COMMENTARY

Continuous Reporting and Continuous Assurance: Opportunities for Behavioral Accounting Research

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ABSTRACT: The movement to more continuous reporting (CR) and continuous assurance (CA) of financial statements appears to be a matter of when and how such changes will take place, rather than if they will occur. Research evidence suggests that computing infrastructures and software applications have advanced to the point where it is now technically and economically feasible to begin preparing and disseminating financial statements on at least a monthly basis (Hunton, Wright, and Wright 2003), and someday it is likely that full or partial financial and nonfinancial disclosures will be processed and presented in real time. Additionally, information consumers are demanding, and the Securities and Exchange Commission (SEC), American Institute of Certified Public Accountants (AICPA), and International Accounting Standards Board (IASB) are contemplating reporting and assurance changes of this nature. Thus, whether “continuous” is defined in terms of monthly, daily, hourly, or real-time reporting, rapidly converging market factors indicate that in the foreseeable future firms will publish and auditors will assure financial information on a more frequent basis than the current quarterly interval.

The major challenge going forward for behavioral researchers in accounting is to investigate how changes of this nature might affect the decision-making processes and consequential outcomes of various constituent groups, such as investors, preparers, and assurers. The combinations of affected parties, contexts, and tasks that could be examined are too numerous to explore in a single article. Accordingly, to keep the following discussion focused and manageable, the scope of this paper is aimed at understanding the potential impact of CR and CA on individual investors. Perhaps by identifying a number of the psychological issues and reviewing some of the studies in this area, accounting behavioral researchers will be motivated to investigate many of the issues and opportunities related to this new and exciting line of research.

Keywords: continuous reporting; continuous assurance; judgment; decision making; investors.

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INTRODUCTION

The objective of this commentary is to motivate accounting behavioral researchers to investigate how continuous reporting (CR) and continuous assurance (CA) might impact the decision processes and consequential outcomes of firm stakeholders. For instance, real-time reporting of financial and nonfinancial information, the ultimate conceptualization of CR, could lead to information overload, which in turn might evoke bounded rationality, induce heuristic decisions, and trigger satisficing strategies. The provision of CA, however, holds the potential to improve decision quality, as credible independent assurance can increase the reliability of management's signals, and thus reduce perceived information risk. While there are likely additional psychology-based facets to consider, the issues discussed in this article apply broadly to CR and CA.

There is some construct ambiguity when discussing CR. For instance, what does continuous mean? Does only real-time reporting with nanosecond updates meet the criteria, or would a change from quarterly to, say, monthly reporting qualify as “continuous”? Also, what does reporting mean? Does it include only traditional financial metrics or does reporting refer to a broader set of organizational performance measures? These are very important issues to consider and ongoing research is underway in these areas (e.g., Beaver 1998; Hirst and Hopkins 1998; Hunton, Wright, and Wright 2003). This commentary focuses on the continuous aspect of CR, as moving from the extant state of issuing quarterly financial statements to offering more frequent reports is likely to affect human decision processes and behaviors in predictable ways—holding information content and presentation format constant. Thus, the issues brought forth during the following discussion should apply to the full range of CR frequencies, with expected effects differing only in magnitude.

Conceptual understanding of CA is also complex. For example, continuous can mean that assurance is provided in real time as information is generated or updated, or aggregated at less frequent intervals such as quarterly or annually. Additionally, assurance might coincide with the firm’s financial reporting period (e.g., quarterly, monthly, or daily) or the timing of reporting and assurance could differ; that is, management could offer daily reports while only monthly statements are assured, or assurance might take place on a transaction-by-transaction basis (e.g., monitoring) while financial reporting occurs on a quarterly basis. Further complexity in the area of CA involves the word assurance, as recognized by domain scholars (e.g., Kogan et al. 2003; Vasarhelyi 2002). Will assurance providers offer positive or negative assurance, strong or weak assurance, general or specific assurance, and so on? Will assurance cover internal controls, event processes, or financial outcomes? Also, how will CA engagements be conducted and who will pay for the assurance services?

In an effort to set a manageable scope around the following discussion of CA, the assumption herein is that assurance will be attached to each set of assertions, such as earnings projections and full or partial financial information releases. This paper further assumes that the assurance report, whether relatively strong or weak, seeks to improve the reliability of management’s signals. In this light, this article investigates how decision processes and related behaviors might be impacted by reduced information risk.

The next section overviews cognitive theory related to rational decision making. The subsequent two sections discuss the potential psychological and behavioral impacts of CR and CA, respectively. The final section summarizes key issues raised in this paper and identifies promising avenues for behavioral research.

BACKGROUND

To understand how more frequent reporting and assurance might affect decision processes and choices, one can look to cognitive science for theoretical predictions. The treatment of rational decision making in cognitive theory is somewhat schizophrenic. On one end of the spectrum, some economists ascribe perfect rationality to economic beings; that is, decision makers possess a complete and unwavering set of preferences, have no limitations on their cognitive computational
abilities, fully understand probability calculations, possess full knowledge of the entire set of alternatives, and can choose the optimal alternative from among a discrete set. On the other end of the spectrum, many social psychologists believe that cognitive rationality essentially reflects human emotion, which they claim helps to explain such phenomena as how group problem solving is accomplished via an iterative exchange of tensions, why the size of coins described by poor children is larger than the portrayal offered by rich children, and how social group pressure can entice a person to ignore personal beliefs and follow the group (i.e., “group think”). Somewhere in the middle of the rationality spectrum lays a widely held notion that cognitive processing is rationally bounded, therefore decision makers employ satisficing rules and decision heuristics when making choices (Simon 1956, 1978, 1986), particularly in situations of information overload (Cohen 1980; Hahn et al. 1992).

Those who follow the latter line of reasoning argue that economic beings are not perfectly rational and all human cognition does not reduce to affect; rather, decision makers are somewhat rational in their choices and the degree of rationality depends on the individual and situation (Byron 1998). This paper relies on the more commonly accepted “middle of the spectrum” perspective on rationality to posit how and why CR and CA may affect investors’ decision strategies, as next discussed.

Decision Strategies

How do humans choose to choose? A decision strategy reflects the psychological processes used to construct a judgment or solution. The concept of decision strategy is also referred to as cognitive schema, procedural knowledge, and knowledge structure, among other terms. The psychological processes and the interrelationship among processes evoked in a given situation can be conscious, subconscious, or both. A widely held notion is that decision makers, as cognitive misers, will select a particular decision strategy based on the “principle of least effort”; that is, individuals will exert only the minimum amount of effort necessary to arrive at an acceptable decision (Beach and Mitchell 1978; Payne 1982; Johnson and Payne 1985).

The principle of least effort is directly relevant to CR, since more frequent dissemination of information in the marketplace will result in a higher volume of information that requires greater levels of cognitive processing effort. Therefore, investors might trade off decision quality for less effort by examining only a select subset of available information at a fairly deep level or by attempting to evaluate all available information at a relatively superficial level. The area of CA is also affected by the principle of least effort as investors might not seek assurance unless it is readily available to them. Instead they might choose to act on less reliable information that is easier to obtain at the expense of decision quality.

The driving force behind the principle of least effort is that human cognition is limited, which gives rise to the concept of “cognitive bounds” in the phrase “bounded rationality” (Simon 1956, 1978, 1986). As a result, decision makers tend to adopt simplifying decision strategies that depart from the precepts of rational choice (Payne et al. 1993; March 1978). The selection of a particular decision strategy depends on the individual, context, and task.

At the individual level, information overload can induce bounded rationality and trigger certain decision strategies. Some of the contextual factors that could impact the choice of a particular decision strategy are the nature (e.g., from financial events to business events), complexity (e.g., from simple routine transactions to intricate financial instruments), volume (from a single signal to multiple aggregated signals), format (from text to audiovisual), frequency (from quarterly dissemination to real-time reporting), and reliability (from self-reports to independent verification) of decision relevant information in the environment. In light of this brief review of extant cognitive theory, the next section examines how continuous reporting might affect human decision processes and choices.1

1 The types of tasks in which humans engage can be categorized as conceptual (creativity, intellective, cognitive conflict, and decision making) or behavioral (planning, performance, competitive, and mixed-motive) (McGrath 1984). This commentary investigates the impact of CR and CA on conceptual decision tasks.
CONTINUOUS REPORTING

Advances in information technology and communication technology (ICT), such as the Internet, eXtensible Business Reporting Language (XBRL), radio frequency identification tags, customer self-service applications, and electronic data interchange, have placed the technical capability of CR into the hands of all but the smallest firms (Alles et al. 2002). Not surprisingly, such advances have led to an explosion of financial information in the public sector (Dietrich et al. 2001). However, concerns have been raised about the potential for information overload, because huge volumes of information are now available to greater numbers of people with faster speed than ever before (Speier et al. 1999). According to Hahn et al. (1992), information overload occurs when the time required to receive, decode, process, encode, and respond to information exceeds available decision time. As key aspects of the decision environment change, decision makers will alter their decision making or adopt coping strategies accordingly (Payne 1982).^2^  

In particular, Simon (1956, 1978) suggested that decision makers will “satisfice” in the face of information overload, which means that they will arrive at satisfactory, but not necessarily optimal, solutions. Payne et al. (1993) further explicated this phenomenon using an effort-accuracy framework, which essentially means that as the environment becomes more complex and difficult to absorb, decision makers, on average, will tolerate a lower level of accuracy such that an acceptable solution is chosen with the least amount of effort. Further, as indicated by Miller (1978) and Toelken (1996), humans are bound by time and space; hence, their limited cognitive-processing abilities constrain the amount of information that can be processed per unit of time (Tuttle and Burton 1999). Thus, as CR moves closer to real time, the resulting information overload can potentially exacerbate bounded rationality, thereby triggering greater use of satisficing decision strategies that impair decision quality (Chewning and Harrell 1990).

A common assumption in the financial-reporting literature is that the market is semi-efficient; i.e., all public information is fully impounded into prices despite bounded rationality among traders (Beaver 1998); accordingly, it is not possible to yield abnormal returns by trading on public information. However, many behavioral researchers argue that information-processing biases do indeed create price anomalies in the marketplace, thus countering the semi-efficient market theory (e.g., Abarbanell and Bernard 1992; DeBondt and Thaler 1985, 1987, 1990; Dietrich et al. 2001; Hand 1990; Hopkins 1996; Hirst and Hopkins 1998; Thaler 1993; Porta et al. 1997). Research findings in this area indicate that boundedly rational investors can “move the market” in irrational ways because marginal investors, who set prices, are subject to information-processing biases (Berg et al. 1995), as well as unrealistic expectations. Therefore, it is important to understand how CR might affect individual investors’ decision strategies and outcomes.

Decision Strategies Induced by CR

With respect to the frequency of financial reporting, the effort-accuracy framework would suggest that investors can become cognitively overloaded if the information flow is too fast, varied, and complex, thereby leading them to initiate coping strategies aimed at minimizing cognitive effort at the expense of decision quality (Payne et al. 1993). As a result, decision makers often rely on heuristics, which can lead to biased or inaccurate judgments. One heuristic, anchoring and adjustment, is particularly germane to CR.

Anchoring and adjustment refers to a behavior where individuals process information sequentially as a result of limited processing capabilities. Their initial belief or “anchor” is important since it affects subsequent judgments. Research findings indicate that individuals often over-weight the anchor and do not fully impound new information (Kahneman and Tversky 1974; Tversky and Kahneman 1985).

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^2^ Decision aids and analytical tools can help to alleviate information overload problems. The intent of this commentary is to examine how and why CR and CA can affect decision processes independent of intervention mechanisms. Such tools have been and should continue to be investigated by behavioral researchers, particularly in the context of CR and CA.
Of greatest concern is that anchoring and adjustment by investors may lead to an increase in stock price volatility as a result of continuous reporting. In the belief-adjustment model advanced by Hogarth and Einhorn (1992) two aspects of anchoring and adjustment relate to how evidence is obtained (presentation mode) and assimilated (processing mode). Regarding the former, beliefs may be updated as each piece of new evidence is presented (step-by-step [SbS] processing mode) or after all evidence has been presented (end-of-sequence [EoS] processing mode). Holding information constant, continuous reporting disaggregates a series of information and presents each informational item in an SbS presentation mode, whereas periodic reporting presents the same information in an EoS mode.

Hogarth and Einhorn (1992) posit that a given presentation mode will evoke a compatible cognitive processing mode, suggesting that continuous reporting (SbS presentation mode) is likely to evoke SbS processing. Researchers have found a recency effect associated with either SbS or EoS processing modes; meaning, greater decision weight is ascribed to later, as compared to earlier, information (e.g., Griffin and Tversky 1992; Maines 1995; Tuttle et al. 1997). Further, the recency effect on belief adjustments is greater with SbS processing, as compared to EoS processing, because more anchoring and adjusting takes place (Trotman and Wright 1996; Kennedy 1993; Ashton and Ashton 1988). This suggests, for instance, that after a series of positive economic information about a company, stock price valuations will be higher (lower) if information is presented in a continuous (periodic) format. Therefore, as the market ebbs and flows with sequential series of good and bad news information, stock prices could become more volatile with continuous financial reporting.

Pinkser (2003) provides some evidence that CR can indeed increase stock price volatility in a 2 (presentation mode: SbS or EoS) × 3 (presentation order: positive-negative [+– –], negative-positive [– ++], or mixed [+–++]) experimental design. The researcher presented the same 20 pieces of financial and nonfinancial information (10 positive and 10 negative) in the SbS mode (reflecting CR) and EoS mode (reflecting traditional financial-statement reporting). In the SbS mode, investors adjusted stock prices after receiving each piece of information. In the EoS mode, investors adjusted stock prices after receiving the first set of 10 informational items and again after receiving the second set of 10 items. Study findings revealed that after the first 10 pieces of information, stock prices were significantly higher in the [+– –] condition (lower in the [– ++] condition) for the SbS mode as compared to the EoS mode. After responding to the second 10 pieces of information, stock prices were significantly lower in the [+– –] condition (higher in the [– ++] condition) for the SbS mode as compared to the EoS mode. Hence, the amplitude of stock price changes in the SbS mode was significantly greater than the EoS mode, indicating increased volatility.

Information economics, however, raises a counter argument to the anchoring and adjustment prediction. That is, a longer reporting window (e.g., traditional quarterly financial statements) as compared to shorter reporting window (e.g., daily financial statements) results in a heterogeneous information economy where one set of investors holds private information that is unknown to other investors, resulting in information asymmetry (Demski 1980). When making investment decisions in such a noisy, rational expectations, equilibrium environment, investors who do not hold private information respond to stock price changes by revising their estimates of the perceived value of other investors’ private information (as signaled through their stock trades); as a result, the degree of shock-induced price changes in the marketplace is significantly amplified (Grundy and Kim 2002). Using an infinite horizon, noisy, rational expectations model, Grundy and Kim (2002) analytically and empirically demonstrated that stock price volatility in the U.S. was 20 percent to 46 percent higher in an information economy where the reporting window is longer, as compared to shorter.

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1 Hogarth and Einhorn (1992) also noted a primacy effect (i.e., greater decision weight ascribed to earlier information) associated with complex tasks and long series of informational cues, although this finding has not been universally supported in subsequent studies.

2 Trotman and Wright (2000) review prior recency studies and note that other than response and presentation mode, the magnitude of order effects also seems to depend on the type of task and the motivation and experience of the individual.
As discussed earlier, information economics assumes that decision makers are rational and possess unlimited cognitive processing capabilities. Additionally, those who hold this point of view would assert that heuristic biases, such as anchoring and adjustment, are idiosyncratic and tend to revert to the mean in aggregate. Hence, there are at least two conflicting perspectives on how CR might affect investors’ judgments and decisions. While the preponderance of research provides greater general support for the external validity of behavioral theory than information economic theory, the ultimate answer can be determined only through a compilation of multiple research studies from the different viewpoints.

There are likely many more issues and applicable psychological and economic theories surrounding CR, some complementary and others contradictory. Our attempt in this section was to introduce a few prominent theoretical perspectives and to ignite a spark of enthusiasm in behavioral researchers on which to expand and extrapolate the issues raised. The next section examines the potential impact of CA on investors.

CONTINUOUS ASSURANCE

Extant research in CA primarily investigates how online real-time enterprise systems are changing the traditional year-end audit (Alles et al. 2002; Kogan et al. 2003) and explores various ways to structure continuous auditing methodologies (Rezaee et al. 2002; Vasarhelyi 2002). While scholarly inquiry into these and related areas continues, accounting behavioral researchers might also contribute to this burgeoning stream of research by exploring how CA can improve decision quality in light of more frequent reporting.

Unreliable information heightens investor uncertainty and increases perceived information risk, thus investors tend to discount stock prices for unreliable information signals (Miller 2002). To the extent that firms can offer more reliable information to investors, uncertainty is reduced, perceived information risk is eased, cost of capital is lowered, and stock prices more accurately reflect the underlying value of the company (King et al. 1990; Olsen 1997). Further, as indicated by Kennedy et al. (1998), there is a positive relationship between the perceived reliability of managements’ signals and the willingness of traders to invest in the firm. Thus, studies of how and why CA can influence the judgment and decision-making processes of individual investors are inexorably intertwined with CR, as CA holds the potential to augment decision quality in light of information overload and bounded rationality.

Individuals often seek information that is easily available, even when information quality is objectively low, rather than search for higher-quality information (Gilliand and Landis 1992; Kuran 1991). The principle of least effort suggests that if investors are required to seek and perhaps pay for assurance on continuously delivered financial information, they might opt not to receive assurance since it could require considerable effort (Alles et al. 2002; Elliott 2002). Instead, they might prefer to minimize effort and satisfice decision quality by relying on managements’ self-reported assertions. However, if deliveries of CR signals were automatically accompanied by assurance, either voluntary or mandatory, investors would likely ascribe more credibility to the information presented (Dietrich et al. 2001; Hopkins 1996; Hirst and Hopkins 1998), which can improve decision quality (Chewning and Harrell 1990).

There have been only two studies, to our knowledge, that provide direct evidence on the decision effects of CA (Hunton, Wright, and Wright 2003; Hunton, Reck, and Pinsker 2003), as next reviewed. While audit theory suggests that assured information should be more reliable than nonassured information, researchers know little about the perceived incremental value of CA in the context of more frequent financial statement reporting. Preliminary findings regarding this issue are provided in an experimental study where analysts, investors, auditors, and CFOs indicated their assessments about the effects of CR and CA (Hunton, Wright, and Wright 2003). The study results suggest that

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5 This situation does, however, create a value-added opportunity for financial analysts and investment bankers to determine the reliability of managements’ signals.

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CA is expected to significantly enhance the decision usefulness of financial statements; improve overall quality of earnings; reduce management’s aggressiveness with respect to accounting accruals, estimates, and principles; lower stock price volatility; increase analyst consensus of future earnings; and reduce firms’ cost of capital. While this investigation suggests that CA may have positive effects, it is unknown if these findings will generalize across times, persons, and contexts.

Hunton, Reck, and Pinsker (2003) examined the behavior of nonsophisticated investors to CR and CA. Using a 2 (assurance: present or absent) × 3 (order: good news, bad news, or mixed news) experimental design, they examined the effect of assurance on a constant stream of information flow (reflecting a CR environment). In their study, participants (relatively unsophisticated investors) were provided with 10 pieces of all positive, all negative, or mixed (positive and negative) information. After reading each informational item, the participants recorded the amount they would be willing to pay for the case company’s common stock.

The study findings indicated that in all three order conditions (positive, negative, and mixed), final stock prices were significantly higher in the information assured condition as compared to the not-assured condition. Additionally, the upward movement in stock prices was greater in the positive news condition than the negative news condition. Finally, the study provided limited evidence that stock price consensus among traders, as indicated by the stock price variance, was higher in the presence of CA. As indicated by Ashton (1982), when no absolute benchmark exists for accuracy (as with stock prices), consensus is an important indicator of precision. While results of the Hunton, Reck, and Pinsker (2003) study did not clearly indicate that stock price volatility would increase or decrease with CA, their findings suggested that during prolonged periods of good (bad) news followed by prolonged periods of bad (good) news, stock price volatility will increase with CR. Additionally, their findings indicated that assurance reduced information risk and enhanced decision quality.

The Hunton, Reck, and Pinsker (2003) study also provided perspective on the extent to which unsophisticated investors would be willing to pay for independent audit assurance. After participants had completed the experiment, they responded to psychological debriefing items. One of the items asked the participants to assume that they were thinking of investing money in the stock of a company, primarily because company management just announced that next year’s profits were expected to increase considerably over the current year. The item then asked: “If you could go to the Internet, find the announcement, and click on a button that takes you to an independent auditor’s assurance regarding the announcement, what percentage of your total investment amount, would you be willing to pay for the assurance report? (0 percent to 100 percent).” While a few of the 179 participants indicated zero (0.00 percent), the vast majority of participants indicated that they would be willing to pay for such assurance; and the mean (standard deviation) answer was 2.45 percent (1.78 percent) of the stock price.

To some extent, these preliminary findings counter the principle of least effort, which suggests that investors might not exert effort in the form of searching and paying for assurance. On the other hand, the effort-accuracy trade-off framework might still apply, as the investors may have believed that the effort required to obtain a more reliable signal from management via auditor assurance was necessary to raise the accuracy to an acceptable, while not optimal, level.

Much more research is needed regarding the effort-accuracy trade-offs associated with seeking and perhaps purchasing independent assurance in a CR context. While there are many other behavioral issues and perspectives with which this commentary has not dealt in the context of CA, as noted before, the purpose herein was to focus on a few salient issues in this area.

**BEHAVIORAL RESEARCH OPPORTUNITIES IN CR AND CA**

The purpose of this commentary is to stimulate thinking among behavioral researchers with respect to research questions and opportunities in the realm of CR and CA. CR can create information overload, exacerbate bounded rationality, induce heuristic decision processes, and trigger
satisficing strategies; CA holds the potential to increase decision quality, provided that the effort involved in seeking assurance is perceived to exceed the gain in information quality. Accounting behavioral researchers can add value to extant literature in the areas of CR and CA by investigating these and other psychology-based issues. The next section will summarize some of the unanswered questions raised herein.

Continuous Reporting

The philosophy and expectations of researchers who examine stock price volatility from the perspective of information economics conflict with the theory and predications of behavioral researchers. Most notably, economic theory asserts that stock price volatility will decrease with more frequent reporting while behavioral theory suggests that volatility will increase. A recent study by Hunton, Wright, and Wright (2003) indicates that investors, controllers, auditors and analysts expect that stock price volatility will decrease with more frequent financial statement reporting, thereby lending some support to economic theory. However, a behavioral study by Hunton, Reck, and Pinsker (2003) suggests that during prolonged periods of good (bad) news followed by prolonged periods of bad (good) news, stock price volatility will increase with CR. The conflicting findings and broadening scope of these studies suggest that further process-oriented and behavioral investigations of CR are warranted, as are additional empirical and analytical studies.

Another interesting set of issues surrounds how CR might impact the quality of earnings reflected on firms’ financial statements. Not only is this issue appealing from a theoretical perspective, but in light of recent accounting scandals in the United States, investigating a link between CR and earnings quality has immense professional and societal value as well. Again referring to the Hunton, Wright, and Wright (2003) study, information consumers, preparers, and assurers assess the impact of a voluntary change by a company from quarterly reporting to more frequent reporting (monthly or daily). Participants in this experimental study agreed that CR would likely enhance the quality of earnings, particularly because CR would temper managements’ aggressiveness with respect to accounting estimates, accruals, principles, and choices. However, research investigations examining how financial statement preparers actually respond to CR await further inquiry. For instance, how do the opportunities and incentives for earnings management vary for, say, quarterly as compared to monthly reporting? Would more frequent reporting require managers to apply accounting estimates prospectively rather than the extant practice of applying judgments of this nature retrospectively?

A recent study by Hodge et al. (2004) sheds new light on the relationship between CR and quality of earnings. The purpose of their study was to investigate the relationship between search-facilitating technology (e.g., XBRL) and financial-reporting transparency. Their results suggest that search-facilitating technologies do indeed improve transparency. If improved reporting transparency indicates higher quality of earnings, as suggested by the authors, this study reflects significant important behavioral and policy implications of CR when combined with XBRL.

A related set of issues discussed in this commentary suggest that CR might lead to more coarsely granular heuristic decision rules, and hence impair decision quality. One particular heuristic, the anchoring and adjustment phenomenon, was explicated earlier. While some work in this area has begun, much more investigation awaits. For instance, Pinsker (2003) found that disaggregating a set of information into its component pieces (reflecting CR versus periodic financial statements) increased stock price volatility. But, further questions loom; for example, would such findings persist with more complex pieces of information over longer periods using sophisticated investors? Additionally, further thought and inquiry is needed regarding the extent to which other heuristic decision rules, such as representativeness, availability, and hindsight bias, relate to CR. Additionally, the effects of CR on interactions among individuals, tasks, and contexts have yet to be examined by behavioral researchers.

Dietrich et al. (2001), Hopkins (1996), and Hirst and Hopkins (1998) indicate that the way in which financial information is presented influences judgment and decision making. They rely,
in part, on the effort-accuracy framework (Payne et al. 1988; Payne et al. 1993) to suggest that investors will minimize their cognitive effort by merely accepting the presentation format provided, thereby sacrificing accuracy. This suggests that the way in which financial information is packaged can bias decision makers, such as traditional financial statements versus comprehensive reporting formats. While the discussion in this paper held information content and format constant, it is important to consider these aspects of CR in future behavioral studies.

Research dealing with information overload and information presentation is ongoing in the area of decision aids. Such research could be extended to the domain of CR, as decision aids can help information consumers deal with excessive complexity and variety in the environment. As a result, the quality of aided decisions can potentially exceed unaided decision quality (e.g., Kleinmuntz 1990; Benbasat and Nault 1990), although there is conflicting evidence on this matter (Rose 2002). More research in this area would be highly valuable, particularly given the continuing growth and complexity of information and computing technology.

Continuous Assurance

Credible assurance on information signals reduces information risk and dampens stock price volatility by improving the perceived reliability of such signals. Further, the cost of capital should consequently decrease with assurance. While considerable research is ongoing in the area of CA, there remain many unanswered questions, particularly with regard to human decision processes and related behaviors.

Under the existing model of auditing, client companies through the Board of Directors hire, pay, and fire their auditors. However, several other models might emerge in the future. For example, information consumers could voluntarily seek assurance when desired. Thus, users would pay more for assured, as compared to nonassured, information depending on many factors, such as the assurance provider, level of assurance, scope of assurance, company risk profile, and so on. From a societal perspective, this potential model has some appeal since the perceived conflict of interest between firms and auditors would be eliminated. However, the effort-accuracy framework (Payne 1982; Johnson and Payne 1985) suggests that individuals tend to minimize their efforts to the point where acceptable, but not necessarily optimal, solutions are reached. Hence, would information consumers merely accept financial signals provided by management on face value, or would they voluntarily seek independent assurance? Part of the answer to this question rests with the users’ perceptions with regard to their tolerable level of acceptability with respect to the decision at hand. That is, if nonassured information leaves decision accuracy beneath a subjective tolerable threshold, then users would likely exert additional effort to seek assurance. Further, the extent of a perceived “free rider” effect also needs consideration, i.e., the unwillingness by users to pay for assurance services with the knowledge that others are already doing so, and thus the information is assured and reliable. If a large proportion of users behaves in this manner, then assurance will not become economically viable and hence either not be provided or provided at a lower level.

Behavioral research into this area within a CR environment can take place on many fronts. For instance, under what circumstances might users deem managements’ signals alone to be sufficiently reliable? Where such conditions exist, would independent assurance be necessary at all? To the extent that managements’ signals transmitted in a CR environment are not acceptably reliable, what CA factors might raise perceived reliability at or above the desired threshold level? How much reliability over the subjective threshold is sufficient for the user to stop applying more effort? Is it necessary that independent auditors supply the assurance; what about other potential assurers, such as financial analysts, lawyers, or various financial media? What type of assurance is demanded, e.g., strong positive assurance, weak negative assurance, or some other type of assurance? Should assurance be voluntary or mandatory on the part of the firm and the user? These and many more questions in the area of CA can be addressed by accounting behavioral researchers.
Final Comments

There are many open avenues of research for behavioral researchers in accounting regarding how CR and CA might affect human decision processes and consequential outcomes. In particular, there is an ongoing struggle between psychological and economic theory regarding the potential impact of CR and CA on those who rely on business information. Simon and Thaler (1986) suggest that economic theory alone is inadequate to explain human behavior without factoring psychology into the equation since “rationality” in economics is defined in terms of choices (substantive rationality), whereas “rationality” in psychology refers to individual and collective processes that facilitate and hinder such choices (procedural rationality). Thus, it appears that scholars should simultaneously factor both perspectives into CR and CA research projects.

Despite its significant importance, our review of the literature reveals only a few studies that directly examine the potential psychological and behavioral effects of continuous reporting and assurance. This paper focuses primarily on investor effects and has not considered the vast array of behavioral implications for other constituent groups, settings, and tasks. The overriding objective of this commentary is to begin a dialogue and stimulate research in these rich, largely unexplored research areas.

REFERENCES


