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

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1. Introduction

Accounting quality constitutes a fundamental objective of financial reporting since it facilitates managements' monitoring and contributes to reducing information asymmetries between firms and their stakeholders. Financial restatements are thus particularly relevant within this context since they challenge the quality of financial reporting. In fact, restatements occur when companies need to revise one or more previously disclosed financial statements in order 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 like fraud or the noncompliance with general accounting principles to simple things like clerical errors. Internal auditors (and managers) routinely check the accounting information in order to identify possible sources of reporting errors that might lead to financial restatements. However, many events of this sort are initiated by specialized third-parties such as the firm's external auditor or the market regulator.

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.

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

Given the importance and relevance of the topic at hand, the present 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 (*e.g.*, Murphy and Maguire, 2015; Hay, 2017). The review allows identifying 47 academic studies published between 1996 and 2019 in top accounting and finance journals, which discuss three main topics. The first 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 financial restatement is bad news for the event firm. Further work, however, reveals that the magnitude of the effect is conditional on several aspects ranging from who trades on the shares of the announcing firm, the regulatory environment, who initiates the proceedings, and the underlying motive for the restatement. In contrast, the long-term market reaction to the same event is still relatively underresearched and the available results are contradictory. A final strand of the literature within this topic investigates the intra-industry effects of financial restatements, with available results clearly suggesting that it leads to a significant contagion effect.

The second main topic reviewed in the present paper deals with how financial restatements affect the announcing firm's cost of capital. Studies addressing this issue unanimously conclude that such event is costly to the announcing firm as the extant evidence consistently shows an increase in the cost of equity and debt in the post-announcement period. Such effect seems to be affected by a number of important factors. For instance, the increase in the cost of capital is typically higher when the restatement is due to actions initiated by the firm's auditor and when

the announcing firm is extremely levered. Further, augmented litigation risk and information risk magnify the increase in the cost of capital following a financial restatement. Importantly, there is evidence that the financial mix employed by firms is affected by the event of interest. In particular, announcing companies tend to rely more heavily on private debt financing post-event, especially when there is a material restatement and when there are important asymmetry of information issues. Interestingly, the extant research 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 looks into how financial restatements affects firms' reputation. Results suggests that this is a very important aspect that should worry both managers and investors as 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 extant literature also concludes that reputational concerns are important determinants of the probability of a financial restatement since, on average, companies enjoying higher levels of reputation are less likely to misstate their financial statements.

Overall, the reviewed literature suggests that financial restatements are a clear case of bad news that have a significant impact in 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 U.S. based, something that can be explained due to 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 U.S. and most of other countries in the world. Even within the U.S. context, one can still find interesting questions that merit close investigation. One example is that of the role of financial analysts. In fact, this has been widely explored with other corporate events but the evidence concerning restatements is scant at best. Another avenue is trying to understand what actions can the market regulator bring about to minimize the information problems that usually plague restating firms so has to provide retail investors with timely information that would help boost their confidence in the functioning of financial markets.

The remaining of this manuscript is as follows. Section 2 summarizes the scope of the research while section 3 presents the research design. Section 4 reports the findings and section 5 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 framework, which encompasses a “weak”, a “semi-strong” and a “strong” form. In its basic format, the EMH posits that current market prices reflect all price-based ‘historical’ information. On the other hand, 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 *a la* Fama (1970) world, financial reporting should play a limited role in the dynamics of financial markets. In fact, in such a world, its 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 in order to improve stock prices and raise additional capital at a low cost (*e.g.*, 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 posits an important challenge for its advocates.

Restatements constitute a fundamental event within this context since they question the integrity of financial statements and challenge the quality of financial reporting, both of which may impact the real economy very significantly. The accounting scandals that shook the global economy 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 due to 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 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 contributions in this field dealing with accounting quality issues (e.g., Wilson, 2008; Donelson *et al.*, 2013; Wiedman and Hendricks, 2013; Chen *et al.*, 2014), management issues (e.g., Efendi *et al.*, 2007; Cheng and Farber, 2008; Fung, 2015), auditing issues (e.g., Stanley and DeZoort, 2007; Prawitt *et al.*, 2012; Blankley *et al.*, 2012; Hennes *et al.*, 2014; Hribar *et al.*, 2014), and market issues (e.g., Palmrose *et al.*, 2004; Bardos *et al.*, 2011; Drake *et al.*, 2015).

2.2. Scope of the research

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: (i) identifying and understanding the most relevant issues and developments linking financial restatements and the dynamic of financial markets; and (ii) 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 in its own right. Moreover, they have practical implications, something one can anticipate from the response of the different market regulators to the 2000s scandals.

2.3. Research design

This study employs a systematic review of the literature to achieve its goal. In fact, such methodology is particularly suited for identifying the main contributions of a field of research, helping to detect 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 employs a four-step approach to find the relevant papers to be reviewed. First, based on the *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*. Furthermore, the keywords *financial markets*, *market reaction*, *market impact*, *share prices*, *stock returns*, *trading*, *shareholders* and *stockholders* do the same for the “financial markets” area. In the next step, these keywords are combined into search strings, which are then used to define an initial list of potentially relevant papers. In practice, the search strings are applied to the keywords and 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. Importantly, we do not restrict the period of search by other criteria than the moment of when the present paper is being written, which means that we

consider all publications present in the abovementioned databases until July 2019. This procedure yields a total of 455 documents, already excluding duplicates and non-academic contributions.

Next, the exclusion criteria present in Table 1 are applied. These aim at removing all contributions that lie outside the scope and purpose of this systematic review. As can be seen, articles that are not published in scientific journals are excluded given the absence of peer review and subsequent quality assessment issues. Further, papers for which the defined keywords are not crucial or papers that are not related to the accounting and finance area 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 address directly the topic of this review are also eliminated at this stage. This approach led to the exclusion of 47 papers based on the first criterion, 256 based on the second criterion and 104 based on the third criterion.

_____ Table 1 _____

In the final step inclusion criteria are applied. Their goal is to ensure that we work only with high-quality papers and involve a detailed analysis that takes into explicit consideration the following aspects: *(i)* does the literature review support the research question(s) explored in the paper?; *(ii)* are the research hypotheses well-defined and presented?; *(iii)* is the methodology clearly stated?; *(iv)* does the paper present a clear definition of the sample it employs?; *(v)* is there an appropriate discussion of the results?; *(vi)* are the results interpreted in the context of the research question(s)?; *(vii)* is there a clear contribution to knowledge? Papers that comply with all the inclusion criteria make up the final set of documents included in this systematic review.

Table 2 summarizes all steps of the selection process that was employed:

_____ Table 2 _____

The process outlined above identifies 47 academic papers published between 1996 and 2019 that address the issue of how financial restatements impacts the dynamics of the financial markets. Please refer to Appendix 1 for further details about each of these papers.

3. Findings

The findings of this study are presented in two sections. Initially studies are classified by journal of publication and their respective scientific ranking. Next, findings are discussed based on homogeneous topics in the intersection between financial restatements and the functioning of financial markets.

3.1 The papers

Table 3 shows the distribution of the final list of papers by journal title and impact factor (SCImago Journal and Country Ranking):

_____ Table 3 _____

As can be seen, the most representative journals in our sample are *The Accounting Review*, with seven studies, and the *Review of Accounting Studies* and the *Journal of Accounting, Auditing and Finance* both with four studies. The remaining papers were published by 20 different academic journals in the accounting and finance area. Importantly, as portrayed by Table 3, the highest impact factor we find is that for the *Journal of Financial Economics* (12,6106) and the lowest is that of *Managerial Finance* (0,2197). This suggests that financial restatements constitute a topic of interest in the accounting and finance areas, with many of the papers included in the present review being published in their top journals.

3.2 Impact of restatements on the dynamics of financial markets

3.2.1. Stock market reaction to financial restatements

The papers that address the stock market reaction to restatement usually differentiate between short- and long-term impacts, and typically investigate: (i) if the market reacts negatively to the publication of a restatement and whether it anticipates such an event; (ii) which factors affect the magnitude of the market reaction and (iii) to what extent the stock market efficiently assimilates the information content of a restatement post-event. The next sub-sections review the set of manuscripts on these topics using this paper's research design.

3.2.1.1. Short-term

The short-term stock market reaction to restatements is one of the most explored topics within this research context. The consensus is that such an event is a clear case of bad news, which is 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 1 January 1997 and 30 June 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 9% in the [-2; 2] event-window. Using different event windows for a similar sample, Gleason *et al.* (2008) document an average negative stock market reaction of 4.6% [-10; -2], 19.8% [-1; 1], 2.1% [2; 10] and 10.3% [2; 60]. Akhigbe and Madura (2008) use a sample comprised only of 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 to 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 event window around the event date [0; 1] for their sample comprised of 740 restatements by 468 firms occurring between 2005 and 2007.

There is also evidence that the market anticipates the announcement of financial restatements. For instance, Gondhalekar *et al.* (2012) reports negative stock price abnormal performance during the year leading up to the event date (9.6%). In a similar vein, Barbos *et al.* (2011) show that the stock price decline of restating firms starts several months before the actual event disclosure date. In addition, the same paper shows that investors are misled during the beginning

of the error period (first 6-months following the error) and the anticipation is only observed in the later period (BHAR of -6.2%, -5.3% and -5.1% during months -3, -2 and -1 respectively). 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 (*e.g.*, Hribar and Jenkins, 2004; Akhigbe and Madura, 2008; Gleason *et al.*, 2008) or the ability of sophisticated investors to anticipate the restatements (*e.g.*, Griffin, 2003; Desai *et al.*, 2006).

3.2.1.2. 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 3 days centred 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 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) finds 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), and that the 3-day negative abnormal reaction is 1.31% and 1.49%, respectively. Bardos *et al.* (2011), however, suggest that investors penalize more the restating firms 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 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 to their claim since they find a negative abnormal stock market reaction for the three-day window around the disclosure of 18% when an auditor triggers the restatement, 13% when the event is initiated by the company, and only 4% when the 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] windows, failing to find a similar pattern when the SEC drives the event. Gondhalekar *et al.* (2012) suggest that this may be due to the propensity of firms to immediately rectify the irregularities identified by SEC. The same authors also 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 unfavourable when the *auditor* starts the case. Similarly, Badertscher *et al.* (2011) shows 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, signalling severe governance problems within the firm and/or fraudulent situations.

Risk-related issues also seem to impact the market reaction to financial restatements. For instance, evidence of fraud - a factor generating firm-specific risk as it hinders managements' 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. According to them, the shareholders of the 27 major firms loss 33 billion dollars during the event window around the restatement date [-1; 0]. Less dramatic phenomena are also relevant in this context. For instance, research by Li *et al.* (2018) shows that evidence of weak internal control magnifies 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 somewhat 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 announcing firms 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 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 other hand, Gordon *et al.* (2013) show 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 finds that using a more optimistic tone when disclosing pre-event information exacerbates the negative market reaction when the event becomes publicly known. In a somewhat related contribution, BenYoussef and Khan (2018) conclude that, on average, the market penalises more 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 significant 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 refileing 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-REITs sample firms. According to the authors, this is an important distinction since REITs are more easily scrutinised 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 non-REIT (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 experience a more negative market reaction of 6.19% and 2.19%, 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.

3.2.1.3. Long-term

The long-term market impact of financial restatements is also explored in 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 since 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 favour 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 6-months, 1-year and 2-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%, respectively.

3.2.1.4. 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 once the SOX is enacted, 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.

² Gondhalekar *et al.* (2012), however, report significant abnormal returns of -7.34%, -7.36% and -5.84% in year +2, +3 and +4, respectively.

A different strand of the literature investigates the trading patterns of particular types of 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-announcement 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) go a step further and examine insider trading behaviour 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) uses restatements to investigate managerial incentives to engage in insider trading on material private information and concludes that the risks of shareholder litigation and SEC enforcement decreases insider trading activity. Yet, Thevenot (2012) finds that insiders of fraud firms sell more than non-fraud firms although the intensity of their trades is less likely to be related to the magnitude of 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 report a significant increase in the short-selling activity both before and after the issue of a restatement. In particular, such activity peaks on the 7th and 6th day before, and the two days following the formal disclosure day. 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 capable of identifying 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 to restatement problems in the pre and post-restatement period and 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 disclosure. This last finding is supported by Ye and Yu (2017), who also find that analysts become less accurate in the post-event period. On the other hand, Barniv and Cao (2009) find no significant differences in the percentages of analysts dropping or initiating coverage between restating and non-restating firms but reveal significant differences on investors' reliance on analysts between these two groups of firms.

3.2.1.5. Intra-industry effects

Financial restatements have important intra-industry effects. For instance, Gleason *et al.* (2008) reports 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 (*i.e.*, effect on net income, pervasiveness, number of years restated and the simultaneous announcement of news) correlates heavily with the adjustments of credit ratings assigned by Standard & Poor's. In particular, the authors find that firms operating in the same industry as Enron and that issued more severe restatement were 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, with 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 to 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 due to investors' scepticism about the peer firms' quality of financial reporting. Instead, they argue that peer firms choose to begin misrepresentation of their financial information after knowing that the target firm adopted such behaviour. This is particularly evident in the target firm restated account, 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 since such events negatively impact managements' credibility, fuelling the idea that they may be opportunistically making accounting decisions within the industry. Findings seem to corroborate this view since, in their sample, the increase in discretionary information risk explains the raise 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 the restatement initiator and the number of times a firm restates are significant determinants of the change in information risk pricing. Sletten (2012) is another relevant contribution in this area. In fact, the author shows that the observed disclosure pattern is driven by previously withheld information since 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 investment reduction. Yet, Beatty *et al.* (2013) show that peer firms present 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 relative to the three-year pre-event 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.

3.2.3. Cost of capital and capital structure

Several papers find that restatements increase 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 effect tends to fade over the three-year period following the restatement disclosure date. Nicholls (2016) augments knowledge on this issue by investigating the impact of a SEC investigation (*i.e.*, accounting and auditing enforcement releases) in firms' 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: (i) higher spreads; (ii) lower maturities; (iii) increases probability of the need for a loan insurance; (iv) more restrictive loan covenants. These findings corroborate the notion 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) provides some evidence on the topic. The authors claim that companies manipulate earnings because they wish to raise external funds at low cost and to avoid debt covenant restrictions. Such behaviour is, however, penalized following the disclosure of a financial restatement due to 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 financial 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 their results can be explained within an asymmetry of information framework since, 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 firm's externally financed growth than non-fraudulent reporting.

3.2.4. Reputation

Firms' reputation is affected by a restatement. In a seminal contribution, Karpoff *et al.* (2008) find that, on average, firms "caught cooking the books" in the U.S. between 1978 and 2002 had to pay \$23.5 million in fines. Yet, the same authors caution that the overall effect is likely to be much higher due to 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 due to the necessary accounting adjustments, 8.8% is for potential litigation costs (with shareholders and the SEC), and the remaining 66.7%

resulting 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 employ 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 somewhat 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 corrective action announcements. 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 that particular manner.

4. Conclusions and implications for future research

This systematic review of the literature investigates the impact of financial restatements in 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 interest. The first is how the event of interest impacts the stock price performance both in the short and long-term. Related literature also explores how restatements influence trading patterns, and documents how the same event affects the performance of competing firms operating in the same industry. The second relevant area deals with the interaction between financial restatements and the cost of capital and capital structure. The third explores to what extent this important accounting event affects the announcing firm's reputation.

Our main conclusion is that financial restatements have clear and significant impacts on the dynamics of financial markets. In particular, they lead to important losses in the market value of the restating companies and their non-restating competing firms, a phenomenon that is particularly acute in the short-term and fuelled by the motivation of the restatement, who

initiates the procedure, its legal implications, the level of information asymmetry and the regulatory environment. Furthermore, the same accounting event significantly increases the announcing firm's cost of capital (be that of equity or debt) and seems to reduce its ability to raise additional funds from shareholders. Finally, the surveyed papers also suggest that filing a restatement negatively affects the reputation of the firm, resulting in severe costs at least in the short-term.

This paper finds that virtually all the sample papers draw exclusively on U.S. data. In fact, non-U.S. evidence is scant, which may result from the lack of appropriate data sources. As Karpoff *et al.* (2017) emphasizes, GAO and Audit Analytics, which are the most popular databases in this area, are restricted to the U.S. universe. They become available in the late 90's and this is the reason why the number of available publications on financial restatements has risen considerably in the last 20 years. Regrettably, there is no similar source for the European market, something that, however, opens up the possibility to explore several interesting questions and develop new empirical work. For instance, IFRS Standards are required for all companies whose securities trade in a regulated market in the 31 member states of the European Union (EU) and the European Economic Area (EEA). One could question if the European regulators are alerted to the quality of financial reporting by publicly listed companies in Europe or, from a different perspective, concerns could be raised regarding the independency of auditing systems towards clients. According to the international accounting standard 8 – IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors, “unless it is impracticable to determine the effects of the error, an entity corrects material prior period errors retrospectively by restating the comparative amounts for the prior period(s) presented in which the error occurred.” Since IFRS are principle-oriented and more subject to professional judgement, it would be relevant to explore comprehensively restating activity in countries using IFRS. Another interesting question that could be explored within the European context is how different institutional settings affect the market response to financial restatements. This line of research is especially relevant in the context of the Euro Zone. 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 the 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 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 the differences on how firms procure their funding. The U.S. 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-centred 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 as equity tends to be swapped for debt in the post-event period. Hence, it would be interesting to revisit such conclusion given the contrast between the core funding mechanism available to firms in the U.S. and the European economies.

There are, however, other research avenues that can be explored outside the European scope. For instance, despite the consensus that financial restatements have a negative impact on event firms' market value in the short-term (*e.g.*, 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 (*e.g.*, Bardos *et al.*, 2011; Burks, 2011; Gondhalekar *et al.*, 2012). Does the market fully and promptly assimilate the information content of a restatement? This is still a question open for debate that merits further investigation. In effect, parallel evidence suggests that the market underreacts to similar bad-news public events like 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). It would thus be interesting to refine the existing research designs to settle this question within the restatement context, taking into consideration that an eventual incomplete market reaction may be due to arbitrage issues (*e.g.*, high transaction costs) and/or investors' biases (*e.g.*, overconfidence, herding behaviour 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 and the pre-event period, there is evidence of statistically significant negative abnormal returns (*e.g.*, Hribar and Jenkins, 2004; Gleason *et al.*, 2008; Bardos *et al.*, 2011), higher short-seller and insiders' activity (*e.g.*, Griffin, 2003; Desai *et al.*, 2006; Drake *et al.*, 2015), and important decreases in institutional stockholdings (*e.g.*, Griffin *et al.*, 2003). Interestingly, financial analysts' role in this context remains open for 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 and to what extent their behaviour actually influences the degree of surprise with which the market receives such bad news. This research could also help clarify if analysts' opinions are misleading retail investors (something that would benefit the more sophisticated short-sellers and insiders), who the literature suggest that rely more on their expertise to make their investment decisions (Malmendier and Shantikumar, 2007).

Our results suggest that regulators may 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 (e.g., Badertschet *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 is contingent on how firms communicate its underlying motivation to investors (Gertsen *et al.*, 2006). On the other hand, SOX seems to have improved the short- and long-term stock price efficiency in what concerns restating firms (Burks, 2011), and increase trading volume for restating firms associated to irregularities (Ye and Yu, 2018). Therefore, it would be interest to explore how regulatory authorities may improve the way they provide retail investors with timely information about firms' restating problems, which would help increase their confidence in the functioning of financial markets.

A final note about limitations. As usual, the results of this systematic review must be read with caution given the nature of the research method employed. In fact, there is always some degree of subjectivity in the definition of the keywords, search strings and selection criteria. These are all important aspect as they delimitate the scope of the study and define the sample of papers to be reviewed. 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 might prove troublesome in our particular context. One of the most important assumptions of meta-analysis is that the research methods employed by the selected papers should be similar (Velte, 2019). This is clearly *not* the case since 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 at the

same time it helps a more comprehensive understanding of a complex reality that must be analysed from different perspectives.

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Appendix 1. Empirical studies on financial restatements and financial markets

Author(s)	Journal	Methodology	Data/Sample	Motivation	Main research findings
Adams, Hayunga and Rasmussen (2017)	Journal of Accounting, Auditing and Finance	Event study methods – CARs in 3-day event window	99 restatements from REITs and 2991 restatements from non-REITs (US) 2000-2011 Database: Data Analytics	To examine financial restatements activity by REITs.	Low pervasiveness of accounting errors in REIT restatements. Market reaction to REITs restatements is less negative when compared with non-REITs.
Agrawal and Cooper (2015)	Journal of Corporate Finance	Event study and OLS regression	518 firm's restatement (US) 1997-2002 Database: GAO and Compustat	To determine 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)	The Financial Review	Event study methods – ARs in different windows surrounding the event	696 restating of earnings by firms' 1991-2002 Database: Lexis-Nexis	To 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, Pereira and Xu (2013)	Journal of Accounting and Public Policy	Regressions using several firms' characteristics	1,044 restatements 1997-2005 Database: GAO	To study impact of restatements on firm growth.	Adverse impact of restatement on firm growth, particularly through external financing
Alfonso, Hollie and Yu (2018)	Journal of Accounting and Public Policy	Regressions using several determinants	78,541 firm-year observations 2002 - 2014 Database: Audit Analytics	To examine the determinants of cash flow restatements (CFRs).	This study finds CFRs to be informative with some investor disagreement as shown by higher abnormal trading volume.
Badertscher, Hribar and Jenkins (2011)	The Accounting Review	Event study using abnormal returns	541 firm restatements' 1997-2008 Database: GAO	To 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.
Bardos, Golec and Harding (2011)	Journal of Financial and Quantitative Analysis	Event study using abnormal returns and regressions	465 firms restatements' 1997-2002 Database: GAO	To provide a comprehensive analysis of investors' ability to see through mistakes in financial statements.	Concluded that investors are misled by mistakes in reported earnings at the time of initial earnings announcements.

Bardos and Mishra (2014)	Applied Economics	Financial	Four models of implied cost of equity	91 restatements 1997-2002 Database: GAO	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)	Journal of Accounting Public Policy		Multivariate regressions	477 firm restatements' 1995-2003 Database: GAO	To 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, Liao and Yu (2013)	Journal of Accounting and Economics		Regression analysis	2,305 restatements 1999-2009 Database: SEC and Compustat	To investigate how high profile accounting frauds affect peer firms' investment.	Concluded that peers react to the fraudulent reports by increasing investment during fraud periods.
BenYoussef and Khan (2018)	Accounting and Finance		Regression analysis	302 restatements 2005-2011 Database: Audit Analytics and Compustat	The impact of chief executive officers' compensation on their choices regarding the timing of earnings restatements.	The results indicate 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, Hibbert and Pavlova (2014)	Managerial Finance		Event study using abnormal failures to deliver and cross-sectional regression	126 restatements by 121 firms 2009-2010 Database: Audit Analytics	To 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.
Burks (2011)	The Accounting Review		Event study and OLS regressions	1,473 restatements 1997-2005 Database: GAO	Evidence of investor confusion by examining stock returns and trading volume.	It concluded that the initial price reaction to restatement announcements becomes significantly less negative after SOX, even after controlling for the less egregious nature of post-SOX restatements.
Campbell and Yeung (2017)	Journal of Accounting, Auditing and Finance		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.	Concluded that 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, Myers and Omer (2012)	Contemporary Accounting Research		Multivariate regressions	3,086 company-year observations 1995-2009	Association between company reputation and financial reporting	Provide evidence that companies with higher reputations produce higher quality financial reports.

				Database: Audit Analytics, Compustat and Corporate Library	quality, as proxied for by misstatements of annual financial statements	
Chakravarthy, DeHaan and Rajgopal (2014)	The Accounting Review	Accounting	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)	The Accounting Review	Accounting	Multivariate regressions	431 restatements and 3,270 loans 2000-2013 Database: Audit Analytics	Banks' reaction to misreporting.	Superior access to direct and indirect information by banks and bank adjust loan contract terms during the misreporting period.
Chen, Cheng and Lo (2013)	Contemporary Accounting Research		Event study and regressions	819 restatements 1997-2006 Database: GAO and Compustat	Whether accounting information quality affects firms' external financing choices in the restatement setting.	Findings indicate that accounting information quality significantly affects firms' external financing choices.
Cianci, Clor-Proell and Kaplan (2019)	Journal of Business Ethics		Qualitative study	94 nonprofessional investors	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)	Managerial Auditing Journal	Auditing	Event study and OLS regressions	27 firms announcing fraudulent report 1992-1999 Database: Wall Street Journal announcements confirmed by SEC	Impact of fraudulent reporting on capital markets.	Strong negative market impact in dollar terms around announcement.
Dechow, Sloan and Sweeney (1996)	Contemporary Accounting Research		Event study and regressions	92 firms 1982-1992 Database: SEC and Compustat	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, Krishnamurthy and Venkataraman (2006)	Review of Accounting Studies		Multivariate regressions	477 firm restatements' 1997-2002 Database: GAO	To 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.
Drake, Myers, Scholz and Sharp (2015)	Journal of Accounting, Auditing and Finance		Event study using abnormal returns and regressions	740 restatements by 468 firms 2005-2007 Database: Audit Analytics	To understand how sophisticated investors process and respond to restatements.	Short-sellers respond 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.
Durnev and Mangen (2009)	Journal of Accounting Research	Event study with regression analysis	785 restatements 1997-2002 Database: GAO and Compustat	To examine the information conveyed by the restatements of financial reports.	Changes in competitors' investments following restatement announcements are significantly related to various proxies for news in the restatements.	
Files, Swanson and Tse (2009)	The Accounting Review	Event study with regression analysis	381 restatements 1997-2002 Database: GAO and Compustat	Whether the effect of prominence given to a restatement in the corporate press release affects market prices and litigation.	Firms providing less prominent press release disclosure of a restatement are rewarded with a less negative return at the announcement.	
Gertsen, van Riel and Berens (2006)	Long Range Planning	Qualitative study	14 restatement cases	To analyze reputation damage in financial restatements.	Concluded that two dimensions of financial restatements determine their severity: the degree of distortion and the degree of malicious intent.	
Gleason, Jenkins and Johnson (2008)	The Accounting Review	Event study with abnormal returns and cross-sectional regression	380 restatements and control sample of 22510 peer firms 1997-2002 Database: GAO and Compustat	To examine if restatements that adversely affect shareholders' wealth induce share price declines among peer firms in the same industry.	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 that use the same external auditor.	
Gondhalekar, Joshi and McKendall (2012)	Advances in Financial Economics	Event study and Fama-French model using abnormal returns	535 restatements 2002-2005 Database: GAO and Compustat	To 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 for the years subsequent to the announcement.	
Gordon, Henry, Peytcheva and Sun (2013)	Review of Quantitative Finance and Accounting	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, Li and Qiu (2008)	Journal of Financial Economics	Regression analysis	237 firms restatements' with 2541 loans started before restatement Restatement period: 1997-2002 Loan period: 1989-2004 Database: GAO and Dealscan	To 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)	Journal of Accounting, Auditing and Finance	Event study and regression	847 observations 1994-2001 Data: Public Access to Court Electronic Records	Examines 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)	Review of Accounting Studies	Event study with abnormal returns and cross-sectional regression analysis	292 restatements 1997-2002 Database: GAO	To examine the effect of accounting restatements on a firm's cost of equity capital.	The cost of equity capital average between 7% and 19% in the month immediately following a restatement.
Ji, Kumar, Pei and Xue (2019)	Accounting Horizons	Event study and regression	692 restatements 2000-2012 Database: Audit Analytics	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.
Karpoff, Lee and Martin (2008)	Journal of Financial and Quantitative Analysis	Event study with abnormal returns and Tobit regressions	1,455 firm restatements' and 585 enforcement actions 1978-2002 Database: Lexis-Nexis and SEC	Reputation cost.	Penalties imposed by SEC enforcement actions represent only 8.8% of the estimated cost of 38% for firms caught misreporting.
Kedia, Koh and Rajgopal (2015)	The Accounting Review	Regression analysis	2,376 restatements 1997-2008 Database: GAO and Audit Analytics	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)	Review of Accounting Studies	Fama-French three-factor model	299 firms restatements' 1997-2001 Database: GAO	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 an transfer effect for non-restatement firms in the same industry.
Li, Park and Wynn (2018)	Journal of Applied Accounting Research	Event study with abnormal returns and regression analysis	637 observations 2004-2014 Database: Audit Analytics and Compustat	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 is negative in a 3-day window around the restatement announcements.
Liu, Rowe and Wang (2012)	Journal of Accounting and Finance	Logistic regression	487 firm restatements' 1997-2005 Restatement database: Lexis-Nexis, EDGAR, GAO and SEC Credit database: Standard & Poor's retrieved from COMPUSTAT	Link between restatements and credit risk.	Restatement characteristics, such as magnitude, duration and pervasiveness, impact the credit-rating response. Enron industry peer-effect resulting in the attribution of lower credit ratings to firms in the same sector as Enron.
Nicholls (2016)	Review of Quantitative Finance and Accounting	Regression analysis	156 firms 1996-2007 Database: SEC and Compustat	Impact of an SEC on a firm's cost of equity capital.	Evidence of changes in cost of equity capital for firms targeted by an SEC.

Palmrose, Richardson and Scholz (2004)	Journal of Accounting and Economics	Event study with abnormal returns and regression analysis	492 firm restatements' 1995-1999 Database: Lexis-Nexis and SEC	Determinants of market reaction to restatement announcements.	Fraud, pervasiveness and the restatements' prompters are determinant to more negative returns.
Park and Wu (2009)	Journal of Business Finance and Accounting	Event study and multivariate regression models	19,505 trading observations, 103 restatements and 176 loans 1997-2005 Restatement database: GAO Loan Trade Database: LPC and Deaslscan	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)	Applied Financial Economics	Event study with abnormal returns	537 firm restatements' 1997-2002 Database: GAO	Market reaction to financial restatements differentiated by restated items.	Market reaction is less negative to restatements of difficult-to-estimate items.
Sletten (2012)	Review of Accounting Studies	Regression analysis	438 restatements 1997-2002 Database: GAO, Compustat and CRSP	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)	Journal of Accounting and Economics	Regression analysis	384 restatements 1997-2006 Database: GAO and Compustat	Insider trading in firms with accounting irregularities.	Illegal insider trading is decreasing in the perceived risk of class action litigation.
Xu, Najand and Ziegenfuss (2006)	Journal of Business Finance and Accounting	Event study with abnormal returns and regression analysis	561 restating firms 1997-2002 Database: GAO, Compustat, CRSP and IBES	Investigate the intra-industry effects of earnings restatements due to accounting irregularities.	Detect a significant contagion effect for rival firms whose cash flow characteristics are similar to those of the restating firm.
Ye and Yu (2017)	Journal of Business Finance and Accounting	Multivariate regression analysis	958 restatements 1997-2006 Database: GAO, Compustat, IBES and CRSP	Examines how changes in credibility of financial reporting affect analyst behaviour.	Restatements have a long-lived effect on analyst behaviour and that analysts differentiate between restatements caused by irregularities and those caused by errors.
Ye and Yu (2018)	Review of Quantitative Finance and Accounting	Event study and regression analysis	1,221 restatements 1997-2006 Database: GAO, Compustat, IBES and CRSP	Examines 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.

