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How does changing measurement change management behaviour? A review of the evidence

Anne Beatty*

Abstract—The effect of a change in accounting standards on reporting firms' economic behaviour is often a concern raised by those opposing the accounting change. Some view these changes in behaviour as an inevitable consequence of a rule change. Others are not persuaded by these arguments. Although the empirical evidence of changes in economic behaviour is not extensive, it is consistent with accounting changes resulting in firms changing both operating and financing decisions. The evidence of which economic incentives give rise to these changes is more limited. Changes in economic behaviour appear consistently to be related to the regulatory use of accounting numbers. In addition, some evidence related to incentives created by management compensation and by market discipline has been found. Evidence of the importance of debt covenants in inducing accounting changes is less convincing given limited examination of actual debt contracts and the use of poor proxies of covenant slack. The existing research does little to tell us whether any changes in behaviour are for the better or for the worse.

1. Introduction

Critics of changes in accounting standards often argue against the changes because they will result in changes concerning reporting firms' economic behaviour. A recent example of these arguments occurred during a Congressional Hearing of the Committee on Financial Services (US House of Representatives, 2004). In that hearing, US Representative Royce argued that economic behaviour had already changed as a result of the employee stock option expensing proposal of the Financial Accounting Standards Board (FASB). Opponents of expensing options argued it would impede job creation and slow economic growth. Similar concerns have been expressed about many other proposed accounting changes. Although this type of argument is frequently made, the rationale is not often given or defended, and implicit in the criticism is the assumption that changes in behaviour are undesirable.

For some, the idea that accounting changes would lead to changes in behaviour seems obvious. Consistent with this view Sandy Burton, former Securities and Exchange Commission (SEC) chief accountant, is quoted in Forbes (1977) as saying '...there is no doubt that measurement standards have an impact on behaviour. That impact cannot be ignored in setting measurement standards. There's a delicate balance you have to have.' This statement implies that the notion that standard-setters should care about these changes in behaviour is equally obvious.

For others the idea that accounting change would lead to changes in behaviour is not believable. Beresford (1998), former FASB chairman, states that 'most of these kinds of allegations about so called "economic consequences" are pretty difficult, if not impossible, to prove and even members of Congress usually are not persuaded by them in the final analysis.' His statement suggests that these arguments merely reflect political posturing.

Even those who believe that changes in behaviour occur do not necessarily agree about whether the change is for better or worse. For example, some suggest that the Statement of Financial Accounting Standards SFAS 106, requiring accrual of post-employment benefits, provided a 'wake-up call' about the magnitude of the costs associated with retiree benefits. This view is expressed by Ben Neuhausen, a partner in Arthur Andersen's professional standards group, who was quoted by Singh (2001) as saying, 'I think some companies were genuinely clueless about how much these benefits were going to cost them over the long haul ... once Statement 106 forced them to measure these obligations, a lot of companies realised that they had offered benefits they could not afford.' In contrast, Reuters (1990) reported that when commenting to the SEC on fair value accounting for investment securities Federal Reserve chairman Alan Greenspan states that 'the adoption of market-value accounting for the investment securities portfolio might also affect the amount of securities that banks are willing to hold. Many

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institutions would likely reduce their holdings of marketable instruments, thereby having the undesired effect of reducing the liquidity of banking organisations.'

Furthermore, some standard setters hold the view that whether or not behavioural changes occur and whether those changes are good or bad is irrelevant for setting standards. For example, Leisenring (1990), former vice-chairman of the FASB states that 'Unfortunately, it is once again fashionable to suggest that the FASB should abandon the notion that decision-useful information must be neutral and should consider the "economic consequences" of its decisions. Some would even assert that the FASB should try to determine in advance who will be relatively helped or hurt by the result of applying a particular accounting standard, and consider "public policy implications" when it establishes accounting standards. In a word, bias the information reported to influence the capital allocation or other economic decisions toward some predetermined objective, thereby undermining the proper functioning of the capital markets and impairing investors' and creditors' capital allocation decisions.'

These views suggest that the issue of whether accounting standard setters should consider resulting changes in economic behaviour when writing accounting standards is controversial. For some, changes in management behaviour seems like an obvious consequence of accounting change, while for others the claims of behavioural changes seem difficult, if not impossible to prove. Furthermore, some argue that firms are better off as a result of these changes while others argue that firms are damaged by the changes. Finally, some believe that regardless of the desirability of the changes in behaviour they should not be considered when setting standards.

The level of controversy about changes in management behaviour has not been matched by the amount of research in this area. Generally, there has been little published academic research in accounting that has examined whether firms actually change their economic behaviour in response to accounting changes. Less than 10% of the studies focusing on FASB accounting standards published in the top three US academic accounting journals (i.e. *Accounting Review*, *Journal of Accounting and Economics* and *Journal of Accounting Research*) directly examines the effects that these accounting standards have on firms' economic behaviour. A majority of the studies consider valuation issues and roughly a quarter of the studies examine accounting choices firms make when adopting the standard. The explanation as to why there is so little emphasis on this seemingly important research question is not obvious. One possibility is that this research has been undertaken but that accounting changes do not actually lead to changes in economic behaviour. A bias against publishing null results may have led to few of these studies appearing in these journals. A second possibility is that the difficulty in documenting these changes in behaviour convincingly may be too discouraging. Another possibility is that this research is not well received because those who believe that firms' economic behaviour responds to accounting changes find the results obvious, while those that do not believe that firms would respond to accounting changes do not believe the results.

Despite the relative lack of emphasis on examining whether changes in accounting standards result in changes in economic behaviour, there has been some research published over the past 25 years documenting this phenomenon. This research can help to answer the questions of whether the changes occur. Although these studies often discuss the incentives for these changes in behaviour, few of the studies conduct tests of which economic incentives gave rise to the documented changes. To some extent this research can help answer the question of why these changes occur. The research does little to tell us whether the changes are for the better or for the worse, or to inform standard-setters about whether they should address these potential changes in behaviour.

The next section reports the existing evidence documenting changes in firms operating and financing activities following several important accounting changes that have been implemented over the past three decades. The following section discusses potential economic incentives that would lead firms to change their behaviour as a result of a change in accounting rules. The final section provides suggestions for further research and conclusions.

2. Measurement changes

During the past three decades, there have been many important accounting changes that potentially might have led firms to change their economic behaviour. Such changes could relate either to operating activities or to financing decisions. Research studies have been conducted for several of these changes to determine whether evidence of their effect in economic behaviour can be found.

Conducting this type of research is challenging. Evidence based on surveys such as the one conducted by Goodacre et al. (2006), is not likely to persuade sceptics who view statements about behavioural changes as political posturing because survey responses may not be consistent with actions actually taken. Documenting a stock market reaction is not sufficient to conclude that a behavioural change has occurred, since the market reaction will not be limited to these behavioural

changes. This suggests that convincing evidence of a behavioural change requires documenting that economic behaviour is different after the accounting change than it was before. However, economic behaviour will be affected by factors other than the accounting change. Convincingly isolating the effect of the accounting change will require either a well-specified model of the economic behaviour or an appropriate control sample. Since firms cannot be randomly assigned to be control firms, the use of a control sample will typically require a correction for self-selection.

2.1. Measurement changes that affect operating activities

2.1.1. Mandated expensing of research and development (R&D)

Several studies of changes in economic behaviour have focused on SFAS 2, which requires the expensing of research and development expenditures. This issue has undoubtedly attracted attention for a variety of reasons. In part the focus on the change in accounting for R&D reflects the importance of these expenditures to economic growth and productivity. The mixed results found in the original studies of this accounting change have most likely also resulted in additional research on this issue.

Horowitz and Kolodny (1981) document a reduction in R&D spending at the time of adoption of SFAS No. 2 for a sample of over-the-counter (OTC) traded firms that were forced to change from capitalising to expensing R&D expenditures relative to a matched control sample of firms that expensed R&D prior to SFAS 2. They discuss several possible explanations for the documented change in behaviour. First, they mention the possibility that the market for the small firms examined may not be efficient. Second, they note that, regardless of whether the market is efficient, if managers believe that the market is inefficient then accounting changes may result in changes in behaviour. The third and fourth possibilities mentioned are that management compensation plans or contractual lending constraints might induce a change in behaviour. Finally, it is noted that stock exchange listing requirements or government contract evaluation procedures might result in a change in economic behaviour. Although they discuss these possibilities, they do not explicitly test for why these changes occurred.

Dukes et al. (1980) also examine the behavioural changes in R&D expenditures following the issuance of SFAS 2. They fail to find support for an effect on research and development expenditures attributable to SFAS 2 for a sample of New York Stock Exchange (NYSE) and American Stock Exchange (AMEX) firms. They acknowledge that their lack of findings may be attributable to their focus on large firms.

Elliott et al. (1984) attempt to reconcile the inconsistent results found in Horowitz and Kolodny (1981) versus in Dukes et al. (1980). Using the Horowitz and Kolodny method of measuring changes in R&D expenditures, they find a change in behaviour for both listed firms and OTC firms. Using the Dukes et al. (1980) method, they find a change in behaviour for the OTC firms but not for the listed firms. They argue that the matched-pair design used in both studies may not be appropriate because it does not control for self-selection problems caused by comparing firms that choose to capitalise against those that chose to expense R&D prior to the accounting rule change.

Sheheta (1991) examines the issue of self-selection bias in the analysis of the economic consequences of the mandatory change in accounting for R&D. He finds a more negative change in R&D expenditures for firms that previously capitalised relative to firms that previously expensed R&D after controlling for the self-selection bias. These results confirm a change in economic behaviour associated with the change in accounting for R&D, but do not consider the economic incentives that gave rise to these changes.

While none of these studies examine whether R&D expenditures were optimal prior to the accounting change, the implicit assumption underlying these studies is that the accounting change had an undesirable effect on R&D expenditures by the expenditures declined after the accounting change.

2.1.2. Accrual of Other Post Employment Benefits (OPEB) liabilities

Another important accounting change with the potential to affect firms' operating decision is the requirement that other post retirement benefits (OPEBs) be accounted for on an accrual rather than cash basis. This accounting change resulted in approximately $300 bn in unfunded benefits liabilities added to the balance sheet of US public firms. This large increase in firms' leverage may have provided incentives to reduce benefits to mitigate the financial statement effect of this accounting change.

Mittelstaedt et al. (1995) document the prevalence, magnitude and timing of retiree health care benefit reductions associated with the adoption of SFAS 106 and examine the determinants of the benefit-reduction decisions. Unlike the SFAS 2 studies they do not have a control sample of firms that engage in the transaction being studied, and which were unaffected by the accounting change. Instead they attempt to control for factors other than SFAS 106 that might lead to changes in post-retirement benefits. They claim that their results indicate that firms cutting benefits are financially weaker and have higher retiree health care costs at

the time benefits are reduced. They conclude that SFAS No. 106 cannot be viewed as the sole cause of the health care benefit reductions.

To the extent that the benefit reductions occurred in firms that were financially weak and had higher retiree health care costs, the results of this study are not inconsistent with arguments made that SFAS 106 helped firms realise that they had offered benefits which they could not afford.

2.1.3. Fair valuing investment securities

For financial institutions the change to fair value accounting for investment securities was an important accounting change with the potential to affect their operating decisions. The use of fair value accounting for only a single type of asset while ignoring concurrent changes in the values of other assets and liabilities could lead to unrealistic volatility in reported equity, and therefore provide an incentive to change investment behaviour.

Beatty (1995) compares changes in the investment behaviour of bank holding companies that early adopted SFAS 115 versus those that did not in the SFAS 115 early adoption quarter. Her analysis includes a self-selection correction for the early adoption decision. She finds a decrease in both the proportion of assets held in investment securities and the maturity of the investment securities held. These changes are related to the banks regulatory capital ratio, suggesting that the volatility in recognised fair values may have led banks to change investment behaviour due to regulatory capital costs that could have arisen from the accounting change. She concludes that shortening the maturity of the investment portfolio may reduce interest income earned or increase their interest rate risk. Increased exposure to interest rate changes could make the banking industry more volatile, which was one of the arguments raised by Greenspan when opposing this standard.

2.1.4. Fair valuing derivatives

Increased volatility in earnings for derivatives not qualifying for hedge accounting treatment may alter use of derivatives. Zhang (2006) examines whether the FASB's standard on accounting for derivative instruments (SFAS 133) caused a change in corporate risk-management behaviour. She hypothesises that the effect of the standard on firms' risk-management activities varies depending on the hedging effectiveness of the derivative instruments. She finds that after the adoption of SFAS 133 interest-rate risk, foreign exchange-rate risk, and commodity price risk decreases for firms that were speculators relative to firms who were hedgers. Zhang concludes that SFAS 133 discouraged firms' speculative use of derivative instruments. She does not consider reasons that firms are concerned with earnings volatility. To the extent that standard setters are interested in how accounting changes affect managements' behaviour, her evidence of a decrease in the speculative use of derivatives suggests a potentially beneficial change in behaviour.

2.2. Measurement changes that affect financing decisions

Lease financing is a commonly used vehicle for financing long-term assets. An important accounting change that had the potential to affect how firms finance their operations was the requirement by SFAS 13 that capital leases be recognised as assets and liabilities on the balance sheet. Increases in reported debt associated with capitalising leases may result in firms structuring leases to obtain operating lease treatment.

Imhoff and Thomas (1988) document a significant change in the structure of leases in response to SFAS 13 for a sample of firms that disclosed a high amount of capital leases prior to the accounting change relative to a sample of firms that reported a low amount of capital leases prior to the accounting change. They find a corresponding increase in the amount of operating leases used by these firms, which suggests a substitution from capital leases to operating leases. However, they find that total leases declined after the accounting change. They also find that the high-lease group has greater increases in equity financing and larger decreases in debt financing after the accounting change. They do not consider reasons for these financing changes.

Beattie et al. (1998) document that key accounting ratios would be affected by the change in lease accounting required by FRS 5 for a random sample of 300 listed UK companies. While they suggest that because these ratios are employed in decision-making and in financial contracts the changes may affect managers' behaviour, they do not examine whether these behaviour changes occurred.

Altamuro (2006) reports similar findings in her examination of whether firms decrease their use of synthetic leases after FASB Interpretation No. 46 (FIN 46) required that they be reported on the balance sheet. Prior to this change in accounting rule, companies acquired assets using this type of financing structure so that for financial accounting purposes the asset and the corresponding depreciation of the asset were recorded on the books of the special purpose entity rather than on their own. This off-balance sheet financing treatment was curtailed by FIN 46's requirement that their primary beneficiary consolidate these variable interest entities. She reports a decline in synthetic lease usage relative to mortgage financing after FIN 46 was adopted. She also does not examine the reasons for the change in behaviour. To the extent that

the objective of the change in accounting was to reduce the use of off-balance sheet financing vehicles, Altamuro's results suggest that the standard may have produced the desired outcome.

2.3. Summary of studies documenting behaviour changes

Research on six important accounting changes has documented evidence consistent with changes in operating and financing activities following the accounting changes. For five of the six changes examined the findings were relative to a control sample of firms unaffected by the accounting change. In two studies where a self-selection correction was included the correction resulted in a larger effect rather than a smaller one. The primary focus of these papers has been on the existence of a change rather than on the reason for the change. The results in these papers suggest that these changes in behaviour may be beneficial in some circumstances but undesirable in others.

3. Potential economic motives for changes in behaviour

In their *'Conceptual Framework for Financial Reporting: Objective of Financial Reporting and Qualitative Characteristics of Decision – Useful Financial Reporting Information'*, the FASB and IASB acknowledge that the information provided by general purpose external financial reporting is directed to the needs of a wide range of users rather than only to the needs of a single group. The potential users of financial reports that they discuss include creditors, equity investors, governments, regulators, employees, suppliers, creditors, and the public. The existence of many different financial statement users suggests that accounting changes could lead to changes in firms' economic behaviours for a variety of reasons.

The research examining potential reasons for behaviour changes has considered a variety of incentives including debt and compensation contracts, capital and rate regulation and market incentives. This research also faces several challenges. Examining the contracting incentive can be difficult because contract terms are not always readily available. Constructing measures correlated with the unobservable contract terms has proven to be difficult. Since regulators may use either generally accepted or regulatory accounting principles, whether regulatory incentives exist is determined on a case specific basis. The explanation for why the market would care about a reporting change can be difficult to articulate and to measure.

3.1. Contracting role of accounting

Watts and Zimmerman (1986) state that 'accounting plays an important role both in contract terms and in monitoring those terms'. They further argue that 'there is an important cash flow and value linkage introduced by accounting's contracting role'. Similar views are expressed in Standard & Poor's (S&P 2006), which states that S&P, as part of its surveillance process, monitors the potential impact of changes in accounting standards. S&P (2006) states that it 'is possible accounting changes could trigger financial covenant violations or regulatory or tax consequences, and could even influence changes in business behaviour, such as a change in hedging policy'.

The FASB and IASB provide a contrasting view of the role of contracting in financial reporting. FASB (2006) states that 'because general purpose financial reports are prepared in accordance with a generally accepted set of financial reporting standards and often are audited, the parties to an agreement may consider them useful as the basis for contractual agreements. However, the parties to an agreement are generally able to specify how financial reporting standards are applied for the purpose of that agreement, including which information in a financial report is used and how it is used. For example, a restrictive covenant may be stated in terms of a particular line item or subtotal on a financial statement, prepared in accordance with financial reporting standards in effect at a specified date. Therefore, reports prepared solely as the basis for contractual agreements are specialised reports, rather than general purpose financial reports that are the subject of this draft framework.'

Research examining the extent to which contracts rely on GAAP accounting numbers as of the reporting date should help distinguish between these two opposing views.

3.1.1. Debt contracting

One of the most commonly discussed rationales for why accounting changes might lead to changes in firms economic behaviour relates to the use of accounting numbers in debt contracts. These arguments assume that debt contracts contain financial covenants and that the covenant calculations are based on GAAP in force at the time of the calculation rather than in effect at the time that the firm enters into the contract. Several papers indicate that this may not always or even frequently be the case. Begley and Freedman (2004) document that the use of financial covenants in public debt contracts has changed through time. Specifically, they note a dramatic decline in the use of accounting numbers over the last three decades. Accounting-based covenants restricting dividends and additional borrowing appear in less than 10% of the most recent sample of debt contracts examined. They conclude that recently executed public covenants provide little incentive for managers to manipulate accounting numbers. The implications for a likely change in economic behaviour induced

by a change in accounting are similar. Begley and Freedman (2004) also re-examine the correlation between a firm's leverage ratio and use of covenants. They find that the rank correlation dropped from nearly 60% during the 1970s to below 5% in the late 1990s. They conclude that the leverage ratio is no longer a good indicator of the use of financial covenants in public debt.

In contrast to public debt, private debt continues to extensively use financial covenants. However, there is substantial evidence that those covenants commonly are not affected by changes in GAAP. An early paper (Leftwich, 1993) considers the use of non-GAAP numbers in covenants calculations. He examines recommended covenant definitions in Commentaries, which is a reference manual for lawyers who negotiate restrictive covenants in lending agreements. In addition, Leftwich examines 10 private lending agreements to verify that the definitions contained in Commentaries appear in actual lending agreements. He finds that the definitions used in covenant calculations use GAAP as a starting point, but make modifications to the GAAP numbers. The modifications disallow certain increases to income and assets that are required by GAAP but insist on certain decreases in income and assets that are not required by GAAP. During the period that he examined, he found that covenants were based on GAAP numbers in force at the time of the covenant calculation rather than GAAP at the time that the contract was signed.

More recent evidence on covenant calculations in private lending agreements suggests that the use of GAAP at the time of covenant calculation has also changed. Mohrman (1996) examines a sample of 228 lending contracts entered into between 1963/1990 including 148 bank loans, 41 public debt issues and 39 private placements. She finds that roughly 25% of the contracts do not include accounting-based covenants. The remaining 75% with accounting-based covenants are split roughly equally into those with covenant calculations affected by accounting changes and those that are unaffected by accounting changes.

Further evidence on how accounting changes affect covenant calculations is provided by Beatty et al. (2002). They examine how the interest rate charged for a sample of 206 bank loans enter into between 1994 and 1996 is affected by the exclusion of either voluntary or mandatory accounting changes from the calculation of covenant compliance. They find that nearly 75% of the loans exclude the effect of mandatory accounting changes from covenant calculations, while roughly 50% exclude the effects of voluntary accounting changes. They also examine how the rate charged on the loan is affected by the exclusion of accounting changes. They find that the rate charged on the loan is 84 basis points lower when voluntary accounting changes are excluded and 71 basis points lower when mandatory accounting changes are excluded. Beatty et al. (2002) conclude that excluding mandatory accounting changes may reduce the expected renegotiation costs of the loan in the event of an accounting change.

Evidence on the correlation between a firm's leverage ratio and closeness to covenant violation for private loans is provided by Dichev and Skinner (2002). They state that 'since we can measure covenant slack directly, we also assess the construct validity of firm leverage as a proxy for closeness to covenants. We find that while covenant slack and leverage are correlated, the magnitude of the correlation is fairly small in economic terms, implying that leverage is a relatively poor proxy for closeness to covenants.'

The results of these papers suggest that, while debt covenant calculations may provide an incentive for firms to change their economic behaviour in response to accounting changes in certain circumstances, this incentive may not be as prevalent as is often assumed; either because public debt does not contain financial covenants or because the covenants contained in private debt are not affected by the accounting changes. In addition, the results in these papers indicate that the leverage ratio is unlikely to be a good measure of a debt contracting incentive to change economic behaviour in response to an accounting change. Some suggest that leverage may instead proxy for the firm's target leverage ratio. However, the reason that firms would not adjust their target for the accounting change is not clear.

3.1.2. Compensation contracts

A second contracting incentive that has been considered is executive compensation contracts. In contrast to debt contracts that are explicit about how accounting numbers will affect contract calculations, typically bonus calculations are linked more loosely to specific accounting metrics. It is unclear whether the lack of specificity in the contract will make it more or less likely for accounting changes to result in changes in economic behaviour. On the one hand, compensation contracts provide more flexibility to adjust bonus calculations, on the other they provide no explicit exclusion of the effects of accounting changes.

There is some empirical evidence that bonus calculations do provide an incentive for firms to change their economic behaviour in response to accounting changes. Marquardt and Wiedman (2007) examine the economic consequences of changes in the financial reporting requirements for contingent convertible securities (COCOs). For a sample of 199 COCO issuers from 2000–2004, they find that issuers are more likely to restructure or redeem existing COCOs to obtain more

favourable accounting treatment when the financial reporting impact on diluted earnings per share (EPS) is greater, and when EPS is used as a performance metric in CEO bonus contracts. They conclude that these results provide new evidence that managers are willing to incur costs to retain perceived financial reporting and compensation benefits.

3.2. Regulation

For firms in regulated industries, the use of GAAP numbers in regulation potentially provides an incentive for changes in management behaviour. Theoretically regulators, like lenders, could modify the accounting numbers that are used in regulatory calculations to meet their specific needs, consistent with the views expressed by the FASB and IASB about specialised rather than general purposes. However, practical concerns that regulators may be captured by the industries that they are supposed to regulate have led regulators to frequently use GAAP numbers rather than regulatory accounting numbers. These GAAP numbers may be used in both capital regulation in the financial services industry and rate regulation in public utilities.

3.2.1. Capital regulation

To the extent that regulatory capital ratios are computed using GAAP numbers, changes in accounting standards created an incentive for affected firms to change their economic behaviour. However, some ambiguity exists about the effect of accounting changes on the calculation of regulatory capital ratios. In the US, the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) requires that regulatory accounting standards be no less stringent than GAAP. Compliance with this regulation results in changes in GAAP inducing changes in regulatory accounting standards. However, the board of governors of the Federal Reserve System (2005) has stated that:

> 'Although GAAP informs the definition of regulatory capital, the Federal Reserve is not bound by GAAP accounting in its definition of tier 1 or tier 2 capital because these are regulatory constructs designed to ensure the safety and soundness of banking organisations, not accounting designations designed to ensure the transparency of financial statements. The current definition of tier 1 capital differs from GAAP equity in a number of ways that the Federal Reserve has determined are consistent with its responsibility for ensuring the soundness of the capital bases of banking organisations under its supervision. These differences do not constitute differences between regulatory reporting and GAAP accounting requirements, but rather are differences only between GAAP equity and the concept of tier 1 capital as used in the Board's regulatory capital requirements for banking organisations.'

This statement suggests that any given accounting change may or may not affect the calculation of regulatory capital ratios and therefore may or may not provide an incentive for a change in economic behaviour. Consistent with this ambiguity, Bens and Monahan (2006) discuss how the FASB Interpretation No. 46 (FIN 46) requirement that sponsors consolidate their highly leveraged asset-backed commercial paper (ABCP) conduits affected regulatory capital ratio calculations. These assets were assigned a zero risk weight by the regulator and therefore this accounting change did not affect the calculation of the risk-based capital ratios. However, this accounting change did affect the calculation of the leverage ratio, which for US banks is required in addition to the risk-based capital requirements, because GAAP assets are used in the denominator of leverage ratio. Bens and Monahan (2006) examine how sponsors of ABCP conduits responded to this accounting change. They find that the volume of ABCP began to decline upon the introduction of FIN 46 and that this decline is primarily attributable to a reduction in US banks' sponsorship of ABCP. Also, they find that US banks entered into costly restructuring arrangements to avoid having to consolidate their conduits per FIN 46. They conclude that in certain settings, accounting standards appear to have real effects on investment activity.

3.2.2. Rate regulation

For rate regulated utilities, accounting changes can create a perverse incentive. D'Souza (1998) explains that for rate-regulated firms expense-increasing accounting standards have a positive effect on their cash flows because the rate recovery mechanism is based on accounting numbers. Managers of rate-regulated firms therefore have incentives to respond to expense-increasing accounting standards in ways that enhance the financial statement impact of the accounting change. She investigates the reporting and contracting responses of electric utilities to SFAS No. 106, which requires that other post-retirement benefits be accounted for on an accrual rather than cash basis. D'Souza (1998) documents that those managers of rate-regulated firms, which face greater uncertainties about future rate recoveries, have lower incentives to reduce employee benefits when adopting SFAS No. 106.

3.3. Market response

While the idea that changes in economic behaviour might result from accounting changes that affect covenant or bonus calculations seems to be widely accepted, there is considerable disagreement about whether managers might change their

economic behaviour to avoid a negative market response to an accounting change. Those who argue that the market can see through the effects of accounting changes argue that managers would not alter their economic behaviour for this reason. In contrast, survey results by Graham et al. (2006) suggest that managers are willing to sacrifice economic value to meet the markets expectations. In particular, they find that more than half of the survey participants state that they would delay starting a new project to avoid missing an earnings target.

Beatty (2006) examines banks' response to recent changes in accounting for Trust Preferred Securities that affect how these securities are reported in the balance sheet but do not change the calculation of regulatory capital. To examine whether the potential market response to this accounting change affected economic behaviour, the paper examines whether publicly traded banks and those with more uninsured liabilities were more likely to issue these securities before the accounting change, but not after. The results suggest that accounting changes can lead to changes in banks' economic behaviour even when the change in accounting does not affect regulatory capital calculations. This is consistent with bank managers acting as if they are concerned with the markets' response to the numbers reported after the accounting change.

3.4. Summary of incentives

The evidence suggests that while contracting incentives for behavioural changes may exist, they are not ubiquitous. Identifying when they exist is not trivial. Regulators determine whether regulatory incentives exist on a case specific basis. Behavioural changes occur when a regulatory incentives exists. Evidence on the importance of a market incentive is limited.

4. Suggestions for future research and conclusions

The issue of whether accounting standard setters should consider resulting changes in economic behaviour when writing accounting standards is controversial. For some, changes in management behaviour seem like an obvious consequence of accounting change, while for others the claims of behavioural changes are difficult, if not impossible, to prove. Additional research documenting the existence of behavioural change in response to accounting changes would strengthen the existing findings of the academic research that suggests that important accounting changes do result in changes in firms' operating and financing behaviour. There is even less consensus about the reasons for these changes. Changes in economic behaviour appear to be related consistently to the regulatory use of accounting numbers. The evidence on the importance of debt covenants in inducing accounting changes is less convincing given that the proxies typically used to measure covenant slack have been shown to be poor. Research examining the contracting incentive using actual contract terms would be more convincing. Some evidence has also been found relating to incentives created by management compensation and by market discipline, although these two incentives have not been examined to any great extent. Additional research exploring a market incentive for changes in management behaviour seems warranted. A better understanding of why managers change their behaviour might help determine whether changes in behaviour are a good or a bad thing, at least from the perspective of the effected firm. This research is unlikely to be able to address broader social welfare concerns.

Regardless of this controversy over the effects of accounting changes on altering management behaviour, it seems relevant that standard setters should be interested in how economic behaviour changes as a result of their standards.

References

Altamuro, J. (2006). 'The economic, financial accounting and governance determinants of synthetic lease financing'. Working paper, Ohio State University.

Beattie, V., Edwards, K.and Goodacre, A. (1998). 'The impact of constructive operating lease capitalisation on key accounting ratios'. *Accounting and Business Research*, 28:233–254.

Beatty, A. (1995). 'Fair value accounting: how fair is it?' St. Louis Federal Review.

Beatty, A. (2006). 'Do accounting changes affect the economic behavior of financial firms?' BIS Working paper No. 211. http://ssrn.com/abstract=947687.

Beatty, A., Ramesh, K. and Weber, J. (2002). 'The importance of accounting changes in debt contracts: the cost of flexibility in covenant calculations'. *Journal of Accounting and Economics*, 33(2):173–204.

Begley, J. and Freedman, R. (2004). 'The changing role of accounting numbers in public lending agreements'. *Accounting Horizons*, 18:81–96.

Bens, D. and Monahan, S. (2006). 'Altering investment decision to manage financial reporting outcomes: asset-backed commercial paper conduits and FIN 46'. Working paper, University of Chicago.

Beresford, D. (1998). 'Will the derivatives project go the way of stock options?' *The CPA Journal*, Jan: http://www.nysscpa.org/cpajournal/2000/0300/f14300a.htm.

Board of Governors of the Federal Reserve System. (2005). *Risk-Based Capital Standards: Trust Preferred Securities and the Definition of Capital, Final Rule*. Federal Register, March 70 (46), Rules and Regulations: 11,827–11,838.

D'Souza, J.M. (1998). Rate-regulated enterprises and mandated accounting changes: the case of electric utilities and post-retirement benefits other than pensions (SFASNo.106). *The Accounting Review*, 73:387–410.

Dichev, I.D. and Skinner, D.J. (2002). 'Large-sample evidence on the debt covenant hypothesis'. *Journal of*

Accounting Research, 40(4): 1091–1123.
Dukes, R., Dyckman, T. and Elliott, J. (1980). 'Accounting for research and development costs: the impact on research and development expenditures'. *Supplement to the Journal of Accounting Research*, 18:1–26.
Elliott, J., Richardson, G., Dyckman T., and Dukes, R. (1984). 'The impact of SFAS No. 2 on firm expenditures in research and development: replications and extensions'. *Journal of Accounting Research*, 22: 85–102.
FASB (1974). Statement No. 2 *Accounting for Research and Development Costs*. Financial Accounting Standards Board. http://www.fasb.org/pdf/fas2.pdf
FASB (1990). Statement No. 106 *Employers' Accounting for Postretirement Benefits Other Than Pensions*. Financial Accounting Standards Board. http://www.fasb.org/pdf/fas106.pdf
FASB. (2003). Interpretation 46 *Consolidation of Variable Interest Entities – an interpretation of ARB No. 51*. Financial Accounting Standards Board. http://www.fasb.org/pdf/fin%2046.pdf
FASB. (2006). *Preliminary Views Conceptual Framework For Financial Reporting: Objective Of Financial Reporting And Qualitative Characteristics Of Decision-Useful Financial Reporting Information*. Financial Accounting Standards Board. http://www.fasb.org/draft/pv_conceptual_framework.pdf
Forbes. (1977). 'Why everyone is jumping on the accountants these days'. Forbes Inc., http://www.forbes.com/forbes/1997/0313/037print.html
Goodacre, A., Beattie, V. and Thomson, S. (2006). 'Lease accounting reform and economic consequences: the views of preparers and users'. *International Journal of Accounting*, 41:75–103.
Graham, J., Harvey, C. and Rajgopal, S. (2006). 'The economic implications of corporate reporting'. *Journal of Accounting and Economics*, 40: 3–73.
Horowitz, B., and Kolodny, R. (1980). 'The economic effects of involuntary uniformity in the financial reporting of research and development expenditures'. *Journal of Accounting Research*, 18:38–74.
Imhoff, E., and Thomas, J. (1988). 'Economic consequences of accounting standards: the lease disclosure rule change'. *Journal of Accounting and Economics*, 10(4):277–310.
Leftwich, R. (1983). 'Accounting information in private markets: evidence from private lending agreements'. *Accounting Review*. 58(1):23–42.
Leisenring, J. (1990). 'The meaning of neutral financial reporting'. Viewpoint http://enzi.sen.gov/liesen.htm
Marquardt. C. and Wiedman, C. (2007). 'Economic consequences of regulation of financial reporting : the case of contingent convertible securities'. *The Review of Accounting Studies*. Forthcoming.
Mittelstaedt, F., Nichols, W. and Regier, P. (1995).' SFAS No. 106 and benefit reductions in employer-sponsored retiree health care plans'. *Accounting Review*, 70(4):535–556.
Mohrman, M.B. (1996). 'The use of fixed GAAP provisions in debt contracts'. *Accounting Horizons*, 10:78–91.
Reuters. (1990). 'Fed criticizes SEC push on bank accounting methods'. *Reuters News*, 8 November 1990.
Shehata, M. (1991). 'Self-selection bias and the economic consequences of accounting regulation: an application of two-stage switching regression to SFAS No. 2'. *The Accounting Review*, 66:768–87
Singh, L. (2001). 'Profiting from health-care cuts?' CFO: *Magazine for Senior Financial Executives*.
S&P. (2001). Standard and Poor's corporate ratings criteria. Standard and Poor's, a division of the McGraw-Hill companies.
US House of Representatives. (2004). Subcommittee on capital markets, insurance andgovernment sponsored enterprises, committee on financial services, 2004. The FASB stock options proposal: its effect on the US economy and jobs.
Watts, R.L. and Zimmerman, J.L. (1986). *Positive Accounting Theory*. Englewood Cliffs: Prentice Hall.
Zhang, H. (2006). 'Effect of derivative accounting rules on corporate risk-management behaviour'. Working paper, Ohio State University.