Determinants of Financial Misreporting: A Survey of the Financial Restatement Literature

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Abstract

We provide a comprehensive overview of the findings regarding the causes of financial restatements in the US. Acknowledging that restatements may derive from intentional and unintentional misreporting, we assign the findings to one of three pillars: i) expected benefits, ii) expected costs, and iii) executive characteristics. Assuming that managers are rational decision-makers, the likelihood of misreporting increases in expected benefits and decreases in expected costs. While expected benefits reflect executives' desire to maximize private benefits through compensation contracts, expected costs refer to the likelihood that misreporting will be revealed through internal or external controls. Given that the efficiency of internal and external controls derives from the ability to avoid both intentional and unintentional misreporting, we also review literature that investigates less severe restatements. We support the existing research by enhancing the understanding of restatements in light of severe and less severe restatements, identifying research gaps and organizing fragmented findings into a larger picture. Ultimately, our survey might inform regulatory bodies, auditors, standard setters and executives regarding restatements of financial statements.

JEL classification: G1, K4, M4
Keywords: survey, financial restatement, audit quality, financial reporting quality

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1 Introduction

This review focuses on financial restatements and is divided into a supportive part and a major part. While the supportive part is targeted towards enhancing readers' understanding of financial restatements (e.g., what separates material from less severe restatements?), the major part provides an extensive review of the literature that investigates the determinants of restatement related misreporting.

Financial restatements describe firms' acknowledgment of past reporting failure and the correction of intentional and/or unintentional misreporting. Accordingly, prior literature perceives restatements as a sign of low financial reporting quality (Pomeroy and Thornton 2008) and low audit quality (Christensen et al. 2016). In light of prominent fraud cases (e.g., Enron, WorldCom etc.) and enormous market capitalization losses due to restatements (GAO 2002), the SEC (2002) states that financial restatements constitute a significant factor undermining investor confidence in financial reporting. While SEC`s view is intuitive, it is empirically supported only for a smaller fraction of restatements (approximately 2 percent); those that arise from intentional misreporting (Chen et al. 2014b). The majority of restatements (approximately 98 percent) correct unintentional mistakes (e.g., misapplication of GAAP) and does not cause any long-lived decline in the information content of earnings (Chen et al. 2014b). Given that the early restatement literature (before 2008) often neglects the distinction between material (intentional) and less severe (unintentional) restatements and thus treats them equal, it seems necessary to first discuss institutional details including, e.g., materiality of misreporting. Next, we will provide an extensive review of determinants of misreporting arising from both intentional and unintentional misreporting. While, as of 2007, "little research examines the determinants of restatements" (Doyle et al. 2007a, p.199), the number has since increased. Considering that restatements were often described as an unreliable indicator of intentional misstatements (Dechow et al. 2010), the observed increase in the restatement-related literature seems surprising. However, in light of enhanced strategies that separate material from less severe restatements (Hennes et al. 2008), restatements have become a more reliable proxy of intentional misreporting. Judging by the number of publications (see: Figure 3), restatements have increased in popularity and acceptance.

Figure 1: Determinants of Misreporting

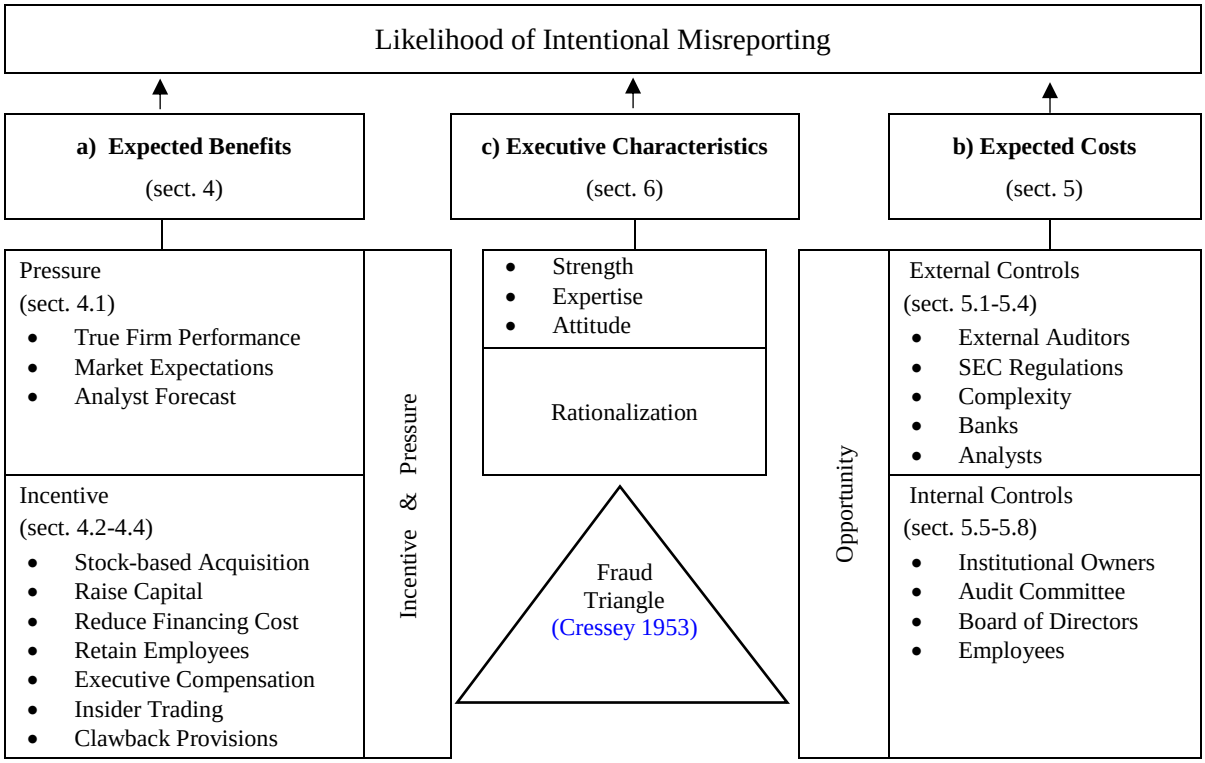

Figure 1 illustrates three major factors from the fraud triangle (pressure and incentive, opportunity, and rationalization) and connects these to our main structure in which we discuss expected benefits, expected costs and executive characteristics. Expected costs refer to external and internal controls and hence connect to the opportunity of manipulation. Opportunity is perceived as the most important factor of the fraud-triangle, since under perfect oversight (no opportunity to misreport undetected) the executive would not be able to publish incorrect financial information, regardless of expected benefits (pressure and incentive within the fraud triangle) and executives' characteristics (rationalization).

To organize existing research plausibly, we present findings based on three pillars: a) expected benefits b) expected costs and c) executive characteristics. This structure aims at reflecting executives' mindset, in which opportunistically acting managers misstate financial numbers when a) the expected benefits (e.g., stock-based compensation) surpass b) the expected costs of misreporting (e.g., the efficiency of controls). Further, we focus on c) executive characteristics (e.g., religion), since ceteris paribus, various executives may place different weights on expected benefits and expected costs. In Figure 1, we reconcile our applied structure to the fraud triangle and provide a brief overview of the potential determinants and structure of this review.[1] Our proposed structure is closely related to the fraud triangle (Cressey 1953) in which i) incentive or/and pressure (e.g., high market expectations) ii) opportunity (e.g., weak

[1] Given that three out four fraud conditions are met by all restatements (regardless of their intention of foregoing misreporting), "the fraud triangle has been used as a theoretical framework in the study of restatements" (Presley and Abbott 2013, p. 3). Three condition, which are met refer to: (a) there is an inherent risk of a misstatement; (b) the misstatement is undetected by the firm's internal controls; (c) the misstatement is undetected by the firm's internal controls. The condition that is not met by restatements arising from unintentional misreporting is that (d) it is in most likely not deemed as material.

controls) and iii) rationalization of misreporting by the manager (e.g., executive characteristics), determine the likelihood of misreporting. We acknowledge that some of the reviewed articles consciously investigate restatements that derive from unintentional misreporting (e.g., investigation of audit quality). While such papers are not directly related to intentional misreporting, they still inform about control efficiency, which may influence the executives' expected costs of misreporting. Further, some articles may erroneously mistake less severe restatements as fraud-related restatements. These articles are reviewed as well because they illustrate potential pitfalls in restatement research and enhance the overall understanding of restatements.

Investigating determinants of misreporting is crucial since at least a fraction of restatement announcements causes severe market reactions. To provide an idea, material restatements cause adverse short-term market reactions of –13.64 percent (Hennes et al. 2008) and long-lived declines in the information content of earnings (Chen et al. 2014b). For early periods covering the years 1997 to 2002 market capitalization losses attributable to restatements total over $100 billion (GAO 2002). The number of financial restatements climbed to an all-time high of 1,420 cases in 2006 involving almost 10 percent of US public companies. After 2006, however, the annual restatement frequency declined from 1,420 to 671 cases in 2016, suggesting an improvement in reporting quality in recent years (Whalen et al. 2017). However, there is some skepticism about whether this radical decline is a reliable indicator of improved financial reporting quality. Instead, the decline in restatements may also be attributed to insufficient control mechanisms that fail to uncover existing misreporting (Ceresney 2013; Wahid 2018) and/or to firms restating "under the radar", which means that misstated numbers are not corrected in dedicated filings (10-Q/A, 10-K/A, Form 8-K), but instead are announced less prominently within regular SEC filings (10-Q/10-K) (Turner and Weirich 2006). Given the described consequences and concerns, understanding the potential determinants of intentional misreporting is crucial.

Our review targets a broad audience, since (mis-)reporting is a combined product of many parties and influences debt- and equity market participants. By reading this review, debt- and equity-market participants gain information about the factors that trigger restatements. Analysts learn about how managers guide earnings before restatement announcements. Moreover, regulators may evaluate the efficiency of past regulations that targeted financial reporting quality. Standard setters generate knowledge about whether accounting complexity enables managers to distract investors from actual misreporting. Further, company boards gain

insights into how to protect a firm's reputation from misreporting. Eventually, our cross-disciplinary review targets researchers by identifying research gaps and providing a better understanding of potential pitfalls in using restatement data. We acknowledge the existence of valuable reviews including financial misreporting and we put our review into perspective using Table 1.

Table 1: Overview of Literature Review on Misreporting

Overview of Review Literature on Misreporting				
Author, Journal	Restatement Focus	Accounting Focus	Determinants Focus	Consequences Focus
This paper	YES	YES	YES	NO
Amiram et al. (2018)	NO	YES	YES	YES
Schnatterly et al. (2018)	NO	NO	YES	NO
Cumming et al. (2018)	NO	NO	YES	YES
Plöckinger et al. (2016)	NO	YES	YES	NO
Healy and Wahlen (1999)	NO	YES	YES	YES

Tab. 1 provides an overview of review literature that discusses misreporting related literature. While our focus on restatement related literature stands out in comparison, it is not the only substantial difference to prior literature. Amiram et al. (2018) do not intend to provide a comprehensive overview. Schnatterly et al. (2018) focus on findings from management related literature and structure their review based on the fraud triangle (pressure, opportunity, rationalization), please see Figure 1. Cumming et al. (2018) provide a brief review of corporate governance and financial misconduct, which is rather compact with 12 pages. Plöckinger et al. (2016) review accounting literature but limit their investigation to findings relating to executive characteristics, which is the most compact part of our review. Eventually, Healy and Wahlen (1999) provide a review of earnings management in the form of accruals.

The remainder of this paper is structured as follows. Sect. 2 illustrates the selection process of the reviewed literature and Sect. 3 briefly defines restatements. Sect. 4 to 5 contribute to the understanding of expected benefits (sect. 4) and expected costs (sect. 5) that executives are likely to consider before they decide to misreport. Further, we focus on executives' characteristics (sect. 6). Sect. 7 outlines research gaps, and sect. 8 summarizes our major findings.

2 Review Approach

To ensure the quality and completeness of the reviewed findings, we review articles that are published in highly ranked journals (see Table 2). Further, we extend this selection by adding cross-referenced papers and insights from working papers (see Figure 2).

Figure 2: Review Approach

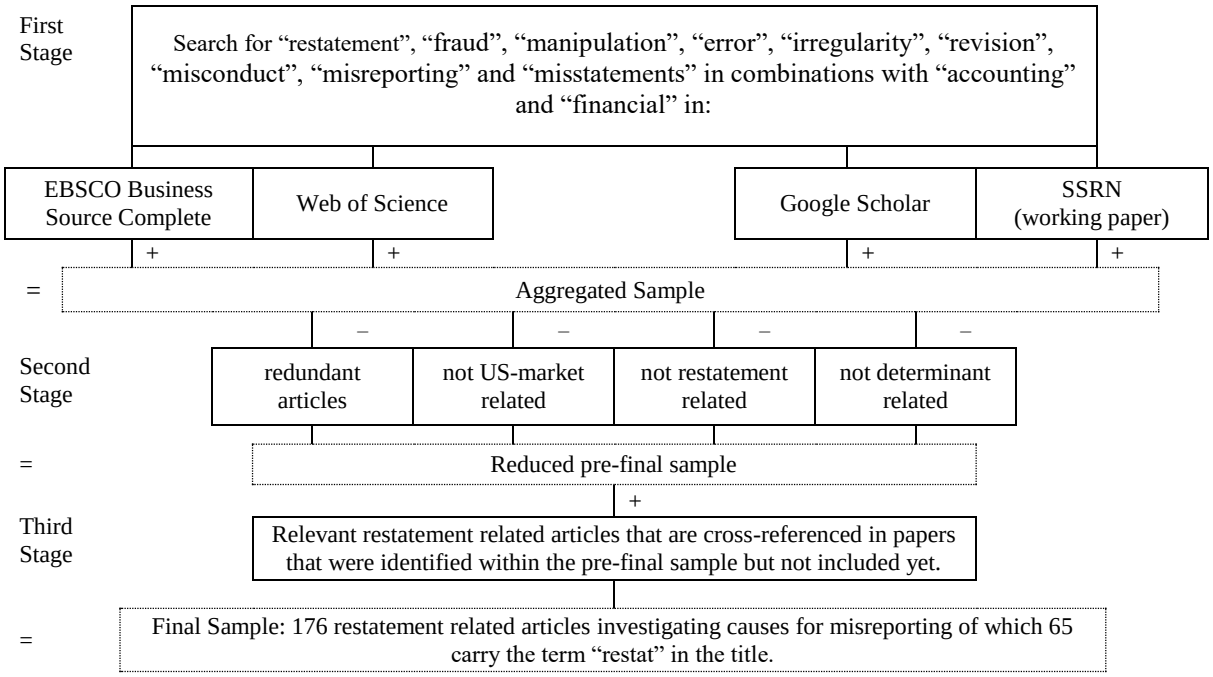

Figure 2 illustrates our three-stage review approach. In the first stage, we search for the term "financial restatement". To provide a comprehensive review we not only focus on highest ranked journals in accounting (The Accounting Review, Journal of Accounting and Economics, Journal of Accounting Research) and finance (The Journal of Finance, Journal of Financial Economics, Review of Financial Studies), but also search within the databases EBSCO Business Source Complete, Web of Science and Google Scholar. To get insight into most current research we also included working papers found in SSRN. In the second stage, we dropped redundant, non-US-market related, not-restatement related and not determinant related papers from our sample. In the third stage, we extended our paper selection to articles that were referenced by articles identified in the second stage. Our final sample includes 176 restatement related articles investigating causes for misreporting.

In contrast to many overview articles, we also review working papers, as their exclusion would otherwise lead to a somewhat fragmented survey. Second, despite the sometimes small contribution of some working papers, their aggregation and interconnection with established findings from highly ranked journals support the overall understanding of financial misreporting. Third, the advantage of reviewing current working papers is that they are more likely to focus on recently debated topics and will potentially be published in the near future.

Research gaps can eventually be identified more reliably when the overview is as comprehensive as possible.[2]

In the first stage of our review approach, we use four databases (see Figure 2): EBSCO Business Source Complete, Web of Science, Google Scholar, and SSRN. These databases were searched for the terms "restatement", "fraud", "manipulation", "error", "irregularity", "revision", "misconduct", "misreporting" and "misstatements". We additionally combined these terms with "accounting" and "financial" (e.g., financial restatement). One crucial advantage of Google Scholar and SSRN is the search beyond the title and the abstract, meaning that we identify a broader spectrum of literature, which is important given that restatements are applied as a proxy for low audit and low financial reporting quality (among others). After reading through the literature, in the second stage, we exclude articles that are redundant or non-US-market-related, or that do not refer to financial restatements or to determinants of misreporting. We retain very few analytical papers. Eventually, in cases in which we might have missed to identify restatement related literature, we extend the aggregated sample by including cross-referenced restatement articles. Our search for restatement-related literature was conducted between July 2017 and January 2019 and yields 176 articles covering periods until the end of 2018.

Figure 3: Distribution of Articles Focusing on Restatements over Time

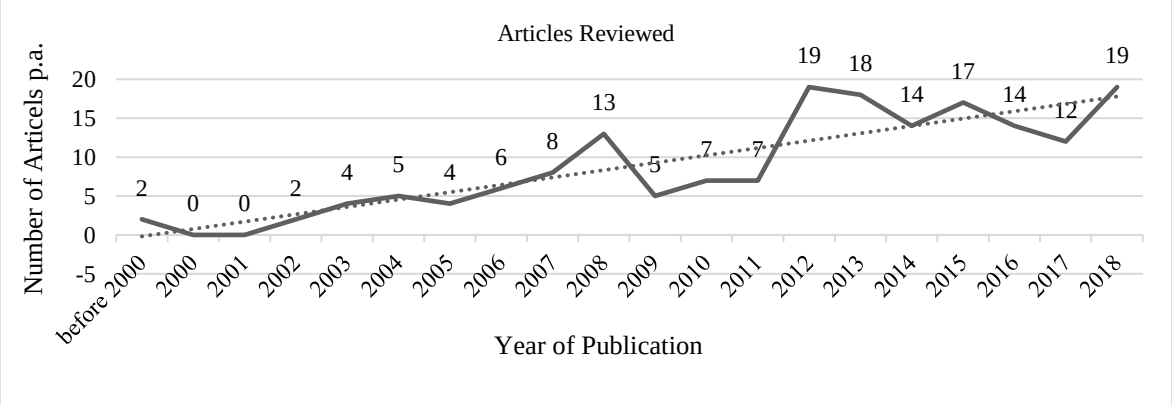

Figure 3 shows the frequency of reviewed restatement related articles published between 2000 and 2018 (174 articles + 2 before 2000). The article selection process is explained in detail in section 2 of the paper. The frequency increases after the U.S. Government Accountability Office (GAO) released its reports in 2002, 2006, and 2007 comprising 2,705 restatements. Recent literature employs both restatement data from GAO and Audit Analytics (AA), suggesting that the availability of restatement data contributed to the understanding of misreporting. While between 2001 and 2009, 47 articles were published, between 2010 and 2018, 127 articles were published (5.22 p.a. vs. 14.11 p.a.).

[2] Since our overarching goal is to draw a larger picture of the existing restatement literature, we must accept that we cannot discuss every paper in detail, such as reviews comprising 40 to 60 articles (we review 176 articles). Nevertheless, we very consciously chose where to provide further details, without distracting the reader from our main mission, namely, to provide a broader understanding of misreporting in light of restatement-related misreporting.

As illustrated in Figure 3, the number of restatement-related articles since 2009 is relatively high (an average of 14 articles p.a. for the last ten years), suggesting that the classification of material restatements (Hennes et al. 2008) has enabled a reliable identification of intentional misreporting. Moreover, 65 articles include the term "restatement" in their title, suggesting that restatements have become a major topic in the literature. Table 2 provides information about journal frequency and journals' impact ratings (SCImago Journal Rank (SJR), Journal Impact Factors (JIF) and Source Normalized Impact per Paper (SNIP)). This journal list indicates that the majority of reviewed articles were published in the field of accounting and finance. However, restatements are also present in the audit quality (14 articles) and corporate governance/management (10) literature. [3]

[3] To mitigate the concern that our review approach underrepresents the corporate governance/management research (10 articles), we compare the number of restatement-related articles from our review to the number of restatement-related articles included in a review published in the *Journal of Management* (Schnatterly et al. 2018). Our comparison (10 articles in our review vs. 6 articles in the review by (Schnatterly et al. 2018)) suggests that we sufficiently cover restatement-related findings in the field of corporate governance/management.

Table 2: Articles Selected by Journal

Articles Selected by Journal				
Impact of Journal			Name of Journal	Appearance
JIF#	SJR##	SNIP###		
8.08	6.462	4.67	Journal of Management	3
7.417	10.76	n.a.	Academy of Management Journal	1
5.162	12.489	4.53	Journal of Financial Economics	6
4.542	6.957	3.45	Journal of Accounting Research	5
4.27	14.238	4.12	Review of Financial Studies	4
3.282	6.875	3.31	Journal of Accounting and Economics	14
3.027	5.497	2.05	Organization Science	2
2.917	1.276	1.64	Journal of Business Ethics	2
2.509	1.26	1.64	Journal of Business Research	1
2.409	n.a.	n.a.	Auditing: A Journal of Practice & Theory	6
2.245	3.946	2.61	The Accounting Review	32
2.065	2.603	2.07	Contemporary Accounting Research	16
2.049	3.636	2.04	Journal of Financial and Quantitative Analysis	1
1.931	1.503	1.91	Journal of Banking & Finance	1
1.796	0.9	1.67	Journal of Accounting and Public Policy	4
1.73	0.72	1.58	Accounting Horizons	12
1.588	2.757	1.87	Review of Accounting Studies	3
1.541	0.91	1.59	Journal of Business Finance & Accounting	5
1.537	0.384	1.04	Accounting and Finance	4
0.693	0.34	1.03	Managerial Auditing Journal	3
0.478	0.149	0.44	Asia-Pacific Journal of Accounting & Economics	1
n.a.	0.214	n.a.	Journal of Emerging Technologies in Accounting	1
n.a.	0.277	0.74	Advances in Accounting	1
n.a.	0.321	1.11	Journal of Accounting, Auditing & Finance	4
n.a.	0.441	1	Journal of Management and Governance	1
			Working Papers (of which 18 on SSRN)	25
			Other	18
Total				**176**

Journal Impact Factor (JIF), ## Scimago Journal Rank (SJR), ### Source Normalized Impact per Paper (SNIP) Tab. 2 provides an overview of journals in which selected articles were published. Journals in the field of accounting and finance dominate our review. Moreover, the majority of the included articles are published in highly ranked journals. While we do not apply a hard cut-off for journals, 72 percent of our selected journals would survive benchmark values applied by Köhn (2017) (Journal Impact Factor; 0.7, Scímago Journal Rank; 0.337). Following the support for a new metric by Mingers and Yang (2017), we also provide the SNIP value. We sort journals based on the Journal Impact Factor (JIF), Scimago Journal Rank (SJR) and Source Normalized Impact per (SNIP). The category entitled "Other" comprises journals without any impact metric.

3 Definition and Interpretation of Restatements

A thorough knowledge of the institutional details regarding restatements is helpful for an adequate understanding of the determinants of misreporting and supports researchers in unfolding the full potential of restatement data. Thus, the appendix describes restatements and their different characteristics in detail (see appendix: "Understanding Restatements" attached to this document). However, for the purpose of this review, the following brief definition of restatements is sufficient to follow the costs and benefits associated with restatements.

Financial restatements correct former misreporting and are considered potential "earmarks of fraudulent activities" (Perino 2012). According to an email reply to Karpoff et al. (2014) by AuditAnalytics (AA), a restatement is "an adjustment to previously issued financial statements as a result of an error, fraud, or GAAP misapplication", suggesting that some restatements are fraud-related, while others are not. Since a key element of fraud is the intention to deceive other parties through misreporting, restatements comprise corrections attributable to both intentional and unintentional misreporting. The majority of restatements arises primarily from unintentional misreporting, which is referred to as "mistakes" or "clerical errors", rather than "fraud" or "manipulation". Thus, to evaluate research design choices and the interpretation of results, it is vital to acknowledge that restatements vary in misreporting severity. We support the reader by highlighting differences in sample choices when findings are inconsistent and when providing detailed information contributes to a better interpretation of the findings. For readers, who are additionally interested in sample choices (restatement type, restatement database, timeframes, etc.), we provide a detailed overview on the 20 most frequently cited restatement related papers, which are reviewed and carry the term "restatement" in the title (see Table 3).

Last, it is important to acknowledge that when researchers conclude that they find a positive association between audit fees and "restatements", it is likely that they mean a positive association between audit fees and restatement-related "misreporting". Due to the close causal relationship between "misreporting" and "restatements", research sometimes applies the terms "misreporting" and "restatement" interchangeably. In particular, restatements refer to the corrective disclosure of past misreporting, while misreporting refers to the wrongdoing itself, which subsequently leads to a financial restatement announcement. Hence, the interpretation of findings requires careful consideration of the proxy "restatement". Is "restatement" a proxy for the disclosure of prior reporting failure (restatement announcement) or a proxy for

misreporting (restated periods)? Hoitash and Hoitash (2018), for example, address this specific issue and emphasize that they "capture the misstatement period rather than the restatement disclosure year". In our review, we adopt the applied terminology and use restatement as a synonym for misreporting. Being aware of potential misunderstandings, we ensure that the reader understands whether we refer to misreporting or to the disclosure of a restatement. For further details on how restatements are defined and perceived, we highly recommend reading the comments by Taub (2012) and our appendix "Understanding Restatements".

In the following, we present restatement related findings in terms of expected benefits (sect. 4), expected costs (sect. 5), and executive characteristics (sect. 6).

Table 3: Overview

Study (Year)	Cites	Type (Severity)	Data Source of the Restatements	Sample Size	Period	Categorization	Dependent Variable	Research Focus	Analytical Method
Abbott et al. (2004)	1,668	Less severe	• Wall Street Journal, Barron's, the Dow Jones Corporate Filings Alert, Dow Jones Business News, Dow Jones News Service, and PR Newswire	228 restatements, 228 control firms	1991-1999	Annual only	Restatement	Audit committee	Logistic regression
Aier et al. (2005)	332	All	• GAO • Lexis-Nexis	228 restatements, 228 control firms	1997-2002	Restate vs. non-restate	Restatement	Corporate governance	Logistic regression of financial restatements on CFO´s ability
Archambeault et al. (2008)	176	All	• 10-K Wizard database	153 restate firms, 153 control firms	1999-2002	Restate vs. non-restate	Restatement	Audit Committee	Logistic regression of restatements on audit committee compensation
Baber et al. (2009)	72	All	• GAO • Hand-collection	179 restate firms, 1,422 control	1997-2004		Restatement	Corporate Governance	Logistic regression of restatement on corporate governance
Blankley et al. (2012)	229	Material	• AA	399 restatements	2005-2009	None	Audit Fees, Restate	Audit	OLS, Logistic
Cao et al. (2012)	204	All	• AA • Lexis-Nexis	779 restatements	1995-2009	Annual restatements	Misstatement	Company reputation	Logistic regression of annual misstatements on company reputation
Carcello et al. (2011)	235	All	• SEC filings	148 restate firms, 519 control firms	2001-2003	Restate vs. non-restate	Restatement	Audit Committee	Logistic regression of restatements on CEO presence on the nominating committee and audit committee characteristics
Ettredge et al. (2010)	130	Fraud	• AA • Lexis-Nexis press releases and 8-K files of the Lexis-Nexis database	354 restatements	1994-2003	Core vs. non-core earnings, Fraud	Fraud, Core, Noncore (Bloated working capital)	Detect restatements, Earnings management	Multinomial logistic regression model
Hennes et al. (2008)	762	Material and less severe	• 8-K filings on EDGAR	429 restatements	2002-2006	Errors and irregularities	Daily abnormal return, Executive Turnover	Corporate governance	OLS, Logistic regressions

Study (Year)	Cites	Type (Severity)	Data Source of the Restatements	Sample Size	Period	Categorization	Dependent Variable	Research Focus	Analytical Method
Hennes et al. (2014)	146	Material and less severe	• GAO • AA	2,036 restatements	1997-2010	Errors and irregularities	audit turnover, daily abnormal return,	Audit, Market reaction	Logistic regression, Descriptive statistic
Hribar and Jenkins (2004)	608	Core operating earnings	• GAO	292 restatements	1997-2002	Earnings restatements	Daily abnormal return and change in cost of capital	Cost of capital	OLS, GLS
Kinney et al. (2004)	955	Material	• Amended Form10-K and 10-Q • Lexis-Nexis • Securities Class Action Alert	432 restate firms, 512 control firms	1995-2000	Restatements	Restatement	Auditor independence	Logistic Models of restatement on audit fees and ACQUIS (1 if registrant has an acquisition during the fee year)
Lobo and Zhao (2013)	180	All	• AA	2,821 restatements	2000-2009	Restatements, quarterly and	Restatement, total audit fees	Audit effort, quality	Logistic regression results for the association between restatements and abnormal audit fees/ total audit fees/, OLS
Myers et al. (2013)	72	All	• AA	1,773 restatements	2002-2008	Form 8-K, press release, 10-K, 10-Q filing	CAR, Form 8-K disclosure		OLS, Logistic regression of Form 8-K disclosure on outside monitoring
Newton et al. (2013)	114	All	• AA	4,087 restatements	2000-2009	Client restatements	Restatement	Restatement type	Logistic regression of auditor competition on restatement
Raghunandan et al. (2003)	223	All	• EDGAR Online database	110 restatement firms	2000-2001	Exclude "technical" restatements, but less severe are included	Audit fees, Fee ratio	Audit	OLS
Richardson et al. (2002)	431	Fraud related, assumption	• Lexis-Nexis Business, Dow-Jones Interactive Publications Library and ABI/Inform databases	225 firms (440 restatement firm-years vs. 133,208 non-restatement firm-years)	1971-2000	Annually related restatements	Restatement	Earnings quality	Logistic regression

Study (Year)	Cites	Type (Severity)	Data Source of the Restatements	Sample Size	Period	Categorization	Dependent Variable	Research Focus	Analytical Method
Schmidt and Wilkins (2012)	89	All	• AA	1,543 restatement cases	2001-2007	Fraud vs. non-fraud, revenue vs. non-revenue	Auditor Litigation	Auditor Litigation	Logistic regression of auditor litigation on non-audit service fees
Srinivasan et al. (2015)	73	All	• AA	874 restate firms	2000-2010	Irregularities and errors	Restatements	Home country effect	Logit model of restatement on foreign firm/ country with weak rule of law
Stanley and DeZoort (2007)	333	Material restatements	• 10-K Wizard database 12/31/2004	191 restate firms, 191 control firms	2000-2004	Exclude interim and technical restatements	Restatement	Audit	Logit model of restatement on audit fees, non-audit fees, tenure length

Tab. 3 presents a comprehensive overview on most cited reviewed articles, which also include "restat" in the title. Most importantly, we provide the source of the restatement data and it classification (e.g., material vs. less material). AA defines Audit Analytics and GAO defines Government Accountability Office. Citations we retrieved from Google Scholar on November 13th, 2019.

4 Expected Benefits from Financial Misreporting

Kempf et al. (2016) provide empirical support that managers tend to maximize private benefits even if this results in lower shareholder wealth. To mitigate concerns that executives exploit their informational advantage at the cost of investors' wealth, executives' compensation is partially linked to firms' share price. As a consequence of this link, increasing firm value and encouraging investors to buy company stock may motivate executives to engage in misreporting (Kellogg and Kellogg 1991). Given that executives wish "to meet specific goals, both internal and external" (Ettredge et al. 2010, p. 334) and to align with compensation and lending contracts (Healy and Wahlen 1999), managers may become more inclined to manipulate financial numbers when market expectations are high and/or firm performance is low.

4.1 The Pressure to Misreport: Firm Performance and Market Expectations

Misstatements appear to be made with the aim of covering up slowdowns in financial performance (Dechow et al. 2011) and concealing bad investments made in the pre-fraud period (Ozbas 2008). Consistent with this view, Kinney and McDaniel (1989) show that restatement firms are indeed less profitable and slower-growing than non-restatement firms. Elayan et al. (2008) find that compared to non-restatement firms, material restatement firms experience poorer operating performance in the pre-restatement period, and Yu et al. (2018) conclude that financial performance deteriorates prior to the restatement announcement. Scholz (2014) confirms that most restatement companies, throughout the decade, were unprofitable, and Kedia and Philippon (2009) show that managers of restatement firms with low productivity excessively hire to mimic "good managers" and exaggerate their growth prospects. Moreover, Kedia and Philippon (2009) and McNichols and Stubben (2008) document that restatement firms substantially overinvest during the misreporting period. In addition, Kedia and Philippon (2009) discover that during the misreporting period, restatement firms grow faster than counterfactuals but grow slower after the restatement, supporting the view that some executives wish to outperform their competitors. Last, Bens et al. (2012) report a higher likelihood of earnings restatements after executives make poor M&A decisions, indicating managers' attempts to conceal bad decisions.

Next, high market expectations may increase pressure to manipulate earnings (Ball 2009). Since market expectations are the result of interrelating factors (e.g., investor beliefs about the

firm`s and industry's future prospects, investor sentiment, prior managerial earnings guidance, analyst forecasts, and economic cycles), assigning findings to one specific explanatory variable is challenging. The fraud-related literature documents a positive association between fraud and the GDP (Davidson 2011) and between fraud and the level of investor beliefs about industry prospects (Wang et al. 2010), suggesting that fraud is more prevalent when market expectations are high. Consistent with this view, Richardson et al. (2002) document that firms with earnings-related restatements have high market expectations for future earnings growth, and Burns and Kedia (2006) show that the average earnings-to-price ratio is lower for restating firms than for non-restating firms during misstated periods, suggesting that investors anticipate higher growth for restatement firms. Noteworthy, while Richardson et al. (2002) identify material restatements by excluding restatements arising from merger and acquisition, Burns and Kedia (2006) include these restatements. Such inconsistencies in sample selection are common in restatement literature and will be discussed throughout the review when findings are mixed. Further, Efendi et al. (2007) and Badertscher (2011) document that restatement firms are more likely overvalued before the misreporting begins, suggesting that executives desire to sustain overvaluation. Last, the number of restatements surrounding the so-called dot-com bubble for the years 1999-2001 is on average twice as high as in the years 1997 and 1999 (Cheng and Farber 2008).

Analysts play a further important role in shaping market expectations, as they provide earnings forecasts and partly buy and hold recommendations for market participants, which may cause overvaluation and, hence, create pressure to misreport (Payne and Robb 2000; Matsunaga and Park 2001). However, analysts may also enhance external monitoring and decrease a manager's ability to misreport. Consequently, the overarching questions is, "[d]o analysts serve as external monitors to managers, or do they put excessive pressure on managers?" (Yu 2008, p. 245). Myers et al. (2013) find a positive association between the number of analysts following a firm and Form 8-K restatements. The authors interpret this finding as outside monitoring (in the form of analysts) increasing transparency (in the form of Form 8-K restatements). Given that Form 8-K restatements are also a proxy for material restatements, this finding may alternatively suggest that outside pressure (in the form of analysts) triggers intentional misreporting (in the form of Form 8-K restatements).

Since prior research shows that managerial earnings guidance affects both analysts' forecasts (Baginski and Hassell 1990) and stock prices (Pownall et al. 1993), managers themselves may increase market expectations over time (e.g., executives meet analyst forecasts over a long

period), making it difficult to sustain overvaluation. Thus, 65 percent of all restatement firms are overvalued in the year before misreporting starts (Badertscher 2011), suggesting that market expectations are relatively high before this event. In line with management's intent to decrease future analysts' expectations in order to more easily beat future analyst forecasts, prior literature finds that restatement firms' managerial guidance is more downwardly biased than control firms' guidance prior to the restatement (Gordon et al. 2014). Interestingly, analysts use more private information prior to a restatement (Yu et al. 2018). Considering that analysts' private communication with management has a greater impact on analysts' stock recommendations than their primary research (Brown et al. 2015b), indicates managers' ability to communicate share price inflating information to the analyst, which in turn may influence investors' growth expectations.

Overall, the findings suggest that executives first mislead the market through downward earnings guidance in order to maintain positive earnings surprises. This reporting strategy may work in the short run, as market participants are positively surprised by positive earnings surprises. However, consistent with a feedback loop, analysts and investors increase their expectations over time and make it more challenging to sustain positive earnings surprises in the future. Eventually, managers start to misreport GAAP earnings. At this stage, one could assume that analysts, who are sophisticated market participants with superior information, will be skeptical about positive earnings strings. However, findings rather support the view that analysts do not see through the ongoing misreporting (see sect. 5.3 for analysts in light of external controls). Taken together, the larger the mismatch between firms' true financial performance and market expectations is, the higher the likelihood of misreporting is. Importantly for future research, we highlight that a firm can get trapped "in a vicious cycle of better firm performance leading to ever-increasing shareholders' expectations which it cannot meet" (Chen 2010, p. 43), making it challenging to establish causality between performance and market expectations.

4.2 Incentives to Misreport: Receive Financing at Lower Cost

In this section, we will discuss financing-related incentives that comprise stock-based acquisitions, raising new capital, and reducing the cost of capital and M&As. Given that overvalued share prices effectively decrease the cost of stock-based acquisitions (as fewer shares are required for the acquisition), executives may be incentivized to misreport before M&A deals. Consistent with this idea, Kravet et al. (2015) show that fraud-related restatement

firms are more likely to make stock-based acquisitions after executives begin misreporting. Further, Chen et al. (2016) document that companies that switch to a more profitable industry are 39 percent more likely to restate in the future, suggesting that segment revenues were misreported to be reclassified to a more favorable industry (e.g., an industry with high valuations). Eventually, these firms undertake significantly more stock-financed mergers and acquisitions as well as seasoned equity offerings (Chen et al. 2016), providing evidence that misreporting and reclassification were aimed at reducing M&A costs. In support of these findings, the prior non-restatement-related literature demonstrates evidence that acquiring firms manage earnings upwards before the merger agreement (Erickson and Wang 1999; He et al. 2019)

Misreporting may also establish the illusion of a high-growth firm, which makes the restatement firm more attractive to acquirers. Skaife and Wangerin (2013) point out 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 the deal is terminated before the restatement announcement. Investigating firms that have announced a restatement in the past, Amel-Zadeh and Zhang (2015) find that these firms are less likely to become takeover targets, suggesting that potential acquirers feel uncertain about financial reporting quality. Further, when a restatement firm receives a takeover bid, it is more likely to be withdrawn, indicating that the due diligence process revealed adverse information (Amel-Zadeh and Zhang 2015). Amel-Zadeh and Zhang (2015) also provide modest evidence that acquisition valuations are lower for restatement firms than for non-restatement firms.

A firm's desire to raise new capital provides further incentives to artificially promote financial health through financial misreporting (Efendi et al. 2007). Consistent with this view, Efendi et al. (2007) find that restating firms issue more equity and debt than non-restatement firms. In contrast, Burns and Kedia (2006) do not find that cash raised from the issuance of common stock, preferred stock, and long-term debt is positively associated with restatement-related misreporting. Bardos and Zaiats (2012) extend this research and show that equity-issuing restatement firms experience abnormally high returns in misstated periods, suggesting that these firms misled investors before the equity issuance. Debt-issuing restatement firms, in contrast, exhibit no abnormal performance prior to debt issuance (Bardos and Zaiats 2012). Since only 20 percent of restatement firms issue equity or debt during the misstated period, Bardos and Zaiats (2012) argue that security issuance is not the dominant reason for

misreporting and conclude that only a few equity-issuing restatement firms obtain financing at better terms. When price run-up in the pre-restatement period is included as an explanatory variable, security issuance no longer explains the likelihood of restatements (Efendi et al. 2007). Instead, price run-up is positively associated with the likelihood of a restatement (Efendi et al. 2007), supporting the view that overvaluation motivates managers to misreport in order to sell stock holdings at inflated prices. Further, Dechow et al. (1996) and Healy and Wahlen (1999) argue that managers' desire to decrease the cost of capital motivates managers to misreport. Thus, executives attempt to decrease external financing costs by decreasing perceived risk (e.g., positive earnings) and align with lending contracts to avoid costs arising from loan covenant violations (e.g., renegotiations and immediate payment of debt) (see also Efendi et al. 2007). Richardson et al. (2002) document that firms that restate earnings have higher levels of outstanding debt, exhibit more frequent external financing needs and raise larger amounts of cash. Kinney and McDaniel (1989) also show that restatement firms have higher debt than non-restatement firms. Moreover, Efendi et al. (2007) discover that restatement firms are more likely constrained by interest-coverage debt covenant than non-restatement firms. The results are consistent with "capital market pressures acting as a motivating factor for companies to adopt aggressive accounting policies" (Richardson et al. 2002, p. 1). The bank's role in acting as an effective monitor will be discussed in the controls-related sect. 5.4.

Altogether, the findings provide evidence that executives misreport to reduce the cost of capital, acquisition costs, and attract new capital. Initially, these findings seem related to firms' benefits, meaning that current shareowners benefit from executives' misreporting. As executives' wealth is usually closely linked to investors' wealth, both parties benefit from share price increases. However, upon the revelation of misreporting, firm value gains attributed to historic misreporting are more than compensated, suggesting that investors' wealth is destroyed in the long-run (Bardos et al. 2011). Next, we focus on stock-option-based compensation and are interested in whether executives extract rents from investors based on their informational advantage about historic misreporting and the timing of future restatement announcements.

4.3 Incentives to Misreport: Stock-option-based Compensation

Stock-option-based compensation links managers' decision-making processes to firm value and aligns managers' incentives with shareholders' interests. While option-based compensation may reduce agency costs, critics argue that excessive option-based

compensation potentially encourages managers to manipulate earnings upwards and exercise options at inflated share prices (Efendi et al. 2007; Jensen 2005). For restatements, Burns and Kedia (2006), Efendi et al. (2007), Harris and Bromiley (2007), and O'Connor Jr et al. (2006) find a positive association between restatements and option-based compensation, suggesting that option-based compensation triggers misreporting. More specifically, Burns and Kedia (2006) show a positive association between the delta of a CEOs' option portfolio and restatement-related misreporting, suggesting option-based compensation hurts financial reporting quality. Efendi et al. (2007) extend the research by Burns and Kedia (2006) and additionally control for in-the-money stock options. These authors find a positive association between restatements and in-the-money stock options held by executives, meaning that executives manipulate earnings to protect themselves against large losses. The association between the delta of a CEO's option portfolio and misreporting becomes insignificant when in-the-money stock options are included as an independent variable (Efendi et al. 2007). Further, Elayan et al. (2008) document that prior to the restatement announcement, the executive compensation structure is found to be significantly more equity-based than in non-restatement firms, and Ndofor et al. (2015) note that CEO stock options are positively associated with restatements when industry complexity is high. While O'Connor Jr et al. (2006) also show a positive association between restatements and option-based compensation, their findings provide evidence that the association is moderated through the presence of either CEO duality or board stock options. Most interestingly, when CEO duality and board stock options both exist, the restatement likelihood decreases in light of increasing CEO option-based compensation (O'Connor Jr et al. 2006). Such findings add to the discussion, whether a decrease in restatements is always a sign for improved financial reporting. In particular, CEO duality (a sign for power) and board stock options (a sign for dependency) might decrease the willingness to admit mistakes (see sect. 5.7 for the board of directors and sect. 6 for executive characteristics). Further, the positive association disappears when firm performance is controlled for (Donoher et al. 2007) (see: sect. 4.1 for firm performance).

In contrast to presented findings, Baber et al. (2009) find no association between restatements and option-based compensation and provide no explanation for their contradicting results, despite citing contrary findings by Burns and Kedia (2006) and Efendi et al. (2007). We must point out that Ndofor et al. (2015), Burns and Kedia (2006), and Harris and Bromiley (2007) erroneously assume that GAO restatements exclusively reflect fraud-related misreporting. While major findings by Efendi et al. (2007) are also based on all GAO restatements, these

authors subsequently address the fact that some restatements (in their case 29 out of 95 restatements) reflect material restatements. After dividing the sample into severe and less severe restatements, findings remain qualitatively similar. Given that the presented research dealt with the question of whether option-based compensation incentivizes executives to misreport, investigation of material restatements seems to be more appropriate.

Armstrong et al. (2013) re-examine findings by Burns and Kedia (2006) and propose to additionally control for the sensitivity of the manager's wealth-to-risk changes (portfolio vega) and not only for the sensitivity of the manager's wealth-to-stock-price changes (portfolio delta). When controlling for both, Armstrong et al. (2013) find a robust positive association between restatements and portfolio vega but not between restatements and portfolio delta. We emphasize that Armstrong et al. (2013) employ "only those restatements classified by AuditAnalytics as relating to fraud, misrepresentation, or an investigation by the Public Company Accounting Oversight Board (PCAOB)".

Given that option-based compensation and insider trading are closely related, we now focus on insider selling around financial restatement announcements. Corporate insiders trade shares for two primary reasons: (i) liquidity/diversification and (ii) capitalization on private information before it is disclosed to investors (Cheng et al. 2007). Burns and Kedia (2008) and Agrawal and Cooper (2015) document that restatement firms' executives with more egregious restatements exercise higher amounts of options during misstated periods than non-restatement counterfactuals, suggesting that executives' desire to sell their stock holdings at inflated prices. We note that while Burns and Kedia (2006) do not divide the sample into severe and less severe restatements, two years later, Burns and Kedia (2008) state that, "[i]n contrast to the full sample results, executives of firms that restate due to revenue or cost improprieties exercise significantly more options than non-restating firms". Agrawal and Cooper (2015) also opted against investigating all restatements and instead focused on earnings-decreasing restatements. While these identification strategies reveal that research has evolved, they also suggest that sampling remains heterogeneous because severity can be identified in different dimensions (e.g., income-increasing restatements vs. revenue-related restatements).

Ravina and Sapienza (2010) document that independent directors earn abnormal returns when they sell firm shares around earnings restatements, suggesting not only that independent directors are informed ahead of the restatement but also that they may exploit their informational advantage. Further, audit committee members earn higher returns than other independent directors at the same restatement firm (Ravina and Sapienza 2010). We note that

Ravina and Sapienza (2010) apply a restatement sample that also includes less severe restatements. Despite explicitly acknowledging this feature as a drawback, Ravina and Sapienza (2010) do not refine their restatement sample. Returning to the question of whether insider trading takes place around the restatement announcement date, statistics by Armstrong et al. (2013) suggest that the average executive has time to "cash-out" at inflated prices before a material restatement is announced. As noted by Agrawal and Cooper (2015), managers perhaps commit two crimes, "earnings manipulation and insider trading" (p. 169). To support this view, Agrawal and Cooper (2015) find strong evidence that executives sell substantially more stock during the misstated period in subsamples, where insiders had greater incentives to sell before the restatement announcement. Griffin (2003) documents that insider selling peaks before material restatements and declines dramatically afterward. Thevenot (2012) shows that illegal insider trading is higher for restatement firms with more negative market reactions to their restatement announcements, suggesting that insiders exploit overvalued share prices before other market participants reduce overvaluation as a response to the restatement announcement.

As for the type of restatement disclosure, Hogan and Jonas (2016) find that firms are less likely to disclose a restatement transparently using Form 8-K when executives' equity proportions are high. This finding suggests that executives opportunistically choose to restate less prominently to avoid signaling failure and face negative consequences (e.g., job loss, firm values decline, clawback provisions). Pyzoha (2015) experimentally finds that when executives with higher incentives (e.g., stock options) face a low-quality auditor, the likelihood of executives agreeing to restatements is smaller compared to situations in which the executive faces a high-quality auditor (see sect. 5.1 for auditor in light of external controls).

In sum, research on the association between option-based compensation, insider trading, and misreporting is fragmented and inconclusive. Mixed evidence can be attributed to variations in observed timeframes (e.g., pre- and post-SOX periods), measurement of equity incentives (e.g., portfolio delta vs. portfolio vega), matching methods (e.g., propensity score matching vs. non-propensity score matching), executive selection (CEOs vs. CFOs), controls for monitoring quality (e.g., high audit quality), controls for price run-up and sample selection (material vs. technical restatements). Armstrong et al. (2013) emphasize that the "lack of standardized measures of equity incentives may potentially explain the conflicting results reported in the literature" (p. 332). Moreover, Armstrong et al. (2010) argue that prior studies exclude many observations due to missing company data in ExecuComp, potentially causing a selection bias.

The alternative database is Equilar, which provides at least twice as many observations p.a. on CEOs relative to ExecuComp (Armstrong et al. 2010). Despite the mixed results on the association between stock-based compensation and restatements, the findings on insider trading suggest that stockholdings are used to extract rents from investors, as insiders know about historic misreporting and the timing of the restatement announcement in advance. To counteract the concerns that stock-option-based compensation incentivizes executives to misreport, the SEC introduced clawback provisions, which we will discuss next.

4.4 Reduction of Expected Benefits through Clawback Provisions

Clawback provisions authorize firms to recover executives' compensation upon the occurrence of predefined trigger events, which in most cases are restatements (Dehaan et al. 2013). Brink et al. (2018) argue that while these provisions are intended to improve financial reporting quality by reducing executives' expected benefits from misreporting, they may instead promote unethical behavior, since executives become more reluctant to restate, fearing potential compensation losses. Specifically, Section 304 of the SOX Act 2002 enables the SEC to require recovery of any bonuses and other incentive-based compensation paid to CEOs and CFOs when the firm announces a material restatement. Modifications to the clawback provisions were proposed in 2010 and 2015 but were not adopted as of 2018 (Section 954 of the Dodd-Frank Act in 2010 and Rule 10D-1 in 2015), making this review valuable for future considerations as to whether these modifications should be adopted. These modifications, if adopted, require all listed firms to apply clawback provisions, extend exposure from CEOs/CFOs to all executives, and refer to unintentional misreporting. Moreover, under Section 954 of the Dodd-Frank Act, a firm's board of directors acts as the enforcer of clawbacks rather than the SEC (Chan et al. 2012). Although clawback provisions have not been modified since 2003, the number of S&P 1,500 firms adopting clawbacks voluntarily has increased from less than 1 percent in 2000 to over 60 percent in 2013 (Babenko et al. 2017).

Given that clawback provisions reduce expected benefits upon misreporting discovery, restatement research supports this idea and finds that following the voluntary adoption of clawback provisions, the likelihood of restatements decreased (Chen et al. 2015a; Chan et al. 2012; Dehaan et al. 2013). Moreover, voluntary clawback adoption is associated with positive stock-valuation consequences (Iskandar-Datta and Jia 2013; Babenko et al. 2017) and higher perceived audit quality (measured through the earnings response coefficient (ERC)) (Dehaan et al. 2013; Chan et al. 2012). Thus, clawbacks appear to be an effective instrument to increase

financial reporting quality. However, while some clawback provisions may be attributed to a real intention to discourage misreporting, others may be used for window-dressing purposes. To counteract this concern, Dehaan et al. (2013) and Erkens et al. (2018) apply identification methods to separate "strong" from "weak" clawback provision firms. Dehaan et al. (2013) do not find that a stricter set of clawbacks is more effective in decreasing the likelihood of restatements than a less strict set. In contrast, Erkens et al. (2018), applying their self-developed "Clawback Strength Index", find that strong clawback adopters experience fewer restatements. Complementing these findings, Babenko et al. (2017) show that stock market reactions are also more positive for stronger clawback provisions.

According to Erkens et al. (2018), "one must be cautious" (p. 307) when advocating clawback modifications (e.g., Section 954 of the Dodd-Frank Act) because the established decrease in restatements may be driven by executives' reluctance to announce a restatement due to negative personal consequences stemming from clawback provisions. Denis (2012) shares this concern, and Dehaan et al. (2013) state that clawback provisions "should be interpreted with caution as adopting a clawback provision decreases managers' incentives to file amended financial statements" (p. 1028). Addressing this concern in an experimental setting, Pyzoha (2015) finds evidence that decreases in restatement announcements are indeed not only attributed to more honest reporting (absence of misreporting; ex-ante effect) but also to the lack of executives' willingness to report a restatement (ex-post effect). Hence, skepticism about whether clawback provisions improve financial reporting quality (as evidenced through lower likelihood of restatement) is warranted. In a further experimental setting, Brink et al. (2018) suggest that a decrease in the number of restatements due to clawbacks is not attributable to auditors acting unethically in favor of the management. While Babenko et al. (2017) state that clawbacks appear to be tailored to fit firm and managerial characteristics rather than serving as pure window-dressing, Addy et al. (2009) show that despite the adoption of voluntarily clawbacks, there is no evidence that clawback provisions are imposed. In other words, "adoption can be strategically developed and disclosed to seemingly illustrate vigilance and oversight without imposing actual consequences on company leadership" (Addy et al. 2009, p. 2).

Overall, clawback provisions are negatively associated with restatements, suggesting that clawbacks decrease the expected benefits from misreporting and enhance earnings quality. However, since clawback adoption "allows auditors to exert less audit effort" (Chan et al. 2012, p. 184), we cannot rule out the possibility that misreporting decreases because it is less

frequently detected by the auditor. Last, executives may have become more reluctant to restate since they fear to repay recognized benefits.

4.5 Conclusion of Expected Benefits

Amiram et al. (2018) highlight that the "predominant goal of managers who manipulate the books is to report positive earnings" (p. 767), which partially also translates to beating analyst forecasts. Prior literature finds that restatement firms are more likely to meet and beat analyst to forecasts with managed earnings compared restated earnings (Donelson et al. 2013), more likely to inflate non-GAAP earnings through the exclusion of recurring expenses (Shiah-Hou 2018) and more likely to have a string of consecutive positive quarterly earnings surprises (Richardson et al. 2002). The latter observation may be attributed to restatement firms' downwardly biased managerial guidance before restatement announcements (Gordon et al. 2014). Further, executives seek to sustain firm's overvalued stock price (Badertscher 2011), mimic profitable firms (Kedia and Philippon 2009), cover up slowdowns in financial performance (Dechow et al. 2011), mask firms' low operating performance (Elayan et al. 2008), decrease costs of stock-based acquisition (Kravet et al. 2015), avoid default on debt covenants (Efendi et al. 2007), and retain employees (Dou et al. 2016b). Overall, restatement-related studies find that executives cash out at inflated prices, suggesting that executives accomplish their overarching goal prior to restatement announcements (Armstrong et al. 2013).

In sum, misreporting arises from executives' incentives, low firm performance, and high aspirations (Harris and Bromiley 2007). While it is challenging to counteract executives' desire to maximize their benefit illegally, research highlights that reducing the opportunity to misreport is the most efficient way of preventing misreporting. In the next chapter, we review findings related to internal and external controls, as these determine the expected costs of misreporting.

5 Expected Costs of Financial Misreporting

The expected costs of misreporting are the combined product of estimated costs that arise when executives' wrongdoing is revealed and the likelihood that executives are caught manipulating (detection likelihood). Potential costs comprise job loss, restrictions on future employment, loss in reputation, penalties, and criminal charges, among others (Karpoff et al. 2008a; Aharony et al. 2015). Since potential costs are closely related to actual consequences following a restatement announcement, we leave this topic to a survey of the consequences of misreporting. Instead, this section exclusively focuses on the detection likelihood of misreporting detection, namely, internal (e.g., audit committee, employees, equity owners) and external controls (e.g., auditor, regulatory bodies, creditors, analysts). We propose that efficient controls increase the expected costs of misreporting and discourage managers from misstating financial statements.

5.1 External Controls: External Auditor

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). Consequently, auditors are hired to prevent both intentional and unintentional misreporting. While audit quality is an inherently unobservable determinant (Balsam et al. 2003), restatements are a well-suited indicator of malfeasance by the auditor when past misreporting goes undetected by the auditor (Liu et al. 2009; Raghunandan et al. 2003). Restatements are perceived as "the most readily available indicator of low audit quality" (Christensen et al. 2016, p. 1675). However, since a restatement also depends on a successful detection and announcement of past reporting, Srinivasan et al. (2015) suggest that restatements do not necessarily proxy for lower financial reporting quality. Supporting this idea, Pyzoha (2015) observes in an experimental setting that executives who face a higher-quality auditor are more likely to agree with correcting prior financial statements relative to facing low quality. For this reason, restatements could be a proxy for strong auditors (high audit quality), as the management follows the auditor's advice to release unfavorable news. In other words, when "restating earnings is a decision that the auditor must consider, a restatement could imply good audit quality" (Corona and Randhawa 2010, p. 936). In most cases, however, restatements are perceived and applied as a proxy for low audit quality because research links restatements to the initial undetected misreporting rather than to a subsequent successful detection of misreporting.

The academic definition of audit quality is the combined probability that the auditor will not only discover but also report material misstatements (DeAngelo 1981). While the probability of discovering misreporting is likely influenced by auditors' effort and knowledge, the probability of disclosing misreporting is rather linked to auditors' independence. Employing this academic construct (see Figure 4), we present findings based on their relation to auditor knowledge (sect. 5.1.1.), audit effort (sect. 5.1.2) and auditor independence (sect. 5.1.3).

Figure 4: Audit Quality

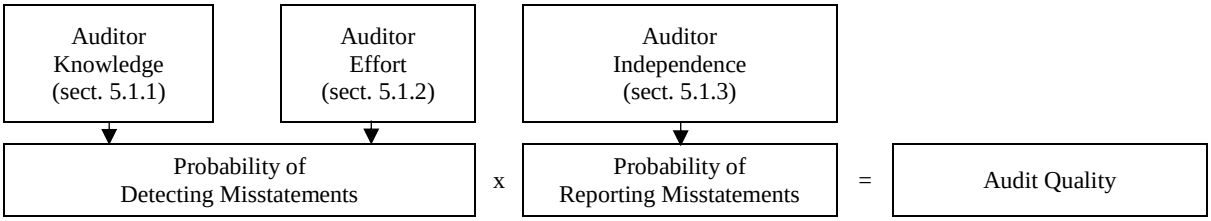

Figure 4 illustrates the academic construct of audit quality, in which audit quality is the joint probability of detecting and reporting misstatements. Hence, high auditor competence and effort do not translate to high audit quality in cases in which the auditor is dependent and perhaps acts in favor of the client by not reporting accounting problems.

5.1.1 Auditor Knowledge

High auditor competence is potentially a major determinant that enables auditors to prevent misreporting and decreases the requirement of restatements. To reflect auditor knowledge, we categorize this section into auditor office size, firm size, specialization, and litigation experience.

Auditor Office Size: Francis et al. (2013) document that office size of Big 4 auditors is negatively associated with income-decreasing, income-increasing, and no-net-income-effect restatements, suggesting 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) limit their sample to restatements initiated by management (client restatements), as these better represent cases of auditor failure. As discussed in the appendix "Understanding Restatements", this assumption is highly debatable because the accounting issues may have been noticed first by the external auditor, who brought the issue to the audit committee's attention. Newton et al. (2013) find a negative association between restatements and office size only for income-decreasing restatements but not for income-increasing restatements. For office size of non-Big 4 audit firms, neither Francis et al. (2013) nor Newton et al. (2013) find that office size decreases the likelihood of restatements. Furthermore, Hayes (2014a) finds no association between office size and restatements,

regardless of their severity. Also, Cao et al. (2016) find that large Big 4 offices decrease the likelihood of subsequent restatements for previously delayed filings by almost half. Furthermore, Ettredge et al. (2014) document a positive association between office size and material restatements in 2008, the center of the recession. However, this association between fee pressure and reduced audit quality appears to be restricted to the recession year 2008. Last, 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, suggesting that recent growth stresses office resources.

Concerning the above depicted mixed results, we note that Hayes (2014a), in contrast to Francis et al. (2013), Newton et al. (2013) and Ettredge et al. (2014), controls for audit committee expertise. Moreover, Francis et al. (2013) and Newton et al. (2013) do not control for internal control weaknesses and include both restatements correcting quarterly and annual financial statements. Moreover, Ettredge et al. (2014) limit their findings to material restatements, which are identified through a composite severity measure introduced by Hennes et al. (2014), including five factors: irregularity, revenue-relation, restated periods, net impact and the market reactions to the restatement announcement. Given such heterogeneous identification strategies to identify material restatements and because of further dimensions (Big 4 vs. non-Big 4 auditor, quarterly vs. annual), the reader might find it difficult to adequately compare findings and to retrieve generalizable conclusions. In other words, while one could appreciate the thoughtful exclusion of some restatements, the "over-partitioning" of restatement samples may unsettle the reader in terms of validation of findings.

Auditor Firm Size: Francis et al. (2013) observe that client restatements occur less frequently when Big 4 auditors are involved in the audit process, compared to non-Big 4 auditors. This finding, however, only holds when the upper quartile of Big 4 office size firms is included in the sample. Files et al. (2014) find that repeat restatements are more likely among clients of non-Big N auditors, suggesting that non-Big N auditors provide inferior audit quality. However, non-Big N auditors can offset the higher restatement likelihood when they collaborate in an association with other non-Big N auditors (Bills et al. 2016a). In other words, clients of association member audit firms are approximately 46 percent less likely to announce a restatement than clients of non-member audit firms (Bills et al. 2016a), suggesting that small auditors can provide high-quality audits when they cooperate.

Auditor Specialization: Prior non-restatement-related findings show that specialized auditors provide higher perceived audit quality (measured through the ERC) and higher earnings quality

(measured through discretionary accruals) (Balsam et al. 2003). Building on these findings, Romanus et al. (2008) and Stanley and DeZoort (2007) discover that auditor industry specialization is negatively associated with restatements, suggesting that industry specialization is beneficial, especially in critical areas. Moreover, auditor expertise is associated with a timelier disclosure of restatement details (Schmidt and Wilkins 2012). We note that Romanus et al. (2008) and Stanley and DeZoort (2007), along with Abbott et al. (2004), exclude restatements correcting quarterly restatements, since "a quarterly review does not contain the rigor of the formal audit process" (Romanus et al. 2008, p. 394). Moreover, Stanley and DeZoort (2007) exclude restatement firms that were not audited by Big 5/4 audit firms to account for possible audit quality differences.

Auditor Litigation Experience: Lennox and Li (2014) find that accounting misstatements occur significantly less often after audit firms are sued, suggesting that a litigation experience may enhance audit quality and be a significant predictor of future financial reporting quality (Lennox and Li 2014). This finding is closely related to a driver who updates his beliefs after being caught speeding and is less likely to speed again (Andenaes 1965).

5.1.2 Auditor Effort

High audit fees may signal a high level of effort and service provided by the auditor (Whisenant et al. 2003), suggesting a decrease of restatements. In contrast, however, a higher pay increases the auditor's economic bond to the client, which may impede independence and professional skepticism during the initial audit (Beck et al. 1988; Magee and Tseng 1990; Stanley and DeZoort 2007; Choi et al. 2010). Supporting the latter, Li and Lin (2005), Bloomfield and Shackman (2008), Hribar et al. (2014) and Paik et al. (2018) document a positive association between restatements and audit fees, suggesting that a higher economic bond decreases an auditor's skepticism and impedes his ability (and perhaps willingness) to detect and disclose misreporting during the initial audit. In contrast to presented findings, after additionally controlling for ex-ante control weakness, Blankley et al. (2012) and Lobo and Zhao (2013) show that audit effort decreases the likelihood of misreporting. More recently, Seidel (2017) finds that more effort decreases the likelihood of restatements in all but the revenue-related areas.

Discussing presented findings in more detail, we first highlight that the audit-related literature does not necessarily require the application of material restatements. For example, Bloomfield and Shackman (2008) apply GAO restatements without addressing the severity and correctly

assume that "the database has already been pre-scrubbed to only include financial restatements from accounting irregularities". In contrast, Hribar et al. (2014) focus only on restatements that derive from intentional misreporting, arguing that "[t]he advantage of using this sample as opposed to a sample of all restatement types is that it does not include minor restatements that are due to error that are not necessarily indicative of low-quality accounting information" (p. 525). Deciding which restatements (material or less severe restatements) are a better proxy for low audit quality is debatable. In particular, one must decide whether the auditor is more responsible for fraudulent misreporting (which may be hidden professionally but is more substantial) or unintentional misreporting (which is likely easier to detect but is less substantial). We leave the answer to this question to future research.

Turning to the econometric specifications in this setting, one observes inconsistencies in control variables, e.g., Kinney et al. (2004) and Li and Lin (2005) do not control for control risk in their regressions. Considering that restatements are positively associated with ex-ante internal control weaknesses (Rice and Weber 2012; Newton et al. 2013; Doyle et al. 2007b) and higher control risk is associated with higher audit fees, could imply that higher audit fees are driven by higher ex-ante risk for restatement firms. Addressing this concern, Blankley et al. (2012) and Lobo and Zhao (2013) control for the ex-ante internal weakness and find a negative association between restatements and audit fees. This finding suggests that the formerly positive associations found by Kinney et al. (2004) and Li and Lin (2005) "may have suffered from omitted variable bias" (Blankley et al. 2012, p. 90). Blankley et al. (2012) reveal that firms with internal control weaknesses are charged a fee premium of 30 percent, suggesting that it is crucial to control for risk in audit-fee-related regression models.

Furthermore, Lobo and Zhao (2013) highlight that Kinney et al. (2004) and Hribar et al. (2014) fail to consider that restatements, which correct audited and unaudited reports have different implications. Lobo and Zhao (2013) argue that "[a]lthough the auditor conducts a review of quarterly reports primarily through inquiries of clients' employees and analytical procedures, no substantive testing is performed" (p. 1386). While controlling for internal control quality seems to be the reason for contrary findings, Paik et al. (2018) find a positive association between audit fees and restatements despite controlling for ex-ante control weakness. Paik et al. (2018) outline that applied samples and observation time frames, among others, differ from research designs employed by Blankley et al. (2012). Refining prior results, Seidel (2017) highlights that revenue is the only audit area where additional audit effort in response to high control risk does not decrease the incidence of restatements. These findings are "consistent

with deficiencies in auditing revenue identified by the PCAOB during inspections" (Seidel 2017, p. 1343). One explanation could be that executives exploit complexity in revenue-related areas as a "smokescreen" (Chychyla et al. 2018) and/or are very "careful" and delicate when they misreport revenues, thereby increasing barriers in detecting misreporting during the initial audit (see sect. 5.8.1 for accounting complexity). Seidel (2017) concludes that understanding why audit effort does not decrease the likelihood of revenue misstatements is an essential topic for future research.

Overall findings on the association between audit fees and restatements are inconsistent, but the majority of findings suggest that higher audit fees decrease the likelihood of misreporting. The fundamental challenge is inherent to audit fees, as they capture a set of factors such as audit effort, risk adjustments, auditor knowledge, audit tenure, and a firm's business model, among others. Further inconsistencies may derive from restatement types (e.g., audited vs. unaudited, fraud vs. non-fraud).

5.1.3 Auditor Independence

Non-Audit Service Fees: Meckfessel and Sellers (2017) recognize that while auditing is not a high-growth business and exposes auditors to litigation, it is understandable that Big 4 audit firms expand their activity to more profitable consulting practices. However, when non-audit services (NAS) create a lucrative financial relationship between the auditor and the client, an auditor's willingness to challenge questionable accounting practices may be impeded. To address this concern, the SEC requires firms to disclose audit and non-audit services. Based on non-restatement-related samples, Ferguson et al. (2004), Gul et al. (2007), Basioudis et al. (2008) and Blay et al. (2011) find that NAS fees result in an economic dependency between auditor and client, leading to reduced audit quality. Supporting the view that non-audit fees impede audit quality, Kinney et al. (2004) and Cao et al. (2012) document a positive relationship between restatements and non-audit fees. Moreover, Meckfessel and Sellers (2017) document that restatements increase in the ratio of consulting fees to total fees from all services. Importantly, Meckfessel and Sellers (2017) find a positive association only for less severe restatements, while Kinney et al. (2004), Cao et al. (2012) and Paterson and Valencia (2011) do not differentiate between material and less severe restatements. Since less severe restatements outnumber material restatements, findings could be driven by unintentional misreporting. Paterson and Valencia (2011) show that the likelihood of a restatement is significantly larger among non-recurring audit-related NAS. Paterson and Valencia (2011)

exclude quarterly and positive restatements, suggesting that their research focuses on material restatements. However, we note that these restrictions are still rather moderate compared to many papers that focus solely on intentional misreporting.[4] In contrast to presented findings, Agrawal and Chadha (2005), Bloomfield and Shackman (2008), and Hribar et al. (2014) find no relation between the provision of NAS and the likelihood of restatements, suggesting that NAS are not harmful to audit quality. In line with these results, both Sankaraguruswamy and Whisenant (2016) and Raghunandan et al. (2003) find no significant difference in unexpected NAS fees between restatement firms and control firms. Of the abovementioned restatement-related studies that find no positive association, only Hribar et al. (2014) focus on material restatements.

Addressing inconsistencies in findings, Meckfessel and Sellers (2017) find a positive association between NAS and less severe restatements, but not between NAS and material restatements. This is a further example that illustrates the importance of severity of restatements. Further, inconsistencies may arise from differences in pre- and post-SOX periods, which are discussed in detail by Anandarajan et al. (2012) (NAS-related overview paper). Another very crucial reason for ambiguous findings may arise from low audit quality, which is assigned to specific periods (Sellers et al. 2018). For example, Bloomfield and Shackman (2008) assign low audit quality to the restatement announcement year, and not to the misreporting period. Given that a firm may change the auditor between the misreporting period end and the restatement announcement date, we recommend applying the misreporting period as the indicator for low audit quality. Accordingly, Sellers et al. (2018) suggest investigating auditor-related features in periods during which the misreporting occurred. This approach was carried out by Kinney et al. (2004), who, in contrast to Bloomfield and Shackman (2008), find a positive association between NAS and restatements. According to Bloomfield and Shackman (2008), one further reason for inconclusive results relates to pair-matching methodologies applied by prior literature, as matched-paired samples may result in "biased estimates of the expected prediction error rate in the population" (Carson and Hoyt 2003, p. 115). To reduce this concern, Bloomfield and Shackman (2008) chose a "random sample rather than matched-paired" (p. 130). Altogether, NAS-related findings within the restatement literature are highly debatable.

[4] Fraud only restatement samples that derive from the AA database usually yield approximately 100 to 200 firms out of approximately 12,000 to 16,000 restatements (depending on the observation timeframes). Paterson and Valencia (2011) include 3,232 restatements for a sample covering years 2003 to 2006. In other words, while some research tries to address materiality, final samples may still vary significantly in the severity level.

Non-Audit Tax Service Fees: In 2005-2006, the Public Company Accounting Oversight Board (PCAOB) introduced rules to limit auditor-provided non-audit tax services (NATS) to improve auditor independence. This separation of services, however, may also decrease audit quality, as information sharing between the audit and tax side decreases (Lennox 2016). While Kinney et al. (2004) find a negative relationship between restatements and NATS, Lennox (2016) finds no change in the likelihood of restatements after the decline in tax services provided by the auditor. Paterson and Valencia (2011) argue that recurring NATS are the only type of NAS that is negatively associated with restatements. Classification into recurring and non-recurring engagements is important, as recurring services suggest that the generation of knowledge may spill over and improves audit quality (Paterson and Valencia 2011). Referring to restatements ascribed to tax issues, Seetharaman et al. (2011) find a significantly negative association between NATS and restatements. Following a review on audit quality, we may also conclude that "banning non-audit services (NAS) does not seem to affect audit quality, and tax-related NAS actually improves it" (DeFond and Zhang 2014, p. 279).

Auditor Tenure: The GAO (2003) proposes that audit committees should consider auditor rotation to provide adequate auditor objectivity in cases of long tenures, suggesting that long tenures may lead to dependency and blindness. In contrast, long tenures may translate into the accumulation of knowledge and expertise, suggesting a decrease in restatements. Supporting the latter, Stanley and DeZoort (2007) and Romanus et al. (2008) find a negative relation between audit tenure and the likelihood of restatements, while Francis et al. (2013) find a positive association between auditor changes and restatements, suggesting that fresh looks uncover former misreporting. Supporting the view that longer tenure decrease audit quality, Singer and Zhang (2018) find that longer audit firm tenure leads to less timely discovery and correction of restatement related restatements. Furthermore, Lazer et al. (2004) find a significantly higher occurrence and magnitude of quarterly restatements for firms that switched auditors, suggesting that new auditors try to decrease future litigation risk, perhaps through unwinding the predecessor's earnings management, which eventually leads to restatements. Additionally, Files et al. (2014) discover that firms that switch auditors before the restatement announcement (but after the end of misreporting) are less likely to experience repeat restatements than non-changing counterfactuals, suggesting that new auditors unwind all misreporting at once and do not require multiple restatements. Eventually, Romanus et al. (2008) highlight that changing from a non-specialist to a specialist auditor increases the likelihood of a restatement, while changing from a specialist to a non-specialist auditor reduces

the probability of a restatement. This finding supports the view that specialist auditors review prior audited statements of lower quality more precisely and that they subsequently reveal prior misreporting ascribed to non-specialist predecessors (Romanus et al. 2008). Turning from audit firm rotation to audit partner rotation, Laurion et al. (2017) document an increase in restatement announcements for rotation firms compared to non-rotation firms, indicating that partner changes provide updated judgments on accounting issues. Overall, findings support the idea that fresh examinations and the desire to guard against future litigation increase the likelihood of cleaning up financials, which leads to an increased likelihood of restatements. Moreover, while longer tenure decreases the likelihood of restatements due to accumulated knowledge, it may also reflect an auditor's reluctance to commit to prior misjudgments.

Auditor Selection Process: Brooks and Yu (2013) find that the likelihood of financial restatements is higher among firms that hire auditors located more than 500 miles away. This finding is consistent with firms' intention to decrease monitoring effectiveness. In other words, firms hire a remote auditor because distance increases information asymmetry and decreases the frequency of on-site visits. This could lead to undermined audit quality and a decrease in expected costs of misreporting. However, when shareholders participate in the auditor selection process, audit fees increase as well as the likelihood of subsequent restatements (Dao et al. 2012). Addressing concerns that compatibility between auditors and auditees may impede audit quality, Brown and Knechel (2016) find that accounting restatements are more likely when unaudited text disclosures such as business descriptions and management discussions are more compatible between the client and the auditor.

Taken together, findings between audit-related features (e.g., audit fees) and misreporting are largely inconsistent. In addition to differences in timeframes, we identify three potential sources that may cause ambiguous findings. First, audit quality is an inherently unobservable determinant (Balsam et al. 2003), and "financial reporting quality and audit quality are often intertwined" (Gaynor et al. 2016, p. 6). Hence, if we observe no restatement, we only know that at least one of both qualities is high. Moreover, if research applies audit fees as a proxy for audit effort, it is crucial to control for non-auditor-related factors that may affect audit fees (e.g., material weakness, earnings quality, accounting complexity, etc.). For example, accounting complexity is rarely controlled for in audit-related literature (Hoitash and Hoitash 2018). Second, the restatement literature is not consistent in the identification of periods with low audit quality (Sellers et al. 2018). For example, while Stanley and DeZoort (2007) and Romanus et al. (2008) use the restatement announcement year as their dependent variable,

Newton et al. (2013) identify the restated years as their dependent variable. Given its importance, we highlight a footnote by Newton et al. (2013), which suggests that a restatement could even imply high audit quality:

> *"We focus on the original period to identify years in which the auditor overlooked misstatements (i.e., an indication of lower audit quality), rather than the announcement period, which arguably could indicate higher audit quality."* (p. 38)

According to Sellers et al. (2018), indicating all restated periods is the "most inclusive measure of audit quality" (p. 4). Third, audit-related literature varies in the application of restatement type (e.g., annual vs. quarterly, severe vs. less severe). For example, while Stanley and DeZoort (2007) investigate all restatements, Hribar et al. (2014) focus only on material restatements. Newton et al. (2013) express the view that auditors should be able to identify material and less material restatements and therefore include all restatements for the primary analyses. By contrast, after finding a positive correlation between fee pressure and misreporting only for material restatements, Ettredge et al. (2014) suggest that a "possible explanation for this result is that more severe errors are more difficult for auditors to detect" (p. 259) during the initial audit. In light of fraud-related research, the limitation to severe restatements is plausible; however, we often do not observe good reasons to focus solely on severe restatements in audit-quality-related research. Given the fraud triangle, executives will likely ascribe the opportunity to misreport without being caught to auditors' ability to detect severe and less severe misreporting. For robustness checks, we propose to investigate severe and less severe restatements separately, as do Meckfessel and Sellers (2017) and Newton et al. (2013). Last, we refine propositions by Sellers et al. (2018) and suggest that periods leading up to the beginning of misreporting could be identified as periods of low audit quality, as executives assess audit quality before they decide to misreport.

5.2 External Controls: Regulations by the SEC

In the following, we present restatement-related findings in light of SEC regulatory events in chronological order and are interested in whether they brought along increased financial reporting quality. The events comprise the SOX-Act of 2002 (sect. 5.2.1) and the introduction of item 4.02 in 2004 and the introduction of the Staff Accounting Bulletin No. 108 in 2006 (sect. 5.2.2). For supportive purposes, we also illustrate the annual frequency of restatement announcements for the years 1997 to 2014 (see Figure 5) and discuss the meaning of the

post-2006 decrease in restatements in detail (sect. 5.2.3). Last, we will present findings that relate to SEC comment letters (sect. 5.2.4). Frequency data in Figure 5 are retrieved from publications by Scholz (2014), Whalen et al. (2015), and Karpoff et al. (2017), who in turn, obtain data from the restatement data provider Audit Analytics. Non-item 4.02 data are only available for years after item 4.02 was introduced in 2004.

Figure 5: Number of Restatements p.a. Based on Audit Analytics Database

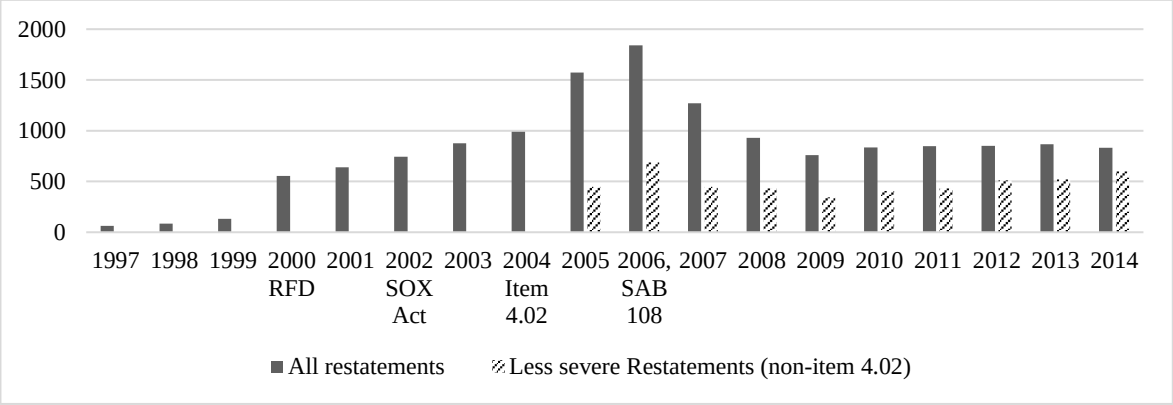

Figure 5 illustrates the frequency of restatements and highlights SEC events that were targeted at improving financial reporting quality. These events comprise the Regulation Fair Disclosure (RFD) in 2000, the SOX-Act in 2002, the introduction of item 4.02 in 2004, and the Staff Accounting Bulletin No. 108 in 2006. Despite the decrease in financial restatements in recent years, the number is higher compared to the pre-SOX period. Moreover, skepticism exists, whether the decrease is not attributable to firms that restate within regular filings and/or auditor's low effort in detecting misreporting. Put differently, when audit quality is low, a revelation of misreporting in subsequent periods is unlikely, meaning no restatement will be announced.

5.2.1 The SOX Act of 2002

Following a series of high-profile accounting scandals (e.g., the demise of Arthur Andersen), the SEC passed the Sarbanes-Oxley Act of 2002 to restore public confidence in financial reporting and audits (Chen et al. 2014a; Blankley et al. 2012), suggesting a decrease in restatements. Instead, contrary to the assumption that restatement numbers decrease after the SOX, numbers have significantly increased, from 641 restatements in 2001 to 1,842 in 2006. Potential explanations for this rather astonishing phenomenon comprise i) the auditor's and manager's conservative attitude after accounting scandals (e.g., WorldCom in 2002, Enron in 2001), ii) an increase in the complexity of accounting rules and iii) higher scrutiny of accounting numbers (Jorgensen et al. 2007). Moreover, since the SEC has not consistently enforced clawback provisions (Section 304 of the SOX Act), they did not demotivate executives from misreporting in the early years after the SOX (Fichtner et al. 2015; Fried and Shilon 2011). Next, we focus on regulations that were part of the SOX Act.

Internal Control Over Financial Reporting: Turner and Weirich (2006) argue that the requirement to hire an independent auditor in order to test the effectiveness of internal control

over financial reporting (ICOFR) is the primary reason for the increased number of restatements. In line with this explanation, Li and Wang (2006) find that firms are more likely to announce a restatement when they receive an adverse ICOFR opinion compared to companies with a clean ICOFR opinion. For small firms, in contrast, Nagy (2010) shows a negative association between ICOFR compliance and the announcement of material restatements, suggesting that Section 404 of the SOX Act is meeting its objective of improving financial reporting quality. Nagy (2010) comments neither on arguments by Turner and Weirich (2006) nor on contradicting findings by Li and Wang (2006). We highlight those contrary findings between Turner and Weirich (2006), and Nagy (2010) are likely ascribed to firm size (large vs. small). Moreover, while SOX became effective for firms with a public float of at least $75 million in 2004, smaller filers were exempted until 2007 from this Section 404, due to implementation costs.

Accelerated Filing Date: The requirement to file sooner should improve transparency, but comes at the risk of lower financial reporting quality due to increased time pressure. Boland et al. (2015) document that following the change in filing deadlines from 90 to 75 days in 2003, accelerated filers experienced an increase in the likelihood of restatements. This increase, however, was temporary and not found for large accelerated filers who faced a change from 75 to 60 days, suggesting that larger firms have a higher capacity to meet timelier reporting. Bryant-Kutcher et al. (2013) also find that the incidence of restatements increases for firms that are obliged to file more quickly. Finally, Cao et al. (2016) reveal that late filing firms face a higher probability of a late filing being restated.

Public Company Accounting Oversight Board Inspections: In 2002, the SOX also established the Public Company Accounting Oversight Board (PCAOB) to oversee the external audit market. The PCAOB can ensure audited financial statements and improve audit quality by inspecting audit firms. Since 2004, inspections are performed annually for audit firms exceeding 100 public clients (large-portfolio audit firms), and triennially otherwise (small-portfolio audit firms), with intent to improve financial reporting quality. Tanyi and Litt (2017) observe differences in the likelihood of restatements between large- and small-portfolio audit firms before and after these inspections were introduced. Tanyi and Litt (2017) find no significant differences between the restatement likelihood of restatements between large- and small-portfolio audit firms for periods before the introduction (2000-2003), suggesting no differences in audit quality. For periods after inspections were introduced (2004-2011), however, the restatement likelihood has decreased for large-portfolio audit firms with annual

instead of triennial inspections, suggesting that more frequent inspections improve financial reporting quality. Furthermore, when clients of annually inspected auditors receive a seriously deficient report from the PCAOB, the propensity to restate increases (Gunny and Zhang 2013). Choudhary et al. (2018) find that waived audit adjustments arising from inspections by the PCAOB are associated with a higher likelihood of financial restatements.

Taken together, the increase in restatements after 2002 up to 2006 contradicts the assumption that the SOX Act improves financial reporting. This conclusion, however, is only contradicted when we interpret restatements as a sign of poor audit and low financial reporting quality. When we instead perceive restatements as a proxy of effective monitoring and transparency, we may interpret regulations as being effective. So do for example, Pfarrer et al. (2008) perceive restatements as a voluntary act by the firm. Moreover, when we take into account that it usually takes about two years to discover historic misreporting, investigating the relation between restatements and regulations should be adjusted for its discovery lag.

5.2.2 Item 4.02 Within Form 8-K and Staff Accounting Bulletin No. 108

Item 4.02 Within Form 8-K: In 2004, the SEC passed the "Final Rule: Additional Form 8-K Disclosure Requirements and Acceleration of Filing Date" (SEC 2004), which mandated the application of Form 8-K (Item 4.02). Firms are required to apply Item 4.02 when investors shall "no longer rely on" past financial statements. Myers et al. (2013) find that since this rule has been passed, firms are more likely to disclose restatements on a Form 8-K filing, which is described as a more transparent disclosure compared to other disclosures (i.e., those in periodic or amended SEC filings).[5] However, Files (2012) finds that despite the close link between restatements and Form 8-K item 4.02, surprisingly only 16 percent of restatements are announced on a Form 8-K, which is low, given that any "non-reliance on past financial statements" is required to be disclosed in a Form 8-K.

Staff Accounting Bulletin No. 108: The implementation of the Staff Accounting Bulletin No. 108 (SAB 108) in 2006 provided a brief time-window in which firms had the chance to identify and restate historical misstatements that were previously not corrected due to their immateriality. Since these corrections refer to immaterial misreporting, the related restatement is a "common example of non-4.02 restatements" (Scholz 2014, p. 1). Supporting this view, Drake et al. (2015a) do not find that the market reaction to SAB 108 restatements is

[5] Implications of disclosure types are discussed in our appendix "Understanding Restatements" included in this document.

significantly different from zero. Turning to the number of restatements that are likely ascribed to the SAB 108 implementation, Keune and Johnstone (2012) document that 295 misstatements were detected and corrected by companies during the implementation year. Moreover, Myers et al. (2013) find that 400 SAB 108 restatements were announced between October 2006 and March 2008. Put differently, the restatement frequency illustrated in Figure 5 for the years 2006 to 2008 is likely to contain restatements ascribed to SAB 108 and most likely reflects rather immaterial misreporting cases. Keune and Johnstone (2009) and Keune and Johnstone (2012) apply SAB 108 restatements as a proxy for less severe restatements.

Taken together, Myers et al. (2013) conclude that the SEC rule concerning item 4.02, which was issued in 2004, successfully improved transparency. Furthermore, the increase in restatements in 2006 is likely ascribed to less severe restatements linked to the SAB 108. Hence, the fraction of Form 8-K restatements remains relatively low. Potential reasons for the latter observation will be discussed next.

5.2.3 Restating Under the Radar: Opting Against Form 8-K Restatement Disclosure

Scholz (2014) and Whalen et al. (2015) document that the relative amount of severe restatement cases (measured through Form 8-K filings) has decreased since 2005. Moreover, restatement numbers declined from its peak in 2006 by approximately 50 percent until 2014, suggesting improved financial reporting quality. While Srinivasan et al. (2015) acknowledge that fewer restatements might indicate a lower incidence of mistakes, implying higher financial reporting quality, the authors cannot rule out the skepticism that lower restatement numbers may also be ascribed to lax detection and actual non-disclosure of misstatements (lower financial reporting quality). In line with this concern, Ceresney (2013) finds "it hard to believe that we have so radically reduced the instances of accounting fraud simply due to reforms such as governance changes and certifications and other Sarbanes-Oxley innovations" (p. 1). This statement is closely related to concerns by Wahid (2018), who warns that "[a]lthough a low instance of restatements may be indicative of low financial misconduct, it could also be symptomatic of inferior detection ability or underreporting of such misconduct" (p. 4).

Imagining that executives may have learned from severe market reactions arising from Form 8-K filings, it seems understandable that they could opt against disclosing restatements in Form 8-K and rather turn to less vivid disclosure choices, in order to avoid investors' attention to unfavorable news (Myers et al. 2013). Supporting this view, Turner and Weirich (2006) claim that "[o]ne of Wall Street's biggest open secrets is that, increasingly, companies are keeping

their restatements under the radar by making it difficult for shareholders to find out about them" (p. 18). In a similar vein, Ettredge et al. (2010) reveal that while non-fraud-related restatements are blamed on an error or misunderstanding of GAAP, suspicion persists that many of these restatements are instead due to intentional earnings management. Myers et al. (2013) provide evidence that severe restatements are to some degree announced "obscurely in periodic SEC filings" (p. 19) rather than in dedicated Form 8-K filings. Understandably, critics propose that all restatements comprising some correction be filed in Form 8-K (Turner and Weirich 2006; Taub 2012).

Turning to the reasons for restating less prominently, Hogan and Jonas (2016) find that Form 8-K restatement disclosure is negatively associated with the equity proportion of executive pay, suggesting that executives fear the negative compensation consequences that arise from material restatements (e.g., clawback provisions, see sect. 4.4). However, Myers et al. (2013) show that greater outside monitoring by auditors, institutional investors and analysts is associated with restatements disclosed in a Form 8-K filing rather than in amended (10-Q/A and 10-K/A) or periodic (10-Q/10-K) SEC filings, suggesting that effective outside monitoring potentially disables executives from "restating under the radar". Overall, executives try to avoid investors' attention through "stealth" restatements, which means opting against Form 8-K, 10-Q/A and 10-K/A disclosure and instead restating within regular filings (10-Q, 10-K). Concluding on the effectiveness of SEC regulations, we note that declines in restatement frequency and restatement severity maybe both improvements upon regulations or executives' reluctance to restate (in particular through Form 8-K) along with insufficient outside control (e.g., not specialized auditors).

Regardless of its severity, a restatement signals reporting failure and should be considered as a warning by investors. To prevent "hiding" bad news, we propose that each restatement be made prominently visible to the public eye. In order to prevent executives from "hiding" bad news, perhaps it is crucial that all restatements be announced in Form 8-K filings.

Overall, the biggest challenge in interpreting prior findings is that we cannot quantify the number of misreporting cases that remain uncovered. In other words, if no restatements are announced for periods after 2002, the research could support both outcomes: controls have worked efficiently, or controls have failed to uncover any misreporting.

5.2.4 SEC Comment Letters

Furthermore, a rather direct action by the SEC is the requirement of additional information, clarification, or revision of the filing through a comment letter (CL) (Hribar et al. 2014). As a result, firms that receive a CL may be perceived as lower-quality reporters. According to Heese et al. (2017), the volume of CLs ranges between 20 percent and 40 percent for US-listed firms between 2005 and 2012, which is substantially higher than the 10 percent restatement frequency between 1997 and 2002 (GAO 2002). Cassell et al. (2013) show that firms that receive a CL are subsequently more likely to restate when they engage a small audit firm, while Lawrence et al. (2010) provide evidence that non-Big 4 auditors increase the likelihood that a firm receives a CL that subsequently leads to a restatement. These results suggest that restatements, CLs, and non-Big four auditors are highly correlated with each other, which increases the concern about reverse causality in empirical settings.

Additionally, Baugh et al. (2017) add that firms that are audited by a more demanding reviewer are more likely to restate during the CL review process. Applying text mining, Liu and Moffitt (2016) show that CL intensity is positively associated with restatement announcements, suggesting that the SEC staff expresses deeper concerns with some reviewed filings. Kubic (2017) reviews CL conversations and documents a positive association between the human capital allocated with a CL review and financial restatements. In addition, restatements are found to be more likely if SEC's Division of Corporate Finance team includes an accountant (Kubic 2017). Kedia and Rajgopal (2011) show that firms in counties located closer to SEC offices and in areas with higher past SEC enforcement activity are less likely to announce a financial restatement, suggesting that firms are more aware of the SEC's enforcement activities "next door". Calluzzo et al. (2015) document that firms that relocate their headquarters have a higher likelihood of financial restatements than firms that do not relocate. Findings are consistent with local SEC scrutiny having a direct impact on a firm's reporting choices and location decisions. More recently, Johnston and Petacchi (2017) discover that historical restatements increase the probability of receiving a CL, while Heese et al. (2017) report that firms that receive a CL from the SEC are more likely to restate, suggesting that CL events likely surround restatements.

In short, findings suggest that controlling for ex-ante and ex-post CL is vital for restatement studies, in particular those that investigate consequences. If research applies restatements as an informational shock to the operating environment, pre-restatement CL may decrease the scale

of the negative surprise to market participants deriving from the subsequent restatement announcement.

5.3 External Controls: Analysts

Prior research demonstrates that analysts are sophisticated monitors of management behavior (Roulstone 2003), which would suggest a decrease in restatements through increases in expected costs of misreporting. However, according to a survey of analysts, "analysts generally do not focus on detecting fraud or intentional misreporting" (Brown et al. 2015, p. 4), suggesting no association between material restatements and the number of analysts following. Last, analysts may be misguided by the managers, causing artificially inflated market expectations (see sect. 4.1 for analysts in terms of expected benefits from misreporting). In light of ambiguous findings, analysts might indeed fail to detect earnings management (Bradshaw et al. 2001), leading to "the suspicion that all analysts publicize biased reports all the time" (Ronen any Yaari 2008, p. 204).

Turning to analysts' ability to anticipate restatements, Griffin (2003) finds neither a decrease in forecast errors nor downwards revisions of forecasts before the restatement announcement, suggesting that analysts have little ability to anticipate bad news. In contrast, insiders, short-sellers, and institutional managers "are unusually active several months ahead of a corrective disclosure event" (Griffin 2003, p. 482), suggesting that some parties extract rents based on their informational advantages before the restatement. Contrary to the view that analyst fail to act as gatekeepers, Elayan et al. (2008) find that the number of analysts following a firm is negatively associated with the incidence of material restatements, suggesting that analysts increase oversight efficiency. Furthermore, Myers et al. (2013) show that the number of analysts following the firm is positively associated with the likelihood of mediating a restatement more transparently (through Form 8-K filings).

Presented findings provide evidence that neither analysts nor non-sophisticated investors anticipate the restatement. Hence, price (based on investors' expectations) and value (based on analysts' forecasts of expected future cash flows) will likely be biased in the same direction, leading to a mitigating effect on markets' overvaluation (price/value) before the restatement announcements. Second, as some parties have superior knowledge before the restatement, insiders may strive to "boost" share prices before the release of unfavorable news and "cash-out" at inflated prices (see sect. 4.3: incentives to misreport). Consequently, share price declines should also be investigated before the restatement announcement. Last, findings by

Griffin (2003) provide valuable insights into the relationship between managers and analysts. In particular, analysts appear to be "tricked" by managers before the restatement announcement. We highlight that analysts use more private information before the restatement (Yu et al. 2018), meaning that executives may influence analysts' perceptions about operating profitability.

Overall, the findings are mixed. While Elayan et al. (2008) suggest that analysts may enhance monitoring, findings by Griffin (2003) suggest that analysts are rather interested in minimizing forecast errors and therefore trust in managerial earnings guidance.

5.4 External Controls: Banks

Stanley and Sharma (2011) propose that bank debt may increase the expected costs of misreporting, as the likelihood of fraud detection increases with better oversight. Further, due to the better oversight banks could adjust loan contract terms when they anticipate ongoing misreporting. Supporting this view, Po-Chang (2016) finds that as soon as the restatement firm starts misreporting, loan spreads for bank loans increase, loans are more likely to be secured by collateral, and the intensity of restrictive covenants increases. These findings indicate that banks incorporate low earnings quality prior to the restatement. Po-Chang (2016) also highlights that banks impose a further significant increase in the loan spread after receiving additional information through the restatement announcement. Last, using an ERC-design setting, Po-Chang (2016) documents that while equity investors do not respond to the ongoing misreporting, they adjust their market reaction upon receiving loan information, which is consistent with investors using information contained in loan contracts. In contrast, Stanley and Sharma (2011) find no relation between material restatements and the use of bank debt, suggesting that banks do not detect material misreporting ex-ante. Surprisingly, Stanley and Sharma (2011) find a positive association between less severe restatements and bank borrowing. This result implies that managers can use less severe misreporting to lower borrowing costs or to avoid loan covenant violations without expecting negative consequences (Stanley and Sharma 2011) (see sect. 4.2 for expected benefits in light of lower financing costs). Taken together, Po-Chang (2016) suggests that banks react to firms' financial misreporting before the restatement announcement, while Stanley and Sharma (2011) find no risk adjustment by banks. We note that Po-Chang (2016) apply a within-sample analysis capturing changes before and after misreporting starts, while Stanley and Sharma (2011) compare restatement firms to non-restatement firms. Next, we discuss internal controls in the

form of blockholders, institutional owners, audit committees, boards of directors, and nonexecutive employees.

5.5 Internal Controls: Institutional Owners

Prior research posits that blockholders and institutional owners enhance monitoring and influence managers' actions to better align with shareholders' wealth (Shleifer and Vishny 1986; Cremers and Nair 2005; Jensen and Meckling 1976), suggesting improvements in financial reporting quality. Conversely, blockholders may benefit from extracting private benefits from smaller shareholders (Shleifer and Vishny 1997), and institutional investors may act as traders concerned with quarterly earnings and not with financial reporting quality (Johnson and Greening 1999).

Blockholders: Turning to blockholders, Larcker et al. (2007) and Baber et al. (2015) find no significant correlation between blockholders and restatements. In contrast, 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, suggesting that it is essential to consider the heterogeneity of blockholders. Additionally, Dou et al. (2018) show that the likelihood of restatements decreases when the exiting threat by blockholders increases, suggesting that executives improve financial reporting in order to prevent blockholders from "selling their shares", which in turn would cause stock price declines. An early study found that restatement companies often have diffuse ownership (DeFond and Jiambalvo 1991).

Institutional Ownership: Baber et al. (2009) find that institutional ownership is negatively correlated with restatements, suggesting that institutional ownership provides benefits to financial reporting quality. In contrast, however, Burns et al. (2010) find a positive association, implying that institutional ownership rather deters financial reporting quality. As highlighted by Burns et al. (2010), this result is ascribed to transient and quasi-indexing institutions and is consistent with these institutions having little incentive to engage in costly monitoring due to their short investment horizons. When this effect is offset, increased concentration reduces the likelihood of misreporting (Burns et al. 2010), meaning that institutions that monitor executives prevent myopic decision making. Both Baber et al. (2009) and Burns et al. (2010) retrieve restatement data from GAO`s first restatement report and do not separate restatements by severity. Interestingly, Burns et al. (2010) opted against restatement data from more recent GAO reports as they "provide far noisier indicators of myopic behavior" (p. 444). Given that

Hennes et al. (2008) show that approximately 25 percent of the GAO restatements arise from intentional misreporting, findings might be different for severe and material restatements.

Griffin (2003) finds that institutional managers reduce their ownership well before the restatement announcement, suggesting that institutional investors have better access to information than other (public) equity market participants. Furthermore, Hribar et al. (2004) show that transient institutional investors reduce their holdings in the restatement firm at least one quarter before the restatement announcement quarter, suggesting that they exploit their informational advantage about upcoming value-destroying news. Hribar et al. (2004) also show that institutional investors trade earlier than individual investors within the restating quarter, indicating that the "sophistication of institutional investors" enables ex-ante adjustments of holdings. Refining prior research, Frieder and Shanthikumar (2008) find that while institutional owners sell restatement-firm shares before and after the restatement announcement, transient and quasi-indexing institutions sell before the restatement but buy in the months following the restatement disclosure.

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 material restatements, suggesting that shorter geographical distance enables better monitoring. Subsequently, Myers et al. (2013) reveal that high institutional ownership correlates with more transparent restatement disclosure through Form 8-K. Wongsunwai (2013) document that IPO companies backed by higher-quality venture capital firms experience less subsequent financial restatements. In sum, findings are two-fold. While investors with a long-time horizon decrease misreporting, investors with rather short-term goals in mind are positively associated with restatements. Overall, the literature documents that institutional investors' have an informational advantage and tend to reduce restatements.

5.6 Internal Controls: Audit Committee

An audit committee (AC) is a subcommittee of the board of directors and is entrusted with control issues relating to the audit, financial reporting, and oversight of internal controls. Specifically, Section 301 of the SOX Act suggests that the audit committee is responsible for hiring and compensating the external auditor. In the following, we present findings that relate to the independence (sect. 5.6.1), the effort (sect. 5.6.2), and the knowledge of the audit committee (sect. 5.6.3). Economic intuition suggests that audit committees whose members are independent have long-term compensation incentives, show significant effort, and have a

financial background are more likely to provide better oversight and to decrease myopic behavior, resulting in a lower likelihood of restatements (see Figure 6).

Figure 6: Likelihood of a Restatement Based on Audit Committee (AC) Attributes

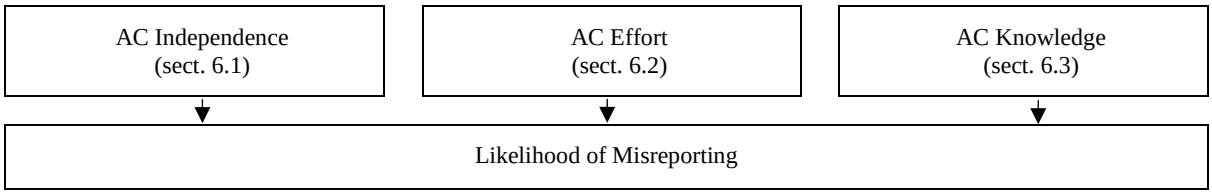

Figure 6 shows that audit committee's independence, effort, and competence are crucial to the likelihood of misreporting.

5.6.1 Independence of Audit Committee Members

Abbott et al. (2004) and Agrawal and Chadha (2005) reveal a negative relationship between the independence of audit committees and restatements, while Lin et al. (2006) find no association. This inconsistency may be ascribed to the observation timeframe, which covers 2000/01 in the paper by Agrawal and Chadha (2005) and 2000 in the article by Lin et al. (2006). He et al. (2018) find that only the presence of an all-independent nomination committee is associated with a lower likelihood of restatements. We note that the SOX Act of 2002 requires that all audit committees of publicly listed companies be 100 percent independent. Since dependency involves at least two parties (e.g., executives and the audit committee), we focus next on the relationship between the CEO/CFO and the audit committee. Badolato et al. (2014) document that audit committees with high status (relative to management status) are associated with a lower number of material restatements, suggesting that audit committees with high status feel less obligation towards the CEO (see sect. 6 for CEO characteristics). Status comprises the number of public board directorships, private board directorships and degrees from elite institutions (Badolato et al. 2014). In a similar vein, He et al. (2018) find that firms with a larger fraction of audit committee members appointed after the CEO are associated with a higher restatement likelihood. This finding is consistent with social exchange theory, in which the new audit committee member is likely to feel more obligation towards the incumbent CEO and is less likely to challenge him (Lambert et al. 1993). Moreover, Carcello et al. (2011) reveal that independence decreases the incidence of restatements only when the CEO was not involved in the board selection process. Sharma and Iselin (2012) document a positive association between the tenure of audit committee members and financial misstatements in the post-SOX period, suggesting that directors with longer tenure may not exercise independent judgment. In contrast, He et al. (2018) find that audit committee members with longer average

tenure are negatively associated with the likelihood of restatements. Both Sharma and Iselin (2012) and He et al. (2018) are aware of material and less severe restatements. However, while He et al. (2018) refine their restatement sample using severity data by Hennes et al. (2008), it is not clear at which point these data become relevant in their regression. In contrast, Sharma and Iselin (2012) do not use the classification by Hennes et al. (2008) to identify material restatements. Taken together, director independency, on average increases financial reporting quality. Findings on the association between a director's tenure length and restatements are ambiguous and require further investigation.

5.6.2 The Effort of Audit Committee Members

Abbott et al. (2004) document that restatements are decreasing in the activity level of the audit committee. Since activity is a binary variable coded one if the board meets at least four times a year, this measure is relatively crude (Abbott et al. 2004). Furthermore, Ndofor et al. (2015) show that aggressive monitoring, which is measured through audit committee meetings, reduces the likelihood of intentional misreporting when firm-level complexity is high (see sect. 5.8.2 for operating complexity). Turning to AAER cases for supportive results, activity (continuous measure) is found to be negatively associated with misreporting (Farber 2005). He et al. (2018) show that higher compensation of audit committee members is associated with a smaller likelihood of restatements, suggesting that compensation motivates more diligent monitoring. Consistently, Liu and Yu (2018) find that higher equity-based compensation in S&P 1500 firms leads to lower restatement likelihood, as equity-based compensation aligns the interests between audit committees and shareholders. For non-S&P 1500 firms, surprisingly, long-term stock option grants increase with the likelihood of restatements, suggesting that future payoffs have failed to motivate diligent oversight (Liu and Yu 2018). Short-term stock option grants are positively associated with the likelihood of restatements (Archambeault et al. 2008). The role of executive compensation and expected benefits from misreporting is discussed in sect. 4.3.

5.6.3 Knowledge of Audit Committee Members

Multiple-directorships may lead to the accumulation of knowledge, suggesting a decrease in restatement occurrence. Conversely, multiple-directorships may limit work capacities and impede audit committee members' ability to monitor financial reporting. Turning to expertise first, Abbott et al. (2004), Agrawal and Chadha (2005), and Badolato et al. (2014) document

that audit committees with financial expertise are associated with a lower number of restatements. Moreover, Sharma and Iselin (2012) find a significant negative association between accounting experts and financial misstatements in both the pre- and post-SOX periods. Additionally, Chychyla et al. (2018) provide evidence that accounting expertise mitigates the positive association between restatements and the complexity of financial accounting standards. Furthermore, Cohen et al. (2014) discover that audit committee members who are both industry and accounting experts perform better, as reflected in the lower likelihood of a financial restatement, compared to those with accounting expertise alone. Wang et al. (2015) highlight that the presence of independent directors with industry experience on a firm's audit committee is negatively associated with material restatements. Carcello et al. (2011), however, find that if the CEO is involved in the board selection process, benefits from audit committee members with financial expertise are muted. Investigating the duration between the restatement disclosure and the subsequent disclosure of restatements' earnings effects, Schmidt and Wilkins (2012) find that companies with more financial experts on the audit committee provide timelier disclosures. Based on a meta-analysis that includes findings from restatement-related literature, Bilal et al. (2018) show that an audit committee's financial expertise and additional accounting background increase earnings quality. A meta-analysis is a technique that combines the findings of prior studies and draws conclusions based on their cumulative effect (Wolf 1986). Surprisingly, findings by Baber et al. (2015) do not support the view that accounting experts on the audit board decrease the incidence of material restatements. Last, 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.

Overall, findings are consistent with the idea that an independent audit committee with financial and industry expertise is more effective in providing financial reporting oversight and decreasing the likelihood of restatements. However, if CEOs are stronger than audit committee members, control efficiency declines. Turning to sample choices, we note that since "a quarterly restatement does not necessarily indicate that an error went undetected by both the internal control system and the external auditor" (Abbott et al. 2004, p. 75), we recommend applying annual restatements when investigating external and internal controls.

5.7 Internal Controls: Board of Directors and non-executive Employees

Board of Directors: The board of directors performs the dual function of monitoring the firm's management (Baldenius et al. 2014) and playing an essential role in companies' decision-making process (Bacon 1993; Zahra and Pearce 1989). According to Adams et al. (2010), boards are involved in the hiring and firing of CEOs, setting strategy, and selecting major projects. Thus, boards have a fundamental function in ensuring that investors' interests are protected (Goh et al. 2016). Agrawal and Chadha (2005) report that the probability of an earnings restatement is lower when the board includes an independent director with financial expertise. Moreover, the probability of a restatement is lower when the board of directors includes a CFO (Bedard et al. 2014) or at least one woman (Abbott et al. 2012), suggesting that financial knowledge and gender diversity improve monitoring. Masulis et al. (2012) document that foreign independent directors at US corporations are positively associated with a greater likelihood of material restatements and higher CEO compensation. In addition, Lin et al. (2013) find that higher levels of directors' and officers' liability insurance coverage are associated with a higher restatement likelihood, suggesting that reductions in managerial liability cause higher risk-taking and encourages managers to misstate reported earnings. We note that the association is stronger for material restatements.

Non-executive Employees: Bowen et al. (2010) observe that firms that experience whistle-blowing events are more likely to announce a restatement. This result is based on external whistleblowing allegations reported in the press. Furthermore, 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, Jun et al. (2016) document that financial restatements, especially those caused by unintentional errors, decrease when employee benefits increase. This finding is in line with fair personnel treatment improving a firm's access to qualified personnel and enhancing the relationship between employees and the firm (Weiss 1980; Laffont and Tirole 1988). Supporting this view, Guo et al. (2015) reveal that financial restatements are less likely to arise in firms that invest more in employee benefits. Further, it is also possible that firms misreport to retain their current workforce because they want to avoid the cost of finding new personnel. In line with this idea, companies have been known to engage in ongoing upward earnings management to project an illusion of job security (Dou et al. 2016b); otherwise, companies would have to compensate for the unemployment risk wage premium (e.g., the employee faces an insecure job) and spend more money recruiting new

workers to compensate for the staff having left the company (Dou et al. 2016b). Dou et al. (2016b) find that when state unemployment insurance benefits increase and employees potentially demand a lower risk premium, firms then partially unwind former upward earnings management. The likelihood of income-reducing restatements increases as prior earnings management is partially unwound.

In sum, the literature finds that characteristics of the board of directors (e.g., board diversity) and non-executive employees' characteristics (e.g., qualified personnel) may enhance financial reporting quality. By contrast, projecting the illusion of job security and decreasing directors' and officers' liability through insurances may impair financial reporting quality.

5.8 Internal Controls and External Controls: Accounting Complexity

Next, we investigate whether restatements increase in complexity. We suggest that increased complexity impedes the ability to detect misreporting through both external and internal controls. Restatements that potentially arise from complexity may have two origins. First, complexity may lead to technical errors, due to the volume of operations and standards involved; second, complexity may be exploited by management to hide intentional misreporting. To provide insights into the association between restatements and complexity, we present findings based on the following three common types of complexity in accounting research (Hoitash and Hoitash 2018):

- Accounting complexity (e.g., the complexity of revenue accounts, the complexity of derivatives, etc.)
- Operating complexity (e.g., number of business segments, the existence of foreign operations, etc.)
- Linguistic complexity (e.g., FOG index, length of 10-K filing, etc.)

Prior non-restatement literature finds a positive association between operating complexity and low financial reporting quality (Ge and McVay 2005; Doyle et al. 2007a), suggesting that complexity overstrains a firm's capability to provide reliable information. Moreover, Li (2008) shows that annual reports with higher linguistic complexity are associated with lower earnings quality, suggesting that managers exploit high complexity to obfuscate poor performance. In other words, managers strategically hide adverse information "by increasing information processing costs" (Chychyla et al. 2018, p. 4), which in turn decreases executives' expected costs of manipulation (through a decrease in the detection likelihood of misreporting).

5.8.1 Accounting Complexity

Turning to accounting complexity, *CFO Magazine* released an article titled "An explosion in accounting errors – in part reflecting the difficulties of today's complex rules – has forced nearly a quarter of US companies to learn the art of the restatement" (Harris 2007, p. 1), suggesting that accounting complexity plays a vital role in the likelihood of restatements. Plumlee and Yohn (2010) highlight that both the SEC and FASB recognize accounting complexity as a daunting problem, while Ciesielski and Weirich (2006) argue that accounting complexity is an essential driver of restatements. Hoitash and Hoitash (2018) discuss two sources of accounting complexity identified by the Advisory Committee on Improving Financial Reporting (ACIFR) (SEC 2008):

- Difficulty in understanding and applying accounting standards (Difficulty)
- Volume and diversity of accounting standards (Volume).

Difficulty: For most companies, restatements are ascribed to basic internal company errors, rather than to "any specific characteristic of the accounting standards" (Plumlee and Yohn 2010, p. 41). However, for those restatements related to accounting standards, Plumlee and Yohn (2010) document that they arise from the lack of clarity in standards (difficulty). Furthermore, Peterson (2012) documents that the complexity of revenue recognition is positively associated with the probability of restatements. Both findings are consistent with the idea that standards are too difficult to understand.

Volume: Concerning the volume and diversity of accounting standards, Hoitash and Hoitash (2018) develop the accounting reporting complexity (ARC) measure that employs XBRL data and is based on the number of accounting items in 10-K filings. Hoitash and Hoitash (2018) find a positive association between ARC and restatement-related misreporting. Furthermore, Hoitash and Hoitash (2018) reveal a high correlation between ARC and a further measure based on the number of FASB accounting standards, among others, suggesting that restatements arise from the volume of applied accounting standards. ARC is also associated with a greater likelihood of higher audit fees and longer audit delays, suggesting that both the auditor and the client require more knowledge and time to "collect, categorize, store, and analyze" information reliably (Hoitash and Hoitash 2018, p. 260).

The Fineness of Accounting Information / Disclosure Quality: Campa and Donnelly (2016) describe the disclosure quality measure (DQ) developed by Chen et al. (2015b) as "fineness" of information since it counts the non-missing line items in Compustat. Campa and Donnelly

(2016) find no association between DQ and restatements. Hoitash and Hoitash (2018) also find no association between DQ and restatements and highlight that DQ and ARC depict different constructs. In contrast, Huang et al. (2018) present empirical evidence that a lower DQ is associated with a higher likelihood of material restatements. We note that Hoitash and Hoitash (2018) investigate all restatements, while Huang et al. (2018) focus on material restatements.

Principle vs. Rules-based Accounting Standards: In light of the implementation of new standards and the convergence between the US-GAAP and the IFRS, findings from restatement-related research support our understanding of whether rules- or principle-based accounting standards improve financial reporting quality. While rules-based standards are based on detailed and complex instructions and, therefore may more easily lead to visible mistakes, principle-based accounting standards require interpretation, which may entail "less comparability, verifiability, credibility, and ability to enforce" (Fang et al. 2015, p. 6). In response to the concern that restatements are ascribed to accounting complexity (rules-based standards), the ACIFR supports more principles-based standards (Plumlee and Yohn 2010). Fang et al. (2015) find that rules-based accounting characteristics are indeed positively correlated with the likelihood of less severe restatements, suggesting that accounting complexity leads to rather technical mistakes that require corrections. Moreover, Mergenthaler (2009) finds that material restatements, which correct more rules-based accounting, are positively associated with the dollar magnitude of earnings management. In other words, intentional misreporting relates to the violation of rules-based standards. Executives' inclination to violate rules-based standards is perhaps ascribed to their being less likely to be penalized for rules-based standard violations (Mergenthaler 2009). In other words, "executives who weigh the costs and benefits of managing earnings will manage earnings more in areas where they are less likely to be penalized" (Mergenthaler 2009, p. 2). Furthermore, Fornaro and Huang (2012) find that a principles-based accounting environment enables earnings management, mainly when standards lack clarity. Consistently, Fang et al. (2018) document a lower likelihood of both severe and less severe restatements when the standards applied by the firm are more principles-based.

Intention and Accounting Complexity: If complexity is positively associated with restatements, two possible explanations compete against each other. On the one hand, as noted by Chychyla et al. (2018), complexity may be applied as a "smokescreen" reflecting managers' efforts to obfuscate financial reporting. On the other hand, restatements may arise from misunderstanding accounting standards, suggesting rather unintentional mistakes. Chychyla et

al. (2018) develop a measure for financial reporting complexity (FRC), which is the sum of complexity scores across all unique items reported in the firm's 10-K filings. Chychyla et al. (2018) reveal the positive association between FRC and the likelihood of unintentional restatements. Furthermore, FRC is positively associated with expertise on a firm's board of directors and audit committee, suggesting that managers allocate resources to improve financial reporting controls in response to heightened control risk. Consequently, as it is unlikely that deceptive managers would increase oversight as a response to higher complexity, findings suggest that executives do not exploit complexity to hide manipulation. While Chychyla et al. (2018) observe unintentional mistakes, Ndofor et al. (2015) investigate intentional misreporting and find that complexity-based information asymmetries (between executives and shareholders) increase the likelihood of a material restatement. Thus, findings by Ndofor et al. (2015) suggest that managers use complexity as a "smokescreen". Furthermore, CEO stock options increase the misreporting likelihood when industry complexity is high, while aggressive monitoring (by the audit committee) decreases the likelihood of misreporting when complexity is high.

5.8.2 Operating and Linguistic Complexity

Hoitash and Hoitash (2018) and Cao et al. (2012) find that operating complexity, when measured based on the operating segment level, is positively associated with restatements, but not when measured through foreign operations. Linguistic complexity, when measured through 10-K length, is associated with restatements, but not when the Fog-Index is applied as a linguistic measure. Hoitash and Hoitash (2018) state that the Fog index is the only index not associated with the ARC, suggesting that "the two capture different aspects of complexity" (Hoitash and Hoitash 2018, p. 261).

Altogether, accounting complexity measures that correlate with rather unintentional restatements indicate that standards are too difficult to understand and hence lead to restatements. For material restatements, a positive association likely suggests that complexity is applied as a "smokescreen" to distract from misstated accounts.

5.9 Summary of Expected Costs

Efficient controls increase financial reporting quality as they heighten the expected costs of misreporting, which in turn decrease executives' willingness to misreport. In line with this view, prior research finds that restatements are less likely for firms with auditors that have

industry experience (Stanley and DeZoort 2007), which provide non-audit tax services (Kinney et al. 2004), have litigation experience (Lennox and Li 2014) and are located closer to clients' headquarters (Brooks and Yu 2013). Furthermore, audit committees with more board meetings (Abbott et al. 2004) and financial (Agrawal and Chadha 2005), accounting (Chychyla et al. 2018) and industry expertise (Wang et al. 2015) decrease the likelihood of restatements. Oversight by analysts (Elayan et al. 2008), blockholders in the form of hedge funds (Dou et al. 2016a), and non-transient and non-quasi-indexing institutions (Burns et al. 2010) increase financial reporting quality (lower incidence of restatements) due to their rather long-term investment horizon. Kinney and McDaniel (1989) and Scholz (2014) document that restatement firms tend to be smaller, suggesting that internal controls are lower in efficiency. Concerning SEC regulations, it is difficult to conclude whether the observed decrease in restatements is a reliable indicator of improved financial reporting quality, since the decrease in restatements may alternately be ascribed to executives' reluctance to restate existing misstatement or to insufficient controls that fail to detect historical misreporting (Srinivasan et al. 2015). Findings investigating the role of banks (oversight), audit fees (effort and dependence), non-audit services and audit committees in terms of restatement likelihood are mixed. Lastly, Cao et al. (2012) find that companies with higher reputations are less likely to misstate their financial statements, suggesting that managers of higher-reputation companies have greater incentives to protect their companies' reputations. Providing supportive evidence, Cao et al. (2012) show that high-reputation firms are willing to pay more for audit services in order to guard reporting quality.

6 Executive Characteristics

So far, the presented findings supported the view that "firms that have greater opportunity and incentive are shown to be more likely to commit accounting irregularities" (Elayan et al. 2008, p. 147). However, despite implemented internal controls and external oversight, executives' i) strength, ii) expertise and iii) attitude towards unethical behavior may impair financial reporting quality, i.e., a reduction in expected costs of misreporting. Regarding i) executive strength it is documented that decisions made by influential executives are less likely to be questioned by monitoring parties due to potentially unfavorable consequences. Agrawal and Chadha (2005) document that firms in which the CEO belongs to the founding family are more likely to restate their earnings, while Abbott et al. (2004) do not support this evidence for a sample of less severe restatements. Furthermore, Efendi et al. (2007) find that restatement likelihood is higher (including less severe cases) when the CEO serves as board chair, which is in line with non-restatement-related findings by Beasley (1996) and Dechow et al. (1996), who document that CEO-chair duality impairs a board's monitoring effectiveness. In contrast, Abbott et al. (2004), Agrawal and Chadha (2005) and Archambeault et al. (2008) find no association between restatements and CEOs who serve as chairman. Regarding these mixed findings, Efendi et al. (2007) note that Agrawal and Chadha (2005) do not control for compensation incentives. Applying an options-based compensation measure for CEO overconfidence (developed by Malmendier and Tate (2008)), Presley and Abbott (2013) document a positive association between CEO overconfidence and financial restatements. Focusing on males only, Jia et al. (2014) evaluate CEOs' testosterone based on facial features. Their findings suggest a positive association between CEO testosterone exposure and financial restatements. Concerning managers' agreement to restate, Keune and Johnstone (2012) find that auditors are less likely to allow managers to waive material restatements as audit fees increase. This finding is consistent with auditors protecting their reputation and suggests that executives are more likely to agree to more powerful and knowledgeable auditors (see sect. 5.1 auditor in light of external controls).

Next, we turn to ii) executive expertise and propose that expertise is negatively associated with misreporting. Bhandari et al. (2018) find that CEOs with an extensive network are less likely to restate, suggesting that well-connected CEOs provide economic benefits, rather than initiate misreporting to extract rents. We note that non-restatement-related literature findings on misreporting and CEO connectedness are mixed (Chidambaran et al. 2011; Khanna et al. 2015).

Demerjian et al. (2013) find that a manager's ability (measured by efficiency in generating revenues) is associated with fewer restatements, suggesting that firms could improve financial reporting by hiring higher-ability managers. Concerning CFOs, Aier et al. (2005) find that CFOs with experience as CFOs, MBAs and/or CPAs are less likely to restate. In other words, CFOs with less financial expertise are inferior in terms of financial reporting quality (Aier et al. 2005).

Turning to the last characteristic – iii) attitude towards unethical behavior – expected costs receive more weight when executives employ higher moral and ethical values, suggesting a decrease in restatements. Huang et al. (2012) reveal that the likelihood of financial restatements decreases with a CEO's age, suggesting that executives become more ethical and conservative with age. Alternatively, however, one could argue that they become more "sophisticated in hiding" misreporting. McGuire et al. (2012) and Dyreng et al. (2012) discover that firms headquartered in strongly 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. Christensen et al. (2018) employ geographic variation in local gambling attitudes and reveal that material restatements are more likely in areas where gambling is socially more acceptable. This finding is in line with Barzuza and Smith (2014), who find that companies that choose Nevada as their corporate home are more likely to announce severe and less severe restatements, suggesting that the legal environment is related to financial reporting quality. According to Kim et al. (2018), conservative CFOs are less likely to announce restatements. Finally, Kohlbeck and Mayhew (2017) illustrate a positive correlation between related party transactions and future restatements. Related party transactions include cases such as loans and guarantees between the company and its directors, officers, or major shareholders.

Overall, the findings suggest that the CEO's strength, CEO/CFO lack of accounting expertise, and attitudes towards unethical behavior is positively associated with financial misreporting as it either directly impairs existing controls or indirectly regards controls as not relevant. We note that age and accounting expertise may also increase the knowledge that is required to misreport without being detected. Hence, in these cases, a decrease in restatements might not signal high financial reporting quality.

7 Future Research

Throughout this paper, we have presented findings related to the causes of misreporting based on restatement-related literature. Although many research questions were investigated, not all research gaps were adequately addressed. Concerning the question of why executives become involved in wrongdoing, findings are partially fragmented and inconsistent. Major research challenges arise from the unobservable interactions between auditors and executives. Since financial reporting is a dynamic process in which self-interested parties interact with each other, we cannot rule out reverse causality. To address this concern, we propose considering simultaneous equation models as proposed by Gow et al. (2016), who present a causal diagram for the likelihood of a restatement announcement. Moreover, the interpretation of Form 8-K restatements is puzzling, since an increase in Form 8-K restatements is a proxy for both, transparency and severity. Moreover, it is not clear how to interpret subsequent restatements after a CEO/CFO turnover. While subsequent restatements may be ascribed to current CEO/CFO efforts to reverse prior misreporting, they may also be ascribed to a successor's lack of knowledge. In short, our understanding of wrongdoing derives from cases in which misreporting was discovered, suggesting that findings are always exposed to type II errors. Below we outline suggestions for future research in more detail.

i) Who Is Responsible for a Restatement?

Restatements are perceived as a failure by the CEO/CFO and/or auditor. While both parties are exposed to higher-than-usual turnover rates, in only 4 percent of all restatement cases do both parties experience a turnover (Ye and Yu 2017), suggesting that failure is instead assigned to one party. One could be interested in the determinants of CEO/CFO and auditor turnover. How do determinants differ between both (CEO/CFO vs. auditor) turnover groups? We propose to investigate the association of each turnover group in terms of three restatement dimensions: a) restatement severity, b) initiator of the restatement, and c) restatement reason.

ii) What Happens "Just" Before the Restatement Announcement?

The detection period covers the period between the end of the misreporting period and the restatement announcement. Focusing on the detection period may generate valuable insights into the decision-making process that eventually leads to the restatement announcement. We are interested in whether the management anticipates the restatement and initiates actions to improve reporting quality just before the restatement announcement. We propose that research

comparing the pre- and post-periods place more weight on investigating managerial behavior just before the restatement, especially since prior findings support the view that some parties are informed about upcoming bad news (Agrawal and Cooper 2015).

iii) Are All Non-Form 8-K Restatements Less Severe?

While prior restatement-related research has focused on material restatements, which are commonly announced through Form 8-K filings, we propose that some firms may have opted against disclosing material misreporting prominently/transparently through Form 8-K filings and instead restated financial statements in regular filings (Ceresney 2013; Wahid 2018; Myers et al. 2013). We suggest investigating less material restatements in more detail, perhaps by applying the restatement classification by Hayes (2014b), who identified 2,075 restatements as being corrections of unintentional errors.

iv) What Are the Implications of Restatements in Non-US Enforcement Regimes?

Non-US restatement-related literature is relatively rare but has increased in recent years (Campa and Donnelly 2016; Chan et al. 2016; Ecker et al. 2013). While findings from US-related research are helpful, they cannot be transferred to international settings, as they operate in different enforcement environments, among others. We propose that future research consider international restatement samples to obtain further insights.

v) How Do Fraud Probability Scores Evolve Before and After the Restatement?

To evaluate earnings quality before and after the restatement, we propose investigating the change in F-score (Dechow et al. 2011) and M-score (Beneish 1999), both indicating the likelihood of misreporting. We are interested in how well these measures identify each period of a restatement case. Do they increase before the misreporting begins? Do they decrease after the restatement announcement, suggesting lower future misreporting likelihood? How do these measures change for firms that have subsequent restatement announcements?

vi) How Do Managers and Analysts Interact Before and After the Restatement?

What roles do earnings management guidance and analyst forecasts play in establishing investors' overly optimistic beliefs that may lead to overvalued equity and create further pressure that eventually leads to misreporting (Gordon et al. 2014; Shiah-Hou 2018)?

vii) Can Auditors Mitigate Disadvantages from Executive's Option-Based Compensation?

Jayaraman and Milbourn (2014) find no evidence for a positive association between misreporting and option-based compensation. Interestingly, when Jayaraman and Milbourn (2014) divide their sample into firms with high and low auditor expertise, they find a positive association for the low auditor expertise partition, suggesting that the disadvantage from excessive option-based compensation can be offset by high-quality auditors. This finding supports the view by Coffee Jr (2005), who states that "absent special controls, more options mean more fraud" (p. 203), but this remains to be tested for financial restatements since Jayaraman and Milbourn (2014) investigate a sample of Securities Class Action Lawsuits.

Eventually, we propose more future research on CEO characteristics and highlight that:

> *"While the impact of incentive on restatement has been addressed through the existence of capital market pressures and opportunity has been addressed through board or audit committee characteristics, rationalization and its effect on restatement has been very sparsely studied"* (Presley and Abbott 2013, p. 3).

8 Conclusion

This review presents findings on misreporting announced through financial restatements and their causes. We focus solely on findings established through the application of restatement data to minimize the chance of inconsistencies being ascribed to sample selection choices. While restatements correct misstatements ascribed to both intentional and unintentional misreporting, prior literature sometimes assumes that all restatements are a proxy for fraud.

Our review provides evidence that executives misreport to meet and beat analyst forecasts to increase firm value. The likelihood of a restatement increases in high-market expectations and decreases in firm profitability. While findings on option-based executive compensation are mixed, the reduction in this proportion after the restatement announcement suggests that option-based compensation is perceived as a potential cause for misreporting. The likelihood of restatements is negatively associated with institutional ownership, blockholders, active audit committees and knowledgeable external auditors. Moreover, the number of analysts is negatively associated with restatements, suggesting that analysts improve financial reporting oversight. Banks, in contrast, fail to provide further oversight functionality and are not associated with lower restatement likelihood.

Applying restatements as a proxy for low financial reporting and audit quality is challenging since restatements occur for various reasons (e.g., fraud, minor errors), may correct audited and unaudited financial statements, may increase or decrease income, may affect different accounts (e.g., revenue vs. line items), may be initiated by different parties (e.g., the auditor, the firm, the SEC), may be disclosed with varying prominence (e.g., Form 8-K vs. corrected 10-Ks), and maybe surrounded by other events (e.g., AAERs). Therefore, restatements require careful consideration and are far from being universally applied within and across research fields. However, once the researcher understands all existing dimensions of restatements and its implications, restatement data become a powerful tool in addressing research questions more accurately. Given that even some of the recent studies mistake less severe restatements for material restatements, signals that restatements are not fully understood. We hope that our review sensitizes readers to interpret restatement-related findings carefully and will ensure a more accurate application of restatement data in future research. Lastly, as noted by Nagy (2010), restatements are “an imperfect proxy for accounting misstatements because, in some cases, companies never identify or restate misstatements” (p. 453).

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Appendix

"Determinants of Financial Misreporting:
A Survey of the Financial Restatement Literature"

– Understanding Restatements –

A Understanding Restatements

Providing a detailed description of restatements is essential for an adequate understanding of the determinants of misreporting and supports researchers in unfolding the full potential of restatement data. In the following, we define restatements and describe three common dimensions in which restatements vary (initiator of the restatement, type/form of disclosure and severity of the restatement). We then compare restatements to AAERs and Class Action Lawsuits and offer advice on how to interpret restatement-related findings.

A.1 Initiators of Restatements

A firm shall restate its financial statement as soon as historic information is "inaccurate, incomplete, or misleading" (Palmrose et al. 2004) and when a "company's previously issued financial statements … no longer should be relied upon" (SEC 2004). Usually, the SEC, an auditor, the management, other parties or any combination of these entities identify the need for a restatement, which is then subsequently announced by the firm. Partitioning restatement samples based upon the initiator has become common practice in restatement-related research, since implications about financial reporting and audit quality may vary considerably. Implications for each party are discussed in the following sections.

A.1.1 Initiator: External Auditor

When auditors discover that previously issued financial statements are incorrect, they should advise their clients to make "appropriate disclosure of the newly discovered facts" (PCAOB, 2017, AS 2905). However, when the audit committee and/or the CEO/CFO refuses to follow the auditors' advice, the auditor is required to initiate the restatement announcement on its own. When the auditor initiates the restatement, investors may be more alarmed about the integrity of management relative to when restatements are management-initiated (Hribar and Jenkins 2004). In line with these predictions, Palmrose et al. (2004) find that the market reaction to auditor-initiated restatements is more negative than that to company-initiated restatements (– 18 percent vs. –13 percent). Moreover, Hribar and Jenkins (2004) document that restatements prompted by auditors are associated with increases in the cost of capital, while Nguyen and Puri (2014) observe that auditor-initiated restatements generate far greater abnormal volatility and spreads than restatements announced by the management and the SEC. The findings suggest that auditor-initiated restatements cause the highest scrutiny about managers' ability and willingness to provide truthful information.

A.1.2 Initiator: SEC

For SEC-initiated restatements, we would expect consequences similar to those for auditor-initiated restatements, since in both cases, restatements are initiated by external parties and therefore "pose a particularly serious threat to the regulatory legitimacy of an organization" (Arthaud-Day et al. 2006). Moreover, restatements initiated by the SEC or external auditors are potentially a sign of a weak internal corporate governance system (Park and Wu 2009). Surprisingly, restatements initiated by the SEC cause the most moderate market reactions (CAR: – 4 percent) around the restatement announcement date compared to auditor- (CAR: – 18 percent) and management- (CAR: –13 percent) initiated restatements (Agrawal and Chadha 2005; Lev et al. 2008; Palmrose et al. 2004). Further, Hribar and Jenkins (2004) document that SEC-related restatements experience the lowest increase in the cost of capital. Despite the more moderate market reactions to SEC-initiated restatements, this finding is often not discussed. One exception is Lev et al. (2008), who address this unexpected result in more detail:

> *"While it may seem surprising that the market reacts less adversely to SEC-enforced earnings restatements, this finding may reflect the fact that these restatements often result from the SEC's desire a change general accounting practices (e.g., in-process research and development) which affects multiple firms. To the extent that more firms make these restatements, they appear to reflect less negatively on any given restating firm."* (p. 424)

Further, we propose an alternate explanation that remains to be tested. In particular, we note that investigations by the SEC (e.g., SEC letters) may forego a restatement announcement and increase investor attention before the restatement announcement. Due to the ex-ante anticipation of lower reporting quality, adverse market reactions to the subsequent restatement will be mitigated (when SEC letters preceded). Our assumption is related to observations by Li et al. (2018), who argue that prior research (Graham et al. 2008; Hennes et al. 2008) fails to take into account the ex-ante disclosure of material weaknesses when investigating the consequences arising from restatement announcements. Moreover, the SEC has limited capacities and therefore devotes its effort not to all firms equally but instead focuses on "problematic" firms that have already raised scrutiny among investors before the restatement announcement. Consistent with this idea, Lawrence et al. (2010) highlight that the SEC's Division of Corporation Finance can be considered the monitor of "last resort", and find that SEC-initiated restatements are more likely to occur for firms audited by non-Big 4 auditors,

suggesting that the market participants are able to anticipate lower financial reporting quality before the restatement announcement. Finally, Dyck et al. (2010) suggest that the SEC is often not the first party to detect accounting fraud. Consequently, controlling for potential ex-ante SEC investigations and signs of poor financial reporting quality (e.g., AAERs) might explain the surprising moderate market reaction to restatements initiated by the SEC.

A.1.3 Initiator: Management

Management-initiated restatements represent the largest group (58 percent) of restatements within the GAO database (GAO 2007). In these cases, a firm's management, board, or audit committee may have discovered previous misreporting (Arthaud-Day et al. 2006). The company can discover misstatements through internal audits, period-end closing processes, policy reviews, and complaints from employees (Palmrose et al. 2004). Plumlee and Yohn (2010) list four main explanations for management-initiated restatements (internal company error, fraud, transaction complexity and characteristics of accounting standards) and point out that "internal company error" and "characteristics of accounting standards" account for 94 percent of all cases. This finding suggests that the management would rather initiate less severe restatement types than disclose fraud-related misreporting. The underrepresentation of fraud-related restatements initiated by the firm may be attributed to the firm's reluctance to admit its own rather severe mistakes for fear of severe market consequences (e.g., firm value decrease).

Francis et al. (2013) suggest that management-initiated restatements are a well-suited indicator for low audit quality, as those restatements imply that the auditor missed discovering a GAAP misapplication in the first place. In contrast, Arthaud-Day et al. (2006) point out that applying management-initiated restatements as a proxy for low audit quality is not without flaws, as accounting issues may also have been noticed first by the external auditor who brought the issue to audit committee's attention, which then, in turn, instituted corrective action. In this scenario, audit quality might be relatively high, since i) prior misreporting was discovered and ii) the management followed the auditors' advice to restate, suggesting that the auditor is independent and does not fear speaking up. Hence, the results related to company-initiated restatements should be interpreted with caution (Hribar and Jenkins 2004).

Taken together, SEC-initiated restatements are associated with a market reaction of – 4 percent, company-initiated restatements with –13 percent, and auditor-initiated restatements with – 18 percent (Palmrose et al. 2004). Given the difference in market reaction

between SEC-related (–4 percent) and auditor-initiated (–18 percent) restatements, grouping restatements into externally- (auditor and the SEC) and internally-initiated (company) restatements, as some studies have done (Arthaud-Day et al. 2006; He et al. 2018), raises concerns as to whether commingling restatements that cause "–4 percent" and "–18 percent" CARs may bias results. For example, if auditor-initiated restatements account for 50 percent of the sample, and SEC-related restatements account for 5 percent of the sample, then auditor-initiated restatements will drive the results, and the findings will suggest that externally initiated restatements cause severe firm value declines; however, this is not true for SEC-related restatements. Thus, Arthaud-Day et al. (2006) find no support for their hypothesis suggesting that "firms with externally prompted restatements are more likely to experience director turnover than firms with internally prompted restatements" (p. 1127). We wonder, therefore, what the findings would have been if the research design were applied only to auditor-initiated restatements. Further, we point out the possibility that the observed market reaction to the initiator type rather reflects the information contained in the restatement and is not related to the initiator. In other words, the more negative market reaction to auditor-initiated restatements may be attributed to worse news uncovered by the auditor, compared to information uncovered by the SEC or the management. Further, the auditor may demand a restatement disclosure that is more visible to the public eye (e.g., Form 8-K filings), which in turn raises investor attention and leads to more negative market reactions. Hence, controlling for the form of disclosure and restated amounts is necessary to draw a clear picture of the initiator effect. We note that Palmrose et al. (2004) control for the restated amount but not for the disclosure type. More recent research (Gordon et al., 2013) controls for the disclosure type and shows its significant impact on market reactions to restatement announcements.

A.2 Disclosure of Restatements

In contrast to AAERs, which are disclosed by the SEC, restatements are announced by the firm, leaving the decision about how a restatement is disclosed to the management. More precisely, once a company, an independent audit firm and/or the SEC have/has identified the requirement for a restatement, there are three approaches to disclose a restatement:

- Form 8-K (mandatory) and Press Release (voluntary) — High Transparency
- Amended Report (10-Q/A, 10-K/A) — Medium Transparency
- Regulatory Filings (10-Q, 10-K) — Opaque Transparency

Restatements that arise from material misreporting must be disclosed within four days after the discovery of material misreporting using Form 8-K filings. In particular, item 4.02, "Non-Reliance on Previously Issued Financial Statements or a Related Audit Report or Completed Interim Review", in Form 8-K informs the public of the restatement. Before 2005, firms applied item 5 ("other information") to disclose a restatement. Although not required by GAAP or the SEC, most restating companies issue additional press releases that comment on the restatement's nature (Acito et al. 2009). While information revealed through press releases is highly unregulated, an attachment providing additional information is recommended (BenYoussef and Khan 2017). If a firm corrects minor mistakes, it may restate within amended reports (10-Q/A, 10-K/A) or regulatory filings (10-Q, 10-K). The latter correction is referred to as restating under the radar and perhaps reflects executives' desire to restate without alarming investors (Turner and Weirich 2006). All types of restatements are publicly available through the SEC's EDGAR database, which is used by investors and database providers (Whalen et al. 2015). Restatement announcements trigger highest investors' interest in the EDGAR database (Drake et al. 2015b), suggesting that information disclosed in restatements is highly relevant for investment decisions and increases investors' attention to that firm.

A.3 Severity of Restatements

Restatements cover a broad sphere of managerial intent that ranges from rather unintentional clerical errors to fraudulent misreporting. Since previous research has been mostly concerned with material restatements, strategies have targeted identifying egregious restatements. Identification strategies have evolved into a fragmented labeling terminology, which we present next, including the market reaction to underscore the degree of severity:

- Form 8-K Restatements; Market reaction of –2.3 percent (other types – 0.6 percent)
- Irregularity Restatements; Market reaction of –14 percent (other types –2 percent)
- Fraud Restatements; Market reaction of –20 percent (other types –6 percent)
- Low-CAR Restatements; Market reaction below the median

A.3.1 Severity: Form 8-K Restatements

Myers et al. (2013) illustrate that 61 percent of restatements are disclosed in Form 8-K filings or press releases, while the remaining 39 percent are made public through amended or scheduled 10-K or 10-Q reports. Scholz (2014) documents that restatement announcements disclosed in 8-K filings are associated with a market reaction of –2.3 percent, while other forms of disclosure cause CARs of –0.6 percent. Consistent with more negative market reactions to Form 8-K restatements, these restatements are a proxy for material misreporting (Whalen et al. 2015). Moreover, since item 4.02 within Form 8-K filings addresses non-reliance on previously issued financial statements in detail, Form 8-K restatements are also a proxy for high transparency disclosure (Hogan and Jonas 2016). We observe that Form 8-K restatements are occasionally labeled “reissuances”, “big R”, and “4.02 restatements”, while restatements announced in 10-K, 10-K/A, 10-Q and 10-Q/A filings are labeled “revisions”, “little r” and “non-4.02 restatements”. Importantly, since Form 8-K restatements are an ambiguous proxy mixing disclosure transparency with misreporting materiality, interpreting adverse market reactions to Form 8-K restatement announcements becomes challenging. A large negative market reaction to Form 8-K disclosure may lead to various conclusions: i) market punishes severe misreporting, ii) market punishes firms with highly transparent disclosure, or iii) market punishes firms that disclose restatements prominently (e.g., because Form 8-K restatements are most attention-grabbing).

A.3.2 Severity: Irregularity Restatement

Hennes et al. (2008) classify restatements as irregularities and errors. While irregularities refer to restatements that are likely attributed to intentional misreporting, errors refer to somewhat unintentional technical mistakes. More specifically, irregularities comprise one of the following aspects (Addy et al. 2009): i) irregularity or fraud are used to describe the restatement, ii) the SEC or Department of Justice are involved, or iii) an independent investigation is involved in the disclosure. Hennes et al. (2008) document that 26.4 percent (715 observations) of the GAO restatements are classified as irregularities and are associated with a CAR of – 14 percent, while errors are associated with a CAR of – 2 percent.

Prior studies (Arthaud-Day et al. 2006; Burns and Kedia 2006; Harris and Bromiley 2007; Lee et al. 2006) fail to address the heterogeneity of severity and instead assume that all GAO restatements are fraud-related (Hennes et al. 2008). Even as of 2015, some research assumes that all GAO restatements "have engaged in financial fraud" (Ndofor et al. 2015, p. 1782). Chen et al. (2014) explain that not all accounting irregularities are intentional or fraudulent. Determining whether irregularities, as defined by Hennes et al. (2008), are exclusively attributed to intentional misreporting, is challenging since executives' intention is not observable. Despite this limitation, irregularities are described as material restatements that are likely attributed to intentional misreporting (Amel-Zadeh and Zhang 2015; Baber et al. 2015; Brown et al. 2015a; Lin et al. 2013; Demerjian et al. 2013). Specifically, Knechel et al. (2012) address the relation between irregularities and intention as follows:

> *"Literature distinguishes between irregularities and errors when it comes to restatements. Irregularities tend to be more egregious restatements, which are much more likely to be intentional, i.e., fraudulent."* (p. 397)

Regarding unintentional misreporting, Fang et al. (2015) state that relative to research on fraud, accounting errors (less severe restatements) are surprisingly understudied in capital market research. Supporting this view, Hayes (2014b) acknowledges that while research has developed refined proxies for restatements arising from intentional misreporting (Hennes et al. 2008; Dechow et al. 2011; Plumlee and Yohn 2010), a refined proxy for restatements arising from unintentional mistakes is missing. To address this gap, Hayes (2014b) executes a keyword search (e.g., "inadvertent" and "unintentional") and identifies 2,075 out of 10,623 restatements (from the Audit Analytics database) as being corrections of unintentional errors.

A.3.3 Severity: Fraud Restatement

The primary factor that distinguishes an error from fraud is the intention to misreport (PCAOB 2017, AS 2401; AICPA, AU Section 316.05). Since at least a fraction of restatements stems from intentional misreporting, overlaps between restatements and fraud exist by construction. Palmrose et al. (2004) document that 21 percent of their investigated sample is fraud-related and associated with a CAR of – 20 percent, while non-fraud restatements yield a CAR of – 6 percent. This finding suggests that market participants revise a firm's information risk upwards when fraud is a factor (Palmrose et al. 2004), which in turn causes firm values to decline more sharply. While Palmrose et al. (2004) identify fraud-relation through searches of keywords, such as "restat", using the Lexis-Nexis News Library and SEC Filing Library, recent literature heavily relies on GAO and/or AA data. Applying irregularities as a synonym for fraud, 26.4 percent (715 observations) of GAO restatements are fraud-related (Hennes et al. 2008), and 1.7 percent (255 observations) of the AA restatements are fraud-related (Karpoff et al. 2017).

A.3.4 Severity: Low-CAR Restatement

A further identification strategy to separate material from less material restatements is based on an ex-post observation of market reactions around the restatement announcement. This approach is in line with a discussion established by the Public Company Accounting Oversight Board (PCAOB 2013), in which the staff acknowledges that "the market reaction of restatements is a more relevant factor to measure materiality objectively" (p. 23). Moreover, Chen et al. (2014a) state that the "negative market reaction is the most direct evidence of adverse consequences immediately following earnings restatements, and it reflects the immediate impact of restatement announcements" (p. 108).

We identify four restatement-related papers that apply the median CAR to partition restatement samples into material (below-median CAR) and less material restatements (Albring et al. 2013; Ettredge et al. 2014; Larcker et al. 2007; Wilson 2008). Providing an example, Wilson (2008) subdivides her restatement sample into a low and a high CAR group and documents a decrease in the information content of earnings only for low CAR restatements (firms with more negative CARs). While this identification strategy results in a relatively large sample size of severe restatements (if the median CAR is applied), findings are not based on one universal threshold, since the median CAR changes with the sample. This concern is attenuated if a static CAR cut-off value is applied, such as by Larcker et al. (2007), who classify a restatement as

"severe" if the market price reaction is more negative than –3 percent, and Carcello et al. (2011), who apply a cut-off value of –10 percent.

However, both static and median CAR cut-off values cause potential problems when restatement samples cover the pre- and post-SOX period, as pre-SOX restatements are associated with more negative market reactions (Hirschey et al. 2010). Hence, the low-CAR subsample will be biased towards pre-SOX observations. Moreover, since negative CARs are associated with fraud- and revenue-related restatements, the findings could rather be explained directly through the information contained in and around the restatement announcement. In addition, as shareholders are more likely to initiate class-action lawsuits after negative market reactions to restatement announcements, low-CAR partitions are likely biased towards samples with subsequent security Class Action Lawsuits (Amoah and Tang 2010). Furthermore, as the CAR usually covers rather short event windows, information revealed outside this short window will be ignored (e.g., subsequent AAERs). Despite these outlined limitations and concerns, we support the careful employment of market reactions as a refinement of existing restatement materiality attributes. For example, Ettredge et al. (2014) use a composite measure of misstatement severity that includes five severity components (irregularity, the scaled cumulative impact of the restatement on net income, revenue relation, misstatement length, and CARs). Last, the market reaction to restatements may support the identification of attention-grabbing events.

A.3.5 Timeliness and Frequency of Restatements

A restatement case comprises at least two events: i) the misreporting period and ii) the corresponding subsequent restatement announcement (see Figure A). Further, a restatement can be followed by subsequent restatements that provide additional information unavailable at the initial announcement date (e.g., the first restatement did not provide the restated amount). Being able to identify the misreporting period (the period that is restated), the detection period (the time it takes to discover the misreporting) and the investigation period (the time it takes to provide further refined information to resolve the restatement case) may clarify the materiality of a restatement and a firm's capability and perhaps willingness to disclose corrections in a timely, transparent and accurate fashion. Therefore, the timeliness and frequency of restatement announcements are important indicators for financial reporting, audit quality, and restatement materiality.

Figure A: Chronology of Restatement Cases

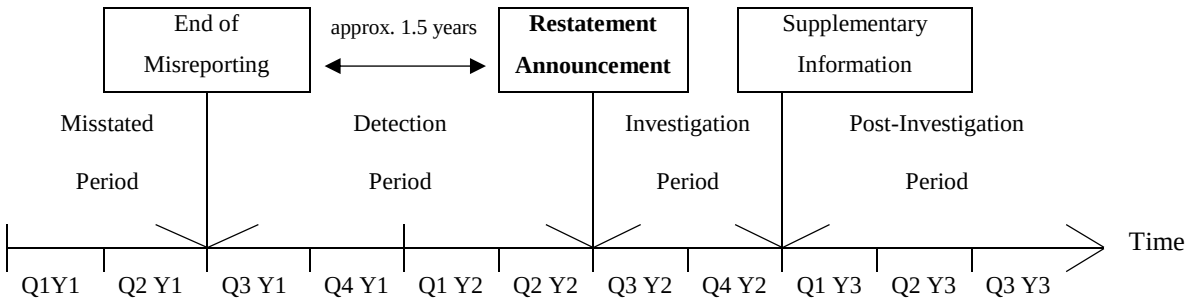

Figure A illustrates the chronology of restatement cases.

A.3.6 Capability and Willingness to Provide Restated Numbers

The misreporting periods have an average duration of 31 months (Ecker et al. 2014), while the detection period, which is the time between the end of misreporting and the restatement announcement, is one or two years in most cases (Efendi et al. 2007). Richardson et al. (2002) document that it takes 454 days on average from the end of the fiscal year of alleged manipulation to the restatement announcement, which is similar to the findings of Burns and Kedia (2006), who observe a mean time-lapse between the misstated year and the restatement announcement year of 1.47 years. We note that 25 percent of the sample have a time-lapse greater than 2.4 years (Burns and Kedia 2006). Against the intuition that firms with more extended misreporting periods will face more adverse market reactions, Palmrose et al. (2004) and Gordon et al. (2013) find no significant differences in market reactions across the number of years misstated.

Referring to the investigation period, Badertscher and Burks (2011) find that when fraud is a factor, the firm typically takes weeks or months to disclose a restatement's earnings impact after the initial unquantified restatement announcement, likely because investigations are necessary to restore the firm's ability to produce reliable information. This observation should be considered when research compares the short-term market reactions (e.g., CARs) of initial and subsequent restatement announcements. While one would expect that the initial restatement would cause the most adverse market reactions, this may not be true if the materiality becomes public only through subsequent restatements. In cases in which fraud is not a factor, the firm discloses the 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). Schmidt and Wilkins (2012) refer to the investigation

period as a “dark period” and note that the delay in quantitative information makes it difficult for investors to evaluate companies.

A.3.7 Frequency of Restatements

The total number of restatements per firm reveals additional information about its financial reporting and audit quality. Regarding audit quality, Files et al. (2014) find that repeat restatement firms have lower ex-ante accounting quality than single-time restatement firms. Interestingly, even though subsequent restatements are likely to be less surprising to investors than the primary restatement, short-term market reactions (CARs) to the first three announcements are similar (Files et al. 2014). This finding may be explained by fraud-related restatements, which tend to quantify the magnitude of misreporting only in subsequent restatements. In contrast, Nguyen and Puri (2014) find that CARs are more negative for the first restatement than for subsequent restatements. While the latter finding seems to be inconsistent with Files et al. (2014), we note that Files et al. (2014) discuss the first three restatements but not subsequent restatements per se (e.g., many firms announce more than 3 restatements). Moreover, abnormal trading volume, transaction number, order size, volatility, and spreads are found to be significantly higher for the first restatement (Nguyen and Puri 2014).

A.4 Restatements and Other Misreporting Events

Erickson et al. (2006) note that, while fraud and earnings management share specific attributes, they are not the same. For example, restatements can be within or outside of GAAP, while fraud is outside of GAAP. Hence, the essential feature to consider is that restatements "do not necessarily reflect a prior intent to deceive, whereas fraud by definition involves intent to deceive" (p. 116, Erickson et al. 2006).

A.4.1 Overlaps between Restatements and Other Cases of Potential Misreporting

A clear distinction between financial restatements, AAERs, and Security Class Action Lawsuits (SCALs) is not possible, as financial misconduct may comprise a set of announcements, potentially including each one of these events in a different chronological order. Concerning the initial revelation date of severe misreporting, Karpoff et al. (2017) conclude that restatements perform dramatically better than AAERs, suggesting that restatements chronologically forego AAERs on average. Consistent with this view, Karpoff et al. (2008b) and Lee and Lo (2016) acknowledge that restatements have served as an essential trigger event leading to AAERs. Palmrose and Scholz (2004) find that 11 percent of restatements result in AAERs. Moreover, Dechow et al. (2011) argue that SCALs are very common after large share price declines, suggesting overlaps with restatements that cause large firm value declines. Specifically, Kedia et al. (2015) state that 21.3 percent of restatements overlap with SCAL. We conclude that overlaps between restatements and AAERs/SCALs are relatively small, as most restatements are not fraud-related (e.g., AAERs) and do not cause large firm value declines (e.g., SCALs). However, the identification of overlaps with fraudulent cases from AAERs and SCALs may enhance the identification process of material restatements.

A.4.2 Strengths and Weaknesses of Restatements as a Proxy for "Quality"

According to a ranking established by Karpoff et al. (2017), AAERs are the most effective in identifying egregious misreporting. Armstrong et al. (2013) state that "the use of AAERs as a proxy for misreporting avoids some of the potential biases induced in samples based on voluntary restatements" (p. 332). Moreover, Dechow et al. (2011) opt against the application of restatements because "restatement firms are biased towards firms that have made a mistake that is not necessarily intentional" (p. 18). Consequently, Dechow et al. (2011) acknowledge that the GAO database provides cases regardless of materiality and economic significance.

Despite the noted advantages of AAERs over restatements, restatements have gained popularity since the early 2000s. Lev et al. (2008) state that the earnings management literature has two distinct phases. While the earlier work focused on cases of SEC enforcement actions (Beneish, 1999, Bonner et al., 1998, Dechow et al., 1996), the recent research applies restatement data. We identify several potential reasons for the recent popularity of restatements in current research. First, as acknowledged by Efendi et al. (2007) and Dechow et al. (2010), the number of fraud-related AAERs issued per year is relatively small. Between 1982 and 2013, AAERs represent 560 fraud-related cases (Karpoff et al. 2017), while AA and GAO provide approximately 700 fraud restatement cases in a much shorter window (between 1995 and 2015) (Karpoff et al. 2017). Second, because AAERs cover periods beginning in 1982, many cases took place in an outdated regulatory environment. Third, as restatements most likely precede AAERs, restatements are better at identifying the initial disclosure of misreporting. Fourth, while restatements may be initiated by parties other than the firm (e.g., the SEC, the auditor, the FASB etc.), they are eventually announced by the firm. In contrast, AAERs are released by the SEC, meaning that the primary disadvantage of using AAERs is that their release is conditional on the detection by the SEC (Armstrong et al. 2013). Further, comparing restatements against Security Class Action Lawsuits, the largest potential problem with Security Class Action Lawsuits is that the data include frivolous cases (Dyck et al. 2010) and are biased towards firms that have had large stock price declines (Dechow et al. 2011). Most importantly, research has established a reliable identification of material restatements (Hennes et al. 2008), mitigating the major concern that less severe restatements are mistaken as fraud-related restatements.

Taken together, each database requires careful consideration of its capabilities and limitations to omit bias in estimate. Careful documentation of initial event dates, actual misreporting periods and misreporting severity is necessary to apply data in an adequate context. For misreporting-related research, we propose starting with restatement data and refining the sample with indicator variables for AAERs, SCALs, and fraud. Moreover, investigating the sequence of announcement dates of each event is essential to rule out any confounding effects of the preceding and subsequent events. Furthermore, SEC comment letters and significant firm-value declines may also be informative. Separating fraud-related from non-fraud-related misreporting cases is necessary, as otherwise results may be over- or underestimated, depending on the research question. For more details on characteristics and differences, we recommend the article by Karpoff et al. (2017).

A.5 Interpretation of Restatements

A.5.1 Financial Reporting and Audit Quality

Pomeroy and Thornton (2008) identify restatements (and AAERs) as a proxy for lowest "financial reporting quality", while Christensen et al. (2016) note that restatements are the most vivid signal of low "audit quality". Consequently, restatements are a proxy for both low audit and low financial reporting quality (Gaynor et al. 2016) (see Figure B). However, since a restatement is the result of successful misreporting detection, it is debatable whether every restatement is a reliable indicator for low audit quality (Srinivasan et al. 2015). Francis et al. (2013), for example, suggest that management-initiated restatements more reliably indicate low audit quality than auditor-initiated restatements. Lastly, DeFond and Zhang (2014b) emphasize that audit quality is a component of financial reporting quality. We note that an auditor may also determine her/his effort (audit quality) based on perceived financial reporting quality (inherent and control risk). Hence, "financial reporting quality and audit quality are often intertwined" (Gaynor et al. 2016, p. 6). For a detailed review and the definition of audit quality, we propose articles by Knechel et al. (2012), DeFond and Zhang (2014b), and Gaynor et al. (2016).

Figure B: Audit and Financial Reporting Quality

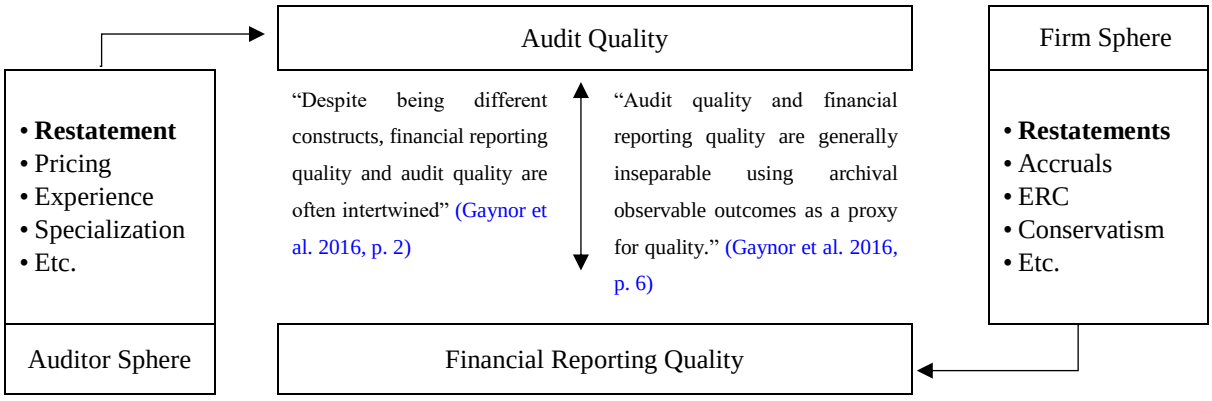

Figure B illustrates the relationship between audit quality and financial reporting quality

A.5.2 Identification of Audit Quality

Sellers et al. (2018) review the application of restatements in the audit-quality-related literature and reveal that audit quality may be identified in three different ways. Specifically, Sellers et al. (2018) differentiate among indicating i) all misstated periods, ii) only the first misstated period, and iii) only the restatement announcement period as a period associated with (low) audit quality. Sellers et al. (2018) find that the first option is most prominent. According to

Sellers et al. (2018), indicating all periods in which statements were misstated "provides the most inclusive measure of audit quality" (p. 4) and is applied to determine audit and financial reporting quality.

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