THE IMPACT OF SFAS 131 ON FINANCIAL ANALYSTS’ INFORMATION ENVIRONMENT

A Thesis in
Business Administration
by
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ABSTRACT

The Financial Accounting Standards Board issued SFAS 131, Disclosures about Segments of an Enterprise and Related Information, to replace the previous standard governing segment information, SFAS 14. Financial Analysts lobbied for changes in segment disclosure requirements and had specifically demanded the “management approach” adopted in SFAS 131. I examine the effect of SFAS 131 on the information environment of financial analysts by assessing its effect on the average individual forecast accuracy of financial analysts as well as its effect on the precision of information common to all analysts and the information idiosyncratically acquired by individual analysts. Further, this approach also enables me to examine the relationship between the change in precision of common information and idiosyncratic information, which has been the subject of theoretical research. My design uses each firm as a control for itself to control for firm-specific unobservable factors in addition to using a sample of control firms to control for economy-wide factors. The results show that ceteris paribus, the change in average individual forecast accuracy is higher for firms that have to change their reported segments to comply with SFAS 131 relative to firms that do not have to do so. Further the change in precision of idiosyncratic information is strongly related to the change in precision of common information. This is consistent with a complementary relationship between common and idiosyncratic information. After controlling for this relationship, the change in precision of idiosyncratic information is only weakly related to whether or not a firm has to change its reported segments to comply with SFAS 131.
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1. Introduction

The Financial Accounting Standards Board (FASB) issued SFAS 131, *Disclosures about Segments of an Enterprise and Related Information*, effective for all fiscal years commencing after December 15th 1997 to modify the segment reporting requirements of SFAS 14, *Financial Reporting for Segments of a Business Enterprise*. One of the major changes from SFAS 14 was in adopting the “management approach” in determining reportable segments. The “management approach” involves determining operating segments of a company based on how it is organized and managed internally. This change was consistent with the long-standing demand of financial analysts articulated in the Association of Investment Management and Research (AIMR) position paper.\(^1\) In this thesis, I examine the effect of the implementation of SFAS 131 on the information environment of financial analysts by assessing: 1) the effect of SFAS 131 on the average individual forecast accuracy of financial analysts, and 2) the effect of SFAS 131 on the information common to all analysts and the information idiosyncratically inferred by individual analysts. Finally, this analysis also sheds light on the relationship between the precisions of common and idiosyncratic information, which has been the subject of previous theoretical research.

Prior studies have examined the effect of changes in disclosure requirements by examining their effect on forecast accuracy and dispersion.\(^2\) They have interpreted a decrease in dispersion as evidence that public information is more informative. This characterization, however, does not take into account the effect of change in public

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\(^1\) The FASB relied on the AIMR (1993) position paper as part of their justification for the “management approach” in their basis for conclusions.

\(^2\) For example, see Chen et al. 1990; Swaminathan 1991; Ayres and Rodgers 1994; Piotroski 1999; Barron, Kile, and O’Keefe 1999; Healy, Hutton, and Palepu 1999; Lang and Lundholm 1996.
information on private information acquisition. Theoretical research predicts a relationship between the precision of public information and private information acquisition. While some models (such as McNichols and Trueman 1994) predict greater acquisition of private information when precision of public information increases, others (such as Lundholm 1991) predict the opposite. However, it is clear that any change in the precision of public information affects private information acquisition. If this is considered, I show later in the paper that it is not possible to unambiguously characterize changes in the precision of common information and idiosyncratic information based on measures such as dispersion, squared error in the mean forecast or average squared error in individual forecasts. Therefore, I use measures of precision of common and idiosyncratic information to determine the source of the change in average individual forecast accuracy.

I focus my analysis on financial analysts for several reasons. First, they believe that segment information is an important part of their information set and have been very active in demanding better segment information. Analysts suggested that a business should report disaggregated data “in a format that coincides with and reflects how it is organized and managed” (AIMR 1993). Analysts felt that “If we could obtain reports showing the details of how an individual business firm is organized and managed, we would assume more responsibility for making meaningful comparisons of those data to the unlike data of other firms that conduct their business differently” (AIMR 1993). SFAS 131 addresses this issue directly by changing the method by which reportable

3 See discussion in the literature review section for details
4 The importance of segment-reports to analysts is evident from the AIMR (The Association for Investment Management and Research) conclusion that these reports are “vital, essential, fundamental, indispensable and integral to the investment analysis process” and that “without disaggregation, there is no sensible way to predict the overall amounts, timing, or risks of a complete enterprise’s future cash flows.” (AIMR 1993).
segments are determined to reflect the internal organization of the firm. This provides a natural motivation to examine whether their information improved, as they seemed to have expected it would. It is not obvious that the implementation of SFAS 131 will improve segment information. James Leisenring, a FASB member at the time, dissented from the issuance of the standard because, as written, it may not improve the quality of segment information. Second, financial analysts play an important role as information intermediaries. As Schipper (1991) also points out, financial analysts are a group of “sophisticated” users of financial statements “to whom financial reporting is and should be addressed.”

I use the following framework in my analysis. Financial analysts have, primarily, two sources of information: an information signal common to all analysts and a signal observed separately by each analyst. The primary proxy for the overall information is the average individual forecast accuracy of all analysts following a firm. However, a change in this measure could be achieved by several combinations of changes in common and idiosyncratic information, each of which have different policy implications. In this study, I use analyst forecasts of upcoming annual earnings to infer the overall precision

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5 See also Hermann and Thomas (2000) for evidence that the Geographical segment information provided may actually be worse than that provided under SFAS 14 since most firms now seem to disclose only revenues (as opposed to revenues and earnings before) for each geographical segment. Also see Albrecht (1998) for a discussion about some issues that arise due to adopting the ‘management approach’.

6 The information used by financial analysts to make forecasts can be broadly classified into two categories. Some information, such as the financial statements of a firm, press releases by a firm, etc. are common across all analysts. Others such as information acquired by individual analysts through their own research on the firm, unique information processing models, etc. are idiosyncratic to individual analysts. The forecasts (or forecast revisions) of individual analysts reflect both their common and their idiosyncratic information. This characterization is broadly consistent with prior work by Abarbanell et al. (1995), Barron et al. (1998), Holthausen and Verrecchia (1990), and Barry and Jennings (1992), though these models differ in the manner in which they specify the forecasts.

7 See Barron et al. (1998) and further discussion later in this thesis.

8 For instance, an increase in precision of common information accompanied by a smaller decrease in private information is more consistent with a level playing field idea than the same improvement achieved by an increase in precision of private information and a smaller decrease in precision of common information.
of the information used by analysts as well as the precision of the common information signal and the average precision of the idiosyncratic information signals. Admittedly, using only forecasts of upcoming annual earnings to proxy for the information environment of financial analysts ignores other important activities such as making stock recommendations, providing longer-term earnings and growth forecasts etc. Availability of data for a sufficient number of firms is a constraint to using those alternative measures in the current analysis.

My design controls for firm-specific factors as well as economy-wide factors. The results show that, ceteris paribus, information concerning firms that change their reported segments pursuant to adoption of SFAS 131 shows increased overall precision (average individual forecast accuracy) and common precision. Further, changes in idiosyncratic precision are positively related to changes in common precision. This is consistent with analysts choosing to acquire more precise private information when the common information is more precise. The effect of SFAS 131 on idiosyncratic precision is mainly through its effect on common precision. This effect is consistent with the information based on SFAS 131 enabling analysts to use complementary information (information similar to the ‘o variable information’ in Kim and Verrecchia (1994)) they possess more effectively. The direct effect of SFAS 131 on idiosyncratic information (after controlling for the indirect effect referred to above) is relatively weak and negative.

The rest of this thesis is organized as follows. In the following chapter, I outline the various changes in segment disclosure arising out of the implementation of SFAS 131 and discuss extant literature in this area. Chapter 3 discusses the prior literature. Chapter 4 discusses the framework adopted and describes the measures of the information
variables. In Chapter 5, I develop my study design. Chapter 6 discusses the sample selection criteria, descriptive statistics and univariate tests. Chapter 7 contains the multivariate tests. Chapter 8 discusses sensitivity analyses. Chapter 9 contains suggestions for future work and concludes.
2. SFAS 131

SFAS 131 was issued by the FASB in June 1997 and is effective for fiscal years commencing after December 15, 1997. Early adoption was encouraged. SFAS 131 replaced SFAS 14, which was the standard previously governing segment disclosure.

There are at least four important distinctions between SFAS 14 and SFAS 131. Perhaps the most important difference between the two standards is the definition of a segment. Under SFAS 14, segments were defined by industry grouping of products and services sold to external customers. Under SFAS 131, segments are defined based on how management organizes segments within the enterprise for making decisions and assessing performance. The reporting is based on the internal units the chief operating decision-maker uses to make operating decisions to assess an enterprise’s performance. This is expected to enable users to look at the firm through the eyes of management. Thus, it is not surprising that Street et al. (2000) finds a greater degree of correspondence between segment information and other parts of the annual report (MD&A, President’s letter etc.) after the implementation of SFAS 131 than under SFAS 14, because the Management Discussion and Analysis (MD&A) section of the annual report is also intended to provide insights about the firm through the eyes of the management.

Second, SFAS 131 requires several specific disclosures that result in more detail than SFAS 14. For instance, certain types of expenditures are required to be disclosed for each reportable segment if they form a part of the computation of segment profit/loss. The profit and loss and total asset information reported should be those that are used by the chief operating decision-maker to allocate resources and evaluate performance.

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9 The quantitative thresholds are largely similar, though some differences exist.
SFAS 131 disclosures need not conform to GAAP if the information used is not based on GAAP. However, the reported profits must be reconciled to the overall consolidated figures for the enterprise. This standard does not define segment profit or loss and does not require that whatever measure of profit or loss is reported be consistent with the attribution of assets to reportable segments. This was the major reason why Mr. Leisenring dissented from the issuance of SFAS 131.

Third, SFAS 131 changes segment reporting for vertically integrated firms. SFAS 14 focused on the products and services sold to outsiders in its industry segment approach. Operating segments under SFAS 131 are major parts of an enterprise and include components that are vertically integrated and start-up operations that do not have revenues yet. Thus, this approach may render previously single-segment enterprises into multi-segment ones.

Fourth, the standard requires disclosure of several items for each reportable segment in the interim-period reports. These include revenues from external customers, inter-segment revenues, a measure of segment profit or loss and a reconciliation of segment profit or loss to the enterprise’s consolidated income, material changes in total assets, and changes in basis of segmentation. Enterprise-wide disclosures are, however, not required in interim period statements. Botosan & Harris (2000) report that 277 out of the 457 firms with three or more segments reported in 1995 Compustat Segment tape were already disclosing segment information in their interim-period statements.

The nature of the information in SFAS 131 is different from that under SFAS 14, but it is not clear that one is superior to the other. As pointed out by Albrecht (1998), there were certain advantages to disclosures under SFAS 14. The first is that the concept
of disaggregation based on products and services is widely understood by investors, analysts, and the public. Further, the availability of data along industry lines assembled by federal and state agencies enhances the cross-sectional comparability and relative evaluation by investors and analysts. Lastly, the reported figures were based on GAAP, which enabled cross-sectional comparison as well. The argument in favor of using the segmentation policy outlined in SFAS 131 is that it reflects managerial responsibilities and enables the user to look at the firm through the eyes of the management and will therefore supplement, support and help interpret information in the MD&A and other discussions elsewhere in the annual report. As pointed out earlier, analysts felt that they would be able to ameliorate the effect of the lack of comparability by using their expertise. The ability of analysts to do so and provide better earnings forecasts under SFAS 131 remains an empirical question.

For a large proportion of firms, this standard results in important changes in the nature of segment information provided by the firm (Ettredge et al. 2000; Hermann and Thomas 2000, Street et al. 2000). Ettredge et al. (2000) study a sample of 149 firms that provided comments to the SEC on the exposure draft to SFAS 131. They find that there was a significant increase in the average number of segments reported by these firms, and further that this increase was related to the size and complexity of the firm, the extent to which the firm ‘under-reported’ segments under SFAS 14. However, they could not document a significant relationship with competition proxies. Hermann and Thomas (2000) report that over two-thirds of their sample firms have re-defined their primary operating segments upon adopting SFAS 131. They also find that while the proportion of country-level geographic segment disclosures has increased, the number of firms
reporting earnings by geographic area has declined significantly. About half the firms in their sample reported higher numbers of segments under SFAS 131 than under SFAS 14, while only eight firms reported fewer segments. Street et al. (2000) find that the segment information is now more consistent with the information in the MD&A and other annual report disclosures. To summarize, the implementation of SFAS 131 resulted in a substantial proportion of firms changing their operating segments, reporting larger numbers of segments, and in segment reports being more consistent with the discussions in the MD&A and elsewhere in the annual report.
3. Literature Review

This paper is part of a broader literature that studies the relationship between disclosure and analyst forecasts. This literature has generally focused on forecast accuracy and dispersion as the two major attributes of analyst forecasts. Lang and Lundholm (1996) find that forecast error and dispersion vary inversely with the quality of a broad set of disclosures (including the investor relations activities) of the firm. Healy, Hutton, and Palepu (1999) document that increases in the Financial Analysts Federation (FAF) ratings of firms’ disclosures are associated with declines in forecast dispersion. Swaminathan (1991) finds that implementation of the SEC’s segment-reporting requirements was associated with a decrease in forecast dispersion. Further, the magnitude of the change in dispersion was related to the number of segments in the firm.

A stream of analytical literature focuses on the effects of changes in information signals on investor activities such as trading, acquisition of idiosyncratic information, and forecasting. This literature broadly shows that public and private information can be substitutes or complements or their relationship could depend on the precision of public information. Kim and Verrecchia (1991) develop a model where they show that as the precision of the public signal increases, the relatively better informed investors

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10 This literature includes Swaminathan 1991; Lang and Lundholm 1996; Healy, Hutton and Palepu 1999; Barron, Kile, and O'Keefe 1999; Piotroski 1999; among others.
11 Verrecchia (1982) has shown that if public and private information signals are conditionally independent, then they are substitutes. Bushman (1991), Alles and Lundholm (1990), Lundholm (1991), and Diamond (1985) also demonstrate conditions under which public and private information can be substitutes.
12 Lundholm (1988) argues that if the errors on the public and private signals are sufficiently correlated, the two may indeed be complements. McNichols and Trueman (1994) show that if the investors have a short investment horizon and if the private information is acquired in anticipation of a public announcement, the investor will acquire private information of higher precision when he anticipates a more precise public signal.
13 Lundholm (1991) models a setting where any increase in precision of ‘sufficiently precise’ public information may lead to some investors acquiring more private information. Indjejikian (1991) shows that an increase in precision of public information may lead to acquisition of more precise private information by investors if prices are not informative or when the public signal is not very precise.
tend to increase their idiosyncratic precision more than the relatively less informed investors. In this case, the increase in precision of the public information actually increases the gap between informed and uninformed investors’ information. Kim and Verrecchia (1994) model a setting where they assume that the private information is useful only in conjunction with the public information and find that when the precision of the public information increases, fewer investors choose to become privately informed. In summary, the analytical literature shows that private information acquisition can either increase or decrease in response to a change in the precision of public information. Importantly, the precision of private information acquired usually depends on the precision of the public signal. Therefore, in any tests of change in precision of public information, it is important to consider the effect of changes in private information acquisition activity. In this paper, I provide evidence consistent with the change in precision of idiosyncratic information being positively associated with a change in the precision of common information.

Swaminathan (1991) examines the impact of SEC-mandated segment data on price variability and divergence of beliefs. In examining the effect of the new segment data, he uses the coefficient of variation (square root of dispersion scaled by the absolute value of the mean forecast) of analysts’ forecasts as a proxy for divergence of beliefs. He shows that the SEC-mandated segment data resulted in a reduction in the coefficient of variation. In the following section, I show that it is not possible to distinguish between the four possible combinations of changes in common and idiosyncratic information using dispersion.
Barron, Kile, and O'Keefe (1999) use a cross-sectional test to study the relationship between the quality of public information (in their case MD&As rated by the SEC) and dispersion. They use the Barron et al. (1998) framework to develop comparative statics with respect to the precision of public information. They show that both dispersion and squared error in individual forecasts are negatively related to changes in public information. However, they do not allow for any changes in private information acquisition in their analysis. As prior analytical literature discussed above shows, changes in precision of common information could potentially affect private information acquisition. In the following chapter, I discuss additional issues that arise when changes in private information precision also occur and are explicitly considered.

Prather-Kinsey (2000) examines the effect of SFAS 14 and other finer geographic segment disclosures on financial analysts’ forecasting behavior. She finds that the number of geographic segments is negatively related to error in the median forecast and to forecast dispersion. She also finds that firms that disclose geographical segment data beyond that required under the SFAS 14 footnote have higher analyst following. This study was conducted under the SFAS 14 segment disclosure regime.

Botosan and Harris (2000) and Piotroski (1999) examine the effects of a voluntary expansion in segment disclosure. Botosan and Harris (2000) find that while firms facing decreases in measures of agreement across analysts are more likely to voluntarily provide quarterly segment disclosures, there is no evidence to support their hypothesis that consensus would increase once the disclosures were made. Piotroski (1999) studies the effect of voluntary increases in the number of segments reported on analyst forecast measures. He finds that the firms that voluntarily expand their segment disclosures
experience positive earnings forecast revisions.\textsuperscript{14} In this study, I consider the effects of a mandatory change in the segment disclosure requirements and document its effects on idiosyncratic and common information. Thus, in addition to examining the effect of a change in disclosure in a mandatory setting, I also extend these studies by considering the effect of the disclosure change on the idiosyncratic and common components of analysts’ information set.

In summary, prior research has found that changes in disclosure are associated with changes in analyst forecast properties. In particular, the introduction of mandatory segment reports resulted in decreases in forecast dispersion. Measures of disagreement were associated with decisions to voluntarily expand segment disclosure, but no conclusive evidence is available regarding the effect of such changes on measures of disagreement. The theoretical literature suggests a need for considering the effect of changes in common information on acquisition of idiosyncratic information, though the nature of the relationship is unclear. Thus, in this paper, I document the effect of the adoption of SFAS 131 on common and idiosyncratic information separately, in addition to considering the effect on the information set as a whole.

\textsuperscript{14} He does not directly examine the effect of the expansion of segment disclosure on forecast dispersion. However, he finds that the returns in the period surrounding the reporting change are negatively associated with change in forecast dispersion.
4. The Framework and Information Measures

a. Framework and Measures

To obtain measures of common and idiosyncratic information, I use the framework developed in Barron et al. (1998). This framework has also been used in Botosan and Harris (2000), Barron, Kile and O’Keefe (1999) and in Barron et al. (2001) and Byard (2001). In this framework, each analyst’s information consists of two signals. One is a signal common to all analysts, and the other is a signal that is idiosyncratically observed by each analyst. The precision of the common signal is denoted by $h$, and that of the idiosyncratic signal by $s$.\(^{15}\) They further assume that analysts’ forecasts are based only on their information signals and that errors are normally distributed.\(^{16}\) They proceed to develop expressions for the underlying information variables ($h$ and $s$), consensus (defined as the average covariance between any two analysts’ forecasts relative to total uncertainty), and measures of uncertainty based on error in the mean forecast, dispersion and the number of analysts forecasting earnings for the firm. The observable variables are defined as follows:

$$SE_{jt} = [\overline{F_{jt}} - A_{jt}]^2$$

is the expected squared error in the mean forecast,

and

$$D_{jt} = \frac{1}{N-1} \sum_{j=1}^{N} [\overline{F_{jt}} - F_{jt}]^2$$

is the expected forecast dispersion;

\(^{15}\)Barron et al. (1998) state that under the assumption of normally distributed and additive errors, if we consider two analysts with any finite number of differing signals (with one additive error term each), then it can be shown that each analyst’s belief can be represented by one common signal and one idiosyncratic signal as in their model. Barron et al. (2001) point out that this is a reasonable first approximation within each firm. The observed excess kurtosis in the cross-section seems to be due to mixing distributions with different scale parameters. See Barron et al. (2001) for more details.

\(^{16}\)As Barron et al. (2001) point out, even when one suspects a bias, one can still use the above equation by making adjustments for the bias (outlined in Barron et al. (2001)). The adjustment is to correct the observed forecast errors by subtracting the mean forecast error for all firms. I carry out this adjustment as a sensitivity check, with no effect on the results.
where \( \bar{F}_{jt} = \frac{1}{N} \sum_{i=1}^{N} F_{ijt} \) is the mean forecast,

\( A_{jt} \) is the actual earnings realization,

and N is the number of analysts.

In this framework, the total precision of information (denoted by \( k \)) is defined as the sum of the precisions of the common (\( h \)) and idiosyncratic information (\( s \)). Thus,

\[ k = h + s \]

It turns out that \( k \) can also be expressed as the reciprocal of the average individual forecast error. It is a measure of average individual forecast accuracy as is evident from the following expression:

\[
k = \frac{1}{\frac{1}{N} \sum_{i=1}^{N} (F_{ijt} - A_{jt})^2} \]

It can also be expressed as follows in terms of the dispersion and squared error in the mean forecast as follows:

\[
k = \frac{1}{[(1 - \frac{1}{N})D + SE]} \]

The measures of idiosyncratic and common information are most readily applicable when substantial differences in precision of idiosyncratic information (\( s_i \)) are not expected ex-ante\(^{17} \). If \( s_i = s \) for all analysts \( i \), then Barron et al (1998) provide measures of common (\( h \)) and idiosyncratic (\( s \)) precision. These precisions are computed by apportioning the total precision (\( k \)) to common (idiosyncratic) precision based on the

\(^{17}\) See Barron et al. (2001) for a detailed discussion about why this assumption is a reasonable first approximation. I also conducted some simulations where \( s \) was allowed to vary across different analysts. Preliminary results indicate that the measured \( s \) was highly correlated with the average of the different values of \( s \) used to generate forecasts. The measured \( h \) was also highly correlated with the \( h \) used to generate the forecasts. See appendix for details.
ratio of common (idiosyncratic) error to total error. Since there are only a finite number of analysts, all idiosyncratic error is not diversified away. This leaves a portion of undiversified idiosyncratic error in the squared error in the mean forecast. This is accounted for in the measurement.

\[
h = k^* \frac{SE - \frac{D}{N}}{(SE - \frac{D}{N}) + D} = \frac{SE - \frac{D}{N}}{[(1 - \frac{1}{N})D + SE]^2}, \text{ and}
\]

\[
s = k^* \frac{D}{(SE - \frac{D}{N}) + D} = \frac{D}{[(1 - \frac{1}{N})D + SE]^2}
\]

N, SE, and D are measured for each firm j at time t. The details of the measurements and calculations of all the variables are discussed in the following chapter.

b. Why study h and s?

It is important to understand that changes in the precision of common information and idiosyncratic information cannot be characterized by studying commonly used measures of analysts’ information such as squared error in the mean forecast, dispersion or average squared error in individual forecasts alone. The following table provides a brief overview of the relationship between each of these measures and the precision of common and idiosyncratic information.\(^{18}\) The relationships depicted in the table below between common precision (idiosyncratic precision) and each of the three forecast measures assumes that idiosyncratic precision (common precision) is held constant.

\(^{18}\) The table is based on partial derivatives calculated using equations 17, 19 and 20 in Barron et al. (1998). See also discussion in Barron, Kile, and O’Keefe (1999) about the relative magnitudes of these partial derivatives with respect to common precision. Their analysis is restricted to changes in common precision. Detailed calculations of these partial derivatives and determination of their signs are available from the author on request.
<table>
<thead>
<tr>
<th>Forecast Measure</th>
<th>Common precision (h)</th>
<th>Idiosyncratic Precision (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersion</td>
<td>Negative</td>
<td>Positive if h &gt; s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative if h &lt; s</td>
</tr>
<tr>
<td>SE</td>
<td>Positive if (1-1/N)s &gt; h</td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td>Negative if (1-1/N)s &lt; h</td>
<td></td>
</tr>
<tr>
<td>Average Squared</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Individual Forecast Error</td>
<td>Negative</td>
<td>Negative</td>
</tr>
</tbody>
</table>

A decrease in dispersion (squared error in the mean forecast) is generally interpreted as evidence that there is a decrease (increase) in the idiosyncratic (common) precision. However, the above table suggests that it is not possible to infer any particular combination of changes in common and idiosyncratic information\(^\text{19}\) by observing changes in any of the above variables alone. It is interesting to note that when the precision of common information is lower (higher) than that of idiosyncratic information, dispersion (squared error in the mean forecast) is negatively related to both common and idiosyncratic precision. Since, as discussed before, it is reasonable to expect that changes in common precision have an impact on idiosyncratic precision, it becomes impossible to infer the changes in precision from changes in dispersion or squared error in the mean forecast. Direct measures of h and s help us characterize the nature of these changes in a more explicit manner.

\(^{19}\) There are four possible combinations of changes in precision of common and idiosyncratic information: Both increase, both decrease, common precision increases while idiosyncratic precision decreases and vice versa.
An increase in $h$ along with a decrease in $s$ is more consistent with a case of leveling the playing field than any of the other cases. An increase in $s$ along with a decrease in $h$ is inconsistent with the ‘level playing field’ idea. Thus distinguishing between these cases may provide some valuable insights.
5. Research Design

In this thesis, I am trying to determine the change in the overall information set that resulted from SFAS 131 implementation. I also examine the components of the overall information set by studying the impact of SFAS 131 implementation on the common information component, h, and the idiosyncratic information component, s. Barron et al. (2001) show that precision of total information \((k = h + s)\) increases over the year. Further, these changes are concentrated around earnings announcements. Their analysis is based on data averaged across several firms over a number of years. The question being addressed in this thesis is whether there are changes in precisions of total information, common information and idiosyncratic information, due to implementation of SFAS 131. I propose a design to measure the difference in precision of common and idiosyncratic information between the post-disclosure and pre-disclosure period.

The pre-disclosure period is the 30-day window following the earnings announcement date for the first quarter after the last annual announcement under SFAS 14. A few firms adopted SFAS 131 early and are excluded from this analysis. Only calendar-year firms are included in this analysis. Thus, the pre-disclosure period will be the 30-day period immediately after the earnings announcement date for the first quarter of 1998. The post-disclosure period is the 30-day window following the earnings announcement date for the first quarter that immediately follows the first full year of SFAS 131 implementation. For the calendar-year firms used in the analysis, this would be the first quarter of 1999.

Since SFAS 131 is implemented by all firms at approximately the same time, one concern would be that the measured changes could be due to economy-wide changes in
information environment over time. To address this issue, I use firms that did not undergo a change in the segments they report due to the implementation of SFAS 131 to control for economy-wide changes that could potentially affect the information environment of financial statement users. Thus, this design incorporates two types of controls. First, the changes design incorporates a firm-specific control by effectively using each firm as its own control. Second, firms that did not change their reported segments are used to control for economy-wide changes.

Changes in the precision of common and idiosyncratic information are negatively skewed and leptokurtic. Therefore, the use of parametric tests alone may be inappropriate. Consequently, in addition to testing for differences in the mean between the two samples, I use non-parametric tests such as the medians test and the Wilcoxon rank-sum test, to test for differences between the control sample and the test sample for each of the information variables as a univariate test. The negative skewness is an indication of lack of symmetry, which violates one of the major assumptions of the non-parametric tests. However, the univariate tests are only descriptive in nature and the inferences are based on the multivariate tests outlined later in this section.

In this thesis, I examine changes in information variables from the pre-disclosure period. Thus, essentially each firm serves as a control for itself. Prior research has considered size as a proxy for the information environment of the firm. Since I am examining the effect of a disclosure on the information environment of the firm, I have to control for the effects of size. Given the changes design, if a firm’s size does not change over this period, size itself may not explain the change in information variables. However, if a firm were to grow or shrink, then this could cause a change in the
information gathering activity for the firm under question. Therefore, I include growth rate to control for the effects of size. Though there is no direct theoretical reason to include size itself in this specification, Byard (2001) shows that size is related to changes in information variables around earnings announcements. Therefore, I include a measure of size as a control variable as well.

Lys & Soo (1995) show that analyst following is positively related to accuracy of the mean forecast. They interpret this as analysts responding to increased competition by increasing the accuracy of their forecasts. Thus, any change in an information variable could potentially be due to a response to changes in following. I therefore include $\Delta$Foll (Change in following) as an additional control variable.

Increases in trading volume could provide analysts with more incentives to gather information. Thus, it is essential to control for changes in trading volume. Further, firms involved in a merger or acquisition may also have to change their segment information as a result. Consequently, I include Acquire, a dichotomous variable to control for the effects of mergers/acquisitions. Similarly, I also include Dispose, a dichotomous variable to control for the effects of disposals or discontinued operations, which may no longer be reported as separate segments.

I include $\Delta$NSEG, a variable to measure the change in number of segments reported by the firm. However, the role of this variable is not clear. Clearly, one of the effects of SFAS 131 is a change in the number of segments. However, this variable has also been used in prior research to proxy for the complexity of the firm. Further, given that the principal change in SFAS 131 is the basis for determining reportable segments, it is not clear that measuring changes in number of segments is appropriate. Its inclusion is
primarily as a control variable. As a sensitivity check, the analysis is repeated without including this variable as well.

\[ \Delta K = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{NSEG} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \beta_7 \Delta \text{Vol} + \beta_8 \Delta \text{Foll} + \omega \]

The coefficient on Disc will be used to infer the effect of the implementation on SFAS 131 on average individual forecast accuracy or total information after controlling for the effect of change in the number of segments.\(^{20}\) This effectively summarizes the effect of SFAS 131 on both the common and idiosyncratic information components. I then proceed to examine the effect of SFAS 131 on the common and total information components separately.

The change in disclosure regime could have a direct effect on both the common and idiosyncratic information of financial analysts. In addition to these direct effects, analytical research discussed before in chapter 3 suggests that the change in the precision of common information could have an impact on acquisition of idiosyncratic information. The analytical models, in general, are derived based on the players observing the public signal and then deciding to acquire private signals. Thus, none of those models predict any relationship where changes in precision of idiosyncratic information cause changes in precision of common information. Further, since the change in common information considered in this thesis is essentially because of a change in disclosure regime, there is no reason to expect that the change in common information is endogenously determined. Therefore, I restrict my focus to the effect of changes in precision of common information on precision of idiosyncratic information. Accordingly, I include change in

\(^{20}\) See discussion later in this chapter for the interpretation of the coefficient on \(\Delta \text{NSEG}\).
common precision as an additional regressor in the equation for change in idiosyncratic information. I estimate the following equations:

\[
\Delta h = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{NSEG} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \\
\beta_7 \Delta \text{Foll} + \beta_8 \Delta \text{Vol} + \varepsilon
\]

\[
\Delta s = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{Nseg} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \beta_7 \Delta \text{Foll} + \\
\beta_8 \Delta \text{Vol} + \beta_9 \Delta h + \delta
\]

where

\(\Delta h\) is the change in the common information (h) (h is calculated as defined in the previous section), measured immediately after the earnings announcement, between the pre-disclosure (1998 I qtr) and post-disclosure (1999 I qtr) periods.

\(\Delta s\) is the change in idiosyncratic information (s) (s is calculated as defined in the previous section), measured immediately after the earnings announcement, between the pre-disclosure and post-disclosure periods.

Disc Dummy = 1 for firms that have to change their reported segments to comply with SFAS 131 and 0 otherwise.

Size The natural logarithm of market value of equity at the beginning of the post-disclosure fiscal period
Growth Change in Size between the pre-disclosure period and the post-disclosure period

Acquire Dummy =1 if the firm was involved in an acquisition during Calendar-year 1998 and 0 otherwise.

Dispose Dummy=1 if the firm disposed off or reported discontinued operations during calendar year 1998 and 0 otherwise.

ΔVol Change in trading volume (as a percentage of outstanding shares) between the pre-disclosure period and post-disclosure period.

ΔNSEG Change in number of segments between pre- and post-disclosure period scaled by the number of segments in the pre-disclosure period.

ΔFoll Change in number of analysts who made earnings forecasts for the firm between the pre-disclosure and post-disclosure periods scaled by the number of analysts in the pre-disclosure period.

The number of forecasts, N, the squared error in the mean forecast, SE, and dispersion, D are measured for each firm j at time t. SE and D are calculated using the most recent forecast for each analyst in the relevant window using the formulae outlined in the previous section. SE and D are then scaled by the absolute value of actual earnings before they are used to compute h, s, and k. Forecasts are measured for each analyst i separately. Calculations are based on forecasts made in the 30 days following the first quarter earnings announcement of the immediately following year (1998 first quarter for the pre-disclosure period and 1999 first quarter for the post-disclosure period) separately for the post-disclosure and the pre-disclosure periods. The 30-day forecast window
immediately after the earnings announcement date tends to ensure that the forecast revisions made during this period capture the information effects of the announcement (Stickel (1989)). I use the first quarter of the following year rather than the annual earnings announcement to ensure that the analysts have the information about segment disclosures filed with the 10-K. If firms voluntarily implement the quarterly disclosure requirements in the first year (even though they are not required to do so), this procedure biases against finding results since the control period is also contaminated with the effects of SFAS 131. This approach is also broadly consistent with Bamber et al. (1999) and Barron et al. (2001).

The significance of the coefficient on Disc would be used to draw inferences about the effect of implementation of SFAS 131 after controlling for any effects due to change in number of segments. In the case of idiosyncratic information, the coefficient on Disc measures the effect of the change in disclosure rule, after accounting for any effect on idiosyncratic information due to a change in the common information. Thus, this design will help separate out the change in idiosyncratic information into two parts—one due to the change in common information and the other independent of the change in common information.21

The change in following (ΔFoll) may itself be the result of the change in the information environment. However, if the time-period across which the changes are being measured is reasonably short, then since the effects of a change in disclosure requirements are widely applicable, it may not be possible for them to immediately

21 An alternative approach would be to use the error form the ΔPUB equation in the ΔPRI equation instead of ΔPUB itself. In this case, the coefficient on DISC would measure the overall (both direct and indirect) impact of SFAS 131 on precision of idiosyncratic information. Using this approach does not change inferences.
realign their coverage. Thus, it is not clear that the potential endogeneity of analyst following is an issue in this case.

The effect of the change in the method of determining reported segments to the “management approach” can be inferred by studying the coefficient on Disc. The interpretation of the $\Delta$NSEG coefficient, however, is not as obvious. It is not clear than increases in number of segments lead to more information. For instance, a firm with three segments A, B, and C under SFAS 14 could report four segments W, X, Y, and Z under SFAS 131. Now when I measure the change in number of segments as one, this is based on a comparison that is not entirely valid. The change in number of segments could be due to a variety of reasons. It could be the result of the firm entering into new lines of business or closing existing lines of business. It could be the result of mergers or acquisitions. It could be the result of growth in a line of business causing this line of business to meet the quantitative thresholds for reporting a separate segment. Thus, the coefficient on $\Delta$NSEG reflects the effect of all of the above plus changes in number of segments because of the segmentation method in SFAS 131. This variable serves as a control for the effect of the above activities on the information environment. To the extent that I have specific controls for merger and acquisition activity, the coefficient on $\Delta$NSEG should reflect the incremental effect of increase in segments. If this were a clean measure of the change in number of segments due to the implementation of SFAS 131, the coefficient on $\Delta$NSEG would capture the effect of reporting more segments on the information variables after controlling for the effects of changing from the line-of-business approach to the management approach.
The multivariate tests specified above are not without problems. First, the functional form of the relationship between the information variables, size and number of analysts is not clear. In fact, linearity may be a strong assumption. Second, the non-normality of the information variables discussed earlier may result in violation of the assumptions of the classical linear regression model. Thus, it is necessary to specifically examine the residuals of any linear regression model to test whether the distribution of residuals is consistent with the assumptions of the model. The tests for normality do not reject normality of the residuals at the 5% level. However, in some specifications they marginally reject normality at the 10% level or worse. To address some of the other issues, I repeat the regressions using ranks as a sensitivity check.
6. Sample Selection and Descriptive Statistics

I use all calendar-year firms that are included in the Compustat Segment Data Base. This results in an initial sample of 4,346 firms. Initially, I exclude firms for which forecasts by at least two different analysts are not available on the I/B/E/S database in either the pre-announcement or post-announcement period in either the pre-disclosure or post-disclosure year and firms that adopted SFAS 131 early. Since using only very few forecasts to calculate the Barron et al. (1998) information variables could result in unstable estimates, I require at least five forecasts to be available in both the pre-disclosure and post-disclosure periods for inclusion of a firm in the sample. This limits the sample size to 588 firms. Missing data for some variables and 10-K/Annual Reports not being available (2 firms) reduces the final sample to 566 firms.

<Insert Table 1 here>

The earnings forecasts for the upcoming annual earnings are obtained from the I/B/E/S detail tapes. All forecasts made within 30 days after the announcement of the first quarter earnings\(^{22}\) in 1999 or 1998 as the case may be, are used in computing the Barron et al. (1998) information metrics and analyst following. I use I/B/E/S information to compute analyst following, the Barron et al. (1998) information metrics, the earnings announcement data, and actual earnings. I initially use Compustat to determine the number of segments (NSEG), change in number of segments, size, growth, and trading volume variables. However, for all the firms in the final sample, I read their 10-K filings or their Annual Report form Disclosure Global Access, FIS online or EDGAR. From

\(^{22}\) I use the earnings announcement date from compustat. Where earnings announcement dates are not available on compustat, I use the date from I/B/E/S. A comparison of earnings announcement dates for firms for which it is available on both databases reveals that they correspond exactly.
this, I determined the number of segments, whether the firm was involved in a material acquisition or disposal of any part of its business, whether the firm made disclosures about geographic information (revenues, assets, and earnings), and where the information in the segment tapes and that in the footnotes did not correspond, I investigated to make sure that the information in my dataset was accurate.\textsuperscript{23} For each firm included in the sample, I require non-missing data for two years, the last year under SFAS 14 and the first year under SFAS 131.

Table 2 lists the descriptive statistics for the post-SFAS 131 period for all the variables of interest. I use a two-sample t-test to test for the difference in means. However, keeping in view the nature of the underlying variables, I also use the non-parametric median and Wilcoxon rank sum tests.

<Insert table 2 here>

The test firms (Disc=1; firms that changed the segments they disclose pursuant to adoption of SFAS 131) are larger than the control firms (Disc=0) and grow more slowly than the control firms. The test firms have a larger number of segments than the control firms. They also experience larger changes in the number of segments they disclose than the control firms do. Test firms not only have lower trading volumes in the post-disclosure period but had also experienced smaller increases in trading volumes than control firms.\textsuperscript{24} Tests firms are more likely to be involved in both acquisitions and disposals than control firms.

\textsuperscript{23} On some occasions, firms included segment information in other parts of the annual report such as the MD&A, Letter to the shareholders etc. I make sure that the disclosure about segments is properly incorporated by reading these sections in addition

\textsuperscript{24} This is only significant for the difference in means but not for the difference in medians.
In terms of geographic disclosures, test firms disclosed geographic earnings, revenues, and assets more often than control firms did. But the point of interest is that roughly 32% of the test firms had disclosed geographic earnings in the previous year but dropped them upon implementation of SFAS 131. In conducting this analysis, I do not have any way of determining whether firms have geographic operations except through their geographic segment disclosures. Since test firms are larger, it is also possible that they are more likely to have operations in other countries than control firms are.

In terms of the variables of interest, test firms experience smaller (larger) increases (decreases) in idiosyncratic information than control firms at the median. The difference between the two sets of firms in terms of $\Delta h$ is insignificant. The median $\Delta k$ (change in average individual forecast accuracy or precision of total information) is lower for the test firms even though the difference in the means is insignificant. However, there are several variables that are significantly different between the test and control firms. This emphasizes the need for a multivariate analysis.

To gain an understanding of the differences, if any, between the two sets of firms prior to the implementation of SFAS 131, I also perform univariate analysis in the pre-disclosure period.

<Insert Table 3 here>

Here again, test firms are larger than control firms and have a larger number of segments though the difference in this case is not as pronounced as after SFAS 131 either in the mean or in the median. Test firms were also more likely to disclose geographical earnings, revenues and assets than control firms. None of the information variables were significant in the univariate tests.
A correlation table is provided in table 4. There is a significant positive correlation of about 0.51 between the change in precision of common information and the change in precision of idiosyncratic information. This seems to be consistent with McNichols and Trueman (1994) where more precise private information is acquired when the precision of public information is expected to increase. As already discussed, segment disclosures under SFAS 131 are more in line with how the management describes the firm in other parts of the annual report. This correlation is also consistent with analysts being able to use other complimentary information or individual interpretation better in the new disclosure regime.

<Insert table 4 here>

Another extremely significant and large correlation is between the change in number of segments and the disclosure dummy. This is because there are very few control firms that have an increase in number of segments disclosed. Some control firms have changes in number of segments. This is because some firms explicitly identify the change in number of segments as being due to an acquisition or discontinuation of a line of business, and explicitly state that there was no change in number of segments as a result of adopting SFAS 131. These firms are coded as control firms (Disc=0).

The disclosure dummy is negatively correlated with $\Delta k$ (Spearman only), growth and change in volume (Pearson only) and positively correlated with size. However, none of the information metrics is significantly correlated with the disclosure dummy.

All the information variables exhibit significant negative rank correlations with growth, change in following (except $\Delta s$) and change in number of segments reported. The negative correlation between change in number of segments and the information variables is consistent with the notion of firms providing more information when the precision of public information is expected to increase.
variables is interesting. This is consistent with the number of segments also proxying for complexity or difficulty in forecasting earnings for the firm. This is another reason why it is difficult to interpret the coefficient on this variable even in a multi-variate setting.

The levels of precision of common (h) and total (k) information are strongly positively correlated with size. Following is also positively correlated with size. This is consistent with prior literature which uses size to proxy for the information environment. The relationship between the precision of idiosyncratic information and size is insignificant. The number of segments in the post-SFAS 131 period is positively related to size indicating that larger firms also have more segments. It is however, negatively related to growth.
7. Results of Multivariate Analysis

a. Precision of Total Information

Separate multivariate tests using OLS regressions are conducted for precision of total information (alternatively, average individual forecast accuracy), common information and idiosyncratic information. It is important to keep in mind that the test of precision of total information is not independent of the tests on common and idiosyncratic information since the precision of total information is merely the sum of the precisions of common and idiosyncratic information. Thus, these should not be viewed as independent tests. The test of the precision of total information tests whether the change in the method of determining reported segments to the management approach is associated with an increase in the precision of total information about the firm impounded in earnings forecasts. The tests on idiosyncratic and common information then provide insights into the source of the change in the precision of total information.

In the total information regression, Disc is positive and significant at the 4% level (two-tailed). This implies that the test firms have a more positive (or less negative) change in precision of total information (or average individual forecast accuracy) than control firms, ceteris paribus. The only other significant variable is change in following which is positive and highly significant. This suggests that firms that experience increases in following are associated with increases in the precision of total information (or average individual forecast accuracy) of the firm. The coefficient on change in number of segments is insignificant. It is important to remember that the segments disclosed under SFAS 131 and SFAS 14 are different and the difference in number of segments may be a very noisy measure of the difference in detail. It is also pertinent to
draw the reader’s attention to the earlier discussion about alternative interpretations of the coefficient on change in number of segments. It is only used here as a control variable.

Lys and Soo (1995) show that the error in the mean forecast is negatively related to the number of analysts following the firm and interpret this in the context of competition in the information market. Their results are consistent with competition forcing analysts to be more accurate. However, it is not possible, in their analysis, to distinguish this from the alternative hypothesis that the mean becomes a better statistic when more observations are used to form the mean. Using the average individual forecast accuracy and a changes design provides a stronger test of relationship between forecast accuracy and analyst following. The strong relationship I document is consistent with their competition result.

<Insert table 5 here>

As discussed earlier, both test and control firms experienced some changes in geographical information, primarily with respect to dropping geographical earnings disclosures. Therefore, I included separate dummy variables to indicate dropping geographical earnings, geographical revenue and geographical asset disclosures. Only the geographical earnings variable was negative and significant at the 5% level and the other two were insignificant. Disc was still positive and significant at the 5.7% level while change in following remained positive and extremely significant. The change in number of segments remained insignificant. This indicates that dropping geographical earnings disclosures, ceteris paribus, was negatively associated with average individual forecast accuracy.
b. Precision of Common Information

The analysis of the precision of common information shows that the Disc dummy is positively and significantly (at the 3.5% level, two-tailed) related to the change in precision of common information. This is consistent with the common information being improved for the firms that change the reported segments pursuant to the adoption SFAS 131. This is consistent with the aims of FASB and the opinions expressed by AIMR that the information with the management approach would be more useful than that under the SFAS 14 approach.

However, the coefficient on the change in number of segments is negative though only marginally significant. As pointed out earlier the interpretation of this coefficient is not obvious for several reasons already discussed. Further, it is not clear if the change in number of segments is an appropriate measure of fineness of information in this case. Swaminathan (1991) used number of segments to study the effect of fineness of information on forecast dispersion. In that study, the comparison was between having and not having segment information. The number of segments in that case is a better characterization of the change in fineness of information than it is in this case. In this case, the comparison is between having one set of segments and having another. A comparison of numbers may not be the appropriate characterization in this case. Further, as discussed earlier, the number of segments may also proxy for forecasting complexity. As a sensitivity check, I re-estimate this equation excluding the change in number of segments. In this case, the coefficient on Disc captures the overall effect of implementing SFAS 131 on the precision of common information. The coefficient remains positive and significant though it is smaller. The only other variable that is
significant is change in following, which is positive and highly significant. This suggests that change in following is associated with change in the precision of common information.

<Insert table 6 here>

This analysis is also repeated with the geographical variables included. Again, the coefficient on the geographical earnings dummy (firms that drop geographical earnings) is negative and significant at the 5.2% level. Neither geographical asset nor geographical revenue dummy was significant. The coefficient on Disc remains significant at the 5.4% level while the coefficient on change in following remains positive and highly significant.

c. Precision of Idiosyncratic Information

The analysis of the change in the precision of private information has to necessarily consider the effect of the change in precision of common information. As already discussed, prior theoretical literature suggests that, there is a relationship between the two. The change in common precision is positively, and extremely significantly, related to the change in precision of idiosyncratic information. This is consistent with the model of McNichols and Trueman (1994), which suggests that an increase in the precision of public information will lead to greater private information acquisition. The Disc dummy is negatively, and significantly (at the 7.4% level two-tailed), related to the change in precision of idiosyncratic information. This suggests that the implementation of SFAS 131 may have reduced the amount of private information gathering after accounting for changes in private information acquisition due to changes in the precision of common information. This suggests that any changes in idiosyncratic information
may be due to the change in precision of common information. This is consistent with
the new segment information enabling analysts to use their complementary idiosyncratic
information. This is supported by the evidence in Street et al. (2000) that the new
segment information is more in line with management’s discussions about the firm in
other parts of the annual report. None of the other variables is significant. Specifically
change in following is insignificant.

<Insert table 7 here>

I included the geographical disclosure variables in this case as well. It had
negligible effect on the coefficient or significance of both Disc and change in precision of
common information. Size stayed negative but became marginally significant at the
9.1% level.

d. Summary

To summarize, firms that change their reported segments to comply with SFAS
131, are positively related to changes in the precision of total information and common
information. Consistent with McNichols and Trueman (1994), the precision of
idiosyncratic and common information are positively related. The relationship between
the change in precision of common and idiosyncratic information in this setting may be
due to the nature of segment information. As already pointed out earlier, Street et al.
(2000) provides evidence that segment disclosures under SFAS 131 are more in line with
how the management presents the firm in other parts of the annual report. This
realignment may help the analysts to use complementary idiosyncratic information since
segment disclosures are also similarly aligned. The positive relationship between the
changes in precisions of common and idiosyncratic information may be due to this nature of segment information.

The results between changes in the various precision variables and change in following also provide some interesting insights. Average individual forecast accuracy (or precision of total information) is positively and extremely significantly related to change in following. This is also true of change in precision of common information. However, the change in precision of idiosyncratic information is not significantly related to change in following. Thus, it seems that the positive relationship between change in average individual forecast accuracy and change in analyst following is driven by change in precision of common information. This is an interesting observation in the light of Lys and Soo’s (1995) competition results. If competition is forcing analysts to be more accurate, it seems that the effort must be in the direction of forcing firms to reveal more information to all analysts as opposed to obtaining information privately or interpreting information idiosyncratically. The result in this sample could also be driven by the nature of segment information already discussed above. It could also be the case that firms improve their disclosures and this causes more analysts to follow these firms. In either case, this merits further investigation in future. However, these results are subject to some important caveats.

First, the information variables have been computed based on realized, rather than expected, values of D and SE. This results in a lot of noise in these variables, which could account for the low explanatory powers of the various regressions. I am not aware of any reasons why this would induce a bias in the coefficients. Second, to the extent that one-year-ahead forecasts are only one aspect of analysts’ work, the reliance on just these
forecasts may ignore important aspects of analysts’ work. The significant loss of sample size when longer-range forecasts and growth forecasts are used is a major factor that precluded their use. The analysis in this study essentially pertains only to sell-side financial analysts. It may not be appropriate to generalize the results of this paper to other financial statement users, who may use information differently from these analysts. However, this approach provides an opportunity to study the effect of this change in information on an important and vocal subset of financial statement users in a manner that other studies may not.
8. Sensitivity Analysis

The skewness evident from the descriptive statistics in the primary information variables indicates the necessity for some sensitivity analysis. In this context, it is relevant to point out that all p-values reported in the multivariate tests are based on white-adjusted covariance matrices. In order to mitigate the effect of extreme values, I carried out several adjustments. First, I repeated the entire analysis using ranks and running rank regressions. Though the explanatory power improved, this had a negligible effect on the significance of Disc, change in following or change in number of segments (hereafter referred to as the primary variables of interest). Second, I winsorized the top and bottom 5% of values information variables. Third, I trimmed the top and bottom 5% of observations based on the information variables. In both these cases, the inferences about the primary variables remained unchanged.

I included dummies for each 2-digit SIC code with 10 or more firms in the sample. None of the dummies was significant. Further, the inferences about the primary variables of interest remained unchanged.

In an attempt to see if these firms were different in the pre SFAS 131 period, I ran levels models in the pre-period for h, s and k including Disc, Size, Following, Volume, Number of segments, Acquire and Dispose (all measured in or at the end of calendar year 1997). In this case Disc was not significant at the 10% level (2-tailed) in any of the cases. It is important to note that this levels model is much more susceptible to misspecification problems due to correlated omitted variables than the changes models used in the primary analysis. It is interesting to note that the number of segments is
negative and significant in both the k and h regressions, indicating that it may be
proxying for forecasting complexity or difficulty.

The difficulties in interpreting the coefficient of change in number of segments
and consequently the overall effect of SFAS 131 using Disc also prompted me to repeat
the analysis dropping change in number of segments from the analysis. The results were
similar in that the sign and significance of Disc and change in following remained. The
coefficient on Disc was slightly smaller but the significance was of the same order.

In McNichols and Trueman (1994), the relationship between the precisions of
common and idiosyncratic information is based on the idiosyncratic information being
acquired before the common information is revealed. In this study, I measure the
precisions of common and idiosyncratic information contemporaneously. To address this
issue, I repeated the analysis for a sub-sample of firms for which enough forecasts were
available immediately before the first quarter earnings announcements for 1998 and 1999. I computed s based on these forecasts and repeated the analysis using this measure
of change in idiosyncratic precision. The results were similar and significant.
9. Contributions and Extensions

a. Contributions

In this paper, I provide some evidence that shows that the firms that change their reported segments to comply with SFAS 131, ceteris paribus, experience larger increases in precision of common information and total information (average individual forecast accuracy) than control firms. Further, the change in precision of common information is significantly positively related to the change in precision of idiosyncratic information. Test firms are weakly negatively related to the change in idiosyncratic precision after accounting for the relationship between common and idiosyncratic information.

The primary result is that test firms experience larger increases in precision of total information (or average individual forecast accuracy) than control firms, ceteris paribus. This improvement is reflected in about a 20% reduction in forecast error for test firms. Test firms also experience larger increases in precision of common information. The impact on idiosyncratic precision is harder to characterize. Idiosyncratic precision is affected by both the common precision and directly on account of the change in segment disclosure. There is a strong positive relationship between the change in precision of common information and that of idiosyncratic information. This is consistent with analysts being able to bring their complementary idiosyncratic information into play better with the new segment information than before. This is consistent with the finding that the new segment information was more consistent with the descriptions of the firm contained elsewhere in the annual report.

The relationship between the changes in precision of common information and idiosyncratic information provides some empirical evidence to support the theories
developed in this area. Specifically, the positive relationship between change in precision of common and idiosyncratic information, provides support for the model developed by McNichols and Trueman (1994). It is pertinent to note that the levels of precision of common and idiosyncratic information are positively correlated as well.

The other important result emanating from this study pertains to the relationship between change in following and the information variables. Lys and Soo (1995) use analyst following as a proxy for the competition in the information market. They document a negative relationship between error in the mean forecast and analyst following and interpret this as evidence of analysts becoming more accurate in the face of more competition. This study provides some more evidence in this regard. The changes design provides a better test of analyst responses to changes than a levels test. First, change in average individual forecast accuracy is positively and extremely significantly related to change in analyst following. This provides evidence that is consistent with Lys and Soo (1995). The interesting part is that while this relationship is also present with common precision, the results for idiosyncratic precision are not significant at all. Thus, it seems that the gain in average individual forecast accuracy is driven by gains in common precision as opposed to idiosyncratic precision. This is consistent with analysts as a group demanding and obtaining more information from firms in the face of increased following and interpreting this information commonly. Alternatively, analysts could be choosing to follow firms which improve (or are expected to improve) their disclosures.

b. Extensions

This study focuses on the effects of SFAS 131 on an important group of financial statement users, financial analysts. The analysis in this paper has been restricted to
annual earnings forecasts. This can be expanded by studying the effect of this disclosure standard on other forecasts (quarterly earnings, earnings growth, long-term earnings, revenue etc.) and analyst recommendations. Studies concerning changes in the frequency of forecasts and changes in information-transfer structures across firms would also be informative given the structural change in information under SFAS 131 relative to SFAS 14. Future studies could also extend this to studying the impact on markets along several dimensions such as price-volatility, bid-ask spreads, speed of price adjustment etc.

Another important avenue for future research is to study the relationship between competition in the analyst market and measures of analyst performance. This study provides some information beyond that in Lys and Soo (1995). Future research should focus on the effect of increase in competition on continuing analysts. The decision of these analysts to continue to follow the firms as well as their performance given that they follow these firms would add significantly to the literature in this area.
References


_______, C.O. Kile, and T.B. O’Keefe 1999. MD&A quality as measured by the SEC. *Contemporary Accounting Research* 16 (Spring): 75-110


APPENDIX 1

Table 1  Sample Selection Procedures

<table>
<thead>
<tr>
<th>Particulars</th>
<th>No. of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendar year firms in Compustat Segment Database</td>
<td>4,346</td>
</tr>
<tr>
<td>Of the above, firms with at least 5 analysts forecasting in both periods and adopting SFAS 131 in 1998</td>
<td>588</td>
</tr>
<tr>
<td><strong>Less:</strong> Firms with missing Compustat Data</td>
<td>(20)</td>
</tr>
<tr>
<td><strong>Less:</strong> Firms for which 10-K/Annual Report not available in Disclosure/FIS online/EDGAR</td>
<td>(2)</td>
</tr>
<tr>
<td>Final Sample</td>
<td>566</td>
</tr>
</tbody>
</table>
Table 2  Descriptive Statistics: Post Period

<table>
<thead>
<tr>
<th>Variable</th>
<th>Disc=0 (310 firms)</th>
<th>Disc=1 (256 firms)</th>
<th>Test of Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>h</td>
<td>175.87</td>
<td>18.33</td>
<td>252.45</td>
</tr>
<tr>
<td>s</td>
<td>148.18</td>
<td>3.05</td>
<td>137.50</td>
</tr>
<tr>
<td>k</td>
<td>324.05</td>
<td>28.50</td>
<td>389.95</td>
</tr>
<tr>
<td>Volume</td>
<td>1.92</td>
<td>1.15</td>
<td>1.52</td>
</tr>
<tr>
<td>Following</td>
<td>11.27</td>
<td>9.00</td>
<td>11.04</td>
</tr>
<tr>
<td>Consensus</td>
<td>0.756</td>
<td>0.887</td>
<td>0.787</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.034</td>
<td>0.002</td>
<td>0.036</td>
</tr>
<tr>
<td>SE</td>
<td>0.413</td>
<td>0.025</td>
<td>0.551</td>
</tr>
<tr>
<td>∆h</td>
<td>-6.85</td>
<td>0.34</td>
<td>-38.30</td>
</tr>
<tr>
<td>∆s</td>
<td>38.00</td>
<td>0.27</td>
<td>-76.53</td>
</tr>
<tr>
<td>∆k</td>
<td>31.15</td>
<td>0.78</td>
<td>-114.84</td>
</tr>
<tr>
<td>Size</td>
<td>7.19</td>
<td>7.09</td>
<td>7.75</td>
</tr>
<tr>
<td>Growth</td>
<td>0.11</td>
<td>0.10</td>
<td>0.02</td>
</tr>
<tr>
<td>NSEG</td>
<td>1.66</td>
<td>1.00</td>
<td>3.46</td>
</tr>
<tr>
<td>∆NSEG</td>
<td>0.14</td>
<td>0</td>
<td>1.73</td>
</tr>
<tr>
<td>∆Foll</td>
<td>0.71</td>
<td>0.38</td>
<td>0.67</td>
</tr>
<tr>
<td>∆Vol</td>
<td>0.385</td>
<td>0.111</td>
<td>0.196</td>
</tr>
<tr>
<td>Acquire</td>
<td>0.34</td>
<td>0</td>
<td>0.50</td>
</tr>
<tr>
<td>Dispose</td>
<td>0.05</td>
<td>0</td>
<td>0.17</td>
</tr>
<tr>
<td>GEOEARN</td>
<td>0.15</td>
<td>0</td>
<td>0.19</td>
</tr>
<tr>
<td>GEOASSETS</td>
<td>0.38</td>
<td>0</td>
<td>0.62</td>
</tr>
<tr>
<td>GEOREV</td>
<td>0.48</td>
<td>0</td>
<td>0.68</td>
</tr>
<tr>
<td>∆GEOEARN</td>
<td>0.14</td>
<td>0</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Notes:

a. These are two-tailed p values from a two-sample t test with unequal variances.

b. These are two-tailed p values from a two-way medians test using median scores (equivalent to the Brown-Mood test). The inferences are consistent when a Wilcoxon Rank Sum test is used.

Variable Definitions: Disc is an indicator variable coded as 1 when the firm has to change its reported segments to comply with SFAS 131 and 0 otherwise. h is the precision of common information measured as \((SE-D/N)/(D-D/N+SE)^2\) with D being Dispersion, SE being the squared error in the mean forecast and N being the number of forecasts measured in the 30 day period after the earnings announcement date for the first quarter of 1999; s is the precision of idiosyncratic information measured as \(D/(D-D/N+SE)^2\) measured over the same time period; K=h+s; Volume is the number of shares traded during 1998 expressed as a ratio of traded shares to shares outstanding as of Dec 31, 1998; Following is the number of analysts providing forecasts in the period referred to above; ∆h is measured as the difference between h measured as above and that similarly measured after the I Qtr EAD of 1998; ∆s is measured as the difference between s
measured as above and that similarly measured after the 1 Qtr of 1998; $\Delta k$ is the change in $k$ measured across the same periods as above; Size is the natural logarithm of market value of equity measured at Dec 31, 1998; Growth is the change in Size between 1997 and 1998; $\Delta$NSEG is the change in number of segments between 1997 and 1998 (for the regressions this is scaled by number of segments in 1997); $\Delta$Foll is the change in number of analysts making a forecast in the PRE period and that in the POST period scaled by the number of analysts making a forecast in the PRE period; $\Delta$Vol is the change in volume between 1997 and 1998. GEOEARN is a dummy variable equal to 1 if the firm discloses geographic earnings and 0 otherwise. GEOREV is a dummy variable equal to 1 if the firm discloses geographic revenues and 0 otherwise. GEOASSETS is a dummy variable equal to 1 if the firm discloses geographic assets and 0 otherwise. $\Delta$GEOEARN is a dummy variable equal to 1 if the firm drops geographic disclosures and 0 otherwise.
### Table 3  Descriptive Statistics: Pre Period

<table>
<thead>
<tr>
<th>Variable</th>
<th>$Disc=0$ (310 firms)</th>
<th>$Disc=1$ (256 firms)</th>
<th>Test of Differences between $Disc=0$ and $Disc=1$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>H</td>
<td>182.73</td>
<td>23.99</td>
<td>290.75</td>
</tr>
<tr>
<td>S</td>
<td>110.17</td>
<td>2.72</td>
<td>214.04</td>
</tr>
<tr>
<td>k</td>
<td>292.90</td>
<td>32.89</td>
<td>504.79</td>
</tr>
<tr>
<td>Volume</td>
<td>1.53</td>
<td>1.04</td>
<td>1.33</td>
</tr>
<tr>
<td>Following</td>
<td>8.73</td>
<td>7.00</td>
<td>9.05</td>
</tr>
<tr>
<td>Consensus</td>
<td>0.789</td>
<td>0.930</td>
<td>0.807</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.039</td>
<td>0.002</td>
<td>0.026</td>
</tr>
<tr>
<td>SE</td>
<td>0.576</td>
<td>0.021</td>
<td>3.91</td>
</tr>
<tr>
<td>Size</td>
<td>7.09</td>
<td>6.97</td>
<td>7.73</td>
</tr>
<tr>
<td>NSEG</td>
<td>1.53</td>
<td>1.00</td>
<td>1.73</td>
</tr>
<tr>
<td>Acquire</td>
<td>0.37</td>
<td>0</td>
<td>0.54</td>
</tr>
<tr>
<td>Dispose</td>
<td>0.09</td>
<td>0</td>
<td>0.16</td>
</tr>
<tr>
<td>GEOEARN</td>
<td>0.30</td>
<td>0</td>
<td>0.51</td>
</tr>
<tr>
<td>GEOASSETS</td>
<td>0.31</td>
<td>0</td>
<td>0.52</td>
</tr>
<tr>
<td>GEOREV</td>
<td>0.43</td>
<td>0</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Notes:

a. These are two-tailed p values from a two-sample t test with unequal variances.

b. These are two-tailed p values from a two-way medians test. The inferences are consistent when a Wilcoxon Rank Sum test is used.

Variable Definitions: Please see table 2 for variable definitions.
Table 4: Correlations between variables in primary multivariate model

<table>
<thead>
<tr>
<th></th>
<th>( \Delta h )</th>
<th>( \Delta s )</th>
<th>( \Delta k )</th>
<th>Size</th>
<th>Growth</th>
<th>( \Delta \text{Foll} )</th>
<th>( \Delta \text{Vol} )</th>
<th>( \Delta \text{NSEG} )</th>
<th>Disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \Delta h )</td>
<td>0.656</td>
<td>0.885</td>
<td>0.049</td>
<td>-0.090</td>
<td>-0.100</td>
<td>-0.069</td>
<td>-0.094</td>
<td>-0.046</td>
<td></td>
</tr>
<tr>
<td>( \Delta s )</td>
<td>0.513</td>
<td>0.847</td>
<td>0.030</td>
<td>-0.097</td>
<td>-0.002</td>
<td>-0.070</td>
<td>-0.071</td>
<td>-0.042</td>
<td></td>
</tr>
<tr>
<td>( \Delta k )</td>
<td>0.887</td>
<td>0.850</td>
<td>0.033</td>
<td>-0.113</td>
<td>-0.071</td>
<td>-0.052</td>
<td>-0.089</td>
<td>-0.057</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>0.001</td>
<td>-0.079</td>
<td>-0.043</td>
<td>0.298</td>
<td>-0.010</td>
<td>-0.105</td>
<td>0.090</td>
<td>0.169</td>
<td></td>
</tr>
<tr>
<td>Growth</td>
<td>-0.048</td>
<td>-0.056</td>
<td>-0.059</td>
<td>0.303</td>
<td>0.154</td>
<td>0.010</td>
<td>-0.082</td>
<td>-0.084</td>
<td></td>
</tr>
<tr>
<td>( \Delta \text{Foll} )</td>
<td>-0.081</td>
<td>-0.038</td>
<td>-0.070</td>
<td>-0.006</td>
<td>0.117</td>
<td>0.076</td>
<td>-0.047</td>
<td>-0.040</td>
<td></td>
</tr>
<tr>
<td>( \Delta \text{Vol} )</td>
<td>0.002</td>
<td>0.014</td>
<td>0.009</td>
<td>-0.052</td>
<td>0.158</td>
<td>0.034</td>
<td>-0.032</td>
<td>-0.056</td>
<td></td>
</tr>
<tr>
<td>( \Delta \text{NSEG} )</td>
<td>-0.035</td>
<td>-0.022</td>
<td>-0.033</td>
<td>0.078</td>
<td>-0.092</td>
<td>-0.032</td>
<td>-0.026</td>
<td>0.722</td>
<td></td>
</tr>
<tr>
<td>Disc</td>
<td>-0.014</td>
<td>-0.058</td>
<td>-0.040</td>
<td>0.170</td>
<td>-0.076</td>
<td>-0.018</td>
<td>-0.070</td>
<td>0.561</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

a. Correlations below the diagonal are Pearson correlations while those above the diagonal are Spearman correlations.

b. Correlations in bold are significant at the 10% level or better.

c. Variable definitions are in table 2.
Table 5: The Effect of SFAS 131 on Precision of Total Information

The following regression is run on the sample of 566 firms:

$$\Delta k = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{Nseg} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \beta_7 \Delta \text{Vol} + \beta_8 \Delta \text{Foll} + \omega$$

<table>
<thead>
<tr>
<th>Variable$^1$</th>
<th>Coefficient</th>
<th>p-value$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-87.95</td>
<td>0.565</td>
</tr>
<tr>
<td>Disc</td>
<td>135.01</td>
<td><strong>0.038</strong></td>
</tr>
<tr>
<td>$\Delta$Nseg</td>
<td>-36.34</td>
<td>0.243</td>
</tr>
<tr>
<td>Size</td>
<td>3.57</td>
<td>0.860</td>
</tr>
<tr>
<td>Growth</td>
<td>-43.78</td>
<td>0.444</td>
</tr>
<tr>
<td>$\Delta$Foll</td>
<td>138.42</td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>$\Delta$Vol</td>
<td>0.57</td>
<td>0.804</td>
</tr>
<tr>
<td>Acquire</td>
<td>-73.11</td>
<td>0.236</td>
</tr>
<tr>
<td>Dispose</td>
<td>-52.27</td>
<td>0.580</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td></td>
<td>25.81 %</td>
</tr>
</tbody>
</table>

1. Variable definitions are in table 2.
2. All p-values are two tailed based on white-adjusted standard errors.

Notes:

a. Trimming the top and bottom 5% of values of $\Delta K$ does not affect inferences of test variables.

b. Running the above regression in ranks has no effect on inferences of test variables though there is an improvement in explanatory power.

c. Winsorizing the top and bottom 5% of values of $\Delta K$ does not affect inferences of test variables.
Table 6: The Effect of SFAS 131 on Precision of Common Information

The following regression is run on the sample of 566 firms:

\[ \Delta h = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{Nseg} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \beta_7 \Delta \text{Vol} + \beta_8 \Delta \text{Foll} + \omega \]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-364.37</td>
<td>0.550</td>
</tr>
<tr>
<td>Disc</td>
<td>247.08</td>
<td><strong>0.035</strong></td>
</tr>
<tr>
<td>( \Delta \text{Nseg} )</td>
<td>-142.33</td>
<td>0.126</td>
</tr>
<tr>
<td>Size</td>
<td>15.47</td>
<td>0.848</td>
</tr>
<tr>
<td>Growth</td>
<td>-172.24</td>
<td>0.450</td>
</tr>
<tr>
<td>( \Delta \text{Foll} )</td>
<td>164.54</td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>( \Delta \text{Vol} )</td>
<td>20.40</td>
<td>0.824</td>
</tr>
<tr>
<td>Acquire</td>
<td>-301.70</td>
<td>0.221</td>
</tr>
<tr>
<td>Dispose</td>
<td>-231.91</td>
<td>0.568</td>
</tr>
<tr>
<td>Adjusted R(^2)</td>
<td></td>
<td>4.59 %</td>
</tr>
</tbody>
</table>

1. Variable definitions are in table 2.
2. All p-values are two tailed based on white-adjusted standard errors.

Notes:

a. Trimming the top and bottom 5% of values of \( \Delta K \) does not affect inferences of test variables.

b. Running the above regression in ranks has no effect on inferences of test variables though there is an improvement in explanatory power.

c. Winsorizing the top and bottom 5% of values of \( \Delta K \) does not affect inferences of test variables.
Table 7: The Effect of SFAS 131 on Precision of Idiosyncratic Information

The following regression is run on the sample of 566 firms:

\[
\Delta s = \alpha + \beta_1 \text{Disc} + \beta_2 \Delta \text{Nseg} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Acquire} + \beta_6 \text{Dispose} + \beta_7 \Delta \text{Vol} + \beta_8 \Delta \text{Foll} + \beta_9 \Delta h + \omega
\]

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>p-value$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>278.06</td>
<td>0.126</td>
</tr>
<tr>
<td>Disc</td>
<td>-130.10</td>
<td>0.074</td>
</tr>
<tr>
<td>\Delta Nseg</td>
<td>27.23</td>
<td>0.462</td>
</tr>
<tr>
<td>Size</td>
<td>-38.21</td>
<td>0.112</td>
</tr>
<tr>
<td>Growth</td>
<td>-31.78</td>
<td>0.640</td>
</tr>
<tr>
<td>\Delta Foll</td>
<td>3.45</td>
<td>0.909</td>
</tr>
<tr>
<td>\Delta Vol</td>
<td>4.68</td>
<td>0.864</td>
</tr>
<tr>
<td>Acquire</td>
<td>100.86</td>
<td>0.171</td>
</tr>
<tr>
<td>Dispose</td>
<td>-26.47</td>
<td>0.826</td>
</tr>
<tr>
<td>\Delta h</td>
<td>0.450</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Adjusted R$^2$</td>
<td></td>
<td>5.81 %</td>
</tr>
</tbody>
</table>

1. Variable definitions are in table 2.
2. All p-values are two tailed based on white-adjusted standard errors.

Notes:

a. Trimming the top and bottom 5% of values of \( \Delta K \) does not affect inferences of test variables.

b. Running the above regression in ranks has no effect on inferences of test variables though there is an improvement in explanatory power.

c. Winsorizing the top and bottom 5% of values of \( \Delta K \) does not affect inferences.
Appendix 2: Simulation

I simulated analyst forecasts by assuming values for \( h \) and \( s \) (the common and idiosyncratic precisions). Then, I obtained measures of \( h \) and \( s \) using the approach outlined earlier (\( h \) and \( s \), respectively). I then studied the relationship between the values of \( h \) and \( s \) used to generate the forecasts and the values of \( h \) and \( s \) estimated. The only violation of the model studied in my simulation is the assumption that all analysts have idiosyncratic information of similar quality (\( s_i = s \) for all \( i \)).

The value of \( h \) was randomly drawn from a uniform distribution between 10 and 100. The value of \( s \) was also randomly drawn from a uniform distribution with the support being between 2 and 50. For each firm, one value of \( h \) and 10 values of \( s \) were drawn. The actual earnings, \( y \), was randomly drawn from a normal distribution with mean \( H \) and variance \( 1/h \). This can be thought of as the prior referred to in Barron et al. (1998). Similarly individual idiosyncratic signals, \( S_i \), were randomly drawn from normal distributions with mean 0 and variance \( 1/s_i \). Forecasts, \( F_i \), were generated by the following equation:

\[
F_i = \frac{h}{h + s_i} H + \frac{s_i}{h + s_i} S_i
\]

I repeated this exercise for 1,000 firms.

For each firm, I now have the actual earnings \( y \) and the ten forecasts \( F_1 \) to \( F_{10} \). I then compute the following for each firm:

1. The average idiosyncratic precision for each firm (\( s = \frac{1}{10} \sum s_i \))

2. The estimated precisions of common and idiosyncratic information, \( h \) and \( s \), are calculated based on the procedure outlined in chapter 4 using the above data. Note that these calculations assume that \( s_i = s \) for all analysts \( i \).

3. I then computed correlations between the true variables used in the simulation (\( h \) and \( s \)) and the estimated variables (\( h \) and \( s \)). The correlation between \( h \) and \( h \) was 0.73 and that between \( s \) and \( s \) was 0.64
4. I also computed the correlation between the measured $h$ and $s$. These were simulated to be uncorrelated. The correlation was 0.13 and was insignificant. The above results provide some reassurance that even with analysts having differential precision of idiosyncratic information, the measured precision of idiosyncratic information is a reasonable representation of the average idiosyncratic precision and the measured common precision is a reasonable approximation of the true common precision. Further, given that the true correlation as well as the measured correlation between the precision of common and idiosyncratic information in my sample were zero (or indistinguishable from zero), it provides some reassurance that the relationships between these precisions documented in this paper are not mere measurement artifacts.
VITA
Ramgopal Venkataraman

EDUCATION
Ph.D.  Pennsylvania State University (Graduation date: Dec. 2001) 1996-Present
B.Sc.  University of Madras, India    1981-1984

PROFESSIONAL CERTIFICATION
FCA  The Institute of Chartered Accountants of India (ICAI)  1987
Grad. CWA  The Institute of Cost & Works Accountants of India (ICWAI)  1987

RESEARCH INTERESTS
My research interests are primarily in the area of financial accounting with particular emphasis on disclosure. I am particularly interested in the effect of disclosures on the users of financial statements. I am also interested in various factors affecting disclosure choices made by firms.

DISSERTATION TOPIC
The Impact of SFAS 131 on Financial Analysts’ Information Environment

TEACHING INTERESTS
My teaching interests lie in both financial and managerial accounting. The role of accounting information in decision-making has been and will always be a focus of my teaching.

WORKING PAPERS
1. “SEC-Mandated MD&A Disclosures: News that can have a substantial effect on stock prices” (co-authored with Prof. Orie E. Barron and Prof. Charles Kile). Resubmitted to Contemporary Accounting Research. Presented at the Joint Symposium of the 11th Annual Conference on Financial Economics and Accounting and the 7th Mitsui Life Symposium on Global Financial Markets held at the University of Michigan, Fall 2000

OTHER PROFESSIONAL ACTIVITIES
Ad-hoc reviewer for the AAA Annual Meeting (FARS Section), 2000