

The impact of financial restatements on financial markets: a systematic review of the literature

The impact of
financial
restatements

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Abstract

Purpose – The purpose of this paper is to discuss the most relevant issues related to the impact of financial restatements in the dynamics of financial markets and identify several research gaps to be investigated in future research.

Design/methodology/approach – The methodology is based on a systematic review of the literature described by Tranfield *et al.* (2003). The final sample includes 47 academic papers published from 1996 to 2019.

Findings – Papers in this domain discuss three main topics: how the market prices the announcement of a financial restatement; how financial restatements affect the announcing firm's cost of capital and how financial restatements affect firms' reputation. There are several issues to explore in future research, including whether financial restatements affect the dynamics of financial markets in Europe, whether the market fully and promptly assimilates the information content of a restatement, the role of financial analysts' information disclosures in this process or how regulators may improve the way they provide investors with timely information about firms' restating problems.

Research limitations/implications – There is always some degree of subjectivity in the definition of the keywords, search strings and selection criteria in a systematic review. These are all important aspects, as they delimitate the scope of the study and define the sample of papers to be reviewed.

Practical implications – The answers to the research questions identified in this paper may provide regulators with information to improve financial accounting and reporting standards and strengthen investors' confidence in accounting information and the dynamics of financial markets.

Originality/value – This paper systematically reviews the relevant literature exploring the connection between financial restatements and the dynamics of financial markets. It contributes to the academic community by identifying several research questions that may impact the theory and practice related to accounting quality and capital markets.

Keywords Financial markets, Literature review, Accounting quality, Financial restatements

Paper type Literature review



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1. Introduction

Accounting quality constitutes a fundamental objective of financial reporting because it facilitates managements' monitoring and contributes to reducing the level of information asymmetry between firms and their stakeholders. Financial restatements are thus particularly relevant within this context because they challenge the quality of financial reporting. In fact, restatements occur when companies need to revise one or more previously disclosed financial statements to correct errors. Restating is thus required when it is determined that a previous statement is flawed by a "material" inaccuracy[1], which can result from serious issues such as fraud or simple things such as a clerical error. Internal auditors routinely check the accounting information to identify possible sources of reporting errors that might lead to financial restatements. Specialized third parties, such as the firm's external auditor and the market regulator, can also require a restatement procedure.

Financial restatements are likely to affect firms' fundamentals, often leading to large stock price declines, market regulators' investigations, top management turnover or/and bankruptcy events (Palmrose *et al.*, 2004; Desai *et al.*, 2006; Amel-Zadeh and Zhang, 2015). It should be stressed that restatements are *not* rare corporate events. According to the Government Accountability Office (GAO, 2002), the number of restatements rose steadily in the USA in the period from 1997 to 2002, resulting in losses of up to \$100bn in market capitalization. Furthermore, the GAO (2006) reveals that the number of public US companies restating financial statements grew from 3.7% of the total listed firms in 2002 to 6.8% in 2005. Recent data available on the Audit Analytics database shows that around 7% of the listed firms in the USA restated their statements between 2010 and 2017.

Given the importance and relevance of the topic at hand, this paper develops a systematic literature review (Tranfield *et al.*, 2003; Denyer and Tranfield, 2009) to investigate the impact of financial restatements in the dynamics of financial markets. This type of work is helpful in identifying gaps in the existing knowledge, which can be explored to produce relevant research with practical implications (Murphy and William, 2015; Hay, 2017). This paper systematically reviews three main topics that draw on 47 academic studies published between 1996 and 2019. The first topic is how the market prices the announcement of a financial restatement. Studies addressing this issue from a short-term perspective unanimously show that filing a restatement is an event that indicates bad news for the firm. Further work reveals that the magnitude of the negative impact on share price is conditional on several aspects, ranging from who trades on the shares of the announcing firm to the regulatory environment, who initiates the proceedings, and the underlying reason for the restatement. In contrast, the long-term market reaction to the same event is still relatively under-researched and the available results are contradictory. A final strand of the literature investigates the intra-industry effects of financial restatements, with the available results clearly suggesting that such an event leads to a significant contagion effect.

The second main topic reviewed in the present paper deals with how restatements affect the cost of capital. Extant research unanimously concludes that this type of event is costly to the announcing firm because it results in an increase in the cost of equity and debt in the post-announcement period. Such an effect seems to be contingent on a number of factors. For instance, it is typically more intense when the restatement is initiated by an external auditor and when the announcing firm is extremely levered or when there is high litigation and information risk. Further, there is also evidence that the financial mix used by the announcing firm is affected by the event of interest. In particular, it relies more heavily on private debt post-event, especially when there is a material restatement and when there are important issues of information asymmetry. Interestingly, the literature also shows that

financial restatements lead to higher bank spreads, lower loan maturities and stricter covenant restrictions.

The last topic covered in the present literature review deals with how financial restatements affect firms' reputation. The existing evidence suggests that this is a very important aspect, which should worry both managers and investors. In particular, up to two-thirds of the post-event loss in market value seems to be driven by pure reputational effects. Not surprisingly, the reviewed studies reveal that restating companies engage in strategies to repair their reputation in the post-event period, which seem to generate positive market returns. The literature also concludes that reputational concerns are important determinants of the probability of a financial restatement because, on average, companies enjoying higher levels of reputation are less likely to misstate their financials.

Overall, the reviewed literature suggests that restatements are a clear case of bad news that significantly affects the functioning of financial markets. There are, however, many research avenues that can still be pursued to enrich our knowledge about this important topic. For instance, most of the literature is US based, something that can be explained because of data limitations. Yet it would be interesting and important to revisit some of the topics already examined in the past but factoring in the fundamental institutional, legal and cultural differences that exist between the USA and most other countries in the world. Even within the US context, one can still find questions that merit close investigation. One example is that of the role of financial analysts. In fact, this issue has been widely explored looking at other corporate events, but the evidence concerning restatements is, at best, scant. Another interesting avenue is to understand what actions market regulators can bring about to minimize the information problems that usually plague restating firms. This would help retail investors' access timely information, which could boost their confidence in the functioning of financial markets.

Apart from this introduction, this manuscript is organized as follows. Section 2 summarizes the scope of the research and presents the research design. Section 3 reports the findings and Section 4 concludes and discusses the implications for future research.

2. Theoretical framework, scope of the research and research design

2.1 Theoretical framework

The efficient market hypothesis (EMH) advocates that financial markets assimilate relevant information fully and quickly. Fama (1970) establishes the classical understanding of the EMH's framework, which encompasses "weak," "semi-strong" and "strong" forms. In its basic format, the EMH posits that current market prices reflect all price-based "historical" information. On the contrary, the "semi-strong" form of the EMH argues that the market value of an asset adjusts immediately and without bias to all "publicly" available information, whereas the "strong" form goes a step further and claims that current market prices incorporate all public and *private* information. Irrespective of the particular form of EMH one considers, the implication is broadly the same: if it holds, traders are unable to design investment strategies that consistently deliver abnormal returns.

In an *à la* Fama (1970) world, financial reporting should play a limited role in the dynamics of financial markets. In fact, in such a world, informational content would be fully and immediately impounded into market prices as soon as the accounting data becomes available. There are, however, many reasons to think otherwise. For instance, a voluminous literature finds that managers manipulate earnings to improve stock prices and raise additional low-cost capital (Lev, 1989; Ramakrishnan and Thomas, 1998; Kothari, 2001). As a result, earnings management may create a significant difference between the market price

of a company and its fundamental value (Ronen and Yaari, 2008), something that is clearly inconsistent with the EMH and that poses an important challenge for its advocates.

Restatements constitute a fundamental event within this context because they question the integrity of financial statements and challenge the quality of financial reporting, both of which may affect the real economy very significantly. The accounting scandals that shook the world in the early 2000s are a practical and very important example of this situation. Such scandals were accompanied by restatements, whereby previously disclosed financials had to be adjusted because of errors (e.g. Enron, Tyco and WorldCom). This led to a chain effect that undermined global investors' confidence in large publicly traded companies and audit firms with very negative and long-lasting effects in the economies of both developed and developing countries. Not surprisingly, the theme of financial restatements has captured the attention of the academic community and is nowadays a well-established investigation field in the areas of accounting and finance. In fact, one can find papers dealing with accounting quality issues (Wilson, 2008; Donelson *et al.*, 2013; Wiedman and Hendricks, 2013; Chen *et al.*, 2014), management issues (Efendi *et al.*, 2007; Cheng and Farber, 2008; Fung, 2015), auditing issues (Stanley and DeZoort, 2007; Prawitt *et al.*, 2012; Blankley *et al.*, 2012; Hennes *et al.*, 2014; Hribar *et al.*, 2014) and market issues (Palmrose *et al.*, 2004; Bardos *et al.*, 2011; Drake *et al.*, 2015).

2.2 Scope of the research

Given the above, the objective of this systematic review is to study the interaction between the issuance of a financial restatement and the dynamics of financial markets. In particular, it aims at:

- identifying and understanding the most relevant issues and developments linking financial restatements and the dynamic of financial markets; and
- mapping the gaps in the literature that offer research opportunities for future empirical work.

These issues are at the core of the existing literature, which justifies examining them in close detail. Moreover, they have practical implications, something one can anticipate from the response of the different market regulators to the scandals in the early 2000s.

2.3 Research design

This study uses a systematic review of the literature to achieve its goal. Such a methodology is particularly suited for identifying the main contributions of a field of research, thus helping to detect research gaps that may exist (Tranfield *et al.*, 2003; Denyer and Tranfield, 2009). Drawing on Tranfield *et al.* (2003) and Denyer and Tranfield (2009), this study uses a four-step approach to find the papers to be reviewed. First, based on an *ad hoc* review of the existing literature, this paper identifies relevant keywords in the two main areas of interest. In particular, the keywords for the topic "financial restatements" are *financial restatements*, *restatement announcements*, *accounting irregularities*, *fraudulent disclosures* and *accounting restatements*, while those for the topic "financial markets" are *financial markets*, *market reaction*, *market impact*, *share prices*, *stock returns*, *trading*, *shareholders* and *stockholders*. Next, the keywords are combined into search strings, which are applied to the abstracts of the papers present in the most popular and comprehensive databases for social sciences that are available to us, i.e. EBSCOhost, ABI/INFORM and SCOPUS. We consider all publications present in these databases up until July 2019, i.e. the moment when we write up

this manuscript. This procedure yields a total of 455 documents, excluding duplicates and non-academic contributions.

Next we apply the exclusion criteria listed in [Table 1](#), which aim at removing all papers that lie outside the scope of this systematic review.

As can be seen, articles that are not published in scientific journals are excluded given the absence of peer review. Further, papers looking only at financial restatements or financial markets and those not related to the accounting and finance areas are removed to ensure a certain degree of homogeneity in the results. Finally, given that the restatement literature is very broad, contributions that do not clearly address the main topic of this review are eliminated. In the end, we exclude 47 papers based on the first criterion. A further 256 and 104 articles are deleted as per criteria two and three above, respectively.

In the next and final step, this study applies inclusion criteria, which are designed to ensure that the papers discussed in this systematic review:

- present well-defined research questions that are supported by the literature;
- clearly state their sample and methodology;
- include an appropriate discussion of the results; and
- offer a clear contribution to knowledge.

Papers that cumulatively comply with these inclusion criteria make up the final set we examine. [Table 2](#) summarizes all steps of our selection process.

In the end, we work with 47 academic manuscripts that are published between 1996 and 2019 and address the issue of how financial restatements affect the dynamics of the financial markets. Please refer to [Appendix](#) for further details about each of these papers.

3. Findings

[Table 3](#) shows the distribution of the final list of papers by journal title.

The most informative journal in our sample is *The Accounting Review*, with seven studies. The *Review of Accounting Studies* and the *Journal of Accounting, Auditing and Finance* come next, both with four studies. *Contemporary Accounting Research*, the *Journal of Accounting and Economics*, the *Journal of Accounting and Public Policy*, the *Journal of Business Finance and Accounting* and the *Review of Quantitative Finance and Accounting*

Criterion	Rationale
Articles published in sources other than scholarly journals	Financial restatements are referred to on a daily basis in the different media and sources other than scholarly journals. For this academic systematic review, documents published in magazines and newspapers are excluded
Studies that do not focus on financial restatements or financial markets or are outside the scope of accounting and finance	Some papers have their focus on other topics than financial restatements or financial markets or are driven in contexts outside the accounting and finance domain. These papers are excluded to ensure that the final sample contains papers exclusively related to the two areas of the literature that we want to connect
Papers that do not focus on whether financial restatements affect the dynamics of financial markets	Papers covering topics that are not directly related to the research goal are deleted

Table 1.
Criteria and rationales for exclusion

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have three studies each. The remaining 17 studies are published by 15 different academic journals in the accounting and finance area.

Next, we discuss the findings based on homogeneous topics in the intersection between financial restatements and the functioning of financial markets.

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3.1 Impact of restatements on the dynamics of financial markets

3.1.1 Stock market reaction to financial restatements. The papers that address the stock market reaction to restatements usually differentiate between short- and long-term impacts and typically investigate if the market reacts negatively to the publication of a restatement and whether it anticipates such an event, which factors affect the magnitude of the market reaction and to what extent the stock market efficiently assimilates the information content

Table 2.
Selection of papers process

Academic papers after duplication removal	455
Papers excluded based on criterion 1	-47
Papers excluded based on criterion 2	-256
Papers excluded based on criterion 3	-104
Papers included in the refined scope	48
Papers excluded based on reading the full text	-1
Final sample of papers for the systematic review	47

Table 3.
Distribution of studies by journal

Journal title	No. of studies
<i>Accounting and Finance</i>	1
<i>Accounting Horizons</i>	1
<i>Advances in Financial Economics</i>	1
<i>Applied Financial Economics</i>	2
<i>Contemporary Accounting Research</i>	3
<i>Financial Review</i>	1
<i>Journal of Accounting and Economics</i>	3
<i>Journal of Accounting and Finance</i>	1
<i>Journal of Accounting and Public Policy</i>	3
<i>Journal of Accounting Research</i>	1
<i>Journal of Accounting, Auditing and Finance</i>	4
<i>Journal of Applied Accounting Research</i>	1
<i>Journal of Business Ethics</i>	1
<i>Journal of Business Finance and Accounting</i>	3
<i>Journal of Corporate Finance</i>	1
<i>Journal of Financial and Quantitative Analysis</i>	2
<i>Journal of Financial Economics</i>	1
<i>Long Range Planning</i>	1
<i>Managerial Auditing Journal</i>	1
<i>Managerial Finance</i>	1
<i>Review of Accounting Studies</i>	4
<i>Review of Quantitative Finance and Accounting</i>	3
<i>The Accounting Review</i>	7
Total	47

of a restatement post-event. The next subsections review the set of manuscripts on these topics.

3.1.1.1 Short-term impact. The short-term stock market reaction to financial restatements is well explored in the literature. The consensus is that restatements are a clear case of bad news and are associated with significant losses in the announcing firm's market value. For instance, [Palmrose et al. \(2004\)](#) study a sample of 403 financial restatements issued between 1995 and 1999 and find an average negative stock price reaction of 9.2% in the two-day event window [0; 1] around the announcement date. [Hribar and Jenkins \(2004\)](#) find similar results for a sample compiled by the GAO encompassing 292 restatements between January 1, 1997 and June 30, 2002. Their results show that the decline in stock value begins 25 days before the announcement, with an average loss of 3% over 17 days [-20; -3] and a further decline of 9% in the [-2; 2] event window. Using different event periods for a similar sample, [Gleason et al. \(2008\)](#) document an average negative stock market reaction of 4.6% [-10; -2], 19.8% [-1; 1] and 2.1% [2; 10]. [Akhigbe and Madura \(2008\)](#) use a sample comprising only earning restatements from 1991 to 2002 and report a negative stock price abnormal performance of 3.35% around the announcement date [-1; +1] and 2.77% immediately before the event disclosure date (i.e. for the [-11; -2] window). [Gondhalekar et al. \(2012\)](#) use data from the GAO database for the period 2002–2006 and find an average and significant negative stock price reaction of 1.58% [-1; 1] and 1.44% [0; 1]. Finally, [Drake et al. \(2015\)](#) report an average reduction in stock value of 1.3% in the two-day window around the event date [0; 1] for their sample comprising 740 restatements issued by 468 firms between 2005 and 2007.

There is also evidence that the market anticipates the announcement of financial restatements. For instance, [Gondhalekar et al. \(2012\)](#) report negative stock price abnormal performance during the year leading up to the event date (9.6%). In a similar vein, [Bardos et al. \(2011\)](#) show that the stock price decline of restating firms starts several months before the actual disclosure date. The literature puts forward many possibilities when trying to explain this negative pre-event abnormal performance. These range from the poor performance of the announcing firm ([Gondhalekar et al., 2012](#)) to information leakage ([Hribar and Jenkins, 2004](#); [Akhigbe and Madura, 2008](#); [Gleason et al., 2008](#)) and the ability of sophisticated investors to anticipate the restatement ([Griffin, 2003](#); [Desai et al., 2006](#)).

3.1.1.2 Determinants of the short-term stock market reaction. Several papers investigate the determinants of the negative stock market reaction to financial restatements. For instance, [Salavei \(2010\)](#) concludes that it is stronger when the restatement is related with "easy-to-estimate" items but much weaker otherwise. Further, using an event window of three days centered around the restatement date, [Salavei \(2010\)](#) finds a stronger negative market reaction when there was litigation (without litigation) for easy-to-estimate items with a mean cumulative abnormal returns (CAR) of 13.02% (2.61%) and difficult-to-estimate items with a mean CAR of 12.04% (2.88%). In a related contribution, [Bardos and Mishra \(2014\)](#) find that firms that are sued after restating their financial accounts face a more negative market impact than non-sued equivalents. In a parallel study, [Palmrose et al. \(2004\)](#) find evidence that restatements affecting multiple items that review previously reported earnings are associated with higher losses in stock market value. [Gondhalekar et al. \(2012\)](#) find that revenue and cost/expense issues are the most common causes for restatements in their sample firms (48% and 22%, respectively), with a three-day negative abnormal reaction of 1.31% and 1.49%, respectively. [Bardos et al. \(2011\)](#), however, suggest that investors penalize the restating firms more heavily when there are core accounting mistakes affecting, for instance, revenues and costs.

Prior studies also reveal that the magnitude of the abnormal stock price reaction to the event of interest depends on who initiates the event. For instance, [Palmrose et al. \(2004\)](#) conjecture that restatements initiated externally can lead to more negative returns, as they can be associated with weak internal controls and managerial incompetence. The authors report supporting evidence for their claim because they find a negative abnormal stock market reaction for the three-day window around the disclosure date of 18% when an auditor triggers the restatement, 13% when the event is initiated by the company and only 4% when the Securities and Exchange Commission (SEC) begins the process. [Hribar and Jenkins \(2004\)](#) also find negative and statistically significant abnormal returns for auditor-initiated (14.8%) and company-initiated (7.1%) restatements over the $[-2; 2]$ window, failing to find a similar pattern when the SEC drives the event. [Gondhalekar et al. \(2012\)](#) suggest that this may be because of the propensity of firms to immediately rectify the irregularities identified by the SEC. The same authors show that during the year leading up to the disclosure date, the abnormal returns are negative regardless of who initiates the restatement. However, the pre- and post-announcement reactions are significantly more unfavorable when the *auditor* starts the case. Similarly, [Badertscher et al. \(2011\)](#) show that auditor-initiated restatements lead to a more negative stock market reaction. They argue that auditors seem to be particularly important because investors think of them as having superior information. Hence, restatements driven by auditors may be perceived as being particularly problematic, signaling severe governance problems within the firm and/or fraudulent situations.

Risk-related issues also seem to affect the market reaction to financial restatements. For instance, evidence of fraud – a factor generating firm-specific risk as it hinders management credibility, increases information asymmetry, reduces earnings prospects and boosts the likelihood of litigation and regulatory actions – magnifies its negative impact. [Palmrose et al. \(2004\)](#) document an average negative CAR of 20% $[0; 1]$ for fraudulent cases, which contrasts with an average negative CAR of 6% $[0; 1]$ for non-fraudulent restatements. In a similar vein, [Cox and Weirich \(2002\)](#) provide anecdotal evidence that firms involved in fraudulent reporting suffer a strong penalization on their market value. Less dramatic phenomena are also relevant in this context. For instance, research by [Li et al. \(2018\)](#) shows that evidence of weak internal control boosts the loss of shareholder value following a restatement. This result is consistent with the view that internal control weaknesses are associated with financial reporting uncertainties. In a related study, [Kravet and Shevlin \(2010\)](#) find that the market impact of a restatement is related to investors' concerns about information risk arising from management's reporting decisions, their discretionary actions (such as accruals) and enterprise characteristics, such as total assets, cash flow from operations and sales.

The level of information opacity surrounding the company is another factor that must be accounted for. [Files et al. \(2009\)](#) use a sample of firms that disclose restatements in press releases and find that the magnitude of the stock market reaction depends on the prominence of the announcement. To be specific, abnormal returns computed for the three-day window around the event date are -8.3% for high-prominence announcements (i.e. when the restatement is disclosed in the headline of the press release), -4.0% for medium-prominence announcements (i.e. the restatement is disclosed only in the body of the press release) and -1.5% for low-prominence announcements (i.e. the restatement is disclosed at the bottom of the press release in a footnote). [Files et al. \(2009\)](#) also show that stock prices adjust faster to fundamental levels in the post-event period when analysts' coverage is high. On the contrary, [Gordon et al. \(2013\)](#) find that greater levels of discretionary disclosures in the pre-restatement period actually mitigate the magnitude of the stock market reaction

around the event date. Further, this paper reports that using a more optimistic tone when disclosing pre-event information exacerbates the negative market reaction when the event becomes publicly known. In a related contribution, [BenYoussef and Khan \(2018\)](#) conclude that, on average, the market more strongly penalizes longer lags in the restatement disclosure. In other words, the announcing firm's stock market abnormal performance is more negative as the number of days between the initial restatement announcement and the actual filing with the SEC increases.

The regulatory environment surrounding the disclosure of a financial restatement may also affect how the market reacts to such an event. [Burks \(2011\)](#) finds that the initial price reaction to restatements is significantly less negative after the enactment of the Sarbanes–Oxley Act (SOX) than in the pre-SOX period. He concludes that the SOX helped improve price efficiency in general and especially in the context of restatement announcements. The type of firm in need of refilling its financial accounts is also an important issue. For instance, [Adams et al. \(2017\)](#) study how the market reacts to such an event, separating between real estate investment trusts (REITs) and non-REIT firms. According to the authors, this is an important distinction because REITs are more easily scrutinized and more transparent than non-REITs and thus *less* exposed to information asymmetry and agency costs. [Adams et al. \(2017\)](#) find a less negative stock market reaction to REIT restatements (average negative CAR of 0.63%) than to non-REIT statements (average negative CAR of 1.58%) over the [−1; 1] event window. Yet further analysis shows that restating REITs with higher leverage and book-to-market ratios experiences a more negative market reaction (of 6.19% and 2.19% over the same period, respectively). At a more general level, [Hribar and Jenkins \(2004\)](#) report that restating firms with higher leverage experience more negative abnormal returns, contrary to size and sales growth – firm characteristics that do not seem to be associated with any significant stock market reaction.

3.1.1.3 Long-term impact. The long-term market impact of financial restatements is also explored in the previous literature, although much less so than its short-term counterpart. One of the few contributions in this area is that by [Hribar and Jenkins \(2004\)](#) who investigate the two-month period following a restatement announcement. The authors find no evidence of abnormal stock price performance within such a period, suggesting that the market is able to efficiently deal with this accounting event. A similar conclusion is reported by [Gondhalekar et al. \(2012\)](#), who consider a full one-year post-event period [2]. [Bardos et al. \(2011\)](#), however, report inconsistent results because they find significant stock price abnormal reaction for months +1, +5 and +6 of −6.9%, −4.61% and −4.53%, respectively. This is evidence that the market underreacts to the initial filing, with the authors arguing that investors are likely to require time to assimilate all the information contained in a restatement announcement. [Burks \(2011\)](#) provides further evidence in favor of an underreaction story when re-examining the issue, conditional on the passing of the SOX. In particular, using Fama–French calendar time regressions, the author uncovers significant accumulated six-month, one-year and two-year median returns of −14.4%, −25.2% and −52.8%, respectively, for pre-SOX restatements. Counterpart figures for the post-SOX period are −4.8%, −6.0% and −12.0%.

3.1.1.4 Trading activity. A few papers explore the trading activity around the announcement of financial restatements. [Ye and Yu \(2018\)](#) show that earnings restatements have a long-lasting impact on the trading volume of the restating firms. They also show that trading volume is more severely affected when the event is driven by some form of irregularity following the enactment of the SOX and when the auditors are dismissed and/or there is at least some executive turnover. In a similar vein, [Alfonso et al. \(2018\)](#) report a significant abnormal trading volume reaction to cash-flow restatements, which supports the

idea that such disclosure has informational content and that investors tend to disagree about its implications on value in the two days around the announcement date.

A different strand of the literature investigates the trading patterns of particular market participants. For instance, [Desai et al. \(2006\)](#) find that short-sellers accumulate investment positions in restating firms long before the formal announcement date, most of which are closed in the post-disclosure period. Consistent with this evidence, [Drake et al. \(2015\)](#) report relatively high levels of short-selling in the month leading up to the restatement. [Agrawal and Cooper \(2015\)](#) examine insider trading behavior in a sample of more than 500 firms involved in accounting scandals revealed by earnings-decreasing restatements. Using several subsamples for which insiders have great incentive to sell before the revelation of the accounting problems, the authors find strong evidence that top managers of restating firms sell substantially more stock during the misstated period. Interestingly, [Thevenot \(2012\)](#), who investigates managerial incentives to engage in insider trading on material private information, concludes that the risk of shareholder litigation and SEC enforcement decreases insider trading activity around restatement events. Nevertheless, [Thevenot \(2012\)](#) reports that insiders of fraud firms sell more stock than do non-fraud firms, although the intensity of their trades is less likely to be related to the magnitude of their private information. [Boyd et al. \(2014\)](#) also contribute to the debate by using the level of abnormal failure to deliver as a proxy for naked short selling and find a significant increase in the short-selling activity both before and after the issue of a restatement. In particular, such activity peaks on the seventh and sixth day before and the two days following the formal disclosure date. In a different contribution, [Griffin \(2003\)](#) finds that insiders and short-sellers are unusually active several months before the announcement of a restatement, with institutional holdings also declining significantly in the pre-event period.

[Badertscher et al. \(2011\)](#) take a different view and explore to what extent prior informed trading affects the magnitude of the stock market reaction to restatements. This paper reports significantly less negative abnormal stock returns when managers are net purchasers of the announcing firm's stock or when there are prior net stock repurchases in the pre-event period. In a similar vein, [Desai et al. \(2006\)](#) find a significant relationship between high levels of short-selling and low performance of restating companies, suggesting that short-sellers are "attentive" and able to identify questionable accounting practices. [Drake et al. \(2015\)](#) further contribute to this discussion by showing that short sellers are particularly interested in companies issuing earnings restatements and small companies that have weaker information environments. In fact, in their paper, high levels of short selling are more evident in companies that experience stronger negative returns in the 40 post-event days.

Financial analysts may play an important role in reducing information asymmetry associated with restatement problems, thus influencing the trading activity on restating firms. However, the few papers addressing related issues provide conflicting evidence. On the one hand, [Griffin \(2003\)](#) claims that analysts do not anticipate restating problems in the pre-event period and they become less interested in following such firms following the restatement date. [Ye and Yu \(2017\)](#) provide additional evidence on the topic, concluding that analysts become less accurate in the post-event period. On the other hand, [Barniv and Cao \(2009\)](#) find no significant differences in the percentage of analysts dropping or initiating coverage between restating and non-restating firms in their sample. Yet the authors report significant differences in investors' reliance on these specialized market participants between these two groups of firms.

3.1.1.5 Intra-industry effects. Financial restatements have important intra-industry effects. For instance, [Gleason et al. \(2008\)](#) report that such events induce share price declines

among non-restating peer firms. Further, they conclude that this intra-industry contagion effect is more extreme for peer firms that exhibit similar levels of accounting quality and when they share the same external auditor. Similarly, [Ji et al. \(2019\)](#) report that peer firms' market value loss increases when they hire an industry specialist auditor that has clients that restated their financial accounts. This paper complements the findings of [Liu et al. \(2012\)](#), who investigate the contagion effect that the Enron episode had on the credit rating of firms in the same industry. [Liu et al. \(2012\)](#) find that severe restatements correlate heavily with the adjustments of credit ratings assigned by Standard and Poor's. In particular, the authors find that firms operating in the same industry as Enron and issuing more severe restatement are more penalized in their credit rating than companies that also had to restate their financials around the same time but operated in other sectors. [Akhigbe and Madura \(2008\)](#) corroborate the contagion effect story and further claim that it holds both when the restatement diminishes or increases previously reported earnings. Moreover, the same authors conclude that the adverse effects of earnings restatements are more prominent for highly concentrated industries that have a greater level of accruals. [Xu et al. \(2006\)](#) contribute to this discussion by showing that the contagion effect is more extreme when peer and announcing firms share similar cash-flow characteristics. Moreover, this paper suggests that the contagion effect is driven by changes in the prospects of short-term earnings and not by investors' confidence in the earnings quality of the peer firms. Interestingly, [Campbell and Yeung \(2017\)](#) find that earnings comparability, i.e. the extent to which a firm's accounting choices and estimates are similar between announcing and peer firms, is useful to understand whether the financial statements of these firms share similar low-quality levels. [Kedia et al. \(2015\)](#) further add to this story by claiming that the restatement's contagion effect is not because of investors' skepticism about the peer firms' quality of financial reporting. Instead, they argue that peer firms choose to misrepresent their financial information after knowing that the target firm adopted the same behavior. This is particularly evident when the target firm is larger, when the restatement is prominently disclosed, or when the target firm's restatement is less severe.

[Kravet and Shevlin \(2010\)](#) take a slightly different approach and focus on the information transfer effects arising from restatement announcements. They argue that this may occur because such events negatively affect the credibility of management, fuelling the idea that they may be opportunistically making accounting decisions within the industry. Findings seem to corroborate this view because, in their sample, the increase in discretionary information risk explains the rise of the annualized cost of equity of the peer firms by 0.47%, i.e. about half the effect reported for the restating firms. Moreover, [Kravet and Shevlin \(2010\)](#) conclude that the restatement initiator and the number of times a firm restates are significant determinants of the change in information risk pricing. [Sletten \(2012\)](#) provides another relevant contribution in this area. In fact, the author shows that the observed disclosure pattern is driven by previously withheld information because managers of the peer firms seem to withhold bad news.

The literature also suggests that restatements are useful for peer firms when the issue is capital budgeting decisions. In fact, such events may help competitors mitigate uncertainty about demand and cost conditions within industry. [Durnev and Mangen \(2009\)](#) find that peer firms' investment expenses decrease between 3% and 16% in each of the three years following the announcement of a restatement by a competing firm. The same authors highlight that peer firms' abnormal return at the restatement announcement date is the single most significant determinant of this reduction in investment level. Yet [Beatty et al. \(2013\)](#) show that peer firms have significantly greater capital expenditures following an industry leader high-profile fraud (i.e. Fortune 500 firms accused of fraud in SEC

Accounting and Auditing Enforcement Releases) in comparison to control firms during the fraud period. This paper also finds that peers' investments increase in fraudulent earnings overstatements and in industries with higher investor sentiment, lower cost of capital and higher private benefits of control.

3.2 Cost of capital and capital structure

Several papers find that restatements increase the cost of capital. For instance, [Hribar and Jenkins \(2004\)](#) use analyst forecast revisions following this type of event and estimate an average increase in event firms' cost of capital that fluctuates between 7% and 19% during the month preceding the event. They also show that capital upturns are more extreme when the case is auditor initiated (13.7%) and for highly leveraged firms (4.2%). [Bardos and Mishra \(2014\)](#) augment the work of [Hribar and Jenkins \(2004\)](#) by including the effects of litigation and by considering the impacts of the event of interest on cash flow and cost of capital separately. The results show that 67% of the sample firms they examine suffer an increase in their cost of equity. Further, of the restating firms that went through a class action, 83% experience an increase in their cost of equity that is greater for cases when an actual indictment occurs. [Kravet and Shevlin \(2010\)](#), however, criticize the work of [Hribar and Jenkins \(2004\)](#), arguing that analysts' forecasts are a poor proxy for assessing a firm's cost of capital. Instead, they posit that one should focus on the quality of accruals and how accruals are used by managers to achieve this goal, as this helps determine a firm's "information risk" and "discretionary information risk." [Kravet and Shevlin \(2010\)](#) examine such variables and find that the cost of information risk increases after the issuing of a restatement, leading to an average growth of 0.86% in the announcing firm's cost of equity. Moreover, their long-term post-event methodology allows them to conclude that such an effect tends to fade away over the three-year period following the restatement disclosure date. [Nicholls \(2016\)](#) augments knowledge about this issue by investigating the impact of an SEC investigation (i.e. accounting and auditing enforcement releases) in a firm's cost of equity and shows that it is exclusively related to the period surrounding the investigation disclosure date and not when the SEC issues an accounting and auditing enforcement release.

Financial restatements also have a negative impact on the cost of debt. [Graham et al. \(2008\)](#) contribute to this topic, showing significant post-restatement effects such as:

- higher spreads;
- lower maturities;
- increased probability of the need for loan insurance; and
- more restrictive loan covenants.

These findings suggest that the perception of risk increases after a restatement ([Hribar and Jenkins, 2004](#); [Palmrose et al., 2004](#); [Kravet and Shevlin, 2010](#)) and that the resulting concentration of lenders allows better monitoring of the borrower. Yet [Park and Wu \(2009\)](#) dispute the results of [Graham et al. \(2008\)](#) on the basis that they may include other factors that are not directly related to restatements. Hence, they re-examine the issue and find significant negative abnormal loan returns and positive cumulative bid-ask spread changes surrounding the restatement announcement date and during the pre-event period. These effects are magnified in cases of revenue recognition restatements and restatements initiated by auditors or the SEC. Further work by [Chen \(2016\)](#) finds a 17.6% increase in the loan interest spread of the announcing firm during the misreporting period and a further 32.6%

after the restatement date when the comparison is done with the interest spread of loans that were issued in the pre-misreporting period.

Financial restatements also significantly affect firms' capital structure. [Dechow et al. \(1996\)](#) provide some evidence on the topic. The authors claim that companies manipulate earnings because they wish to raise external funds at a low cost and avoid debt covenant restrictions. Such behavior, however, is penalized following the disclosure of a financial restatement because of earnings manipulation, with fraudulent firms experiencing a significant increase in their cost of capital post-event. On the other hand, [Chen et al. \(2013\)](#) show that firms rely more on private debt and less on equity financing following a restatement. Switching to debt financing is particularly clear when there is a material restatement and when the event firm exhibits severe information problems. In contrast, the same effect is lessened when there is CEO/CFO turnover and/or the auditor is dismissed. [Chen et al. \(2013\)](#) suggest that their results can be explained within an asymmetry of information framework because, in general, the related literature finds that private debt holders are more able to deal with information issues than equity holders. [Albring et al. \(2013\)](#) further contribute to this discussion by showing that fraudulent reporting leads to a much larger effect on a firm's externally financed growth than non-fraudulent reporting.

3.3 Reputation

Firms' reputations are affected by a restatement. In a seminal contribution, [Karpoff et al. \(2008\)](#) find that, on average, firms "caught cooking the books" in the USA between 1978 and 2002 had to pay \$23.5m in fines. Yet the same authors caution that the overall effect is likely to be much higher because of reputational losses. In particular, [Karpoff et al. \(2008\)](#) estimate that a company could lose up to 38% of its market value once its financial misreporting is discovered. According to them, around 24.5% of that loss is because of the necessary accounting adjustments, 8.8% is for potential litigation costs (with shareholders and the SEC) and the remaining 66.7% results from the loss of reputation with customers and suppliers. In another contribution, [Cao et al. \(2012\)](#) show that companies with higher reputation are less likely to misstate their financials, a pattern that holds after controlling for CEO tenure, corporate governance structure and audit fees.

[Chakravarthy et al. \(2014\)](#) take a different approach and argue that restating firms have an incentive to use a reputation-repair strategy that targets multiple stakeholders (capital providers, customers, employees and geographic communities). They find that such companies undertake substantially more reputation-building actions after a serious restatement than before the event is known to the public. In a related contribution, [Cianci et al. \(2019\)](#) find that pre-event managerial reputation can lessen the negative impact of a financial restatement as it conditions investors' response to announcements of corrective action. Furthermore, [Gertsen et al. \(2006\)](#) use content analysis and show that the magnitude of restatements' negative consequences is affected by how the firm communicates to investors the underlying causes of the event. In particular, this paper finds that its overall impact may be mitigated when the restating firm communicates openly, "takes the blame" and complies with rules and regulations. Yet according to [Gertsen et al.'s \(2006\)](#) data, very few companies choose to communicate in such a particular manner.

4. Conclusions and implications for future research

This systematic review investigates the impact of financial restatements on the dynamics of stock markets. Drawing on 47 academic manuscripts published in accounting and finance journals from 1996 to 2019, this paper identifies three main areas of research. The first deals with the stock price performance of the restating firms. The second examines the interaction

between financial restatements and the cost of capital. The third explores to what extent financial restatements affect the announcing firm's reputation.

Our main conclusion is that this important accounting event leads to significant losses in the market value of the restating companies and their non-restating rival firms. Such a phenomenon is particularly acute in the short term and is fuelled by different aspects, such as the motivation for the restatement, who initiates the procedure, its legal implications, the level of information asymmetry and the regulatory environment. Our review also allows us to conclude that financial restatements significantly increase the announcing firm's cost of capital (be that of equity or debt) and seems to reduce the restating company's ability to raise additional funds from shareholders. The surveyed papers also suggest that filing a financial restatement negatively affects the reputation of the firm, which results in severe costs, at least in the short run.

Virtually, all of the papers covered in this review draw exclusively on US data. In fact, non-US evidence is scant, which may result from the lack of appropriate data sources. As [Karpoff et al. \(2017\)](#) emphasize GAO and audit analytics, which are the most popular databases in this area, are restricted to the US universe. These databases became available in the late 1990s and this is why the number of publications on financial restatements has risen considerably in the past 20 years. Regrettably, there is no similar source of information for the European market, something that, however, opens up the possibility to explore several interesting questions and develop new empirical work. For instance, International Financial Reporting Standards are required for all companies whose securities are traded in a regulated market of the 31 member states of the European Union (EU) and the European Economic Area (EEA). One could question whether the European regulators are concerned with the quality of financial reporting or whether concerns should be raised regarding the independence of auditing systems in Europe. Another interesting question that could be explored within the European context is how different institutional settings affect the market response to financial restatements. In fact, although 19 of the 28 EU member states have adopted the euro as their common currency, very important and significant differences among them still persist ([Iversen and Soskice, 2018](#)). As pointed out in recent research by [Pérez-Moreno et al. \(2017\)](#), institutional characteristics of the 19 euro countries such as government efficiency and corporate ethics have actual *diverged* in the period 2006–2015. Thus, re-examining the extant knowledge on the impact of financial restatements on the dynamics of financial markets, taking into consideration the structural institutional differences of the eurozone, should enable us to learn more about this topic. A third promising research avenue is driven by how firms typically procure funding. The USA is usually seen as a market-based economy, which means that companies rely on markets to secure the cash they need. In contrast, most European countries have a bank-centered economy, with such institutions providing most of the capital (i.e. debt) to firms ([Ciani et al., 2015](#)). This systematic review concludes that financial restatements significantly affect the cost of capital and the capital structure of the announcing firms. Hence, it would be interesting to revisit such a conclusion given the contrast between the core funding mechanism available to firms in the USA and in the European economies. It should be noted that all of the issues raised for the EU and the EEA are also relevant for emerging economies. In fact, the International Accounting Standards Board has actively promoted the adoption of International Accounting Reporting Standards in these countries. Thus, it would be important to develop future research on different firms' behaviors and market reaction during crisis periods and possible reasons to issue modified audit opinions and firms' restatements in such emerging economies.

There are other research avenues that can be explored even in the US context. For instance, despite the consensus that financial restatements have a negative impact on those firms' market value in the short term (Hribar and Jenkins, 2004; Palmrose *et al.*, 2004; Akhigbe and Madura, 2008; Gondhalekar *et al.*, 2012; Drake *et al.*, 2015), we still know very little about the long-term market reaction to the same event (Bardos *et al.*, 2011; Burks, 2011; Gondhalekar *et al.*, 2012). Does the market fully and promptly assimilate the information content of a restatement? This question is still open for debate and merits further investigation. In effect, parallel evidence suggests that the market underreacts to similar bad news public events such as negative earnings surprises (Bernard and Thomas, 1989, 1990), dividend omissions (Michaely *et al.*, 1995), bond downgrades (Dichev and Piotroski, 2001) and going concern or bankruptcy announcements (Taffler *et al.*, 2004; Kausar *et al.*, 2009; Coelho, 2015). Thus, it would be interesting to refine the existing research designs to settle this question, namely, by explicitly taking into consideration that an eventual incomplete market reaction may be because of arbitrage issues (e.g. high transaction costs) and/or investors' biases (e.g. overconfidence, herding behavior or loss aversion).

This systematic literature review concludes that the market is able to anticipate the formal disclosure of a financial restatement. In fact, for the announcing firm, there is evidence of statistically significant negative abnormal returns (Hribar and Jenkins, 2004; Gleason *et al.*, 2008; Bardos *et al.*, 2011), higher short-seller and insider activity (Griffin, 2003; Desai *et al.*, 2006; Drake *et al.*, 2015) and important decreases in institutional stockholdings (Griffin, 2003) in the *pre*-event period. Yet, financial analysts' role in this context remains open to debate. Thus, one question that warrants investigation is whether or not these market participants appropriately adjust their recommendations, earnings estimates and price targets in the months leading up to the restatement announcement date. An additional question is to what extent their behavior influences the degree of surprise with which the market receives the bad news a financial restatement usually entails. Answering these questions could help clarify whether analysts' opinions are misleading retail investors (something that would benefit the more sophisticated short sellers and insiders), who the literature suggests rely more on their expertise to make investment decisions (Malmendier and Shanthikumar, 2007).

Regulators play an important role in minimizing the information asymmetry problem that exists between restating firms and investors. In particular, there is evidence that sophisticated investors act (and benefit) from this accounting event before its formal announcement date (Badertscher *et al.*, 2011; Drake *et al.*, 2015) that banks have privileged access to restating firms' financial information (Park and Wu, 2009) and that the negative consequences of a restatement are contingent on how the firm communicates its underlying motivation to investors (Gertsen *et al.*, 2006). On the contrary, the SOX seem to have improved the short- and long-term stock price efficiency in what concerns restating firms (Burks, 2011). Therefore, it would be of interest to explore how regulatory authorities may improve the way they provide retail investors with timely information about firms' restating problems, which would likely help increase these investors' confidence in the functioning of financial markets.

The results of this review must be read with caution given the nature of the research method we use. In fact, despite using a systematic review method, some degree of subjectivity remains in what concerns the definition of the keywords, search strings and the selection criteria. These are all important aspects, as they delimit the scope of the study and define the papers to be reviewed. In this sense, other research methods could be used to increase the robustness of our results. For instance, meta-analysis represents a research method that reconciles the findings of the sample studies, allowing the identification of logical conclusions. Yet, using this methodology might prove troublesome in our particular context. One of the most important assumptions of meta-analysis is that the research

methods used by the selected papers are similar (Velte, 2019). This is clearly *not* our case, because the 47 papers that were reviewed exhibit significant differences in their methods, samples and time periods. Such heterogeneity jeopardizes resorting to meta-analysis but, at the same time, is important for ensuring the robustness of the findings. It also helps to reach a more comprehensive understanding of a complex reality that must be analyzed from different perspectives. We also want to thank one of our referees for pointing out another limitation of our research, which is the fact that the papers we cover are published in a narrow set of journals, all of which are primarily quantitative in nature. We acknowledge this as a limitation of our work which, however, is because of the fact that most of the research done in our topic is published in this particular type of journal. We hope that future research can help to mitigate this structural problem in this line of research.

Notes

1. Material inaccuracy is a loose term. In general, an error is considered material if the incorrect information is likely to lead the users of the statements to reach inaccurate conclusions when performing standard financial analysis.
2. Gondhalekar *et al.* (2012), however, report significant abnormal returns of -7.34% , -7.36% and -5.84% in years +2, +3 and +4, respectively.

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Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Adams <i>et al.</i> (2017)	<i>Journal of Accounting, Auditing and Finance</i>	Event study methods: CARs in three-day event window	99 restatements from REIT's and 2991 restatements from non-REIT's (US) 2000–2011 Database: Data analytics 518 firm restatements (USA) 1997–2002 Databases: GAO and Compustat	Examine financial restatements activity by REITs	Low pervasiveness of accounting errors in REIT restatements. Market reaction to REIT restatements is less negative when compared with non-REITs
Agrawal and Cooper (2015)	<i>Journal of Corporate Finance</i>	Event study and OLS regression	696 earnings restatements 1991–2002 Database: Lexis–Nexis	Determine the impact of insider trading activities and earnings manipulation	Strong evidence that top managers of restating firms sell substantially more stock during the misstatement period
Akhigbe and Madura (2008)	<i>The Financial Review</i>	Event study methods: ARs in different windows surrounding the event	1,044 restatements 1997–2005 Database: GAO	Determine whether earnings restatements prompt industry valuation effects	Earnings restatements are associated with negative and significant valuation effects of rivals in the corresponding industry
Albring <i>et al.</i> (2013)	<i>Journal of Accounting and Public Policy</i>	Regressions using several firms' characteristics	78,541 firm-year observations 2002–2014 Database: Audit analytics	Study the impact of restatements on firm growth	Adverse impact of restatement on firm growth, particularly through external financing
Alfonso <i>et al.</i> (2018)	<i>Journal of Accounting and Public Policy</i>	Regressions using several determinants	541 firm restatements 1997–2008 Database: GAO	Examine the determinants of cash flow restatements (CFRs)	CFRs are informative, with some investor disagreement, as shown by higher abnormal trading volume
Badertscher <i>et al.</i> (2011)	<i>The Accounting Review</i>	Event study using abnormal returns		Examine how informed trading activities affect the market reaction to accounting restatements	Significantly less negative reactions to accounting restatements when managers are net purchasers of stock before the restatement, and significantly more negative market reactions when managers are net sellers

(continued)

Table A1. Empirical studies on financial restatements and financial markets

Table A1.

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Bardos <i>et al.</i> (2011)	<i>Journal of Financial and Quantitative Analysis</i>	Event study using abnormal returns and regressions	465 firm restatements 1997–2002 Database: GAO	Provide a comprehensive analysis of investors' ability to see through mistakes in financial statements	Investors are misled by mistakes in reported earnings at the time of initial earnings announcements
Bardos and Mishra (2014)	<i>Applied Financial Economics</i>	Four models of implied cost of equity	91 restatements 1997–2002 Database: GAO	Investigate the effect of financial restatements on the cost of equity versus litigation risk	After restatements, the increase in the cost of equity is more pronounced and concentrated in sued firms
Barniv and Cao (2009)	<i>Journal of Accounting and Public Policy</i>	Multivariate regressions	477 firm restatements 1995–2003 Database: GAO	Examine investor response to analyst forecast revisions using accounting restatements as a proxy for uncertainty	Investors tend to rely more on the information that analyst characteristics convey about forecast accuracy in restatement firms than in non-restatement firms
Beatty <i>et al.</i> (2013)	<i>Journal of Accounting and Economics</i>	Regression analysis	2,305 restatements 1999–2009 Databases: SEC and Compustat	Investigate how high-profile accounting frauds affect peer firms' investment	Peers react to fraudulent reports by increasing investment during fraud periods
BenYoussef and Khan (2018)	<i>Accounting and Finance</i>	Regression analysis	302 restatements 2005–2011 Databases: Audit analytics and Compustat	Look at the impact of CEOs' compensation on their choices regarding the timing of earnings restatements	There is a negative relationship between options exercised and lags in disclosing the restated earnings, suggesting that managers who exercise options in a given year tend to release information quickly
Boyd <i>et al.</i> (2014)	<i>Managerial Finance</i>	Event study using abnormal failures to deliver and cross-sectional regression	126 restatements 2009–2010 Database: Audit analytics	Examine the relationship between naked short selling and accounting irregularities that cause a firm to issue a restatement	Informed traders use the information flow from institutional investors following larger firms to anticipate the accounting restatements and serve as good market monitors of the firm. More transparent announcements are associated with more abnormal fails

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Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Burks (2011)	<i>The Accounting Review</i>	Event study and OLS regressions	1,473 restatements 1997–2005 Database: GAO	Study evidence of investor confusion by examining stock returns and trading volume	The initial price reaction to restatement announcements becomes significantly less negative after the SOX, even after controlling for the less egregious nature of post-SOX restatements
Campbell and Yeung (2017)	<i>Journal of Accounting, Auditing and Finance</i>	Multivariate regressions	442 restatements 1997–2006 Database: GAO	Examine the extent to which a firm's accounting choices and estimates are similar to those of peer firms that have restated their earnings	Earnings comparability with a restoring peer firm is an incrementally useful signal that a firm's financial statements are of a similarly poor quality
Cao et al. (2012)	<i>Contemporary Accounting Research</i>	Multivariate regressions	3,086 firm-year observations 1995–2009 Databases: Audit analytics, Compustat and Corporate Library	Investigate the association between company reputation and financial reporting quality, as proxied for by misstatements of annual financial statements	Evidence that companies with higher reputations produce higher-quality financial reports
Chakravarthi et al. (2014)	<i>The Accounting Review</i>	Multivariate regressions	243 restatements 1997–2006 Database: GAO	Identify how firms repair their reputations after a serious accounting restatement	Restoring firms undertake more reputation-building actions after a serious restoration than before the restatement, as well as relative to matched control firms
Chen (2016)	<i>The Accounting Review</i>	Multivariate regressions	431 restatements and 3,270 loans 2000–2013 Database: Audit analytics	Study banks' reaction to misreporting	Evidence that banks have privileged access to information and that they adjust loan contract terms during the misreporting period

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Table A1.

Table A1.

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Chen <i>et al.</i> (2013)	<i>Contemporary Accounting Research</i>	Event study and regressions	819 restatements 1997–2006 Databases: GAO and Compustat	Determine whether accounting information quality affects firms' external financing choices in the restatement setting	Accounting information quality significantly affects firms' external financing choices
Cianci <i>et al.</i> (2019)	<i>Journal of Business Ethics</i>	Qualitative study	94 nonprofessional investors	Investigate investors' reactions to a restatement	Pre-restatement managerial reputation and the announcement of managerial corrective actions jointly influence investors' managerial fraud prevention assessments
Cox and Weirich (2002)	<i>Managerial Auditing Journal</i>	Event study and OLS regressions	27 firms announcing fraudulent reports 1992–1999 Databases: <i>Wall Street Journal</i> announcements confirmed by SEC	Examine the impact of fraudulent reporting on capital markets	Evidence for strong negative market impact in dollar terms around an announcement
Dechow <i>et al.</i> (1996)	<i>Contemporary Accounting Research</i>	Event study and regressions	92 firms 1982–1992 Databases: SEC and Compustat	Investigate firms subject to accounting enforcement actions by the SEC for alleged violations of GAAP	An important motivation for earnings manipulation is the desire to attract external financing at low cost
Desai <i>et al.</i> (2006)	<i>Review of Accounting Studies</i>	Multivariate regressions	477 firm restatements 1997–2002 Database: GAO	Contribute to a better understanding of the decision process of short sellers	Short-sellers accumulate positions in restating firms several months in advance of restatements. The increase in short interest is larger for firms with high levels of accruals prior to restatements

(continued)

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Drake <i>et al.</i> (2015)	<i>Journal of Accounting, Auditing and Finance</i>	Event study using abnormal returns and regressions	740 restatements by 468 firms 2005–2007 Database: Audit analytics	Understand how sophisticated investors process and respond to restatements	Short-sellers respond to but do not anticipate restatements. Firms with high activity of short-selling experience report most negative subsequent abnormal returns over horizons of up to 40 trading days following the restatement disclosure. Changes in competitors' investments following restatement announcements are significantly related to various proxies for news in the restatements.
Durnev and Mangen (2009)	<i>Journal of Accounting Research</i>	Event study with regression analysis	785 restatements 1997–2002 Databases: GAO and Compustat	Examine the information conveyed by the restatements of financial reports	Firms providing less prominent press release disclosure of a restatement are rewarded with a less negative return at the announcement.
Files <i>et al.</i> (2009)	<i>The Accounting Review</i>	Event study with regression analysis	381 restatements 1997–2002 Databases: GAO and Compustat	Examine whether the effect of prominence given to a restatement in the corporate press release affects market prices and litigation	Two dimensions of financial restatements determine their severity: the degree of distortion and the degree of malicious intent.
Gertsen <i>et al.</i> (2006)	<i>Long Range Planning</i>	Qualitative study	14 restatement cases	Analyze reputation damage in financial restatements	Evidence of a contagion effect resulting in a share price decline of non-restating firms. The contagion effect is more pronounced for peer firms with high industry-adjusted accruals and those that use the same external auditor.
Gleason <i>et al.</i> (2008)	<i>The Accounting Review</i>	Event study with abnormal returns and cross-sectional regression	380 restatements and control sample of 22,510 peer firms 1997–2002 Databases: GAO and Compustat	Examine whether restatements that adversely affect shareholders' wealth induce share price declines among peer firms in the same industry	

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Table A1.

Table A1.

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Gondhalekar et al. (2012)	<i>Advances in Financial Economics</i>	Event study and Fama–French model using abnormal returns	535 restatements 2002–2005 Databases: GAO and Compustat	Examine both short- and long-term share price reaction to restatements	Significantly negative CAR for the three-day window event, the year prior to restatement, and the year subsequent to the announcement
Gordon et al. (2013)	<i>Review of Quantitative Finance and Accounting</i>	Event study with abnormal returns and regression	365 restatements 1997–2002 Database: GAO	Examine the incremental explanatory power of pre-restatement disclosure choices	Evidence that management's disclosure choices prior to restoration are associated with the market reaction at the time the restatement is announced
Graham et al. (2008)	<i>Journal of Financial Economics</i>	Regression analysis	237 firm restatements with 2,541 loans started before restatement Restatement period: 1997–2002 Loan period: 1989–2004 Databases: GAO and Dealscan	Study the effect of financial restatement on bank loan contracting	Compared with loans initiated before restatement, loans initiated after restatement have significantly higher spreads, shorter maturities, higher likelihood of being secured, and more covenant restrictions
Griffin (2003)	<i>Journal of Accounting, Auditing and Finance</i>	Event study and regression	847 observations 1994–2001 Data: Public access to court electronic records	Examine the response of financial analysts to company restatements with the response of investor groups/insiders	The number of analysts covering a firm declines significantly in the months following a corrective disclosure
Hribar and Jenkins (2004)	<i>Review of Accounting Studies</i>	Event study with abnormal returns and cross-sectional regression analysis	292 restatements 1997–2002 Database: GAO	Examine the effect of accounting restatements on a firm's cost of equity capital	The cost of equity capital averages between 7% and 19% in the month immediately following a restatement
Ji et al. (2019)	<i>Accounting Horizons</i>	Event study and regression	692 restatements 2000–2012 Database: Audit analytics	Determine whether auditors' industry specializations are valued by the capital market	Auditors' reputations as national- and city-level specialists are priced at a premium in the capital markets

(continued)

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Karpoff <i>et al.</i> (2008)	<i>Journal of Financial and Quantitative Analysis</i>	Event study with abnormal returns and Tobit regressions	1,455 firm restatements and 585 enforcement actions 1978–2002 Databases: Lexis–Nexis and SEC	Investigate reputational cost	Penalties imposed by SEC enforcement actions represent only 8.8% of the estimated cost of 38% for firms caught misreporting
Kedia <i>et al.</i> (2015)	<i>The Accounting Review</i>	Regression analysis	2,376 restatements 1997–2008 Databases: GAO and audit analytics	Determine what factors increase or decrease the likelihood of contagion	Firms are more likely to begin managing earnings when a higher fraction of their industry has already announced a restatement
Kravet and Shevlin (2010)	<i>Review of Accounting Studies</i>	Fama–French three-factor model	299 firm restatements 1997–2001 Database: GAO	Investigate the relation between financial restatements and the cost of information risk	The increase in information risk for restatement firms after a restatement announcement results in an increase in the estimated cost of capital. There is a transfer effect for non-restatement firms in the same industry
Li <i>et al.</i> (2018)	<i>Journal of Applied Accounting Research</i>	Event study with abnormal returns and regression analysis	637 observations 2004–2014 Databases: Audit analytics and Compustat	Analyze investor reactions to financial restatements conditional on disclosures of internal control weaknesses	Cumulative abnormal returns for firms disclosing internal control weaknesses in a timely manner are negative in a 3-day window around the restatement announcements
Liu <i>et al.</i> (2012)	<i>Journal of Accounting and Finance</i>	Logistic regression	487 firm restatements 1997–2005 Restatement databases: Lexis–Nexis, EDGAR, GAO and SEC Credit databases: standard and poor’s retrieved from Compustat	Examine the link between restatements and credit risk	Restatement characteristics, such as magnitude, duration, and pervasiveness, affect the credit-rating response. Enron industry peer effect resulted in the attribution of lower credit ratings to firms in the same sector as Enron

(continued)

Table A1.

Table A1.

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Nicholls (2016)	<i>Review of Quantitative Finance and Accounting</i>	Regression analysis	156 firms 1996–2007 Databases: SEC and Compustat	Examine the impact of an SEC enforcement action on a firm's cost of equity capital	Evidence of changes in cost of equity capital for firms targeted by an SEC enforcement action
Palmrose et al. (2004)	<i>Journal of Accounting and Economics</i>	Event study with abnormal returns and regression analysis	492 firm restatements 1995–1999 Databases: Lexis-Nexis and SEC	Investigate the determinants of market reaction to restatement announcements	Fraud, pervasiveness, and the restatements' prompters are determinant of more negative returns
Park and Wu (2009)	<i>Journal of Business Finance and Accounting</i>	Event study and multivariate regression models	19,505 trading observations, 103 restatements and 176 loans 1997–2005 Restatement database: GAO	Examine the effect of financial restatements and debt market	Restatements produce a negative loan market reaction. Restatement information arrives at the secondary market earlier than the equity market
Salavei (2010)	<i>Applied Financial Economics</i>	Event study with abnormal returns	Loan trade databases: LPC and DealScan 537 firm restatements 1997–2002 Database: GAO	Research the market reaction to financial restatements differentiated by restated items	Market reaction is less negative to restatements of difficult-to-estimate items
Stetten (2012)	<i>Review of Accounting Studies</i>	Regression analysis	438 restatements 1997–2002 Databases: GAO, Compustat and CRSP	Study the impact of exogenous changes in stock prices on voluntary disclosure	Managers are more likely to release good-news forecasts following larger stock price declines
Thevenot (2012)	<i>Journal of Accounting and Economics</i>	Regression analysis	384 restatements 1997–2006 Databases: GAO and Compustat	Examine insider trading in firms with accounting irregularities	Illegal insider trading is decreasing in the perceived risk of class action litigation

(continued)

Author(s)	Journal	Methodology	Data/sample	Motivation	Main research findings
Xu <i>et al.</i> (2006)	<i>Journal of Business Finance and Accounting</i>	Event study with abnormal returns and regression analysis	561 restating firms 1997–2002 Databases: GAO, Compustat, CRSP and IBES	Investigate the intra-industry effects of earnings restatements because of accounting irregularities	A significant contagion effect is detected for rival firms whose cash flow characteristics are similar to those of the restating firm
Ye and Yu (2017)	<i>Journal of Business Finance and Accounting</i>	Multivariate regression analysis	958 restatements 1997–2006 Databases: GAO, Compustat, IBES and CRSP	Examine how changes in credibility of financial reporting affect analyst behavior	Restatements have a long-lived effect on analyst behavior, and analysts differentiate between restatements caused by irregularities and those caused by errors
Ye and Yu (2018)	<i>Review of Quantitative Finance and Accounting</i>	Event study and regression analysis	1,221 restatements 1997–2006 Databases: GAO, Compustat, IBES and CRSP	Examine whether restatements affect trading volume reactions to subsequent earnings announcements	Restatements increase the degree of differential event-period information, leading to more divergent interpretation of earnings announcements subsequent to restatements

Table A1.

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