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21st century scandals: towards a risk approach to financial reporting scandals

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Financial reporting scandals in the 21st century have been followed by many changes in the regulatory framework of financial reporting. While it is natural to ask for research evidence on the effectiveness of these changes in preventing new scandals, we discuss some of the difficulties in conducting this type of research as well as limitations of commonly used approaches. We argue as the central point of this paper that both research and regulation should be based on an explicit acceptance of a permanent risk of financial reporting failure, rather than working on the assumption that this risk can and should be ever further reduced. Acceptance of this point of view can turn what is currently a scattering of unconnected research efforts into a coherent research agenda with potentially high relevance. Facing the existence of permanent financial reporting risk leads to a series of interconnected questions including the measurement of this risk, both actual and as perceived by various stakeholder groups, communication and education concerning these risks, and mechanisms to share or transfer these risks.

Keywords: Accounting scandals; financial reporting regulation; financial reporting quality; regulatory policy; risk management; accounting research agenda

1. Introduction

Unquestionably, public debate about financial reporting during the early years of the 21st century has been dominated by the theme of scandals. ‘Enron’ has become firmly established in the collective memory as one of the biggest financial reporting scandals of all time, but the sense of crisis in financial reporting around 2001 would probably not have emerged if Enron had been seen as an unfortunate but isolated incident. It was the occurrence of a number of scandals in a short period of time, leading to common enumerations such as ‘Enron, WorldCom, Tyco, Xerox, etc.’, as well the unprecedented collapse of a big-5 audit firm, that fed the notion of a systemic crisis in financial reporting. The swift passage of the Sarbanes-Oxley Act of 2002 with its stringent requirements to improve the financial reporting environment, and the deep impact it had on the accounting and reporting processes of

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companies, helped to solidify the prevailing perception that something was fundamentally wrong with financial reporting, requiring a strong regulatory response.

Both Enron and Sarbanes-Oxley were first and foremost domestic events in the United States, but they reverberated around the world. There were some signs of *Schadenfreude* in countries who had long been told that their financial reporting was inferior to that practiced in the United States, but this was probably not the prevailing sentiment.¹ At any rate, subsequent scandals in other parts of the world, such as Parmalat in Italy, strongly suggested that problems with financial reporting were pervasive rather than local. The overseas impact of Sarbanes-Oxley coincided with a variety of regulatory reforms in financial reporting in countries around the world.

The widespread perception that financial reporting went through a period of crisis at the beginning of the 21st century, justifying a decisive regulatory response, naturally leads to the question: was the regulatory response effective? Have we reason to believe that we learned from the scandals in the sense that the world is now a better place in which such scandals are less likely to occur? More particularly, what academic evidence is there concerning the effectiveness of accounting regulation introduced since 'Enron' in preventing scandals?

While these questions are natural and legitimate, a large part of this paper is devoted to discussing why they are very difficult to answer. The assumption underlying these questions is that a scandal is followed by improved regulation, which in turn leads to a demonstrably lower risk of scandals. We first illustrate that there is no simple link between the 21st century scandals and recent changes in financial accounting standards. We then discuss that research provides limited insight in the second link – regulatory responses leading to a lower probability of scandals. The reason is that research often concentrates on changes in averages (e.g. average reporting quality) and thus provides limited insight in the tail-end risk of accounting scandals. We therefore argue that the focus on prevention of accounting scandals should be complemented, both in practice and research, with a focus on measuring the remaining risk and on how society should cope with it.

Most people, even without the benefit of research evidence, are unwilling to believe that the risk of financial reporting scandals has now been eliminated. Greater and lesser scandals simply continue to happen in various parts of the world, as illustrated by recent financial reporting problems of companies such as Toshiba (Japan), Daewoo Shipbuilding & Marine Engineering (South Korea), Steinhoff (South Africa), Carillion(UK) and Folli Follie (Greece). Such anecdotal evidence is supported by compelling theoretical arguments why the risk of major financial reporting incidents cannot be eliminated, and is likely to remain non-negligible, such as cost–benefit considerations of optimal deterrence (Becker 1968) or of not fully removing information asymmetry (Hölmstrom 1979). If that is true, should policy makers and researchers not face up to it, and consider the question: *how does, and how should, society cope with a permanent risk of accounting scandals?* This is different from the dominant perspective in regulation (including standard setting) as well as research, which is focused on designing better processes to improve financial reporting quality. While there is nothing wrong with this by itself, demonstrating improvements is not the same as asking the question: what risks of major accounting incidents still lurk in the tail-end of the distribution? And how can we help society to live with these risks? We believe that this question opens up a large and underexploited area of research with potentially high policy relevance.

This paper is organized as follows. In Section 2, we explain our understanding of the nature of financial reporting scandals, and briefly recapitulate the reasons for believing that they are inevitable. Sections 3 and 4 contain, in a sense, the negative part of our argument as we argue that our knowledge of the effectiveness of 21st century regulation in preventing future financial reporting scandals is limited. In Section 3 we discuss, by way of historical illustration, the weakness of the link between the numerous financial reporting failures that collectively constitute the poorly defined category of '21st financial reporting scandals' and changes in financial reporting

standards. In Section 4, we review empirical academic research on market effects and changes in financial reporting quality following changes in standards or other regulation, to show that typical research approaches and findings relate to average reporting quality rather than the tail-end of the quality distribution containing the risk of scandals. In Section 5 we argue that research directed at preventing accounting failures should be complemented with a research agenda based on the assumption of a permanent risk of financial reporting failures. We propose and discuss lines of research aimed at understanding actual and perceived levels of financial reporting risk (Section 6), creating risk awareness about financial reporting risk and the relation to precautionary actions (Section 7) and approaches for stakeholders to reduce, transfer, or share these risks (Section 8). Section 9 concludes.

2. Financial reporting scandals

2.1. *Financial reporting scandals: relevant concepts*

Financial reporting scandals are not easily defined, but it is helpful to explain the main concepts used in this paper. We introduce a distinction between financial reporting failures and financial reporting scandals.² With ‘financial reporting failures’ we refer to any situation where it becomes clear that a company’s financial reporting in some sense falls short of what people expect of it. Many financial reporting failures have only limited impact and are dealt with as routine occurrences in the practice of financial reporting.³ Financial reporting scandals are those financial reporting failures that, despite the general inevitability of such failures, occasion surprise and indignation in society at large, prompting the question: ‘how could this happen?’. We offer no exact predictions as to when failures become scandals, but assume that ‘scandals’ can be expected when the failure is large, when it is associated with immoral behaviour or negligence of duty by those responsible, rather than with unintentional error, and when adverse consequences are suffered by many stakeholders.⁴

The definition of financial reporting failures is deliberately broad. Its main elements, ‘short-fall’ and ‘expectations’, imply that financial reporting failures can be thought of as manifestations of an expectations gap. While the expectations gap concept is often applied to auditing (e.g. McEnroe and Martens 2001, Mock et al. 2013), it can also be applied to financial reporting (Mohs 2017, Bricker 2018). Using frequently used concepts (Porter 1993), we can analyse financial reporting failures as consisting of:

- a deficient standards gap (standards deficiency failure): financial reporting produced in compliance with the regulatory framework falls short of what stakeholders expect; and
- a deficient performance gap (compliance failure): financial reporting falls short of what can reasonably be expected given the normative requirements (‘standards’) of the applicable regulatory framework.

When applied to auditing, an audit failure or audit scandal is either a failure to comply with auditing standards, or a mismatch between auditing standards and what the stakeholders expect auditors to do or be able to do.⁵ When applied to financial reporting, the parties involved and their roles are more diverse, but in general terms the distinction between the two types of gaps can still be made. We use the term ‘regulatory framework’ or ‘regulation’ to refer to the entire system of formalized arrangements which constrains management’s discretion over financial reporting (company law, corporate governance arrangements, accounting standards, audit, securities market regulation, etc.) and which aims at providing constituents with relevant and reliable information.

Generically, ‘regulation’ can be thought of as consisting of ‘standards’, i.e. the normative description of the qualities expected of financial reporting and of the roles the various parties involved have to play in order to produce that quality of reporting, and ‘enforcement’, which includes all arrangements to ensure compliance with ‘standards’. Some parts of the regulatory framework have a double aspect, the most obvious example being auditing standards. Similarly, a securities regulator is part of the arrangements for ‘enforcement’, but if the securities regulator fails to live up to its own job description (‘standards’) we have a deficient performance gap, and if the public attributes greater powers to the regulator than it actually has, there is a deficient standards gap. We make these distinctions not in order to introduce an elaborate taxonomy of financial reporting scandals, but rather the reverse: for our purposes it is sufficient if we can look at financial reporting scandals using just two basic categories: the regulatory framework hasn’t functioned as intended, or there is something wrong with the intent implied in the design of the regulatory framework.

In practice there is a large grey area where it may be disputed whether a company’s financial reporting is or is not in compliance with the regulatory framework (see, for instance, the discussion of creative accounting in Jones 2010). For our purpose, it is sufficient that financial reporting failures of all kinds – minor and major, relating to standards or performance and, if the latter, both intentional and unintentional – are known to happen, have often happened, and will, as we argue, continue to happen, and that the distribution of financial reporting failures has a tail where failures become scandals.

A final concept we introduce is that of the financial reporting environment. This includes the regulatory framework of ‘standards’ and ‘enforcement’, but also all other factors with a bearing on the quality of financial reporting. An important factor is direct scrutiny by parties with an interest in financial reporting. In many jurisdictions the regulatory framework is based on the assumption that regulation will be supplemented by a degree of vigilance on the part of stakeholders in financial reporting. A lack of such scrutiny may contribute to financial reporting failures. An expectations gap will exist if it is commonly but erroneously assumed that such scrutiny takes place.

2.2. *The inevitability of financial reporting scandals*

The theoretical literature in (behavioural) economics provides many arguments to support the hypothesis that financial reporting failures are inherent in financial reporting in an enterprise economy.⁶ These start with the conflicts of interest at the heart of organizations managing scarce resources, including but not limited to the classical principal-agent setting of managers versus owners. Financial reporting is conceived as a means to mitigate the problem of information asymmetry arising in such settings, but, because of cost/benefit considerations, information asymmetry will not be fully removed (Hölmstrom 1979). This creates room for opportunistic behaviour that may perhaps be priced but which will, for the same cost/benefit reasons, never be fully exposed or sanctioned (Becker 1968, see Polinsky and Shavell 2000, for an overview of economic theory related to enforcement and sanctions). Financial reporting also involves significant externalities which may lead to outcomes that are suboptimal from a societal point of view. All of the preceding implies that a continuous stream of financial reporting failures, great or small, will continue to occur, basically because the costs of full prevention would be too high, or would be shared differently from the benefits.

This applies not only to compliance type failures, but also to standards deficiency failures. The conflicts of interests and the costly nature of financial reporting solutions will be reflected in the positions taken by various constituents in the standard-setting process, which itself is a costly activity. Participating in standard setting (as defined by us in a wide sense, so including legislative

activity) and keeping up to date with accounting standards is costly as well, so at any point in time accounting standards are likely to be out of line with the expectations of some stakeholders.

In a random distribution of financial reporting failures, some will be large enough to be seen as scandals. In addition, people may have incentives to turn failures into scandals for reasons such as shifting blame to others, the hope of higher compensation for losses occasioned by the failure, or, in case of politicians or the media, raising one's own profile. Turning failures into scandals is facilitated by the information asymmetry which characterises not just financial reporting as such, but also the regulatory framework and the financial reporting environment. Even if one knew, for instance, prior to the financial crisis, that banks' loan loss provisions were based on an incurred-loss model, it was still relatively easy to claim to be shocked by the extent of under-provisioning revealed by the crisis.

All in all, the permanent presence of conflicts of interests, the different preferences of various constituents, and the limitations of what can be achieved given cost constraints imply that financial reporting failures of various kinds will inevitably continue to occur.

3. Weak link between financial reporting scandals and change in financial reporting standards

One of the clearest examples of financial reporting scandals with an identifiable regulatory response is the case of 'Enron etc.', followed shortly afterwards, in 2002, by the Sarbanes-Oxley Act. As discussed in Section 4, this swift sequence of events has spawned a considerable amount of empirical research into the effectiveness, or effects, of this response. Because the scandals were quickly followed by a response that was explicitly linked to the scandals, the effects of the response could be studied without major confounding effects. Yet it may be argued that, for all its prominence, the Enron/Sarbanes-Oxley paradigm is of limited use in understanding the complex relationship between financial reporting scandals and developments in financial reporting regulation since the beginning of this century.⁷ A fundamental reason is that financial reporting regulation evolves for many reasons and under the influence of many factors, and not just in response to scandals.⁸ This is considered from three angles in the following sections. The first angle is the sometimes long response lag between scandals and regulatory change. The second relates to the fact that regulatory reforms are informed by multiple events over time resulting in a moving target. The third angle is that many accounting reforms are a consequence of international developments rather than a response to national scandals. In this section, for the sake of brevity, we focus on regulatory responses involving financial reporting standards. It would be possible to make similar observations about other regulatory responses, such as audit reform.

3.1. Long response lags

While the Sarbanes-Oxley Act was an almost immediate response to a series of financial reporting scandals, it was not the full response. The regulatory fall-out continued for years afterwards and is, in fact, still working its way out. This can be illustrated by the topic of accounting for leases. Section 401(c) of the Sarbanes-Oxley Act required the US Securities and Exchange Commission (SEC) to conduct a study on 'off-balance sheet transactions, including assets, liabilities, leases, losses, and the use of special purpose entities', to assess the adequacy of generally accepted accounting standards with respect to off-balance sheet transactions, and to come up with recommendations for improvement. Large-scale off-balance sheet treatment of assets and liabilities was, of course, a major element of the Enron case (Healy and Palepu 2003). In its report published three years later (SEC 2005, p. 105–6), the Commission recommended that the Financial Accounting Standards Board (FASB) should add a project to its agenda to revise the leasing

standard, preferably in cooperation with the International Accounting Standards Board (IASB). As the SEC acknowledged, revising lease accounting was not a new idea. Since the 1990s, it had repeatedly been observed that the current accounting standards (FAS 13 and, internationally, the closely related IAS 17) were unsatisfactory in that they resulted in off-balance treatment for most lease contracts in the financial statements of lessees. Yet, it was generally assumed that a revision of lease accounting would run into major opposition, and it appears that the SEC's 'suggestion' was decisive in getting the FASB and the IASB to include a joint project on accounting for leases among the major projects in their February 2006 Memorandum of Understanding describing their convergence agenda (see Camfferman and Zeff 2015, p. 334–341, p. 577). The two boards did succeed in issuing new and converged leasing standards (Topic 842 and IFRS 16, respectively), but only in 2016 and after a long and challenging process. For most affected reporting entities, the new standards will first be implemented in 2019. Even those currently engaged in implementing the new standards could be forgiven for being only vaguely aware of the chain of events linking these standards to the scandals of the first years of the century.

Arguably, lease accounting was not a major issue in the case of Enron and other scandals occurring around the same time, so the scandals perhaps provided no more than a convenient opportunity to push for a reform that had been favoured for some time among accounting standard setters and regulators. In contrast, the off-balance treatment of special purpose entities (SPEs) was at the core of the Enron scandal (Powers et al. 2002). In response, the FASB produced additional guidance with limited scope in 2003.⁹ By June 2002, if not earlier, the IASB also recognized the need to take up the topic of consolidation of SPEs in order to be seen to respond to Enron (Camfferman and Zeff 2015, p. 558), but its project evolved into a general revision of accounting for interests in other entities, including general consolidation criteria and accounting for joint ventures. Along the way, further complications arose in attempts to develop new standards together with the FASB, prompted by the same SEC (2005) report that provided the impetus to reform lease accounting. In the convergence process, the FASB struggled to expand its original limited-scope solution into a more general revision of the relevant topics. In 2010, the FASB dropped its ambition to produce a new general consolidation standard. In 2011, the IASB succeeded in publishing a package of standards (IFRS 10, 11 and 12) around the topic of consolidation. Because of a problematic European endorsement, these standards became mandatory in the European Union only as of 1 January 2014. By then, the financial crisis erupting in full force in 2008 had produced a new scandal around accounting for SPEs. By creating structured financial products, many banks had obtained off-balance treatment of loan portfolios that had been off-loaded onto SPEs, while remaining exposed to significant risks on these portfolios. Although it was convenient for the IASB that it could point out, under the political pressure arising out of tottering and collapsing banks, that it was already working on accounting for SPEs, this probably obscured the historical link between IFRS 10 and Enron.

3.2. *Moving targets*

Long time-lags between scandals and regulatory responses may mean that the original impetus for starting a standard-setting project is lost sight of. The case of financial instruments is the most evident and the most significant case of a very long reform trajectory where the perception of the problems to be solved has changed significantly over time. Arguably, the process – which is now nearing its end with the implementation of IFRS 9 and the completion of its section on portfolio hedging (dynamic risk management) – began as a response to several clusters of twentieth century scandals.

One set of scandals was formed by the US Savings and Loan (S&L) crisis in the 1980s. While this was a tangle of issues involving failures in banking regulation, banking supervision,

corporate governance, and audit, one of the themes that emerged was that measuring financial assets and liabilities at market value would provide the necessary transparency in banks' financial position that had been lacking in the case of the S&L's (see, for instance, Young 1995). 'Fair value' began to acquire prominence as a benchmark solution in accounting for financial instruments, not least because SEC Chairman Breeden pressed the FASB to require fair valuing marketable securities in SFAS 115 (1993; see Johnson and Swieringa 1996).

Another line of scandals was formed by a string of disclosures of large, derivatives-related losses, including cases such as Nippon Steel Chemical (1993), Metallgesellschaft (1993), Showa Shell Sekiyu (1993), Procter and Gamble (1994), Orange County (1995), Daiwa (1995) and Barings (1995).¹⁰ These scandals created a sense that 'new financial instruments' urgently required a better accounting solution and established as axiomatic, at least among accounting standard setters in the English-speaking world, that all derivatives should be measured at all times at fair value.

Against this background, the FASB and the International Accounting Standards Committee (IASB, as it then was) had been working on accounting for financial instruments from the late 1980s through the 1990s, with standards in place around 2000 that significantly expanded the scope of fair value accounting for financial instruments. A draft standard based on 'full fair value' accounting for all financial instruments was circulated as a discussion piece in 2000 by an international group of standard setters (JWG 2000). However, opposition to fair value arose as well. By the early 2000s, if not before, proponents of fair value regularly presented fair value as a response to past scandals (mainly of the deficient standards type) while opponents could argue that it contained the seeds of future scandals (both of the deficient performance and the deficient standards type).¹¹ These debates flared up again in the financial crisis. The question of whether the crisis was in some sense caused or aggravated by accounting standards for financial instruments (i.e. mainly a standards deficiency type of scandal) has been debated at length (e.g. Véron 2008, Magnan 2009, McSweeney 2009, Pozen 2009, Barth and Landsman 2010, Laux and Leuz 2010, Badertscher et al. 2012, Kothari and Lester 2012, Cooper 2015). Although one can't say that a consensus has been reached, it seems a fair characterisation that accounting specialists have tended to deprecate accounting's impact relative to other factors such as the quality of banking supervision. Yet, there is no question that significant numbers of people were scandalized, or professed to be so, by such issues as the alleged pro-cyclicality of fair value measurements, continued mandatory measurement at fair value of assets when markets had become illiquid, or the recognition of gains on liabilities measured at fair value reflecting a deteriorating own credit risk.¹² The current standard, IFRS 9, reflects a deliberate decision by the IASB that a mixed-measurement model for financial instruments will be the long-term solution. But it can hardly be said that the balance between amortised cost and fair value measurement in IFRS 9 reflects a consensus on the optimal use of fair value for financial instruments to prevent future scandals of whatever kind.

Similar observations might be made about accounting for loan losses: the FASB's and the IASB/IASB's adoption of the incurred-loss model were aimed at curbing banks' earnings management by means of loan loss provisions, a topic which had attained at least a moderate degree of scandalousness during the 1990s (Camfferman 2015). Nonetheless, in the aftermath of the financial crisis the incurred-loss model became a scandal by itself ('too little, too late'). Especially in the United Kingdom, IAS 39 was vociferously decried as 'not fit for purpose', not least because of its requirements for loan loss accounting (LAPFF 2011). As a result, IFRS 9 introduces an expected-loss model, but again there is no consensus that this is the best way to prevent future scandals.

A final example of how, over time, regulatory responses to scandals can lose focus is the discussion of principles-based standards versus rules-based standards. After Enron, there was a

widespread view that US GAAP was too rules-based, at least more so than IFRS, and that this had contributed to the outburst of accounting scandals at the start of the century. For some time, both the IASB and the FASB aimed to move their standards away from bright-line rules and towards more generally worded guidance requiring a greater degree of judgment. The IASB still describes its objectives in terms of standards ‘based on clearly articulated principles’.¹³ Yet its output of standards is mixed. Few would regard IFRS 9 with, for instance, the arbitrary 12-month horizon for estimating credit losses in the absence of significant increases in credit risk, as the epitome of a principles-based standard. On the other hand, the IASB’s ‘disclosure initiative’ is a clear attempt to discourage an attitude of mere compliance with formal disclosure requirements on the part of reporting companies and auditors. In general, the IASB is responding to mixed signals from constituents who appear to vacillate between a professed preference for substance over form and a reluctance to leave too much discretion to management.

Arguably, IFRS 8 *Operating Segments* is as good an example as any of a principles-based standard, given that it is heavily based on the principle of the ‘management approach’. Yet IFRS 8 was the object of considerable criticism, particularly in Europe, primarily for not containing sufficiently specific requirements (see Crawford et al. 2010). Similar concerns that the corresponding US standard allows too much ‘gaming’ can be heard today (Peters 2018). In the UK, the report on the Parliamentary Enquiry into the demise of Carillion did not find fault with principles-based accounting standards as such, but did emphasize that revenue recognition on construction contracts and goodwill impairment was highly dependent on estimates and judgments (House of Commons 2018). In doing so, the report illustrated the potential for scandal to arise out of different assessments of how such estimates and judgments should be made.

Overall, even though the 21st century scandals led to a widely held view of principles-based standards as a possible remedy, and even though it is likely that this view has had a practical impact on standard setting, there was no clearly identifiable response that could be the subject of a policy evaluation relying on measurable effects on reducing the risk of financial reporting standards failure.

3.3. *Local scandals and international regulation*

Undoubtedly, the adoption of IFRS by many jurisdictions around the world has been the single most important factor in the development of financial reporting since the beginning of this century. Yet in many of the adopting jurisdictions, the transition to IFRS was not a direct response to local accounting scandals.

It is clear that the decision to adopt IFRS in the European Union, announced in 2000, was not driven by any specific accounting scandal or with a distinct view of how IFRS might reduce the risk of future accounting scandals. The main drivers for the adoption were the policy of creating a single European capital market, as well as the threat arising during the late 1990s that US GAAP might become the de facto accounting standard for European enterprises accessing international capital markets (Van Hulle 2004). It is true that, in June 2002, European Commissioner for the Internal Market Frits Bolkestein welcomed the enactment of the EU’s IAS Regulation by saying: ‘IAS are the best standards that exist ... they are part of making sure Enron cannot happen here’ (Bolkestein 2002). Given that the IASB was at that very moment considering the necessity of changes to its standards with respect to SPEs, as indicated above, this was little more than a politically useful statement. Bolkestein’s statement may have reflected the view, mentioned above, that IFRS (IAS) was principles-based and in that sense superior to US GAAP in preventing scandals, but he would have had little or no evidence to support it.¹⁴

In Japan, as another instance, an accounting reform (the accounting ‘big bang’) had been set in motion in the late 1990s in response to accounting scandals, or at least a perception of abuse of

accounting standards (see Benston et al. 2006). By the early 2000s, it was widely believed that this had brought Japanese standards to a high level of internationally acceptable quality. Nonetheless, a convergence programme with IFRS followed for a brief period between 2009 and 2012 with a view to future mandatory application of IFRS. This happened not so much because of fresh accounting scandals, but because of a perception that IFRS was becoming the de facto global standard. While those who opposed a move to IFRS did not necessarily predict that it would be the cause of future scandals, they did tend to criticise it for being less conservative than Japanese GAAP, for allowing more managerial discretion, and for being too principles-based (Tsunogaya 2016).

These examples could be multiplied across many jurisdictions, but they would not change the overall picture. Already from before the beginning of this century, we have seen an almost continuous stream of greater and smaller changes in financial reporting standards. Although some of these changes were directly inspired by accounting scandals, the total package of changes is only weakly related to these scandals, both in terms of timing as in terms of the justifications for the changes.

4. Research on effectiveness of regulatory response

Regulatory responses can include changes to any aspect of the regulatory framework, that is, both to standards and to enforcement as defined in Section 2. Both types of responses have been extensively studied, but not, typically, with a direct focus on the link between these regulatory responses and scandal prevention. A notable exception is the recent historical study by Hail et al. (2018) on the relation between corporate scandals and regulation across many countries and over the last two centuries. The results, however, do not indicate a high degree of success of regulation in preventing corporate scandals, as the authors find that new regulations are generally followed by an increase in corporate scandals.

As we discuss in this section, much research takes an ‘average view’, that is, it analyses whether some measure of reporting quality increases *on average* in the wake of new regulation. Similarly, investor reactions to new regulation are frequently analysed. While these can be made firm-specific, and so reveal more than averages, these reactions capture more than the effectiveness of new regulation. In this section we discuss, first, some research on the market effects of financial reporting failures, and then research on regulatory response to such failures. The latter discussion is organized according to two perspectives. First, we discuss studies addressing the question: ‘how does the market perceive the proposed regulatory response?’, and second, ‘what is the quality of the new accounting information?’. In the end we conclude on the insights, or lack thereof, in relation to the ability of new regulation to prevent scandals. The discussion of the different types of analyses are not intended as an overview of all relevant research, but as an illustration of the main research approaches applied to these types of questions.¹⁵

4.1. Market effects of financial reporting failures

Before providing an overview, in Sections 4.2 and 4.3, of research on the effects of regulatory responses, we first briefly discuss research that shows that financial reporting scandals matter. The causes and consequences of specific, high-impact events have been studied in case studies (e.g. Rezaee 2005), and it is evident that those directly exposed to firms at which major scandals took place do suffer, such as employees who may lose their jobs in a bankruptcy or a corporate restructuring. Even so, research has with few exceptions (e.g. Sadka 2006, for the distorting effect of financial reporting fraud on product markets) focused on the impact of financial reporting failures on financial markets.

The study by Palmrose et al. (2004) documents large negative abnormal returns for firms in the period surrounding restatement announcements, that is, for financial reporting failures with rather

less impact than Enron, WorldCom, or Ahold. They show that market losses on restatements due to fraud are economically and significantly larger than those not involving fraud (-20% vs. -6% respectively). Anderson and Yohn (2002) show evidence of increased information asymmetry and a decrease in the extent to which investors rely on information. In line with this, Wilson (2008) reveals lower earnings response coefficients for restating firms in several quarters following a restatement. If such negative returns for the firm reporting the failure would be the only market effect, then regulators could argue that such an effect is firm-specific, that firms have incentives to reduce firm-specific risk, that investors can diversify their investments, and maybe that investors are to some extent insured against this loss by the audit and the possibility for claims against audit firms (see Section 8 for further discussion of these issues).¹⁶

The market effects of reporting failures extend, however, beyond the firm where the failure took place. Akhigbe et al. (2005) show that firms with direct exposure to Enron or firms that were also in the oil and gas industry experienced significant losses surrounding the publication of Enron's accounting fraud. Similarly, Gleason et al. (2008) show negative spillover effects of accounting restatements for firms in the same industry as the restating firm. The extent to which firms suffer from restatements of a peer firm seems to depend on their accounting quality. Donnelly (2008) shows that firms with weak corporate governance face a relative decline in stock price compared to firms with stronger corporate governance surrounding the publication of the Elan accounting scandal in Ireland.

Another channel through which negative effects can spill over is through the perceived quality of the audit. An accounting scandal can cast doubt on the quality of financial statements of other clients of the auditor involved. In the case of Enron, Chaney and Philipich (2002) document market losses for other clients of Arthur Andersen, and even stronger for the Houston office clients, on the day that Arthur Andersen acknowledged shredding certain documents (although Nelson et al. 2008, show that these effects are not significantly negative when controlling for the changes in oil prices on the same day). Weber et al. (2008) document that clients of KPMG experienced negative abnormal returns on days surrounding events in the case of ComROAD AG (a scandal breaking in Germany in 2002). The abnormal returns vary with indicators of the demand for high-quality audits such as the probability of default and the number of subsidiaries, supporting the idea that the consequences of a scandal spill over to other clients of the auditor involved due to a loss in confidence in the quality of the auditor's work.

Finally, financial reporting failures may negatively affect the stock market in general as valuations are based on a certain amount of trust that the systems of accounting and auditing work as they are supposed to work (Unerman and O'Dwyer 2004). This implies that major reporting failures (financial reporting scandals) may affect the perceived quality of these systems, resulting in a general loss in trust. This would yield a loss in value (due to a higher required risk compensation) for all firms in which the confidence in the financial reporting is affected. Wielhouwer (2015) shows evidence of general losses in value on days that financial reporting irregularities are disclosed in The Netherlands. The effects for incidents in other countries seem negligible, in line with the idea that perceptions are most affected by incidents occurring in the country itself.

All in all, there is some evidence that financial reporting failures have considerable market effects that extend beyond the firms directly involved. The next two sections consider what research does and does not tell us about the effects of regulatory changes on the probability of accounting scandals.

4.2. Market perception of regulatory response

Market responses to new regulation reflect several aspects simultaneously. When a new accounting standard or other regulatory change is announced, the market anticipates both implementation

costs for firms and changes in financial reporting quality. In case of proposed regulation, this is all weighed with the probability that the proposal will be implemented, with or without modifications. A market response can thus be seen as an average effect of whether investors perceive the proposal as efficient and as likely to be implemented. Assuming a high level of efficiency of securities markets, positive changes in abnormal returns around events related to the proposals are evidence that expected benefits exceed expected costs.

As an example consider the study by Li et al. (2008) on the events surrounding the introduction of the Sarbanes-Oxley Act. The speed of the Sarbanes-Oxley legislative process makes an analysis of the market reactions possible as news concerning the act may have come as a surprise. More often, legislative events are to some extent anticipated, or news only gradually leaks to the financial markets, making an analysis of market responses difficult. Li et al. (2008) find that the market reacted positively to events that signalled a higher probability that the draft law would be enacted. This leads to the conclusion that on average the market expected the benefits to exceed the costs.

The study of Sarbanes-Oxley by Hochberg et al. (2009) is notable for its extensive analyses of costs, benefits, and potential explanations of observed effects. It is also a good example of an analysis that uses market effects that go beyond the average by studying effects for different groups of firms, namely lobbyists against Sarbanes-Oxley and non-lobbyists. They first analyse lobbying behaviour and show that firms with higher agency problems were more likely to lobby against strict implementation of Sarbanes-Oxley. They then show that these lobbying firms did not experience a stronger increase in audit costs post Sarbanes-Oxley, thus refuting the explanation that high cost was the reason for their observed lobbying behaviour. They show that in the period prior to implementation of Sarbanes-Oxley, these lobbying firms with higher agency problems, on average, had positive abnormal returns, which suggests that the market expected that Sarbanes-Oxley would resolve some of the agency problems. This is in line with the evidence of Li et al. (2008) that the positive stock price effects are most pronounced for firms that engaged relatively more in earnings management.

Khan et al. (2018) recently studied market perceptions of FASB accounting standards issued between 1973 and 2009. They show that events prior to and including the issuance of the final standard are, in the case of most standards, not associated with changes in shareholder value, indicating no expected benefits in excess of costs. Surprisingly, a number of standards did not reduce, but increased estimation risk for the firms affected by the standards. Similarly, there are several studies of the capital market effects of IFRS adoption (see ICAEW 2015, for an overview of the effects in the European Union). Although there seems to be evidence that generally the cost of capital is lower after IFRS adoption, this may well be attributable to simultaneous changes in the enforcement level of adopting countries (Christensen et al. 2013).

While event studies on the introduction of new accounting standards or other regulations are highly relevant, strictly speaking they do not provide evidence that the risk of financial reporting scandals decreases, even if investors are positive about the change in financial reporting quality. The closest to such evidence is the analysis of differential effects that show that investors value these regulations more for groups that were expected to have the highest risk of failure. In general, such analyses provide evidence on whether regulations are economically beneficial, but not on the risk of failure per se. The reason is that market effects are an average whereas major reporting failures are events in the tail of the distribution. Although the average quality increases and firms with lower quality reporting benefit more on average, the highest-risk cases may remain unaffected.¹⁷ Conclusions on the risk of major reporting failures rest on the implicit assumption that a positive average share price reaction means that the entire distribution of reporting quality shifts to the right, or that the average positive effect is due to a high increase in financial reporting quality of the firms with the lowest quality. Although not necessarily wrong, as long as it remains

an assumption one cannot tell whether a positive share price reaction to a change in regulation indicates a decrease in the risk of extreme events.

A further limitation of event studies is that they require clearly identifiable events in relation to new or proposed requirements. While the Sarbanes-Oxley Act provided opportunities for this type of research, the discussion in Section 3 highlighted that it is common for the accounting standard setting process to extend over a long period of time, with few discrete events that can be related clearly to any share price reactions.

4.3. *Quality of new accounting information*

A large body of research addresses the consequences of newly introduced standards or other regulations for the quality of accounting information. Important research questions are ‘what is the amount of information that financial reporting contains?’, ‘to what extent do financial reporting numbers explain market value or changes therein?’, ‘what is the quality of the accounting information?’ and ‘to what extent can managers manage the earnings of the company?’

Assessing the amount of information in financial reporting numbers by reference to stock market returns has been a fertile topic of research since Ball and Brown (1968) and Beaver (1968), giving rise to a vast number of studies. One can evaluate, for instance, whether there is more news value in earnings announcements after implementing a new standard. An example is Landsman et al. (2012) regarding the change in information content of earnings following the implementation of IFRS. Also, based on the idea that prices lead earnings, one can see whether the returns over a period are associated with the information in subsequent earnings announcements (e.g. Aboody and Lev (1998) on the capitalisation of software R&D expenses). An alternative way of analysing changes in accounting are value relevance studies based on the theoretical framework of Ohlson (1995). These studies are similar in spirit to the association studies of long term returns and accounting information, but examine to what extent the firm price can be explained by a set of core financial reporting numbers (Barth et al. 2001). Ahmed et al. (2006) study, for example, whether recognized derivative fair values under SFAS No. 133 are more value relevant than the disclosures in the notes prior to this standard. Some differential insight can be gained by analysing whether the coefficients of accounting numbers are lower when, for example, corporate governance is poorer (e.g. Song et al. 2010, on the fair value hierarchy under SFAS No. 157). Studies of information content and value relevance evaluate whether reported numbers on average contain information or are on average more or less strongly correlated with share prices, which is a joint estimate of their association with expected future cash flows and their perceived reliability. These insights are, however, of limited use in assessing the risk of reporting failures, and even less in assessing these risks in the tail of the distribution.

Other studies analyse whether characteristics of accounting information – e.g. accruals quality, or timely loss recognition – have changed after the introduction of new regulations (see, e.g. ICAEW 2015, for a review of empirical research on the introduction of IFRS in the European Union). High quality accruals are important and valuable for informing investors about firm performance, and are priced by the market (e.g. Rayburn 1986; Francis et al. 2005). Lobo and Zhou (2006) show that firms report lower discretionary accruals and recognize losses in a more timely fashion after the introduction of Sarbanes-Oxley. Ashbaugh-Skaife et al. (2008) show that remediation of internal control weaknesses, which are reported after the introduction of Sarbanes-Oxley, is associated with an increase in accrual quality. Although it is highly relevant to see whether in general firms have higher accrual quality, have more timely loss recognition, or make more conservative accounting choices, these analyses again only provide insight in average effects for all firms or at best for subsets of firms with, for example, higher agency problems.

Finally, many studies investigate the effect of new regulations on earnings management. Studies may focus on total accruals or on an aggregation of activities such as expenses (e.g. Cohen et al. 2008, on the introduction of Sarbanes-Oxley) or on specific accrual items in the financial statements. Schrand and Wong (2003), for example, show that after the introduction of SFAS No. 109, well-capitalized banks used the valuation allowance for deferred tax assets for income smoothing. Fonseca and González (2008) show that earnings management by banks using loan loss provisions depends on the quality of accounting disclosures in a country. Such analyses show that when managers strive for a specific objective, they may use discretion in accounting to realize these objectives, and how this is influenced by regulation. Apart from the already frequently noted limitation that these are average effects, studies on earnings management (whether based on accruals or other indicators) are of limited relevance in explaining financial reporting failures. Most of the accounting variation observed in such studies is expected to be within the boundaries of the financial reporting framework, rather than the extreme behaviour leading to financial reporting failures with high societal impact.

4.4. *What do we learn regarding the prevention of scandals*

All these studies contribute important elements to our understanding of financial reporting and its environment. However, this body of literature tells us little or nothing about situations when financial reporting is not just a little less value relevant but totally beyond the borders of the acceptable. This means that a large body of studies on the effects of changes in financial reporting regulation uses methodologies that are not very suitable for, and do not directly aim at, identifying effects on the probability of extreme failures of the deficient performance type, that is, the kind of failures that may have provided an important motivation for the change in regulation (Ball 2009a, Hail et al. 2018). These studies tell us even less about the probability of scandals of the deficient-standards type. To the extent that they are based on patterns in accounting numbers (as many studies of accruals quality are), they do not consider public expectations about accounting quality. If they are market-based, they assume that market prices correctly incorporate the characteristics of the regulatory framework, thus assuming away the possibility of a ‘deficient standards’ gap.

Nevertheless, it is possible to employ these methodologies in ways that come closer to evaluating the likelihood of future scandals. This is especially the case for studies of differential effects of new regulation for certain groups of firms that can be expected to have the highest risk of failures. Similarly, studies on the antecedents of financial restatements (e.g. Harris and Bromiley 2007; Bentley et al. 2013) can provide insights in what can be effective in preventing certain types of reporting failures. But it should be noted that while restatements are financial reporting failures, many restatements are not scandals with large societal impact. For good estimates of probabilities in the tail of a distribution, many observations are needed or specific estimation methods for extreme values need to be used.

5. Living with risk: need for a broader focus in policy and research

In Section 2 we argued that financial reporting failures are not indicators of relatively superficial flaws in our regulatory system, but inherent at a fundamental level to the organization of our society, so that failures will continue to occur. This argument is not novel. Yet the common reaction of regulators to any scandal is to intensify regulation with a view to preventing future scandals (Ball 2009a, Hail et al. 2018). The argument typically employed in such cases is that ‘confidence in financial reporting must be restored’ (Wielhouwer 2015). The question is legitimate whether this is always the best response. If confidence in financial reporting has fallen in

the wake of a scandal, one should at least consider whether these adjusted expectations better reflect the reality of financial reporting failure risk. Why should one simply assume that confidence, prior to the scandal, was at the appropriate level? Restoring confidence to levels beyond what is realistic is doomed to lead to new disappointments. If one doesn't know the actual and perceived risks, one doesn't know whether to take measures aimed at changing perceptions of reporting failure risk (and, if so, whether upwards or downwards), or at decreasing the actual risks of failure, or both.

Successful policy development should be informed by both expert calculations of actual risk and people's perceptions of it (e.g. Freudenburg 1988). However, these conditions for informed policy development in accounting regulation are not met. In general, financial reporting regulation has focused one-directionally on reducing the risk of financial reporting failures, raising expectations that this risk may be ever further reduced – if not ultimately eliminated – by introducing stronger regulation. Reporting regulation has not systematically been informed by research on actual or desired levels of risk, nor on perceptions of such risk.

A focus on prevention of financial reporting failure or on incrementally reducing the risk of financial reporting failure is not wrong, but it is not sufficient. It should be complemented by awareness that incidents may still occur, and thinking ahead about managing the consequences. Both in the practice of reporting regulation and in academic research, a focus on prevention or risk reduction leaves major, and in some sense obvious questions unaddressed: how much risk of financial reporting failure do we find acceptable? What is the actual and perceived risk? How can we achieve desired risk levels and ensure that these are correctly perceived? How can stakeholders better manage the degree of risk that will always be there?

If we may use a Dutch analogy, it may be necessary to keep increasing the height of the dikes, but doing so blindly is not very helpful. One should have some understanding of the risks of flooding. Moreover, it is dangerous to foster the perception that raising the dikes guarantees safety from flooding. Active policy-making is necessary to ensure that people continue to have realistic perceptions of the risk of flooding, that they know what to do in case of an emergency, and to help them to take measures in advance to limit the damage in case of a dike breach.

The flooding analogy has its limits. That will also be true for analogies with other risks, ranging from food safety to terrorism. However, thinking of financial reporting in terms of public policy risk management, and exploring differences and similarities with other types of risks, is in our view a fruitful way of discovering new perspectives and of identifying issues that are neglected in accounting regulation and academic accounting research. We do not by any means suggest that researching or resolving these issues is easy, but that is not a good reason for continuing to leave them aside. In the remainder of this paper, we begin to develop a research and policy agenda along these lines. The three main elements of such an agenda would be the following:

First, understanding the extent of risk of major financial reporting failures and perceptions of such risks. There is hardly any insight in the actual risk of financial reporting incidents occurring, despite the fact that we are aware that these incidents will happen. Financial reporting practice and research could benefit from more insight in the tail of the financial reporting failure probability distribution. Minor or routine financial reporting failures create only limited risks, but it is the extreme events that seem to drive confidence in the system, political pressure, and a call for improved financial reporting standards or strengthened enforcement. Apart from the actual risks, one has to deal with the perceptions of the risks. Risk perceptions are important in several ways. They don't map directly on expectations gaps of the 'deficient standards' type, but they will be important determinants of such gaps.¹⁸ Following a scandal, the policy response may be more rational or effective if people had a realistic assessment of risk. Prior to a scandal, risk perceptions will influence how much effort people will make to understand financial reporting and financial reporting regulation, these perceptions will influence any precautionary

measures people take, and, perhaps most importantly, risk perceptions will influence the level of active scrutiny of financial reporting by interested parties. While a better perception of flood risk will not by itself stop sea levels from rising, it may limit the consequences because people are better prepared.

Second, and given the importance of risk perceptions, it is important to understand how these can be influenced. Research on how to communicate information about financial reporting risks and on how to educate users of financial statements about the possibilities and limitations of financial reporting should therefore be an important part of the research agenda. This should be accompanied by research on whether increased risk awareness leads to stakeholders taking precautionary actions to protect themselves against the consequences of financial reporting risks.

Third, and following up on the previous point, given that with any level of quality of the financial reporting framework, financial reporting failures will continue to happen, the question arises what stakeholders can do themselves to reduce, transfer, or share these inevitable risks.

As mentioned above, a plea for more attention to these three elements does not mean that regulators and academic researchers should stop efforts to improve the quality of the regulatory framework. In the next three sections, we outline how research and policy-making can extend their agenda to address these elements. In doing so, we point out examples of relevant extant research that could be used as starting points for a more coherent body of research on the issue of living with a permanent risk of financial reporting failure. There are many possible starting points in the literature, and we believe that these incipient lines of research would benefit from being seen as part of a recognized research domain of 'financial reporting failure risk', that would take its place next to long-standing research headings such as 'value relevance', 'earnings management', 'voluntary disclosure' or 'audit quality'.

6. Research in extent and perceptions of financial reporting failure risk

6.1. *Is there a gap between actual and perceived risks on financial reporting failures?*

In Section 2, the notion of the expectations gap was applied to financial reporting failure. That such an expectations gap exists might be inferred on an anecdotal basis from the fact that some financial reporting failures become financial reporting scandals, but it is possible to consider the gap on an empirical basis. Simply stated, the evidence discussed in Section 4.1 illustrates that the risks of financial reporting failures are generally underestimated. The fact that trust-related effects of restatements and scandals are observed for other firms (e.g. Gleason et al. 2008, Wielhouwer 2015) implies that the market updates its expectations about the risks, and perceptions change. We suggest that this approach be used more widely in a systematic effort to chart expectations gaps in financial reporting.

In the professional auditing literature, the expectations gap is a well-established idea. An extensive research literature has documented the existence of audit expectations gaps of one kind or another across a range of countries, mainly by means of comparing differences between auditors and various other parties (investors, managers) in responses to survey questions or by means of experiments (without any pretence to completeness, see for instance, Epstein and Geiger 1994, McEnroe and Martens 2001, Lin and Chen 2004, Nazri Fadzly and Ahmad 2004, Hassink et al. 2009, Gonthier-Besacier et al. 2016). Yet differences in perceptions of audit quality do not translate easily into estimates of differences in perceptions of financial reporting risk and differences in perceptions also provide limited evidence on the perceived absolute levels of risk. Most of these studies do not focus on the tail-end risks of major financial reporting incidents, but rather on differential perceptions of audit quality, or aspects of audit quality, in general (see James 2003, for a study focusing explicitly on fraud risk).

All in all, there is evidence that perceptions of the risk of financial reporting failures, both measured directly through studies of spillover effects and indirectly through studies on perceptions of audit quality, differ from the actual risks. The auditing literature has paid attention to this and studies investigate whether new auditing standards contribute to lowering the expectations gap (e.g. Gold et al. 2012). But while the gap between actual and perceived financial reporting quality is often seen as an auditing problem, it is clearly a wider problem as discussed in Section 2. And even in the auditing literature, limited attention has been paid to how to adjust the expectations and make people aware of the risks that are inherent to a system of financial reporting in which financial statements are produced and audited by people whose norms, values, and interests may be quite different from those of a company's stakeholders.

6.2. *Understanding and measuring risk exposures*

In order to obtain better insights into the risk of financial reporting scandals and their consequences, which are partly driven by the perceptions, the first topic on which more research is needed is insight into the size of the actual risks. As defined in Section 2, financial reporting failures include both deficient-performance failures and deficient-standards failures. Although both can create real risk exposures, we focus in this section on risks of the deficient performance type. Generally, risk exposure is determined by the loss in case of an event multiplied by the probability of this event. Insight into the risks of financial reporting failures requires more research on both aspects.¹⁹

First, more insight into the actual probability of a scandal occurring is needed. This goes beyond trying to predict the probability of a scandal in a certain firm based on, e.g. financial ratios or other characteristics (see, e.g. Bell and Carcello 2000). It requires predicting the likelihood of a scandal in a certain period of time for a group of firms. As with many risky events, estimating the likelihood based on the normal distribution is not adequate and underestimates risks because the tails of the distribution are likely to be 'fatter' than the normal distribution. This requires estimating the probability of extreme values.

Second, more insight is needed into losses in case of an event. Share-price reactions to reporting scandals provide relatively straightforward indicators of the impact on shareholders. We have noted above that these effects may not be limited to the firms in which the scandal occurs, but may spill over to affect share prices of other firms. The fact that other stakeholders are exposed to risk has been noted in the literature, for instance in comments on the plight of Enron employees (e.g. Kochan 2002, Arnold and De Lange 2004, Rezaee 2005). While it is clear that employees can lose employment and retirement benefits as a consequence of reporting scandals, charting employees' exposure is complicated. Such losses will not be a direct result of the accounting failure (as in the case of shareholders holding mispriced shares), but will be mediated by an ensuing event such as a default or reorganization. The impact on employees will also be heavily dependent on institutional arrangements such as protection of pension plan assets. Despite these challenges, the fact that adverse consequences of accounting scandals for employees do from time to time provide occasion for outrage and calls for reform does suggest that this is a topic meriting more (descriptive) research.

It seems worth the effort to build models that estimate the probability of extreme events to get insight into the *actual* probability of scandals and to estimate the consequences of such an event. Extreme value theory (or generalized extreme value theory) is widely used to predict probabilities on extreme rainfall, floods, or other events (Kotz and Nadarajah 2000). It is applied in finance to estimate the value-at-risk which can be used to determine capital requirements (e.g. Gilli and Kellezi 2006, McNeil and Frey 2000, Neftei 2000).²⁰ Separate dependency structures for events may be needed to properly assess the risks (e.g. Poon et al. 2004).

The idea of extreme value theory is to estimate the tail of the distribution separately. Consider for example all earnings restatement amounts over several years. The maximum restatement

amount per year then follows a generalized extreme value distribution. In actuarial science often the generalized Pareto distribution is used to model the distribution of events in excess of a certain high amount (Embrechts et al. 1997). Using these limit distributions may provide insight into, for instance, the probability of restatements with an amount in excess of $x\%$ of earnings; the probability of a scandal occurring in x years that leads to a default; the probabilities of scandals with a market value effect greater than x billion, etc.

Insights from areas outside the financial world could also be applied to develop such models. The three steps distinguished in Büchele et al. (2006) for flood risk assessment could serve as a starting point to build models for financial reporting failure risk. A regional estimation of the risk of extreme events; estimation of impact based on local characteristics; and damage estimation. The fact that financial reporting scandals seem to occur not randomly over time but seem to be somehow interdependent suggests that recent applications of copulas to model the dependence structure between events is also an interesting research development (e.g. Rodriguez 2007, Gudendorf and Segers 2010, Salvadori and De Michele 2010).

Applying these insights to financial reporting risk provides several opportunities to extend our knowledge. Although relatively little data is available for financial reporting failures, probabilities of extreme events can still be estimated by (generalized) extreme value theory. These probabilities are likely driven by several local factors ranging from differences in regulation, accounting standards, audit practices, ethical norms, etc. This suggests that these models are best developed based on local data. If applied to many countries or regions, this opens up the possibility of estimating the extent to which differences in risk are driven by these local factors. To obtain insights into the impact of such failures, one needs to consider to what extent risk mitigation mechanisms (see Section 8) are in place in each region. Given an event of a certain size, the consequences can be estimated based on exposure, risk mitigation, assumed or modelled dependency structures, and lessons learned from historic events. Taking these aspects – probability and impact – together, scenario analyses could yield insights into the distribution of damage in case of a scandal. This would be a first step to assess the risk of financial reporting scandals. Combined with insights into risk perceptions, the findings from such research could be highly relevant to policymakers.

6.3. Understanding and measuring risk perceptions

Risk perceptions are measured in a variety of settings, ranging from diseases (e.g. Brewer et al. 2004), nuclear power plants (e.g. Whitfield et al. 2009), internet shopping (e.g. Forsythe and Shi 2003), to investing (e.g. Wang et al. 2011). A common denominator is that perceptions depend on many more factors than the actual risk and may be affected by people's understanding of the issue, familiarity with the issue, and/or by media coverage. Also, it is known that the risks perceived by people often differ from the actual risk measured by advanced models or historic hazard rates (e.g. Wang et al. 2011, Slovic 1987). Policy makers need to consider both perceived and actual risks and take into account expert assessment and public perceptions because 'risk communication and risk management efforts are destined to fail unless they are structured in a two-way process. Each side, expert and public, has something valid to contribute.' (Slovic 1987, p. 285). We therefore argue that future financial reporting policy may benefit substantially from measuring perceptions of risks of financial reporting scandals.

The concept of perceived risk and different ways to measure it has been discussed since the 1960s (see e.g. Dowling 1986, for an early overview mostly related to consumers).

It seems promising to construct scales to measure stakeholders' perceptions of the likelihood that in a certain time frame a financial reporting incident will occur, their trust in the financial accounting standards, the auditor, and government oversight. Such measures could be similar in spirit to, for example, measuring the perceived risks of flooding (e.g. Grothmann and Reusswig

2006) or, more qualitatively, the Global Risks Report series issued by the World Economic Forum. As with actual financial reporting risks, perceptions of risk are likely to differ across jurisdictions or regions. In addition, such perceptions are likely to differ across stakeholder groups, sometimes cutting across geographical boundaries. Active investors may well be aware of risks across a range of jurisdictions of which the average citizen is not aware, despite the fact that the latter may be exposed to such risks due to being an employee or a recipient of less than fully funded defined-benefit pensions. How such instruments should be deployed remains to be determined, but it is clearly preferable that data are gathered in a way that allows international comparisons as well as insight into developments over time. Having established such scales and measures and regularly measuring the perceptions by using stakeholder panels opens important possibilities for research that could inform regulators.

First of all, measurement of these perceptions combined with insight into actual risks (see Section 6.2) yields insights into the expectation gap across and within stakeholder groups. This could inform regulators on where to focus when reforming standards or communicating the risks.

Second, *regular* measurement allows to study how events, media coverage, new standards, et cetera affect these perceptions. They provide a basis for determining whether an incident has really impaired trust, and, more importantly, whether trust needs to be restored or has actually become more aligned with reality.

Third, studying cross-region differences may shed light on the extent to which government intervention has affected risk awareness, which could be very relevant when studying people's motivations to take precautionary measures. Grothmann and Reusswig (2006) relate the previous experiences with flooding, the perceived future risks, but also the reliability of public flood protection to an individual's decision whether to take precautionary actions against flooding. Similar in spirit, perceptions about risks related to financial reporting may be related to decisions on whether to invest, to diversify investments, or to gather more knowledge. In this way, it is possible to get insight into how scandals, new standards, or government interventions translate into actual changes in behaviour through the changes in perceptions. Two aspects deserving attention explicitly as important elements related to financial reporting risk are creating risk awareness (communication of the risks) and risk mitigation (precautionary actions related to risks).

7. Communication and education to create risk awareness and stakeholders' responses

Determining the perceptions of risks of different groups of stakeholders and the extent to which they rely on, or trust financial reporting is only a first step. Stakeholders should ideally not underestimate the risks and should know how to respond to it. Again, as with perceptions, this needs to be tailored to the stakeholder group, as investors may have higher awareness than employees or the general public. Recall that, in general, research evidence based on share price reactions to scandals suggests that even in the case of investors, perceived risk appears to be an underestimation of actual risk (Gleason et al. 2008, Wielhouwer 2015). This is not necessarily a matter of insufficient available information. There is a long line of research, going back to early work such as Lee and Tweedie (1977), documenting the difficulties of financial statement users in understanding and correctly interpreting information in financial statements (see also, e.g. Bartlett and Chandler 1997). Although little of this research seems to be directly focused on assessing risks of financial reporting failure, it seems plausible a priori that financial statement users will find this at least as challenging as, say, seeing through different presentation formats for items of other comprehensive income (Maines and McDaniel 2000).

We therefore distinguish two aspects of increasing risk awareness: 'communication', by which we mean the incorporation and presentation of information relevant to financial reporting

risks in the financial reporting by individual companies, and ‘education’, by which we mean the enhancement of general knowledge about financial reporting risk.

An interesting example with respect to communication consists of the Key or Critical Audit Matters (KAMs). These disclosures are meant to inform stakeholders about important issues arising during the audit process and how the auditor responded. In the exposure draft on the revised international auditing standards in 2013 in which reporting on KAMs was proposed, the IAASB mentioned among the expected benefits:

... the IAASB is of the view that changes in auditor reporting may have positive benefits to audit quality or users’ perception of it. This in turn may increase the confidence that users have in the audit and the financial statements, which is in the public interest. (IAASB 2013, p.7)

We note that, even though the exposure draft also mentioned an increase in scepticism, an increase in confidence on the part of financial statement users was seen as a key possible benefit. Yet, instead of increasing confidence or positively influencing perceptions of audit quality, we believe that the objective of the reform should perhaps have been to make these perceptions *more realistic*. That this may have been the outcome is suggested by research into disclosures of risk of material misstatements in the UK (similar in spirit to Key or Critical Audit Matters). Lennox et al. (2018) show that these disclosures do not contain incremental information, but are negatively associated with the value relevance of the financial accounting numbers. The association between financial accounting numbers and stock price is weaker when more risks are disclosed. The fact that these risks are now disclosed may contribute to more realistic perceptions about what can reasonably be expected from financial statements. This may in turn contribute to less damage if an incident occurs. Hence, a reform of audit regulation leading to a generally lower perception of audit quality can be considered successful to the extent that this perception has now become more realistic.

The findings of Lennox et al. (2018) suggest that the information contained in the KAM disclosures was already incorporated in prices by the capital market, but this does not imply that all stakeholders were, or are now, aware of the risks. Indeed, Christensen et al. (2014) show that KAM disclosure does affect investment decisions of nonprofessional investors, a result reinforcing the need for caution in drawing inferences from market-wide effects in assessing risks of major financial reporting failures and their potential impact on different stakeholder groups.

While there is an extensive literature on accounting education, only a modest part of it seems to be directed at the question of how students’ perceptions of reporting failure risk can be formed (see, however, Monroe and Woodliff 1993, Pierce and Kilcommins 1997, Boyle and Canning 2005, Siddiqui et al. 2009). More generally, the question of how the general public can be educated about the nature of financial reporting and about financial reporting risk seems to be almost a blind spot in the accounting literature. A critical tone in the financial press in the 1960s led to initiatives by the accountancy profession in the US, Canada, and New Zealand to give educational seminars on accounting and auditing to financial journalists. These were believed to be effective in that some of the participating journalists went on to write more constructive articles (Zeff 1972, 1979). While deflecting criticism from the accountancy profession should not be an end in itself, it is clear that educating financial writers on financial reporting is important given their role in forming public opinion. Yet as far as we know there is not much evidence on the existence or effectiveness of such educational programs. More generally, studies do exist on financial education and on increasing financial literacy that may provide insight both for practice and for researching the effectiveness of such policies (e.g. Williams 2007, Bay et al. 2014, OECD 2005). Similarly, initiatives can be developed to increase awareness of what financial reporting can and cannot do. We note that a criticism raised against policies of increasing financial literacy

is that these may be ways of governments to shift responsibility to consumers (see Williams 2007), but in the light of evidence that risks of reporting failures are underestimated, at least for now, unwarranted confidence in the regulatory system or the government seems to be the greater potential problem.

Connecting the idea of communicating about and educating people on financial reporting risks to the idea of measuring perceptions of risk (see Section 6), will allow us to investigate the effectiveness of different educational strategies, or the cumulative effect of modified communication (as in the case of KAMs). As investing in risk awareness seems necessary, research can contribute by evaluating the effectiveness of programmes (see, e.g. Uggla 2008, on the Swedish campaign to create awareness of the risks of climate change). However, improving risk awareness is not an end in itself. To the extent that it reduces confidence in the regulatory system,²¹ it should lead either to precautionary actions or more conscious acceptance of risk. For example, awareness of the risk that personal information is abused reduces the level of trust in e-commerce relationships, which in turn leads to an increased demand for control (Olivero and Lunt 2004). This process is, however, not so straightforward in relation to risks of extreme events, but again, research on, for example, flood risks may provide valuable insights and starting points to study the relation between creating awareness, perceptions, and precautionary actions. This relation is much more complicated than casual intuition suggests. Based on a review of case studies, Wachinger et al. (2013) conclude that a risk perception paradox exists: the assumption that higher perceived risk leads to better preparedness is not necessarily true. They provide three possible explanations: People consciously accept the risks because the perceived benefits are high enough; people assume that other parties will take responsibility for reducing the risk or managing the consequences; or, people have few resources to take actions. The first reason for not taking precautionary actions is related to the level of risk aversion. People take actions if they are not only aware of the consequences but are also worried (e.g. Micheli et al. 2008). This is perfectly aligned with the idea of consciously accepting the risks. The second reason is related to trust in government, as more trust in government makes people less likely to act themselves. The hazard literature distinguishes between natural and technological disasters and suggests that, because the latter are less easily understood, the public is more likely to rely on the government to deal with the risks and the consequences of disasters (e.g. Kasperson and Pijawka 1985). Even though the distinction between the two may have become less clear because of the influence of human behaviour on climate change and thereby its influence on natural hazard rates (Wachinger et al. 2013), financial reporting risk is firmly in the sphere of technological or man-made risks. This points to an important lesson for the financial reporting environment. Financial reporting quality is supported by a range of mechanisms including corporate governance, external audit, and government oversight. All these layers are standing invitations for people to project any responsibility they may have themselves on to these quality-enhancing mechanisms, making people less likely to take precautionary actions themselves. In that sense, a decrease of trust in the regulatory system that does not reflect an actual increase in the risk of incidents may be beneficial. The third reason why improved risk perception may not lead to better preparedness – lack of resources – is broader than poverty. It can also relate to lack of knowledge, skills or social support for setting up mechanisms to protect oneself and others against negative consequences. It is likely that some stakeholders groups such as employees, when aware of their exposure to financial reporting risks, will feel quite powerless to do much about it.

An important challenge in communicating or education about financial reporting risk is that the information is not necessarily trusted. This problem exists generally in communications by governments or experts about public risks (Wachinger et al. 2013), but is likely to be quite severe in the area of financial reporting because expertise is concentrated with parties with a clear interest at stake, such as reporting companies, their industry associations, and auditors.

For instance, several studies do suggest that KAM disclosure reduces auditors' exposure to liability risk because courts will note that KAM disclosure gives stakeholders a means of becoming more aware of risks (Brasel et al. 2016, Kachelmeier et al. 2018). While such an effect is in principle in line with the objective of creating risk awareness, it may become problematic when some stakeholders do not have the capacity to assess the contents of the KAMs or to take sufficient risk-reducing measures on the basis of the KAMs. If the main effect of KAMs is that of reduced auditor liability, the information may be perceived as just a form of self-protection for auditors rather than as an attempt to convey relevant information.

It would seem that independent academics have an important role in providing information about financial reporting risk. In addition, academics may attempt to measure (dis)trust in financial reporting experts, paving the way for an evidence-based approach to education about financial risk in which expertise from practice plays an effective role.

In general, Wachinger et al. (2013) point towards participation processes as a way to manage the complicating effects (undue reliance and lack of trust) of expert involvement in efforts to increase trust in the information provided by experts. Participation stresses the responsibility of the participants, and can increase trust in warning signals. In financial reporting regulation, some element of stakeholder participation is often part of due process requirements, both in case of private-sector standard setters such as the IASB or the IAASB, and in case of legislative procedures. However, to our knowledge, the issue of financial reporting risk is not commonly included among the relevant issues to be discussed in proposals for new or modified reporting requirements,²² quite apart from the problem that consultation processes in financial reporting tend to be characterised by relatively low participation on the part of financial statement users. At the level of the individual company, a participative approach could for instance mean a more active discussion with the auditor during general shareholders' meetings of the limits of the audit and the costs of additional levels of assurance, for instance to reduce materiality thresholds below the normal requirements of applicable auditing standards.²³ Research in the area of financial reporting and auditing could focus on how to maintain trust in the expertise of, e.g. auditors as they explain the limitations of their work and lower the expectations of what can reasonably be expected.

As indicated, we argue that it could be beneficial to shift the balance from risk prevention to living with the risks. The above section provides opportunities and challenges, but research suggests that risk perceptions don't have to be adjusted before starting to educate about precautionary actions. Terpstra and Gutteling (2008) find, related to the change from prevention to risk management for flood risk in The Netherlands²⁴, that, although people generally feel that the government is responsible for protection and although perceived risk is low, people see an equal responsibility for themselves to be prepared for an event. They conclude that individuals may therefore be open for education on this topic. So creating awareness and educating about precautionary measures can go hand in hand.

8. Risk management by stakeholders

In general, the literature on the 21st century accounting scandals has tended to distinguish between regulatory and market approaches to coping with the risk of financial reporting scandals (Ribstein 2002, Ball, 2009a). In that context, regulatory approaches mainly relate to reducing the risk of the occurrence of financial reporting scandals, such as better accounting standards or better auditing. While our main focus is not on such preventive measures by standard setters and regulators, we do note that they could do more to help stakeholders to help themselves. The IASB's Conceptual Framework as revised in 2018 does not clearly articulate the risks to financial reporting quality arising out of structural conflicts of interests. There are brief discussions of 'manipulation'

under the heading of ‘neutrality’ (para 2.15) and of ‘verifiability’ as an enhancing characteristic of useful financial information (paras 2.30-32), but this doesn’t add up to a coherent view of how financial reporting should cope with a permanent risk of failure. In the context of its disclosure initiative the IASB should not just frame disclosure requirements in terms of more effective communication, but also in terms of facilitating market scrutiny of financial information for signals of reporting failure. This is an angle which is not discussed in the new chapter on disclosure in the 2018 Conceptual Framework.

So, while designing better standards is not in the scope of this section, we can still distinguish between market mechanisms and regulatory mechanisms, but limited to mechanisms by which stakeholders can deal with the risks inherent in a given regulatory framework of accounting standards, auditing, and enforcement.

8.1. Portfolio diversification versus information search

To the extent that investors (both equity and credit investors) are exposed to the risk of financial reporting scandals, portfolio diversification offers a well-understood market-based risk management tool. Diversification should be especially effective in dealing with compliance-type scandals of the Parmalat type. If these are interpreted as random events, hitting specific companies without prior observable signals of troubles ahead, they represent a form of non-systematic risk to which diversification is a rational response. Diversified investors will remain exposed only to the systematic risk that major financial reporting failures will occur somewhere, sometime, with high probability. However, if these are isolated incidents their impact on the return on the market portfolio will be limited if not negligible.²⁵ Because significant spillover effects as discussed in Section 4 are essentially a form of systematic risk they will make diversification less effective as a risk management technique. If spillover effects are limited in scope relative to the universe of available investments the impact on systematic risk will again be low. But one can envisage scenarios where spillover poses a significant systematic risk, for instance in case of investors limited to securities of companies whose financial reporting is subject to the same weak national system of compliance monitoring. Similarly, diversification may be less effective as a risk management technique in case of standards deficiency scandals where formal compliance with standards turns out to obscure significant risks across entire industries, as some have argued to be the case with the incurred-loss model for credit losses.

To the extent that cross-sectional variation in financial reporting risk is observable one would expect it to be priced, leaving conclusions about diversification as a tool to manage financial reporting risk unchanged. However, if observing risk requires costly private information search one would expect that some market participants choose active investment rather than diversification as their strategy. Research has provided evidence that short-selling is associated with subsequent earnings restatements, suggesting that short-sellers have an ability to identify increased risk of financial reporting failure (Ribstein 2002, Karpoff and Lou 2010, Cassell et al. 2011). In equilibrium, one would expect an economically rational investment in such scrutiny and therefore efficient pricing of financial reporting risk. Whether that is true in practice is an empirical question with variable answers across settings (Ball 2009b). While, in general, it can be argued that a combination of competitive processing of available information, efficient market pricing, and diversification will provide a powerful mechanism for society to deal with the risk of financial reporting failure, important issues remain. One such issue is whether research-based short-sellers have incentives to create or exaggerate financial reporting scandals (Lee 2013). If so, what is the effect of their activities on perceived levels of financial reporting risk?

Another important set of questions concerns the effects of portfolio diversification by investors on other groups of stakeholders such as employees or suppliers. These other groups cannot, or

only to a limited extent, reduce their risk exposure by means of diversification, implying that their exposure, relative to their capacity to absorb losses, may be much larger than that of investors. While it is likely that investors, in particular equity investors, will be first in line to take losses from an accounting scandal, and that losses for employees and suppliers may be limited in cases where the company survives the scandal, they remain at risk of tail-end failures of the Enron- or Carillion type. Portfolio diversification may induce complacency on the part of investors with respect to accounting fraud (Omisore et al. 2011). This would seem to be a specific application of the more general criticism that market-based approaches to understand or deal with corporate fraud may trivialize such fraud by treating it just as any other business risk (Pontell 2005). The economically rational amount of scrutiny for investors may leave other stakeholder groups, that cannot diversify their risk, exposed to a possibly unbearable level of risk, which makes it important to research possible alternative risk-mitigating mechanisms.

8.2. Risk-sharing or risk-transferring mechanisms

If the risk of financial reporting failures cannot be diversified away, it may perhaps be shared or transferred. Up to a point, mechanisms for sharing or transferring risks of financial reporting failures already operate in practice, but these may not always be well understood. The approach to this topic in the literature is fragmentary, and it is not evident that the full potential of such mechanisms is already achieved.

8.2.1. Financial reporting failure as part of credit risk

The risk of compliance-type financial reporting scandals is, generally speaking, recognized as part of the broader category of operational risks, including fraud risk, that is commonly distinguished in discussions of credit risk (e.g. Van Gestel and Baesens 2009). In the context of credit risk, it is also referred to as event risk (Anson et al 2004, p. 46). When considered as part of credit risk, various kinds of credit risk derivatives may therefore be used to manage large individual exposures to risk of financial reporting scandals.

Typically, credit risk derivatives are written on default events in general, without necessarily specifying the cause of the default event. It is also plausible that credit investors will not attempt to manage financial reporting failure risk separately from other categories of credit risk. Nonetheless, a better understanding of how and to what extent the pricing of credit risk reflects the risk of financial reporting failure would be helpful. This subject has rarely been researched. Duffie and Lando (2001) do show that uncertainty in the accounting information affects credit spreads and Bhat et al. (2016) show that an improvement in transparency due to IFRS adoption reduces credit default swap spreads. This transparency effect could relate to better insight in the risk of default due to economic events and it remains to be further explored to what extent the risk of accounting failure is reflected in the prices.

Another line of research would be the extent to which parties exposed to financial reporting failure risk have access to credit risk derivatives. Many of these would seem to be available only as Over-The-Counter(OTC)-instruments to relatively large market participants, although some simple forms of credit insurance are also available to small- and medium-sized entities. That credit risk derivatives are available to any significant degree to employees seems highly unlikely. Whether credit risk derivatives would be of use to equity investors as an (imperfect) hedge against financial reporting risk seems to be an open question.

What may be inferred from the literature is that credit risk management should not just be seen as a way of managing financial reporting failure risk, but that it can also contribute to this risk. The recent financial crisis highlighted problems with the large-scale use of structured products such as

Collateralised Debt Obligations (e.g. Lang and Jagtiani 2010). Before the crisis such instruments were widely seen as tools to improve the overall distribution of risk through the economy, yet it turned out that they could also pose risks to financial stability. And while this was not primarily a financial reporting failure it seems generally accepted that opaqueness introduced into banks' financial statements as a result of a formally correct accounting treatment of structured products was a significant factor in causing and/or exacerbating the financial crisis.

8.2.2. *Deep-pocket insurance by audit firms*

A well-established line of reasoning in the professional and academic literature is that auditor liability provides de facto insurance against financial reporting failure (e.g. Griffin 1976, Wallace 1987). Evidence in support of this 'insurance hypothesis' has been found mainly in share prices (e.g. Menon and Williams 1994, Numata and Takeda 2010, Brown et al. 2013) but also in audit fees (Pratt and Stice 1994). The following observations can be made.

First, in line with earlier observations about empirical research, it can be said that empirical evidence that 'auditor insurance' is incorporated in share prices or audit fees is welcome, but that it does not tell us much about the adequacy of this form of insurance. While share price information may give us some indication of the value attached by shareholders to this type of insurance, it does not tell us whether from their point of view the 'coverage' of the insurance in relation to its price is optimal. Share price information also provides little insight into the extent to which other stakeholders, such as employees, may benefit from auditor insurance. More research of a qualitative nature into the resolution of specific financial reporting scandals would help to see, across jurisdictions, which parties do or do not benefit from auditor insurance.

Second, in the policy world auditor liability has been extensively discussed for many years. A recurring issue has been whether auditor liability should be capped or not. However, this debate has typically been carried on in terms of whether (un)limited liability is conducive to better audit quality and a healthy structure of the audit market (e.g. whether unlimited liability creates barriers to entry). See, for instance, the analysis by Samsonova-Taddei and Humphrey (2015) of the European debate on proposals issued in 2008 to limit auditor liability. However, discussions in the policy sphere rarely seem to address the question whether an insurance function should deliberately be included in the design of the auditing function. In other words, debate on the design of the audit function is typically limited to maximizing assurance within realistic constraints such as cost. In that view, legal liability serves mainly as a safeguard against moral hazard on the part of the auditor. In addition, by restricting payments to liability established in a court of law, the auditor is procedurally protected from arbitrary claims. However, as argued in a line of literature (Ronen 2002, 2006, 2014, Cunningham 2004, Dontoh et al. 2013) one can consider more radical changes in the audit model in terms of some form of financial statement insurance, in which insurance firms underwrite the risk of financial reporting failure, and auditors then become agents of the insurer rather than of the company.

8.2.3. *Other types of insurance*

Apart from the auditor, one could consider other forms of insurance. As in the case of credit risk derivatives, such forms of insurance already exist, up to a point, but they have typically not been thought of specifically in terms of coping with financial reporting failure risk. The most conspicuous example is unemployment benefits existing in many jurisdictions. These shield employees from many risks, including the risk of job losses as a result of major financial reporting failures. Similarly, rules on the funding of pension obligations may play an important role in reducing exposure of employees to financial reporting failure. However, as is evident from indignant

public reactions to highly publicized instances of such job losses or pension cuts, this protection is not necessarily seen as adequate. In some jurisdictions, a legal liability of company directors for company debts in case of default is assumed in case of specific failures to comply with legal requirements relating to financial reporting. It could be considered whether in case of a company default that is associated in defined ways with financial reporting failure, a liability of directors for compensation to employees could be assumed. To be meaningful, the directors would have to insure themselves against this risk, which would create a market for insurance against a specifically defined segment of financial reporting risk. The feasibility of such insurance is suggested by Cao and Narayanamoorthy (2014), who show that insurance premiums of Directors' and Officers' insurance against litigation by shareholders are positively associated with prior earnings restatements and negatively with earnings quality. The limitation of this research to shareholder litigation should be noted, though.

9. Concluding remarks

This paper started out with the commonly held perception that the start of the 21st century was marked by a series of major accounting scandals, followed by equally important regulatory responses, both in the form of improved accounting standards and in the form of enhanced enforcement. This naturally raises the question of the effectiveness of these responses in preventing future scandals. While we accept that this is a legitimate question, we argue three points in this paper: first, that the nature of the historical events makes it difficult to research the question empirically; second, that most empirical research with a bearing on the question is more concerned with average levels of accounting quality than with tail-end risks of major accounting scandals, and third, that it is not enough to focus on prevention of major financial reporting failures, both in practice and research.

The third point deserves particular emphasis. It is that that both accounting policy makers and accounting academics should broaden their approach. Based on an explicit recognition of a permanent risk of financial reporting failure they should address, not as a side issue but as a major component of their endeavour, the issues of understanding and measuring financial reporting risk, both actual and as perceived, how to communicate financial reporting risk effectively and how to educate financial statement users on these risks, and means and approaches of stakeholders to manage their exposure to such risks, apart from any improvements made to the regulatory framework. The question of 'what level of financial reporting risk should we aim to achieve, and how to manage that level of risk' ranks alongside the 'big unanswered questions in accounting',²⁶ and we had better begin to address it. To be sure, initial attempts to explore these questions by means of models and measures will be subject to important limitations and may well seem primitive. Empirical research will require substantial investment in the construction of new datasets. The road to findings with robust practical implications may be long. But these are not good reasons for leaving this area unexplored. We should begin adding pieces to the puzzle, no matter how imperfect the total picture will initially be.

One possible objection to this proposal must be considered: would an explicit and generally shared acceptance of the fallibility of financial reporting not lead to an unacceptable increase of moral hazard? If everyone assumes that failures will happen, will that not lower the threshold for accounting misdemeanour? If stakeholders can protect themselves by various means, will this lead to lower scrutiny and thus to increased moral hazard? Will standard-setters be able to shrug off criticism of poor accounting based on their standards with the argument that 'stuff happens'? In our view, these questions may well be asked, as long as it is kept in mind that we do not imply that improper behaviour or dereliction of duty go unpunished. When a scandal happens, it should be investigated, and if guilt can be established it should result in

criminal or administrative sanctions, or in civil liability. It may be that such an investigation also brings to light deficiencies in the regulatory framework which may then be addressed. Our point, however, is that we should stop the virtually automatic reflex to interpret each scandal as a sign that the regulatory framework is flawed, a reflex which will encourage regulatory responses merely for the sake of being seen to respond. Our point is that society should accept that moral hazard is intrinsic to financial reporting, as well as to any attempt to regulate and monitor financial reporting. For that reason, it may just as well be argued that continuous attempts to improve standards, suggesting that this will reduce risks to a very low level or eliminate them altogether, also increase moral hazard: this makes it easier in many cases for reporting companies to shift any blame to auditors, regulators or standard setters. Awareness that risk of failures cannot be completely eliminated allows standard setters to focus on designing standards in the way that is most beneficial to financial statement users, taking into account costs and benefits. In the final analysis, a widely shared awareness of the real risks in any financial reporting setting is the only way to keep the risk of moral hazard manageable. In that light, a shift of emphasis from prevention to management of risk is not a form of defeatism. Given the nature of financial reporting, such an emphasis should always have been self-evident.

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Notes

1. For a nuanced German view see, for instance, Rüdiger von Rosen, 'Nach Enron-Pleite: Vorsicht vor Übernahme von US-Standards', *Die Welt*, 11 February 2002, 12. For a review of reactions in France, see Stolowy (2005).
2. Although 'accounting scandal' is more commonly used, we use 'financial reporting scandal' as a broader term, and understand it to include 'audit scandals' as well.
3. For instance, restatement announcements as required by the US Securities and Exchange Commission are financial reporting failures by our definition, but most would not be seen as financial reporting scandals. Restatements represent a continuum ranging from minor to more serious failures, as illustrated by the distinction, introduced in 2004, between 'Big R' or '4.02 restatements' and 'non-4.02 restatements' (see Scholz 2014).
4. Ball (2009a) observes that a public scandal occurs if an event is both unusual (infrequent) and 'shocking' (contrary to norms). This is broadly equivalent to our first two conditions. We add the third (wide impact) because we wish to highlight the importance of exposure to financial reporting risk.
5. In practice the distinction may not always be clear, especially when auditing standards require an auditor to assess financial statement users' expectations. See, for instance, the discussion of materiality in ISA 320.A11.
6. For textbook treatments of basic concepts see for instance Christensen and Demski (2003) and Scott (2014).
7. See Gross and Königsgruber (2012) for comparable observations on overly simplistic assumptions underlying calls to evaluate, or actual attempts to evaluate, the effects of accounting regulation.
8. Another sense in which the link between reporting scandals and regulatory change may be weak is that a change imposed directly and explicitly in response to a scandal may be designed primarily so that regulators can be seen to act, rather than on the basis of a diagnosis of the underlying problem.

9. FIN46 *Consolidation of Variable Interest Entities* (January 2003), revised as FIN46R in December 2003.
10. See Dowd and Hutchinson (2010) and Kuprianov (1995).
11. For a nicely balanced set of views as of the first years of the century, see the collection of papers published in the 'fair value' special issue of *Revue d'Économie Financière*, no. 71 (2003), also published in English translation as a special edition.
12. See Plantin et al. (2008) for an economic analysis of the trade-offs between historical cost and mark-to-market for financial institutions.
13. 'Preface to International Financial Reporting Standards' (2018), paragraph 6.
14. He might have cited a major fraud involving revenue recognition, among other issues, by the Belgian company Lernout & Hauspie, which collapsed in 2001 and reported on the basis of US GAAP. Yet claiming that the rudimentary requirements of IAS 18, as it was at the time, would have been more effective in preventing accounting scandals than US GAAP would not have been plausible.
15. We restrict our attention to whether financial reporting itself, i.e., the final output, has improved as a result of changes in regulation. We do not discuss research on specific elements of the process of producing and supervising this output (e.g., whether the establishment of the PCAOB as initiated by the Sarbanes-Oxley Act contributed to higher audit quality), as these are means to the end of higher quality financial reporting. Nonetheless, we expect that the same general conclusion holds both for research into financial reporting quality and for research into the underlying processes, which is that it does not generally reveal much insight in the effects in the tail of the distribution.
16. Regulation could still be necessary and desirable because investors' and management's interests in accounting may conflict, and because it may be an efficient way of resolving agency problems. However, a firm-specific loss is not by itself a reason for enhancing the regulatory framework.
17. For instance, in case of the aforementioned studies, one cannot simply assume that firms lobbying against a new standard, or firms with lower accrual quality, are the most likely to cause the next accounting scandal.
18. Risk perceptions will reflect both the degree to which standards are correctly understood, and assessments of the probability of deficient performance, given a certain understanding (correct or incorrect) of the standards. Common understandings of the expectations gap imply an expectation of zero performance failures. We would argue that, at the level of society as a whole, a 'deficient performance gap' should be defined relative to a realistic assessment of the probability of performance failures, given the actual requirements of the standards.
19. Regarding the probability of failure, the type of studies on the effects of regulatory changes discussed in Section 4 provides some insight in whether the probability of failures has changed, although – as indicated – mainly on average and not so much in the tail of the distribution.
20. Konstantinidi and Pope (2016) provide a method to forecast tail risk in future earnings based on estimating quantiles for maximum events. This method may be more efficient than extreme value theory for small sample sizes (Pisarenko and Rodkin 2017).
21. Unerman and O'Dwyer (2004) explain how Giddens' concept of reflexivity implies that negative experiences (incidents) affect people's trust in the system. Creating risk awareness would do the same without the negative experience.
22. For instance, in the 2018 consultation by the European Commission on the fitness of the EU framework for public reporting by companies (European Commission 2018), a few questions were asked in general terms about the effectiveness of the framework in terms of stakeholder of investor protection, but these made no distinction between financial reporting as a means of stakeholder protection and the risks inherent in financial reporting itself. Similarly, the notion of 'public confidence in financial reporting' was mentioned as an element of 'financial stability', but no specific questions were asked about actual levels of confidence and their appropriateness.
23. We note that in many jurisdictions and in many settings the parameters of financial statement audits are essentially non-negotiable, if only to protect the interests of stakeholders other than shareholders. Nonetheless, a general practice of involving shareholders more actively in discussion of risks, and of the costs of extending audits beyond minimum requirements, may have important effects on understanding of financial reporting risk, and of responsibilities for this risk.
24. See Klijn et al. (2004) for this change from resistance towards resilience to flood risks.
25. Lambert et al. (2007) demonstrate how an overall increase in disclosure quality moves average cost of equity closer to the risk free rate. But if, as we assume, there is a permanent risk of financial reporting failure this will remain as element of the aggregate risk premium.
26. Although it was not identified as such in the 2007 AAA symposium on 'big unanswered questions in accounting' (See Basu 2008).

References

- Aboody, D., and Lev, B, 1998. The value relevance of intangibles: The case of software capitalization. *Journal of Accounting Research*, 36 (Suppl.), 161–191.
- Ahmed, A.S., Kilic, E., and Lobo, G.J, 2006. Does recognition versus disclosure matter? Evidence from value-relevance of banks' recognized and disclosed derivative financial instruments. *The Accounting Review*, 81 (3), 567–588.
- Akhigbe, A., Madura, J., and Martin, A.D., 2005. Accounting contagion: The case of Enron. *Journal of Economics and Finance*, 29 (2), 187–202.
- Anderson, K.L., and Yohn, T.L., 2002. The effect of 10K restatements on firm value, information asymmetries, and investors' reliance on earnings. Working Paper, Georgetown University. Available at SSRN: <https://ssrn.com/abstract=332380>.
- Anson, M.J., Fabozzi, F.J., Choudhry, M., and Chen, R.R, 2004. *Credit Derivatives: Instruments, Applications, and Pricing*. Hoboken, NJ: John Wiley & Sons.
- Arnold, B., and De Lange, P., 2004. Enron: an examination of agency problems. *Critical Perspectives on Accounting*, 15 (6-7), 751–765.
- Ashbaugh-Skaife, H., Collins, D.W., Kinney Jr, W.R., and LaFond, R., 2008. The effect of SOX internal control deficiencies and their remediation on accrual quality. *The Accounting Review*, 83 (1), 217–250.
- Badertscher, B.A., Burks, J.J., and Easton, P.D, 2012. A convenient scapegoat: fair value accounting by commercial banks during the financial crisis. *The Accounting Review*, 87 (1), 59–90.
- Ball, R, 2009a. Market and political/regulatory perspectives on the recent accounting scandals. *Journal of Accounting Research*, 47 (2), 277–323.
- Ball, R, 2009b. The global financial crisis and the efficient market hypothesis: what have we learned? *Journal of Applied Corporate Finance*, 21 (4), 8–16.
- Ball, R., and Brown, P, 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research*, 6 (2), 159–178.
- Barth, M.E., Beaver, W.H., and Landsman, W.R, 2001. The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics*, 31 (1-3), 77–104.
- Barth, M.E., and Landsman, W.R, 2010. How did financial reporting contribute to the financial crisis? *European Accounting Review*, 19 (3), 399–423.
- Bartlett, S.A., and Chandler, R.A, 1997. The corporate report and the private shareholder: Lee and Tweedie twenty years on. *British Accounting Review*, 29 (3), 245–261.
- Basu, S, 2008. Panel on big unanswered questions in accounting – synopsis. *Accounting Horizons*, 22 (4), 449–451.
- Bay, C., Catasús, B., and Johed, G, 2014. Situating financial literacy. *Critical Perspectives on Accounting*, 25 (1), 36–45.
- Beaver, W.H, 1968. The information content of annual earnings announcements. *Journal of Accounting Research*, 6 (supplement), 67–92.
- Becker, G.S, 1968. Crime and punishment: an economic approach. *Journal of Political Economy*, 76 (2), 169–217.
- Bell, T.B., and Carcello, J.V, 2000. A decision aid for assessing the likelihood of fraudulent financial reporting. *Auditing: A Journal of Practice & Theory*, 19 (1), 169–184.
- Benston, G.J., Bromwich, M., Litan, R.E., and Wagenhofer, A, 2006. *Worldwide Financial Reporting: The Development and Future of Accounting Standards*. Oxford: Oxford University Press.
- Bentley, K.A., Omer, T.C., and Sharp, N.Y, 2013. Business strategy, financial reporting irregularities, and audit effort. *Contemporary Accounting Research*, 30 (2), 780–817.
- Bhat, G., Callen, J.L., and Segal, D, 2016. Testing the transparency implications of mandatory IFRS adoption: The spread/maturity relation of credit default swaps. *Management Science*, 62 (12), 3472–3493.
- Bolkestein, F., 2002. The financial services action plan. Speech, 3 June 2002, SPEECH/02/49, Available from: <http://europa.eu.rapid>.
- Boyle, D., and Canning, M, 2005. The impact of audit education on perceptions of deficient auditor performance. *Irish Accounting Review*, 12 (1), 15–37.
- Brasel, K., Doxey, M.M., Grenier, J.H., and Reffett, A, 2016. Risk disclosure preceding negative outcomes: The effects of reporting critical audit matters on judgments of auditor liability. *The Accounting Review*, 91 (5), 1345–1362.
- Brewer, N.T., Weinstein, N.D., Cuite, C.L., and Herrington Jr, J.E, 2004. Risk perceptions and their relation to risk behavior. *Annals of Behavioral Medicine*, 27 (2), 125–130.

- Bricker, W., 2018. The intersection of financial reporting and innovation, remarks to the Institute of Chartered Accountants in England and Wales, 6 June 2018. Available from: <https://www.sec.gov/news/speech/speech-bricker-060618>.
- Brown, D.L., Shu, S.Z., Soo, B.S., and Trompeter, G.M., 2013. The insurance hypothesis: An examination of KPMG's audit clients around the investigation and settlement of the tax shelter case. *Auditing: A Journal of Practice & Theory*, 32 (4), 1–24.
- Büchele, B., Kreibich, H., Kron, A., Thieken, A., Ihringer, J., Oberle, P., Merz, B., and Nestmann, F., 2006. Flood-risk mapping: contributions towards an enhanced assessment of extreme events and associated risks. *Natural Hazards and Earth System Science*, 6 (4), 485–503.
- Camfferman, K., 2015. The emergence of the 'incurred-loss' model for credit losses in IAS 39. *Accounting in Europe*, 12 (1), 1–35.
- Camfferman, K., and Zeff, S.A., 2015. *Aiming for Global Accounting Standards: The International Accounting Standards Board, 2001–2011*. Oxford: Oxford University Press.
- Cao, Z., and Narayanamoorthy, G.S., 2014. Accounting and litigation risk: evidence from directors' and Officers' insurance pricing. *Review of Accounting Studies*, 19 (1), 1–42.
- Cassell, C.A., Drake, M.S., and Rasmussen, S.J., 2011. Short interest as a signal of audit risk. *Contemporary Accounting Research*, 28 (4), 1278–1297.
- Chaney, P.K., and Philipich, K.L., 2002. Shredded reputation: The cost of audit failure. *Journal of Accounting Research*, 40 (4), 1221–1245.
- Christensen, J.A., and Demski, J.S., 2003. *Accounting Theory: An Information Content Perspective*. New-York: McGraw-Hill.
- Christensen, B.E., Glover, S.M., and Wolfe, C.J., 2014. Do critical audit matter paragraphs in the audit report change nonprofessional investors' decision to invest? *Auditing: A Journal of Practice & Theory*, 33 (4), 71–93.
- Christensen, H.B., Hail, L., and Leuz, C., 2013. Mandatory IFRS adoption and changes in enforcement. *Journal of Accounting and Economics*, 56 (2-3, Suppl.1), 147–177.
- Cohen, D.A., Dey, A., and Lys, T.Z., 2008. Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review*, 83 (3), 757–787.
- Cooper, C., 2015. Accounting for the fictitious: a Marxist contribution to understanding accounting's roles in the financial crisis. *Critical Perspectives on Accounting*, 30, 63–82.
- Crawford, L., Helliard, C., and Power, D., 2010. *Politics or Accounting Principles: Why was IFRS 8 so Controversial?* London: ICAEW Centre for Business Performance.
- Cunningham, L.A., 2004. Choosing gatekeepers: The financial statement insurance alternative to auditor liability. *UCLA Law Review*, 52 (2), 413–476.
- Donnelly, R., 2008. Accounting, board independence and contagion effects from adverse press comment: The case of Elan. *The British Accounting Review*, 40 (3), 245–259.
- Dontoh, A., Ronen, J., and Sarath, B., 2013. Financial statements insurance. *Abacus*, 49 (3), 269–307.
- Dowd, K., and Hutchinson, M., 2010. *The Alchemists of Loss: How Modern Finance and Government Intervention Crashed the Financial System*. Chichester: Wiley.
- Dowling, G.R., 1986. Perceived risk: the concept and its measurement. *Psychology & Marketing*, 3 (3), 193–210.
- Duffie, D., and Lando, D., 2001. Term structures of credit spreads with incomplete accounting information. *Econometrica*, 69 (3), 633–664.
- Embrechts, P., Klüppelberg, C., and Mikosch, T., 1997. *Modelling Extremal Events for Insurance and Finance, Volume 33 of Applications of Mathematics*. Berlin: Springer-Verlag.
- Epstein, M.J., and Geiger, M.A., 1994. Investor views of audit assurance: recent evidence of the expectation gap. *Journal of Accountancy*, 177 (1), 60–66.
- European Commission, 2018. Consultation document: Fitness check on the EU framework for public reporting by companies. Available from: https://ec.europa.eu/info/sites/info/files/2018-companies-public-reporting-consultation-document_en.pdf.
- Fonseca, A.R., and González, F., 2008. Cross-country determinants of bank income smoothing by managing loan-loss provisions. *Journal of Banking and Finance*, 32 (2), 217–228.
- Forsythe, S.M., and Shi, B., 2003. Consumer patronage and risk perceptions in internet shopping. *Journal of Business Research*, 56 (11), 867–875.
- Francis, J., LaFond, R., Olsson, P., and Schipper, K., 2005. The market pricing of accruals quality. *Journal of Accounting and Economics*, 39 (2), 295–327.
- Freudenberg, W.R., 1988. Perceived risk, real risk: social science and the art of probabilistic risk assessment. *Science*, 242 (4875), 44–49.

- Gilli, M., and Këllezzi, E, 2006. An application of extreme value theory for measuring financial risk. *Computational Economics*, 27 (2-3), 207–228.
- Gleason, C.A., Jenkins, N.T., and Johnson, W.B, 2008. The contagion effects of accounting restatements. *The Accounting Review*, 83 (1), 83–110.
- Gold, A., Gronewold, U., and Pott, C, 2012. The ISA 700 auditor's report and the audit expectation gap—Do explanations matter? *International Journal of Auditing*, 16 (3), 286–307.
- Gonthier-Besacier, N., Hottegindre, G., and Fine-Falcy, S., 2016. Audit quality perception: beyond the 'role-perception gap'. *International Journal of Auditing*, 20 (2), 186–201.
- Griffin, C.H, 1976. The beleaguered accountants: A defendant's viewpoint. *American Bar Association Journal*, 62 (June), 759–763.
- Gross, C., and Königsgruber, R, 2012. What you measure is what you get: the effects of accounting standards effects studies. *Accounting in Europe*, 9 (2), 171–190.
- Grothmann, T., and Reusswig, F, 2006. People at risk of flooding: why some residents take precautionary action while others do not. *Natural Hazards*, 38 (1-2), 101–120.
- Gudendorf, G., and Segers, J, 2010. Extreme-Value copulas. In: P. Jaworski, F. Durante, W. Härdle, T. Rychlik, eds, *Copula Theory and Its Applications. Lecture Notes in Statistics*, vol 198, 127–145. Berlin, Heidelberg: Springer.
- Hail, L., Tahoun, A., and Wang, C, 2018. Corporate scandals and regulation. *Journal of Accounting Research*, 56 (2), 617–671.
- Harris, J., and Bromiley, P, 2007. Incentives to cheat: The influence of executive compensation and firm performance on financial misrepresentation. *Organization Science*, 18 (3), 350–367.
- Hassink, H.F., Bollen, L.H., Meuwissen, R.H., and de Vries, M.J., 2009. Corporate fraud and the audit expectations gap: A study among business managers. *Journal of International Accounting, Auditing and Taxation*, 18 (2), 85–100.
- Healy, P.M., and Palepu, K.G, 2003. The fall of Enron. *Journal of Economic Perspectives*, 17 (2), 3–26.
- Hochberg, Y.V., Sapientza, P., and Vissing-Jørgensen, A., 2009. A lobbying approach to evaluating the Sarbanes-Oxley Act of 2002. *Journal of Accounting Research*, 47 (2), 519–583.
- Hölmstrom, B, 1979. Moral hazard and observability. *The Bell Journal of Economics*, 10 (1), 74–91.
- House of Commons, 2018. *Carillion*. London: House of Commons Business, Energy and Industrial Strategy and Work and Pensions Committees.
- IAASB, 2013. Reporting on auditing financial statements: Proposed new and revised international standards on auditing (ISAs). International Federation of Accountants (IFAC). Available from: <https://www.ifac.org/system/files/publications/files/Complete%20ED%2C%20Reporting%20on%20Audited%20Financial%20Statements.pdf>.
- Institute of Chartered Accountants in England and Wales (ICAEW), 2015. The effects of mandatory IFRS adoption in the EU: A review of empirical research. Information for better markets. available at icaew.com: <https://www.icaew.com/-/media/corporate/files/technical/financial-reporting/information-for-better-markets/ifbm/effects-of-mandatory-ifs-adoption-april-2015-final.ashx?la=en> (accessed Oct. 10, 2018).
- James, K.L, 2003. The effects of internal audit structure on perceived financial statement fraud prevention. *Accounting Horizons*, 17 (4), 315–327.
- Johnson, L.T., and Swieringa, R.J, 1996. Anatomy of an agenda decision: statement no. 115. *Accounting Horizons*, 10 (2), 149–179.
- Jones, M, 2010. Introduction – setting the scene. In: M. Jones (ed.), *Creative Accounting, Fraud and International Accounting Scandals*. Chichester: Wiley, 4–11.
- JWG, 2000. *Joint Working Group of Standard Setters: Draft Standard and Basis for Conclusions Financial Instruments and Similar Items*. London: International Accounting Standards Committee.
- Kachelmeier, S.J., Schmidt, J.J., and Valentine, K, 2018. Do critical audit matter disclosures protect auditors by forewarning users of misstatement risk? Available at SSRN: <https://ssrn.com/abstract=2481284> or <http://dx.doi.org/10.2139/ssrn.2481284>.
- Karpoff, J.M., and Lou, X, 2010. Short sellers and financial misconduct. *The Journal of Finance*, 65 (5), 1879–1913.
- Kasperson, R.E., and Pijawka, K.D, 1985. Societal response to hazards and major hazard events: comparing natural and technological hazards. *Public Administration Review*, 45 (Special Issue), 7–18.
- Khan, U., Li, B., Rajgopal, S., and Venkatachalam, M, 2018. Do the FASB's accounting standards add shareholder value? *The Accounting Review*, 93 (2), 209–247.
- Klijn, F., van Buuren, M., and van Rooij, S.A.M., 2004. Flood-risk management strategies for an uncertain future: living with Rhine river floods in The Netherlands. *AMBIO: A Journal of the Human Environment*, 33 (3), 141–147.

- Kochan, T.A., 2002. Addressing the crisis in confidence in corporations: Root causes, victims, and strategies for reform. *Academy of Management Perspectives*, 16 (3), 139–141.
- Konstantinidi, T., and Pope, P., 2016. Forecasting risk in earnings. *Contemporary Accounting Research*, 33 (2), 487–525.
- Kothari, S.P., and Lester, R., 2012. The role of accounting in the financial crisis: lessons for the future. *Accounting Horizons*, 26 (2), 335–351.
- Kotz, S., and Nadarajah, S., 2000. *Extreme Value Distributions: Theory and Applications*. London: Imperial College Press.
- Kuprianov, A., 1995. Derivatives debacles: case studies of large losses in derivatives markets. *FRB Richmond Economic Quarterly*, 81 (4), 1–39.
- Lambert, R., Leuz, C., and Verrecchia, R.E., 2007. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research*, 45 (2), 385–420.
- Landsman, W.R., Maydew, E.L., and Thornock, J.R., 2012. The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics*, 53 (1), 34–54.
- Lang, W.W., and Jagtiani, J.A., 2010. The mortgage and financial crises: The role of credit risk management and corporate governance. *Atlantic Economic Journal*, 38 (2), 123–144.
- LAPFF, 2011. UK and Irish Banks Capital Losses: Post Mortem. Local Authority Pension Fund Forum.
- Laux, C., and Leuz, C., 2010. Did fair-value accounting contribute to the financial crisis? *Journal of Economic Perspectives*, 24 (1), 93–118.
- Lee, J., 2013. Activist short sellers: market manipulators or market protectors? *Review of Banking & Financial Law*, 32, 274–274.
- Lee, T.A., and Tweedie, D.P., 1977. *The Private Shareholder and the Corporate Report: A Report to the Research Committee of The Institute of Chartered Accountants in England and Wales*. London: ICAEW.
- Lennox, C.S., Schmidt, J.J., and Thompson, A., 2018. Is the expanded model of audit reporting informative to investors? Evidence from the U.K. Available at SSRN: <https://ssrn.com/abstract=2619785>.
- Li, H., Pincus, M., and Olthoft Rego, S., 2008. Market reaction to events surrounding the Sarbanes-Oxley act of 2002 and earnings management. *Journal of Law and Economics*, 51 (1), 111–134.
- Lin, Z.J., and Chen, F., 2004. An empirical study of audit ‘expectation gap’ in the People’s Republic of China. *International Journal of Auditing*, 8 (2), 93–115.
- Lobo, G.J., and Zhou, J., 2006. Did conservatism in financial reporting increase after the Sarbanes-Oxley act? *Initial Evidence*. *Accounting Horizons*, 20 (1), 57–73.
- Magnan, M.L., 2009. Fair value accounting and the financial crisis: messenger or contributor? *Accounting Perspectives*, 8 (3), 189–213.
- Maines, L.A., and McDaniel, L.S., 2000. Effects of comprehensive-income characteristics on nonprofessional investors’ judgments: The role of financial-statement presentation format. *The Accounting Review*, 75 (2), 179–207.
- McEnroe, J.E., and Martens, S.C., 2001. Auditors’ and investors’ perceptions of the “expectation gap”. *Accounting Horizons*, 15 (4), 345–358.
- McNeil, A.J., and Frey, R., 2000. Estimation of tail-related risk measures for heteroscedastic financial time series: an extreme value approach. *Journal of Empirical Finance*, 7 (3–4), 271–300.
- McSweeney, B., 2009. The roles of financial asset market failure denial and the economic crisis: Reflections on accounting and financial theories and practices. *Accounting, Organizations and Society*, 34 (6–7), 835–848.
- Menon, K., and Williams, D.D., 1994. The insurance hypothesis and market prices. *Accounting Review*, 69 (2), 327–342.
- Micheli, R., Sotgiu, I., and Settanni, M., 2008. Disaster preparedness and perception of flood risk: A study in an Alpine valley in Italy. *Journal of Environmental Psychology*, 28 (2), 164–173.
- Mock, T.J., Bédard, J., Coram, P.J., Davis, S.M., Espahbodi, R., and Warne, R.C., 2013. The audit reporting model: current research synthesis and implications. *Auditing: A Journal of Practice & Theory*, 32 (Supplement 1), 323–351.
- Mohs, J.N., 2017. Financial reporting and the accounting expectations gaap [sic]. *Review of Contemporary Business Research*, 6 (1), 25–34.
- Monroe, G.S., and Woodliff, D.R., 1993. The effect of education on the audit expectation gap. *Accounting & Finance*, 33 (1), 61–78.
- Nazri Fadzly, M., and Ahmad, Z., 2004. Audit expectation gap: The case of Malaysia. *Managerial Auditing Journal*, 19 (7), 897–915.
- Neftci, S.N., 2000. Value-at-risk calculations, extreme events, and tail estimation. *The Journal of Derivatives*, 7 (3), 23–38.

- Nelson, K.K., Price, R. A., and Rountree, B.R., 2008. The market reaction to Arthur Andersen's role in the Enron scandal: loss of reputation or confounding effects? *Journal of Accounting and Economics*, 46 (2), 279–293.
- Numata, S., and Takeda, F., 2010. Stock market reactions to audit failure in Japan: The case of Kanebo and ChuoAoyama. *The International Journal of Accounting*, 45 (2), 175–199.
- OECD, 2005. Improving Financial Literacy: analysis of issues and policies. OECD, Available from: <http://www.oecd.org/daf/fin/financial-education/improvingfinancialliteracyanalysisofissuesandpolicies.htm>.
- Ohlson, J.A., 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, 11 (2), 661–687.
- Olivero, N., and Lunt, P., 2004. Privacy versus willingness to disclose in e-commerce exchanges: The effect of risk awareness on the relative role of trust and control. *Journal of Economic Psychology*, 25 (2), 243–262.
- Omisore, I., Yusuf, M., and Christopher, N., 2011. The modern portfolio theory as an investment decision tool. *Journal of Accounting and Taxation*, 4 (2), 19–28.
- Palmrose, Z., Richardson, V.J., and Scholz, S., 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics*, 37 (1), 59–89.
- Peters, S., 2018. *Segment Disclosures: Investor Perspectives*. Charlottesville, VA: CFA Institute.
- Pierce, B.P., and Kilcommins, M., 1997. The impact of undergraduate auditing modules on the audit expectations gap. *Irish Accounting Review*, 4 (2), 89–118.
- Pisarenko, V.F., and Rodkin, M.V., 2017. The estimation of probability of extreme events for small samples. *Pure and Applied Geophysics*, 174, 1547–1560.
- Plantin, G., Sapra, H., and Shin, H.S., 2008. Marking-to-market: Panacea or Pandora's box? *Journal of Accounting Research*, 46 (2), 435–460.
- Polinsky, A.M., and Shavell, S., 2000. The economic theory of public enforcement of law. *Journal of Economic Literature*, 38 (1), 45–76.
- Pontell, H.N., 2005. White-collar crime or just risky business? The role of fraud in major financial debacles. *Crime, Law and Social Change*, 42 (4-5), 309–324.
- Poon, S., Rockinger, M., and Tawn, J., 2004. Extreme value dependence in financial markets: Diagnostics, models, and financial implications. *The Review of Financial Studies*, 17 (2), 581–610.
- Porter, B., 1993. An empirical study of the audit expectation-performance gap. *Accounting and Business Research*, 24 (93), 49–68.
- Powers, W.C., Troubh, R.S., and Winokur, H.S., 2002. Report of investigation by the Special Investigative Committee of the Board of Directors of Enron. Accessed 20 March 2019 at i.cnn.net/cnn/2002/LAW/02/02/enron.report/powers.report.pdf.
- Pozen, R.C., 2009. Is it fair to blame fair value accounting for the financial crisis? *Harvard Business Review*, 87 (11), 84–92.
- Pratt, J., and Stice, J.D., 1994. The effects of client characteristics on auditor litigation risk judgments, required audit evidence, and recommended audit fees. *Accounting Review*, 69 (4), 639–656.
- Rayburn, J., 1986. The association of operating cash flow and accruals with security returns. *Journal of Accounting Research*, 24 (Suppl.), 112–133.
- Rezaee, Z., 2005. Causes, consequences, and deterrence of financial accounting fraud. *Critical Perspectives on Accounting*, 16 (3), 277–298.
- Ribstein, L.E., 2002. Market vs. regulatory responses to corporate fraud: a critique of the Sarbanes-Oxley Act of 2002. *The Journal of Corporation Law*, 28, 1–67.
- Rodriguez, J.C., 2007. Measuring financial contagion: a copula approach. *Journal of Empirical Finance*, 14 (3), 401–423.
- Ronen, J., 2002. Post-enron reform: financial-statement insurance and GAAP revisited. *Stanford Journal of Law, Business & Finance*, 8 (1), 39–68.
- Ronen, J., 2006. A proposed corporate governance reform: financial statements insurance. *Journal of Engineering and Technology Management*, 23 (1-2), 130–146.
- Ronen, J., 2014. Post-enron reform: financial statement insurance, and GAAP re-visited. In *Accounting and Regulation*. New York, NY: Springer, 31–58.
- Sadka, G., 2006. The economic consequences of accounting fraud in product markets: theory and a case from the US telecommunications industry (WorldCom). *American Law and Economics Review*, 8 (3), 439–475.
- Salvadori, G., and De Michele, S., 2010. Multivariate multiparameter extreme value models and return periods: A copula approach. *Water Resources Research*, 46 (10), 1–11.
- Samsonova-Taddei, A., and Humphrey, C., 2015. Risk and the construction of a European audit policy agenda: The case of auditor liability. *Accounting, Organizations and Society*, 41, 55–72.

- Scholz, S, 2014. *Financial Restatement Trends in the United States 2003-2012*. Washington, DC: Center for Audit Quality.
- Schrand, C.M., and Wong, M.H.F, 2003. Earnings management using the valuation allowance for deferred tax assets under SFAS No. 109. *Contemporary Accounting Research*, 20 (3), 579–611.
- Scott, W.R, 2014. *Financial Accounting Theory*. Toronto: Pearson/Prentice Hall.
- SEC, 2005. Report and recommendations pursuant to Section 401(c) of the Sarbanes-Oxley Act of 2002 on arrangements with off-balance sheet implications, special purpose entities, and transparency of filings by issuers. United States Securities and Exchange Commission, 15 June 2005.
- Siddiqui, J., Nasreen, T., and Choudhury-Lema, A, 2009. The audit expectations gap and the role of audit education: the case of an emerging economy. *Managerial Auditing Journal*, 24 (6), 564–583.
- Slovic, P, 1987. Perception of risk. *Science*, 236 (4799), 280–285.
- Song, C. J., Thomas, W.B., and Yi, H, 2010. Value relevance of FAS No. 157 fair value hierarchy information and the impact of corporate governance mechanisms. *The Accounting Review*, 85 (4), 1375–1410.
- Stolowy, H, 2005. Nothing like the Enron affair could happen in France (!). *European Accounting Review*, 14 (2), 405–415.
- Terpstra, T., and Gutteling, J.M, 2008. Households' perceived responsibilities in flood risk management in The Netherlands. *International Journal of Water Resources Development*, 24 (4), 555–565.
- Tsunogaya, N, 2016. Issues affecting decisions on mandatory adoption of International Financial Reporting Standards (IFRS) in Japan. *Accounting, Auditing & Accountability Journal*, 29 (5), 828–860.
- Ugglå, Y, 2008. Strategies to create risk awareness and legitimacy: the Swedish climate campaign. *Journal of Risk Research*, 11 (6), 719–734.
- Unerman, J., and O'Dwyer, B, 2004. Enron, Worldcom, Andersen et al.: a challenge to modernity. *Critical Perspectives on Accounting*, 15, 971–993.
- Van Gestel, T., and Baesens, B., 2009. *Credit Risk Management: Basic Concepts: Financial Risk Components, Rating Analysis, Models, Economic and Regulatory Capital*. Oxford: Oxford University Press.
- Van Hulle, K, 2004. From accounting directives to international accounting standards. In: Leuz, C., Pfaff, D. and Hopwood, A. (ed.), *The Economics and Politics of Accounting: International Perspectives on Research Trends, Policy, and Practice*. Oxford: Oxford University Press, 349–375.
- Véron, N, 2008. Fair value accounting is the wrong scapegoat for this crisis. *Accounting in Europe*, 5 (2), 63–69.
- Wachinger, G., Renn, O., Begg, C., and Kuhlicke, C, 2013. The risk perception paradox – implications for governance and communication of natural hazards. *Risk Analysis*, 33 (6), 1049–1065.
- Wallace, W, 1987. The economic role of the audit in free and regulated markets: A review. *Research in Accounting Regulation*, 1, 7–34.
- Wang, M., Keller, C., and Siegrist, M, 2011. The less you know, the more you are afraid of – a survey on risk perceptions of investment products. *Journal of Behavioral Finance*, 12 (1), 9–19.
- Weber, J., Willenborg, M., and Zhang, J, 2008. Does auditor reputation matter? The case of KPMG Germany and ComROAD AG. *Journal of Accounting Research*, 46 (4), 941–972.
- Whitfield, S.C., Rosa, E.A., Dan, A., and Dietz, T, 2009. The future of nuclear power: value orientations and risk perception. *Risk Analysis: An International Journal*, 29 (3), 425–437.
- Wielhouwer, J.L, 2015. The public cost of broken trust: spillover effects of financial reporting irregularities. *Journal of Trust Research*, 5 (2), 132–152.
- Williams, T, 2007. Empowerment of whom and for what? financial literacy education and the new regulation of consumer financial services. *Law & Policy*, 29 (2), 226–256.
- Wilson, W.M, 2008. An empirical analysis of the decline in the information content of earnings following restatements. *The Accounting Review*, 83 (2), 519–548.
- Young, J.J, 1995. Getting the accounting “right”: accounting and the savings and loan crisis. *Accounting, Organizations and Society*, 20 (1), 55–80.
- Zeff, S.A., 1972. *Forging Accounting Principles in Five Countries*. Champaign, Illinois: Arthur Andersen & Co. Lecture series, Stipes publishing company.
- Zeff, S.A, 1979. *Forging Accounting Principles in New Zealand*. Wellington: Victoria University Press.