassell et al. 2013). Heese et al. (2017) also report that firms that receive a comment letter from the SEC are more likely to restate.

Tanyi and Litt (2017) reveal that in years before PCAOB inspection (2000-2003) there is no significant difference in the probability of restatements for firms of smaller portfolio audit firms compared to firms of larger portfolio audit clients. For the post-PCAOB inspection period (2004-2011) findings suggest that firms experienced improved financial reporting quality (e.g., fewer restatements) after the introduction of the inspection. Results for smaller portfolio audit firms, however, are weak. An auditor is identified as big when he/she issues an audit report for more than 100 public clients p.a. Big auditors are inspected annually whereas small auditors are inspected every three years. Gunny and Zhang (2013) reveal that clients of annually inspected auditors that receive a seriously deficient report from the PCAOB are associated with a greater propensity to restate.

Bills et al. (2016a) find that small audit firms that collaborate in an association provide similar audit quality to a Big 4 audit firms. However, small audit firms are paid lower premium fees by the client. Moreover, clients of association member audit firms are about 46% less likely to announce a restatement than clients of non-member audit firms (Bills et al. 2016a).

10.3.2 Large size Big N auditors vs. small size Big N auditors

[Francis et al. \(2013\)](#) document that larger Big 4 offices provide higher quality audits than smaller Big 4 offices due to their greater in-house experience and expertise in the audits of SEC registrants. [Francis et al. \(2013\)](#) unveil that client restatements are more likely to occur for the clients of smaller Big 4 offices and that a smaller office has more income-decreasing restatements. They measure Big 4 office size by the number of SEC registrants, but their results are also robust to an alternative measure of office size based on client fees. The sample used by [Francis et al. \(2013\)](#) exclusively focuses on client restatements, which reflect auditors' failure to detect a misapplication of GAAP better than an overall sample of various types of restatements. However, leaving the upper quartile of office size for Big 4 auditors out of the sample leads to the conclusion that there is no significant difference in experiencing a client restatement between Big 4 and non-Big 4 auditors. Hence, findings suggest that Big 4/non-Big 4 quality differences proxied by client restatements are driven by a subsample of the largest Big 4 offices.

[Cao et al. \(2016\)](#) find that large Big 4 offices decrease the likelihood of subsequent restatements for previously delayed filings by almost half. Besides the actual size, [Bills et al. \(2016b\)](#) provide evidence that clients of offices that experience local office growth (increases in workload over the prior year) have an increased likelihood of restatements and greater absolute discretionary accruals. The authors suggest that significant recent growth stresses office resources.

[Hayes \(2014a\)](#) finds no evidence that auditor quality measured by both firm and engagement office size is associated with either restatement to correct unintentional error or restatement to correct the intentional misstatement. However, [Francis et al. \(2013\)](#) find that restatements decrease in auditor quality, at least for the more severe restatements. This result suggests that high-quality audits are capable of avoiding the occurrence of severe restatements. The propensity of less severe restatements may, however, be not affected by the difference in audit quality. Hence, high quality audits potentially make only a difference in cases of intentional misreporting. [Cohen et al. \(2014\)](#) do not find a negative association between restatements and audit quality (proxied by auditor size).

10.3.3 Other audit factors

Companies that employ specialist auditors tend to experience higher earnings response coefficients (ERCs) and lower discretionary accruals ([Balsam et al. 2003](#)), suggesting higher earnings quality and thus a decrease in restatement likelihood. Indeed, [Stanley and DeZoort \(2007\)](#) find that auditor industry specialization is negatively related to the likelihood of restatements for short-term engagements. [Romanus et al. \(2008\)](#) as well discover that auditor industry specialization is negatively associated with the likelihood of accounting restatements and that auditor industry specialization reduces the likelihood of restatements related to core operating accounts, suggesting that industry specialization is beneficial regarding audit in critical areas. [Romanus et al. \(2008\)](#) conclude that a firm changing from a non-specialist to a specialist auditor increases the likelihood of restatements, and changing from a specialist to a non-specialist auditor reduces the probability of restatements. Also, [Bell et al. \(2015\)](#) show that for audits of SEC registrants, the probability of a high-quality audit reaches its maximum with very long tenure, while first-year audits receive lower assessments of audit quality. [Bell et al. \(2015\)](#) use internal data from a Big 4 accounting firm. [Lennox and Li \(2014\)](#) find accounting misstatements (before restatements) occur significantly less often after audit firms are sued. Hence, the litigation experiences of audit firms and audit offices are significant predictors of future financial reporting quality ([Lennox and Li 2014](#)). [Brown and Knechel \(2016\)](#)

find that accounting restatements are more likely when unaudited text disclosures such as business description and management discussion are more similar between the client and the auditor. This study applies a unique text-based measure of similarity of financial disclosures that should help to understand how clients choose their auditors. [Francis and Michas \(2013\)](#) show that audit offices who were associated with client restatements are more likely to face further client restatements in the future (for up to five years).

In sum, auditor turnover is higher after the restatement compared to non-restatement firms, suggesting the perception that the auditor failed to uncover misreporting. Restatements involving fraud, reversing profit to loss, and those disclosed in press releases are associated with a higher auditor resignation. Findings on the correlation between audit fees and restatements are mixed. While a positive correlation could suggest a greater dependency for the auditor, a negative correlation could lead to the conclusion that higher audit fees go along with more effort and a higher likelihood of preventing any misreporting in the first place. Mixed findings are also found for the correlation between NAS and restatements. However, when plaintiff attorneys argue that auditor independence was impaired due to NAS, higher settlement amounts are more likely. Repeat restatements are less likely for firms audited by Big-N auditors. Moreover, if small audit firms collaborate in an association the likelihood for a restatement decreases by about 46% compared to small audit firms that do not collaborate in an association.

11 Contagion-effects

[Gleason et al. \(2008\)](#) discover that accounting restatements that affect shareholder wealth at the restating firm also decrease share price among non-restating firms in the same industry. These share price declines are unrelated to changes in analysts' earnings forecasts, but instead, seem to reflect investors' accounting quality concerns. They also find share price declines to be greater of peer firms with high earnings and high accruals when peer and restating firms use the same external auditor. [Gleason et al. \(2008\)](#) report that peer firms with high accruals face a more severe market value decline than it is the case for low accrual firms. These results are consistent with the notion that some accounting restatements cause investors to reassess the financial statement information previously released by non-restating firms.

[Akhigbe and Madura \(2008\)](#) find that downward earnings restatements are associated with negative valuation effects especially for industries that have a higher level of accruals and intangible assets, weaker sales growth, and a higher degree of stock volatility. [Kedia et al. \(2015\)](#) find that non-restating firms are more likely to begin managing earnings after a restatement had been announced by another firm in their industry. Contagion, however, is moderated when the restatement is severe, has been disclosed less prominently and the restating firm is small. [Xu et al. \(2006\)](#) find that the restatement does not seem to affect all the firms in the industry. Rival firms whose cash flow characteristics are similar to those of the restate firm undergo an abnormal return of -0.76% when the restatement reduces the share price of the restate firm. This contagion effect is also found for restatements that increase share price. [Xu et al. \(2006\)](#) do not find any significant change in the cost of equity of the rival firms. [Sletten \(2012\)](#) documents that managers from non-restate firms disclose good news when they experience stock price declines around exogenous negative stock price shocks, namely around financial restatements in the same industry. In particular, [Sletten \(2012\)](#) finds that after restatements by industry peers, a more negative stock price change for non-restating firms is positively correlated with the likelihood that managers of non-restating firms disclose good-news management forecasts. [Chiu et al. \(2013\)](#) reveal that a firm

is more likely to engage in earnings management (measured by restatements) when it shares a common director with a firm that is currently managing earnings. The contagion effect is more pronounced when the shared director is a member of the audit committee. [Chen et al. \(2012\)](#), suggest that restatements increase investors' concerns over the financial reporting quality for interlocked firms. In reaction to these concerns, directors associated with the restatement ("tainted directors") are found to enhance financial reporting quality at the interlocked firms. Interlocked firms experience lower discretionary accruals in the year after the restatement compared to control firms ([Chen et al. 2012](#)). [Durnev and Mangan \(2009\)](#) discover that changes in competitors' investments following restatement announcements are significantly related to various proxies for news in the restatements, such as competitors' and restating firms' abnormal returns at the restatement announcements. [Durnev and Mangan \(2009\)](#) find that peers significantly lower investments after a competitor announces a restatement and conclude that restatements convey information about the investment projects of restating firms' competitors.

[Kravet and Shevlin \(2010\)](#) observe an increase in the pricing of discretionary information risk for firms in the same industries as the restatement firms, consistent with an intra-industry information transfer effect. [Campbell and Yeung \(2017\)](#) find that earnings comparability between a firm and its restating peer firm also have the power to detect similar accounting choices. Moreover, they document that about 80% of the price decrease is delayed. [Beatty et al. \(2013\)](#) document an increase in investments during fraud periods by peers. Restatements follow investigated frauds in the sample.

[Lee and Lo \(2016\)](#) observe AAERs, which are closely related to restatements. They uncover for a bullish analyst who had a positive opinion before an AAER, that investors react less to their subsequent forecast revisions for non-misstatement firms. For bearish analysts the opposite is true. [Barniv and Cao \(2009\)](#) disclose that characteristics of analysts are more important to investors when a restatement was announced. Restatements proxy for information uncertainty.

In brief, non-restatement firms in the same industry as restatement firms experience share price declines and an increase in the pricing of discretionary information risk. Findings seem to reflect investors' accounting quality concerns. Rival firms with similar cash flow characteristics experience an abnormal return of -0.76% . Due to concerns over the financial reporting quality in interlocked firms, directors associated with the restatement ("tainted directors") are found to enhance financial reporting quality at the interlocked firms.

12 Summary

A financial restatement corrects formerly incorrect published financial data, on which readers have mistakenly relied upon during the misreporting period. The number of restatements in the U.S. has risen from 625 cases p.a. in the year 2001 to its peak of 1,853 cases p.a. in 2006. However, not all restatements imply similar wrongdoing. The former misreporting can be of intentional or of unintentional nature. Restatements that correct severe mistakes are announced through an 8-K report, while less relevant corrections are published within a regular annual and/or interim report. Many significant findings refer to severe restatements, which are classified as irregularities instead of errors, suggesting an intentional misreporting in the past.

Generally, severe restatements are the result of covering up unfavourable firm performance in order to fulfil expectations by current equity holders and creditors. Managers desire to be rewarded economically and hope to receive firm capital at lower cost.

Restatement firms are slower growing and higher indebted than their counterfactuals. However, higher institutional ownership if controlled for transient and quasi-indexing institutions, more blockholders in the form of hedge funds and a high-quality workforce decrease the likelihood for a restatement. Firms that announce revenue related restatements and irregularities (restatements that suggest formerly intentional misreporting) experience highest market value declines. The negative reaction is elevated when the restatement is published in the headline, the audit committee was less independent and the prompter was the auditor. Market reactions to restatements have become less severe after SOX. Restatements do not only affect the firm value, but also decrease the information content and increase the cost of equity and the cost of debt. Most recent studies find a long-lived decline in the information content for severe restatements. Results suggest a lower perceived credibility of financial information and less optimistic future prospects after the restatement. Some firms try to restore credibility after the restatement by replacing executives, while others stop issuing quarterly earnings forecasts as they may be held responsible in the future. Financial reporting conservatism increases after the restatement, suggesting improvements in corporate governance. Restatement firms are also more likely to be sued than counterfactuals. Settlement amounts are higher when a restatement was announced compared to when no restatement was announced. Furthermore, after a restatement firms pay higher Directors' and Officers' insurance premiums.

Turnover of audit committee directors is higher after the restatement, suggesting that in some cases replacement is the consequence of failing to prevent misreporting in the first place. The more independent and active the audit committee is, the less likely is the occurrence of restatements. Moreover, audit committee members who are accounting and industry experts correlated with a lower likelihood of a financial restatement.

Auditor turnover is higher after the restatement compared to non-restatement firms, suggesting the perception that the auditor failed to uncover misreporting. Restatements involving fraud, reversing profit to loss, and those disclosed in press releases are associated with a higher auditor resignation. When plaintiff attorneys argue that auditor independence was impaired due to NAS, higher settlement amounts are more likely. Repeat restatements are less likely for firms audited by Big-N auditors. Moreover, if small audit firms collaborate in an association the likelihood for a restatement decreases by about 46% compared to small audit firms that do not collaborate in an association.

Non-restatement firms in the same industry as restatement firms experience share price declines and an increase in the pricing of discretionary information risk. Findings seem to reflect investors' accounting quality concerns. Due to concerns over the financial reporting quality in interlocked firms, directors associated with the restatement ("tainted directors") are found to enhance financial reporting quality at the interlocked firms. Since 2007 the severity and the number of restatements have decreased to 671 cases p.a. in 2016. Despite the decrease in the number of restatement cases, literature on restatements has increased. Perhaps the ability of restatements to control for low audit and low financial reporting quality and the increase in data availability through the GAO and AA database motivates researches to be active in this domain.

The described downward trend in recent years (from 2007 to 2016) is good news for investors – who are typically more concerned about revenue restatements than restatements of other accounts – and for companies because they are more likely to be sued when revenue restatements were announced. [Srinivasan et al. \(2015\)](#) consider two explanations for decreasing rates of restate-

ments, namely a lower incident of mistakes, as well as lax detection and disclosure of misstatements.

Most restatement research focuses on irregularities since these are more likely to deliver significant results. Therefore, in the future, a closer look at errors (unintentional) may lead to surprising economically and statistically significant results. In addition, a separate investigation of companies that announce only one restatement and firms that restate multiple times potentially brings interesting insights. Many research gaps are still prevalent: a) How does the European Market react to restatements? b) What are the restatement effects on supply chain parties? or c) Which CEO characteristics matter after a restatement?

13 Appendix

-----[Please insert Table 11 approximately here](#)-----

Endnotes

- ¹ Many companies accused in AAERs reach a settlement with the SEC without admitting or denying the allegations; CFRM (Center for Financial Reporting and Management) data available from: <https://www.sec.gov/divisions/enforce/friactions.shtml>, http://faculty.haas.berkeley.edu/patricia_dechow/aaer.html or <http://accounting.haas.berkeley.edu/cfrm/aaer-dataset.html>. Accessed 10 December 2017
- ² SCAC (Securities Class Action Clearinghouse) data available from its website (see: <http://securities.stanford.edu>). Accessed 10 December 2017
- ³ Numbers based on findings by [Karpoff et al. \(2017\)](#)
- ⁴ An (large) accelerated filer is defined as a firm that (1) had a market value of the voting and non-voting common equity held by its non-affiliates of \$75 (\$700) million or more, (2) has been subject to the Securities Exchange Act of 1934 reporting requirements for at least twelve calendar months, (3) has filed at least one annual report and (4) is not a “small business” as defined in §240.12b-2 Definitions (see: https://www.ecfr.gov/cgi-bin/text-idx?amp;node=17:4.0.1.1.1&rgn=div5#se17.4.240_10_61). Accessed 22 March 2018
- ⁵ An ADR is a certificate issued by an American bank that represents equity by a company that is listed in a different country. In a RM a foreign company buys a local (American) company. The later lets foreign companies “avoid reviews with state and federal regulators that are normally required for initial public stock offerings” ([Barboza and Ahmed 2011](#)).
- ⁶ [Miles and Snow \(1994\)](#) “call these firms ‘Prospectors’ because they continually search for new products, services, technologies, and markets”, while firms following a defender strategy “search for economies of scale in those areas that are relatively healthy, stable, and predictable” ([Miles and Snow 1994](#)).

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Tables

Table 1: Overview of selected findings

Overview of selective findings	
Likelihood of restatements (Causes) Before the restatement	Consequences of restatements After the restatement
Company	
<ul style="list-style-type: none"> • Smaller size (Kinney and McDaniel 1989) • Smaller growing (Kinney and McDaniel 1989) • Less profitable (Kinney and McDaniel 1989) • More debt (Kinney and McDaniel 1989) (Richardson et al. 2002) • Overvalued (Badertscher 2011) • Low earnings quality (Dechow et al. 2010) • Overinvest (McNichols and Stubben 2008) • Higher market expectations (Richardson et al. 2002) • Low reporting quality (Gaynor et al. 2016) 	<ul style="list-style-type: none"> • Increase in probability of being sued (Bradley et al. 2014) • Increase in cost of equity (Hribar and Jenkins 2004) • Increase in a firm's cost of debt (Cornil 2009; Park and Wu 2009) • Increase in conservative financial reporting (Chen et al. 2014a) • Increase in upfront and annual fees (external finance) (Graham et al. 2008) • Increase in CDS returns (Du 2017) • Decline in probability of obtaining external financing (Chen et al. 2013) • Decline in externally financed growth (Albring et al. 2013) • Decline in probability of becoming takeover targets (Amel-Zadeh and Zhang 2015) • Decrease in credit ratings (Bierey and Schmidt 2017)
Auditor	
<ul style="list-style-type: none"> • Low audit quality (Lobo and Zhao 2013) • Audit fees (-) (Lobo and Zhao 2013) • Non-audit-fees (0) (Raghunandan et al. 2003) • Non-audit-fees (+) (Kinney et al. 2004) • Recurring tax services provided by the auditor (-) (Paterson and Valencia 2011) • Large Big 4 offices (-) (Francis et al. 2013) • Auditor industry specialization (-) (Stanley and DeZoort 2007) • Unexplained audit fees (+) (Hribar et al. 2014) • Auditor switch (+) (Lazer et al. 2004) • Shareholder participation in auditor selection (-) (Dao et al. 2012) 	<ul style="list-style-type: none"> • Increase in probability of restate firms choosing a smaller future auditors (Huang and Scholz 2012) • Increase in auditor turnover (Huang and Scholz 2012) • More difficult to attract and retain clients (Swanquist and Whited 2015)
Other	
<ul style="list-style-type: none"> • Book-Tax conformity (-) (Kuo and Lee 2016) 	<ul style="list-style-type: none"> • Decrease in number of quarterly earnings forecasts (Ettredge et al. 2013) • Decrease in precision of forecasts (Ettredge et al. 2013) • Increase in conservatism of companies' earnings forecasts (Ettredge et al. 2012) • Increase in analyst earnings forecast dispersion (Palmrose and Scholz 2004)

Table 2: Types of restatements

Restatement types
<ul style="list-style-type: none"> • Initiator: Company, Auditor, SEC (Agrawal and Chadha 2005) • Fraud vs. non-fraud (Palmrose et al. 2004) • 4.02 vs. non-4.02 (Scholz 2014) • 8-K vs. 10-K (Hogan and Jonas 2016) • Irregularity vs. error (Hennes et al. 2008) • Intentional vs. unintentional (Jun et al. 2016) • Revenue vs. non-revenue (Turner et al. 2001) • Quantified vs. non-quantified (Palmrose et al. 2004) • Number of restated periods (Agrawal and Chadha 2005) • Direction of a restatement (Callen et al. 2006) • Magnitude of a restatement (Palmrose et al. 2004) • Reason for a restatement (Scholz 2014) • Market reaction of the restatement (CAR) (Wilson 2008) • Length of the misstatement period (Agrawal and Chadha 2005) • Length of the investigation period (Badertscher and Burks 2011)

Table 3: Possible restatement classification based on implication

Subdivision	Category	Implication	Study
Initiator (prompter)	<ul style="list-style-type: none"> • SEC • Auditor • Company 	Company failed twice to detect Auditor missed detecting	Arthaud-Day et al. (2006) Francis et al. (2013)
Type of financial report	<ul style="list-style-type: none"> • Audited • Unaudited 	Auditor missed detecting Auditor is less responsible	Lobo and Zhao (2013)
Frequency of re-statements per company	<ul style="list-style-type: none"> • Single restatements • Multiple restatements 	Case is less complex Case is more complex	Files et al. (2014)

Table 4: Market Reaction by observation timeframe

Authors (Date)	Market reaction	Observation timeframe	Number of observations
Dechow et al. (1996)	-8.8%	1981-1992	92
Wu (2002)	-10%	1977-2000	255
GAO (2002)	-10%	1997-2002	689
Anderson and Yohn (2002)	-3.49%	1997-1999	161
Palmrose et al. (2004)	-9.2%	1995-1999	403
Fich and Shivdasani (2007)	-5.95%	1998-2002	200
Scholz (2014)	-1.5%	2003-2012	10,479

Table 5: Market reaction by type

Authors (Date)	Market Reaction	Type	Years	Observations
Palmrose et al. (2004)	-20%	Related to fraud	1995-	83
	-6%	Not related to fraud	1999	320
Hennes et al. (2008)	-14%	Irregularity	2002-	105
	-2%	Error	2006	324
Scholz (2014)	-2.3%	4.02 restatements	2003-	4,246
	-0.6%	Non 4.02 restatements	2012	6,233

Table 6: Market reaction by revenue relation

Authors (Date)	Market Reaction	Reason	Years	Observations
Turner et al. (2001)	-12%	Revenue	1997-	n.a.
	-5%	Other	1999	n.a.
Anderson and Yohn (2002)	-11.04%	Revenue	1997-	30
	-4%	Other	1999	12
Scholz (2014)	-4%	Revenue	2003-	1,435
	n.a.	Other	2012	9,044

Table 7: Market reaction by direction of restatement

Authors (Date)	Market Reaction	Direction	Years	Observations
Agrawal and Chadha (2005)	-3.99%	Revenue increase	1977-	14
	-6.02%	Revenue decrease	2000	96
Callen et al. (2006)	0%	Revenue increase	1986-	69
	-8.3%	Revenue decrease	2001	385

Table 8: Market reaction by the magnitude of correction

Authors (Date)	Market Reaction	Magnitude	Years	Observations
Agrawal and Chadha (2005)	-4.69%	Large	1977-	53
	-1.62%	Small	2000	56

Table 9: Market reaction by number of restated periods

Authors (Date)	Market Reaction	Periods	Years	Observations
Palmrose et al. (2004)	-5%	<=1 quarter	1995-	n.a.
	-10%	> 1 quarter	1999	n.a.
Agrawal and Chadha (2005)	-7.45%	<= 4 quarters	2000-	80
	-2.06%	> 4 quarters	2001	35

Table 10: Market reaction by initiator

Authors (Date)	Market Reaction	Initiator	Years		Observations
Palmrose et al. (2004)	-5%	Management	1995-		n.a.
	-0.5%	SEC	1999		n.a.
	-8.3%	Auditor			
Agrawal and Chadha (2005)	-6.01%	Companies and auditors	1977-		99
	-3.56%	SEC	2000		17

Table 11: Non-US findings

Country	Authors (Date)	Finding
Australia	Ahmed and Goodwin (2007)	Restatement firms are smaller than non-restatement firms and have higher growth opportunities compared to industry peers.
Australia	Loyeung and Matolcsy (2015)	CFO's talent is positively correlated to CFO's compensation; talent is measured by the absolute difference between accounting values in the transition and adoption period.
China	Li et al. (2017)	Auditors who have performed failed audits that are identified by restatements also deliver lower-quality audits to other clients.
China	Chan et al. (2016)	Firms with extremely long audit reporting lags (top 5%) tend to have more restatements.
Germany	Ecker et al. (2013)	Industry based estimation samples perform at least as good in detecting earnings management as samples based on industry membership.
Germany	Hitz et al. (2012)	Abnormal returns, abnormal trading volumes and abnormal bid-ask spreads around restatements announced.
Japan	Skinner and Srinivasan (2012)	Actions undertaken to prevent reputational loss by Chuo Aoyama, a Big-Four affiliate and find that clients that moved to another auditor were larger, had a higher market-to-book ratios and greater extent of cross-listing, suggesting demand for high audit quality.
Taiwan	Young et al. (2008)	Excess board seats control rights from the controlling shareholders (opposed to low equity ownership) are positively correlated to the likelihood and materiality of financial restatements.
Taiwan	Sue et al. (2013)	Low-integrity family firms, measured by negative media coverage, experience a higher likelihood of restatements than other family firms.
Taiwan	Chin and Chi (2009)	Clients that are signing auditor specialists, either alone or in conjunction with firm-level specialists, are less likely to make restatements.
UK	Campa and Donnelly (2016)	Restatements are positively associated with the level of NAS fees for firms who pay expected or below normal audit fees.
UK	Clatworthy and Peel (2013)	Audited accounts are 50% less likely to report errors for the sample of UK private companies.
UK	Ferguson et al. (2004)	NAS are positively and significantly associated with earnings-related restatements in three models.
Global	Kuo and Lee (2016)	Audit fees are positively correlated with restatements.

Figures

Figure 1: Systematic search and selection process regarding the literature

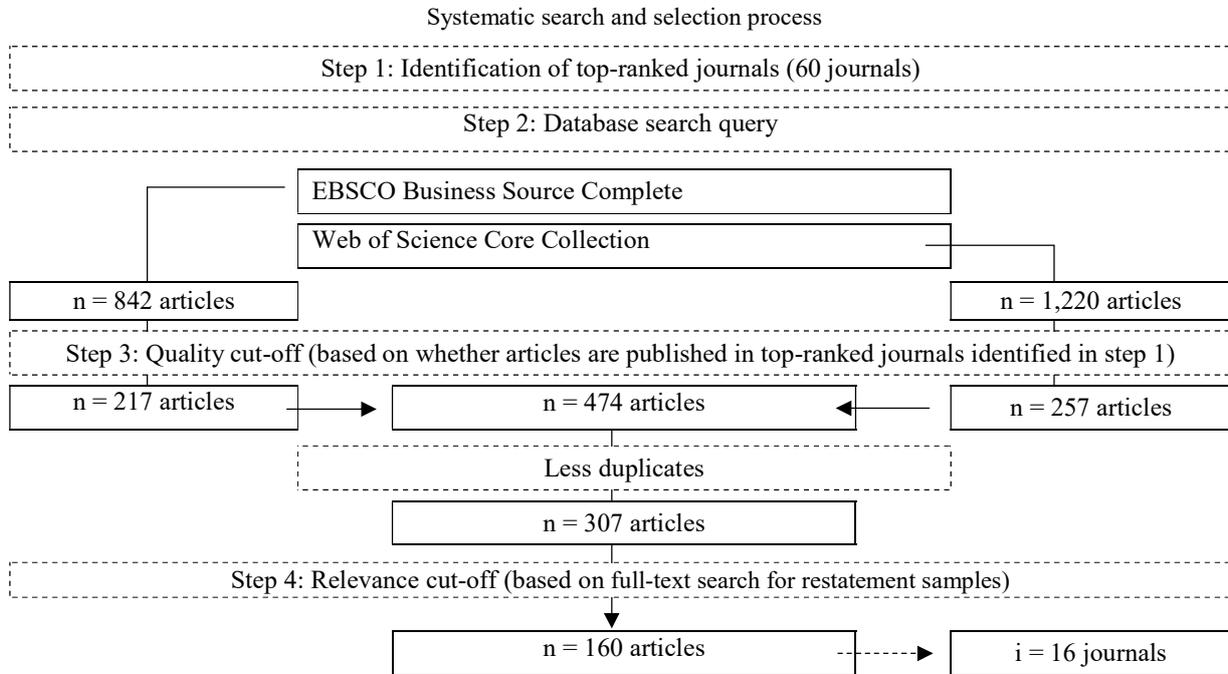


Figure 2: Number of articles p.a. out of 160 restatement related papers

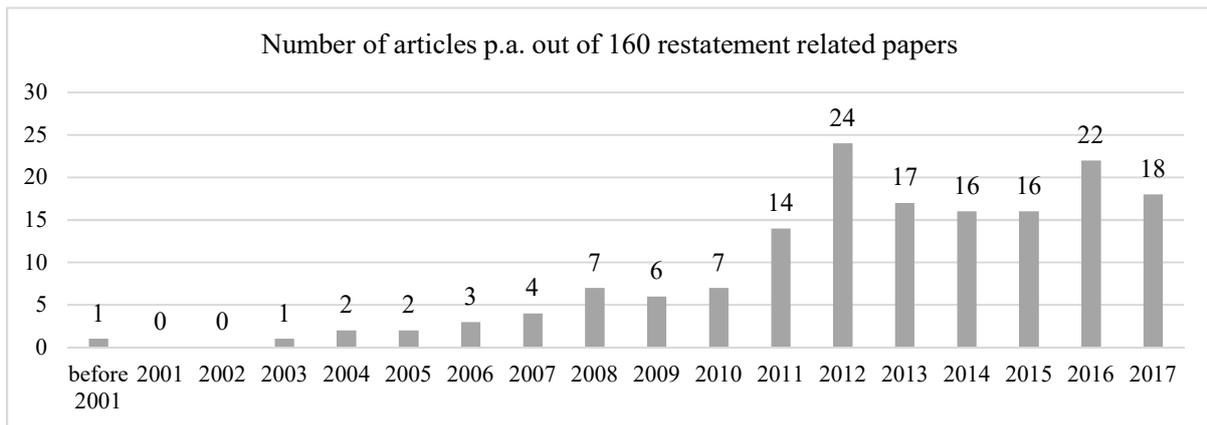


Figure 3: Restatements and frauds

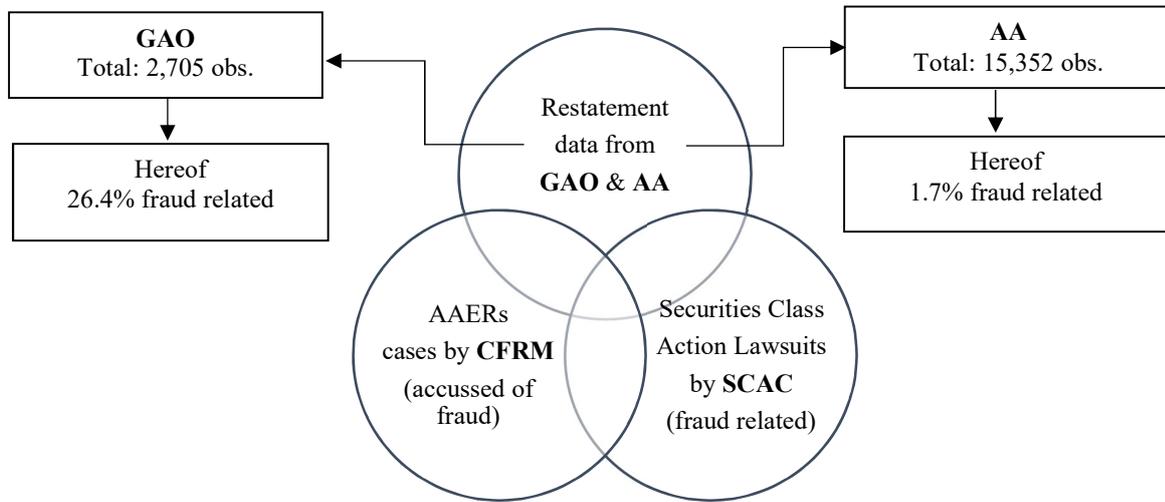


Figure 4: Number of restatements p.a. based on Audit Analytics database

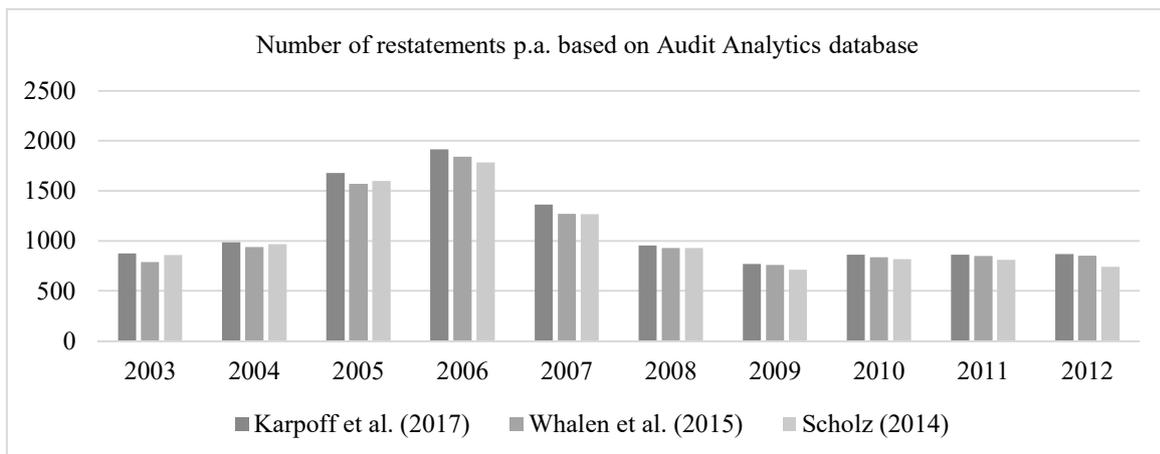


Figure 5: Restatement timeline based on Ettredge et al. (2010)

