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Accounting information and analyst stock recommendation decisions: a content analysis approach

Gaétan Breton and Richard J. Taffler*

Abstract—We explore the information set used by sell-side equity analysts in their stock recommendation decisions through content analysis of their company reports. In particular, we assess the relative importance of accounting measures compared with non-financial information items. We conclude that whereas accounting information is of fundamental importance to analysts, it is not the only, nor even the most important, source. Financial analysts are equally concerned with the firm's management and strategy and its trading environment in arriving at their investment recommendations. Our results have implications in terms of enhancing the relevance of financial reporting to key user constituencies.

1. Introduction

Financial analysts play a central role in security markets in interpreting and disseminating corporate financial and other information (Lang and Lundholm, 1996) and their investment recommendations have a material impact on trading activity and stock returns (Womack, 1996; Ryan and Taffler, 2000). Accounting policy makers need to understand how investment analysts, as sophisticated users of financial information and key information intermediaries for investors, actually use financial and other information (Schipper, 1991: 105).

This paper explores the importance of accounting information relative to other, non-financial, information to security analysts in analysing stocks. How much attention do analysts pay to accounting-based numbers compared with more qualitative measures such as quality of management, trading prospects and firm strategy in assessing firm value, and what implications does this have for the financial reporting process?

Specifically, we seek insights into the factors that influence sell-side analyst investment recom-

mendations, their ultimate judgments, through formal content analysis of their company reports. By modelling the analyst recommendation generation process in terms of the information used in discriminating between buy, hold and sell recommendations, we obtain a better understanding of what information is truly decision relevant.

Our results demonstrate that whereas profit-based information is of importance, balance sheet based measures are much less so, if at all. Nonetheless, non-financial qualitative factors are the most significant drivers of analyst judgment; in particular an analysis of corporate management and strategy.

We conclude that further consideration needs to be given to ensuring formal disclosures and appropriate audit of such important non-accounting information to shareholders in the annual report.

The remainder of the paper is arranged as follows. Section 2 reviews earlier work and Section 3 outlines our content analysis methodology. Section 4 discusses our data and pre-sample analysis and this is followed in Section 5 by our results. Our findings and implications for policy are reviewed in Section 6.

2. Prior research

A number of studies investigate how security analysts process accounting information using experimental methodologies (e.g. Biggs, 1984; Bouwman et al., 1987 and 1995; Mear and Firth, 1987; Breton and Taffler, 1995). Nonetheless, protocol analysis, regression analysis of analyst information cue usage and case study approaches are restricted in their ability to model the real world evaluation situation, being deficient in both context and incentive structure (Schipper, 1991) and generally lack the decision consequences of the ac-

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tual task. In addition, the role (and presence) of the researcher may influence the results. These limitations make it difficult to use such approaches to evaluate the real importance of conventional financial reporting and other data in the process of assessing security values.

Questionnaire and interview methods also have their difficulties and are often characterised by inconsistent results (Breton and Taffler, 1995: 88, Table 8). Asking analysts or investors directly about the relative importance of different types of information may provide little real insight into what they use in practice. Direct observation of analysts in their normal work environment is also both time consuming and limited in scope (Gniewosz, 1990).

In contrast, Rogers and Grant (1997: 19) argue that examining the output of analysts in the form of texts of their reports, the end product of their decision process, overcomes the above problems successfully.¹ Previts et al. (1994) investigate the content of sell-side analyst company reports using word-based content analysis methodology. They find that earnings and performance-related discussions dominate the reports, supporting the extensive links between earnings and security prices in the literature, with balance sheet and other accounting-based references far less prevalent.

Of particular relevance is their highlighting of the attention being paid to quality of management and disclosure and evaluation of corporate strategy. Previts et al. conclude (p.66) that '...contemporary financial reporting provides an important but incomplete basis for sell-side analyst forecasts of company performance. Their information needs exceed traditional, transaction-based reports.'

In a study more closely related to our research, Rogers and Grant (1997) content analyse 187 sell-side analyst reports using sentences or clauses as the information unit and code all specific information into six broad thematic categories. They then cross-reference these with the different component parts of the firm's full text annual report to identify potential sources for the information units. The authors find that whereas just over half the information contained in their analyst reports can be found in the annual report, GAAP financial statement information constitutes only a relatively small proportion of the total information cited, with balance sheet and cash flow items rarely mentioned. In total, the narrative sections of the annual report provide almost twice the citations compared with the basic financial statements. Rogers and Grant

(1997: 26) suggest further insights can be derived from exploring the relationship between analyst stock recommendation and information usage.

In parallel with these two studies, we also adopt a content analysis methodology focusing on sell-side analysts' reports. These sources, despite being less timely than other means of brokerage house client communication, are the only extensive trace of the analyst's work.

This trace, being written, also benefits from the process of rationalisation that goes with any such formal articulation process. Because these documents make formal recommendations to investors, e.g., to buy, to hold or to sell, and present the underlying arguments supporting these recommendations, we assume they reflect the essential factors and considerations used by analysts to discriminate between investments of different quality, and their beliefs about stocks' intrinsic values relative to their market values.² Barber et al. (1999) show that the average time between sequential recommendations for a firm is around 200 days. This implies that associated reports are written to be self-contained and read independently of earlier reports on the same company, which is the assumption in our analysis.

The methodology of content analysis has been widely used in other areas of accounting. For example, Jones and Shoemaker (1994) reference a corpus of 35 studies, 15 analysing annual reports, eight legal texts, seven letters of comment on exposure drafts, three standards and training manuals and one each government reports and testimonies before commissions.

Abrahamson and Amir (1996), using a word-based content analytic approach focusing exclusively on negative references, conclude that the president's letter has predictive value for the firm's future performance measured in accounting terms. Bryan (1997), in a parallel study, assesses the information content of mandated disclosures in the firm's management discussion and analysis (MD&A) in terms of their incremental value to conventional financial statement-based ratios with disclosure items rated as unfavourable, neutral and favourable. He concludes that MD&A disclosures can assist in assessing firms future short term prospects.

Smith and Taffler (2000), in a UK-based study, similarly adopt content analysis methodology to investigate whether the firm's discretionary narrative disclosures measure its financial risk. Specifically, they find that the chairman's state-

¹ Schipper (1991: 116) also points out that such difficulties as the lack of explicit incentives and potential conflicts of interest inherent in the work of financial analysts do not arise in the same way with content analysis. This is because there is no eliciting of responses from subjects and the research materials are essentially archival and not experimental.

² We note, in addition, other influences on analyst judgments, implicit or explicit, that impact on their recommendations such as underwriting or corporate finance relationships (Lin and McNichols, 1998) and the desire for maintained respect from, and access to, company management, as well as, arguably, peer pressures etc.

ment is highly predictive of firm failure, reinforcing the argument that such unaudited disclosures contain important future-orientated information.

3. Methodology

Academic research tends to focus on analyst earnings forecasts despite these being subsidiary to their main task of making timely stock recommendations (Schipper, 1991; Womack, 1996).³ We are concerned here to understand the analyst's full information environment, of which such accounting numbers are only a part, and the relative importance of different types of data.

Content analysis methodology is particularly appropriate for our purpose both because of its unobtrusive nature in analysing narratives prepared for other reasons and audiences, and its ability to measure the implicit importance attributed to an information category by the report's author.⁴

Our interest is in the relative importance of the different information types in explaining analyst buy/hold/sell advice.

3.1. Procedure for textual analysis

Our application of content analysis involves the classification of the information units of sell-side analyst reports into common meaning categories, measuring their importance in terms of their frequency of occurrence in the text, and then exploring the relationship between these relative frequencies and analyst stock recommendations via multinomial logistic regression. We infer that the information categories that best discriminate between buy, hold and sell recommendations are those of most value, implicitly or explicitly, to the financial analyst.

Specifically, we work with the underlying themes⁵ in texts to detect shades and nuances of meaning and content (Krippendorff, 1980: 63). We focus on the denotative meanings of the narratives, i.e. the sets of information leading to a particular stock recommendation, and the manifest content alone, the presented arguments rather than the hidden feelings or affects of the authors (Smith and Taffler, 2000).

The initial stage of analysis is the development of an appropriate coding structure consisting of an inclusive set of thematic categories qualified by attitudinal indicators (positive, neutral, negative) following the evaluative assertion hypothesis of

Osgood et al. (1956) and Osgood et al. (1957). Clearly, a positive reference to the profit figure is more likely to be associated with a buy recommendation and a negative one with sell advice.

The analytical structure is developed directly from the analysts' reports themselves (Weber, 1990: 37) using a report pre-sample rather than using theoretical constructs imposed by the researcher.⁶ Five basic themes are synthesised which, with the three directional arguments, provide 15 thematic textual coding categories.

The main part of the research involves analysing company report narratives by computer⁷ and deriving the thematic variables.

Finally, the following statistical analysis is conducted:

- (i) separate univariate analyses of the differences in the 15 thematic variable values by report recommendation class (buy/hold/sell); and
- (ii) logistic regressions to distinguish between information usage by recommendation (buy/hold/sell).

An important point is that tables in the company reports are not analysed. Strictly speaking, tables are part of the text and contain lexical elements, and their removal requires explanation. The view we take is that the key factor is the argument used by the analyst to justify a stock recommendation and this is expressed in his/her narrative. If information provided in tables and graphs is of true importance in their decision process, then this fact will be referred to explicitly in the text and given prominence through repetition.⁸

4. Data and pre-sample analysis

4.1. Sample selection

Most brokerage houses publish their stock recommendations in monthly summary books. Five of the top six ranked⁹ brokerage houses in the City of London participated in this research and allowed us to use their analysts' reports sampled from their summary lists.

Table 1 summarises the distributions of recommendations in the summary books. As can be seen, on average there are 2.5 times as many buy recommendations as sells, and holds are twice as frequent as buys.¹⁰

³ Analysts are not paid merely to forecast earnings but '...to pick stocks and to write reports which cogently support their recommendations.' (Schipper 1991: 116).

⁴ Nonetheless, the assumption that frequency of occurrence directly reflects the degree of emphasis accorded to words or themes may not always hold (Weber, 1990: 71–73).

⁵ Weber (1990: 37) defines a theme as '... referring to clusters of words with different meanings or connotations that taken together refer to some theme or issue.'

⁶ Bryan (1997) is an example of the use of an externally determined framework in his study of MD&A required disclosure information content.

⁷ *Inter alia* to ensure uniformity of coding to our pre-defined categories (Kelle, 1995).

⁸ To test the possibility of information loss through table omission explicitly, we conducted parallel analyses on the basis of space occupied by each theme including accounting information presented in tables and without. Results did not differ significantly.

⁹ According to the 1990 Extel analyst survey.

Table 1
Summary book recommendation statistics

	<i>No. of stocks covered</i>	<i>Buy %</i>	<i>Hold %</i>	<i>Sell %</i>	<i>Others %*</i>
Mean	434	23	45	9	23
St. dev.	76	1.2	10.3	4.9	15
Max.	533	25	57	14	36
Min.	328	22	33	3	4

* Hold/sell, switch from, switch to, speculative buy, accept offer, reduce, add, hold/buy, strong hold, weak hold, buy for income, hold for income, hold/yield etc.

Monthly recommendation lists used were dated between October 1989 and February 1990 with the exception of one house whose August 1990 book was used.¹¹ Only about two thirds of the recommendations had an associated report issued.

Reports were randomly sampled by recommendation and brokerage house, according to the following criteria:

- (i) the recommendation had an associated recent published report;
- (ii) unambiguous buy, hold or sell recommendations;
- (iii) a minimum of five reports for each of the three recommendation classes from each house; and
- (iv) principally non-financial firms, to ensure a good degree of comparability.

The total sample consists of 105 reports, 37 buy recommendations, 39 holds and 29 sells.¹²

4.2. Pre-sample analysis

Pre-samples are used in content analysis to develop the set of categories to be used in the analysis of the main sample of texts (Bardin, 1977; Krippendorff, 1980). Such samples must come from the same population as the main sample, but can be limited in size. We use a pre-sample to develop our thematic structure.

¹⁰ Francis and Soffer (1997) find buy recommendations occur four and a half times as frequently as sell recommendations, which they attribute to characteristics of the analyst's work environment that encourage issuance of favourable recommendations. Barber et al. (1999) provide a buy:sell ratio of 7.6:1. Our far lower proportion of buys to sells may reflect the differing institutional environment in the UK, or could be an artefact of the start of the UK economic recession of the early 1990s. However, Ryan and Taffler (2000) provide a similar ratio of new buy recommendations to new sells for the mid-1990s.

¹¹ This firm had to be sampled later than the others because it was restructuring its research department at the time.

¹² The number of buy recommendations per firm is either seven or eight, the holds vary between seven and nine, and the number of sells is five or six.

All sell-side analyst reports are similar in format, with the first page providing a summary of the full document and encapsulating the arguments underpinning the recommendation. We thus focus on this section of the report at the initial stage of the analysis. Sentences are cut into units or segments representing only one idea which can generally be characterised with a simple word or syntagm.¹³

We then synthesise all the derived textual units into five broad mutually exclusive thematic categories on the basis of commonality of meaning, Growth, Management and Strategy, Profitability, Financial Position and Market Conditions.

Such a codification structure, of course, cannot be viewed as objective and will be driven by the familiarity of the researcher with the field (Kelle and Laurie, 1995) and the objectives of the study. Nonetheless, despite the different nature and purposes of the studies of Previts et al. (1994) and Rogers and Grant (1997), our analytical framework can be broadly compared to theirs.

However, such general headings are essential considerations in any analyst's stock valuation process and, as indicated above, need to be refined by directional attributes or qualities, positive, neutral and negative. The derived 15 category pre-defined analytic structure is then applied to the main sample of full text reports.

4.3. Content analysis of the main sample

All the 105 full text reports were scanned via OCR and the 15 pre-defined thematic categories applied to generate theme variables. Our content analysis is conducted using the computer program SATO (Duchastel et al., 1989) which is specially designed to analyse texts automatically.¹⁴

Analysis of the main sample is conducted in two stages. First, a keyword dictionary is derived and then, using the KWIC (keyword in context) facility of SATO, all the 105 reports are analysed in detail to provide appropriate thematic assignment.

¹³ In most cases, the subject of the verb in the textual unit clearly highlights the information item.

¹⁴ This produces frequency statistics not only for words but also for themes, and automatically calculates the theme variables we use as the basis of our statistical analysis.

Table 2
Classification of words to themes

Growth	Growth Addition Development Disposal	Investment Acquisition Bid Merger
Management and Strategy	Management Productivity Competitive Innovative	Leadership Objective Control Restructuring
Profitability	Profit Earnings Contribution Margins	Results Returns Costs Losses
Financial Position	Equity Gearing Capital Borrowings	Debt Liquidity Share price Dividends
Market Conditions	Market Demand Volume Orders	Contracts Products Sales Customers

The specific steps in the analysis are (© denotes using the computer and ® researcher judgment):

- (i) an alphabetic sort of all words appearing in the texts together with frequencies;©
- (ii) identification of all relevant subject nouns (keywords);®
- (iii) assignment of these to the five broad themes;©
- (iv) conduct a KWIC analysis for each report to determine the attribute dimension for each keyword for classification into the full 15 thematic categories;®^{15,16} and then finally,
- (v) derivation of the 15 thematic variables for statistical analysis via:

$$\text{thematic variables} = \frac{\text{frequency of thematic category keywords}^{\text{©,17}}}{\text{total number of words in the text.}}$$

Table 2 provides examples of word classifications to the five basic themes and Table 3 into the 15 refined themes through analysis of context.

4.4. Validation

The employment of multiple coders is the traditional approach to reliability problems in content analysis studies (Morris, 1994). However, this is not appropriate here as the computer program SATO is used to assign keywords to themes automatically.

The area of main concern is the validity of the underlying thematic classification scheme, which depends on the researcher's knowledge and experience of the domain being investigated (Morris, 1994). Two research assistants independently synthesised the word list derived from the pre-sample into analytical categories. The 85% average rate of agreement with our conceptualised analytical structure is very adequate for our purposes.

5. Results

5.1. Company report characteristics

Table 4 provides a breakdown of report length and market capitalisation statistics by recommendation. As can be seen, both sets of distributions are skewed in all cases; there is no statistical evidence of differential report length or firm size by recommendation using the Kruskal-Wallis H-test.^{18,19}

¹⁵ The proportion of keywords in the texts is about 6%.

¹⁶ In the small number of cases of homonyms the researchers had to consider reassigning the subject noun to a different theme to that to which it had been previously classified by computer.

¹⁷ A small number of extreme values (21 out of 1,575) were replaced by the respective firm means.

¹⁸ $\chi^2_{\text{calc}} = 0.16$ for report length and 0.34 for market capitalisation ($\chi^2_{0.05} = 5.99$).

¹⁹ Number of words is highly correlated with number of pages ($r = 0.95$).

Table 3
Attribution of qualities

<i>KWIC extracts</i>	<i>Classification</i>
These were disappointing results (...)	Profitability – negative
Retail profits grew (...) in spite of the perceived softness in the DIY market	Profitability – positive Market Conditions – negative
Gearing (...) should come down now (...)	Financial Position – positive
(...) recent 4th quarter figures were accompanied (...)	Profitability – neutral
Capital expenditure last year was (...)	Growth – neutral
The company's diversifications of the past were all unsuccessful (...examples)	Management and Strategy – negative

Table 4
Company report characteristics by recommendation

<i>Recommendation</i>	<i>n</i>	<i>Number of pages</i>			<i>Market capitalisation (£m)*</i>		
		Mean	Median	St.dev.	Mean	Median	St.dev.
Buy	37	4.2	2.0	3.5	1,165	388	1,972
Hold	39	4.5	2.0	4.5	874	414	1,537
Sell	29	4.1	2.0	3.7	1,112	443	1,834

* The mean and standard deviation figures are derived omitting two cases both with market capitalisation > £10 bn, one Buy and one Hold case.

Table 5
Company report characteristics by brokerage firm

<i>Firm</i>	<i>n</i>	<i>Number of pages</i>			<i>Market capitalisation (£m) *</i>		
		Mean	Median	St.dev.	Mean	Median	St.dev.
1	19	2.0	2.0	0.0	613	348	990
2	21	4.3	2.0	5.0	1,147	491	1,778
3	22	4.5	4.0	1.8	1,743	567	2,829
4	22	8.1	6.5	4.7	765	273	1,324
5	21	2.0	2.0	0.0	908	561	974

* The mean and standard deviation figures are derived omitting two cases both with market capitalisation > £10 bn, and both from brokerage firm 5.

We may expect different brokerage houses to have different style reports and perhaps follow different firms. Table 5 summarises report length and market capitalisation by brokerage firm. Size of company followed does not differ between houses although length of report does.²⁰

However, any potential problems that might arise in the latter case as a result are somewhat ameliorated by our use of thematic variables standardised by length of report. Nonetheless, we cannot discount the possibility that the nature of the analyst's argument will vary across report length.²¹

In our sample, 49% of the reports are triggered

by the publication of the firm's interim results, 37% relate to annual results and the remaining 14% (15 reports) to other reasons such as a bid analysis or general company review.²² Of the

²⁰ Adopting the Kruskal-Wallis H-test, for size $\chi^2_{\text{calc}}=5.38$ and for report length $\chi^2_{\text{calc}}=67.2$ ($\chi^2_{.05}=9.49$).

²¹ For example, longer reports may be the result of more in-depth analysis or be prepared for a special purpose.

²² We tested for differences in report content by reason for issuance using the 15 thematic variables and multiple discriminant analysis but were unable to discriminate between the three 'types' of report on this basis. As such we pool all cases for purposes of analysis.

Table 6
Mean theme by variables by recommendation (%)

Rank	Theme	Recommendation			
		Buy	Hold	Sell	All
1	Profitability – neutral	20.2	18.2	19.7	19.4
2	Market Conditions – neutral	16.3	20.5	18.2	18.2
3	Growth – positive	10.8	11.8	10.7	11.1
4	Profitability – positive	11.4	10.6	7.8	10.0
5	Market Conditions – negative**	5.7	7.4	9.2	7.3
6	Profitability – negative	6.0	5.8	8.9	6.7
7	Market Conditions – positive	5.4	6.2	7.3	6.3
8	Financial Position – neutral	5.9	4.0	4.0	4.7
9	Management and Strategy – neutral**	5.2	3.4	2.6	3.8
10	Growth – neutral	4.0	3.1	3.5	3.5
11	Management and Strategy – positive**	4.1	3.3	2.3	3.3
12	Financial Position – negative	2.0	1.9	2.0	1.9
13	Financial Position – positive*	1.1	2.2	1.7	1.8
14	Growth – negative	1.4	1.2	1.7	1.5
15	Management and Strategy – negative	0.5	0.4	0.4	0.5

Key * Difference significant at the 10% level, Kruskal-Wallis H test
** Significant at the 5% level

[Respective χ^2 -statistics with p in brackets: 8.6 (.013), 8.2 (.016), 8.8 (.012), 4.8 (.093); there are 2 degrees of freedom.]

latter, four out of five reports are five or more pages long.

5.2. Univariate analysis

Table 6 provides mean thematic variables by recommendation in descending proportion of occurrence. As can be seen, references to Profitability – neutral and Market Conditions – neutral are most frequent, on average accounting for well over a third of all analyst thematic comment (37.6%). The neutral attributes indicate largely descriptive information with no value (good/bad) implications. The only other variable with more than 10% of thematic mentions is Growth – positive.

Overall, the Profitability theme accounts for 35% of references on average, Market Conditions 32% and Growth 16%. The two least frequently mentioned areas are Financial Position – 8.5% and Management and Strategy – 7.5%.²³

Perhaps, not surprisingly, adverse comment on management (Management and Strategy) is prominent by its absence in most reports (80%) and where there is some such mention this is brief and usually coupled with much more extensive positive discussion. This would be consistent with the wish not to antagonise a principal source of information (Schipper, 1991; Breton and Taffler, 1995).

Interpretation of the firms' balance sheet and cash flow position (Financial Position – positive and Financial Position – negative) is also relatively infrequent, accounting together for only 3.7% of total references and being placed near the foot of Table 6. Neutral mentions (Financial Position – neutral) dominate such comments (4.7%).

Conducting Kruskal-Wallis one-way analysis of variance highlights only three themes statistically significant at better than the 5% level in distinguishing between recommendation types, and one just significant at the 10% level. These themes (with p in brackets) are Management and Strategy – positive (.012), Management and Strategy – neutral (.016), Market Conditions – negative (.013) and Financial Position – positive (.093).

On this basis, sell-side security analysts appear to find non-financial qualitative information relating to the firm's management and its strategy the most important and decision useful source of information in their key investment advisory function. Management issues, even if comparatively infrequently discussed, dominate in analyst argumentation in discriminating between their stock recommendations.

On a univariate basis, a buy recommendation is associated with both more approving and neutral mentions of company management and strategy but fewer references to adverse trading conditions. Sell advice is driven by exactly the converse in each case. Despite the extensive discussion of profitability issues in all analyst reports, this ap-

²³ Our results broadly parallel the differential proportions of mention of related non-directional themes in Previts et al. (1994) suggesting commonality of analyst concerns and report structure in the two financial markets.

Table 7
Buy/hold/sell multinomial ordinal logit model coefficients

Variable	Hold		Buy	
	Coefficient	t-stat	Coefficient	t-stat
Constant	-1.030	1.77*	-2.312	-3.29***
Profitability – positive	0.077	1.80*	0.110	2.39**
Management and Strategy – positive	0.153	1.44	0.233	2.13**
Management and Strategy – neutral	0.081	0.95	0.222	2.54**

Sell is the reference category.

Model $\chi^2 = 21.32$ ($\chi^{2.01}$ for 6 degrees of freedom = 16.81).

* significant at the 10% level

** significant at the 5% level

*** significant at the 1% level

Table 8
Buy/sell logit model coefficients

Variable	Coefficient	t-stat
Constant	-0.376	-0.54
Profitability – positive	0.096	1.97**
Management and Strategy – positive	0.246	2.35**
Market Conditions – negative	-0.144	-2.29**

Model $\chi^2 = 17.44$ ($\chi^{2.01}$ for 3 degrees of freedom = 11.34).

** significant at the 5% level

pears to have little impact on the nature of their ultimate recommendation considered alone.

5.3. Multivariate analysis

Nonetheless, the way in which an analyst arrives at a stock recommendation is complex and involves weighing up a large number of inter-related factors simultaneously. A multivariate analysis approach is thus likely to provide a more helpful picture of the comparative decision relevance of different information types to the financial analyst and insights into his/her argumentation process.

Table 7 summarises the results of a multinomial ordinal logit analysis to distinguish between the three recommendation types. Our interest is in which information variables, when taken together, best distinguish between buy, hold and sell reports. Likelihood ratio tests for redundant and omitted variables are conducted to determine those themes to be included in the model (Demaris, 1992: 67–68). Sell is treated as the reference category.

Three themes are statistically significant at the 5% level in distinguishing between recommendations in the buy case: Profitability – positive, Management and Strategy – positive and Management and Strategy – neutral. As each has a positive coefficient we infer that the more positive comments on profitability and approving and neu-

tral references to company management, the more likely is a buy recommendation. Whereas a focus on management and strategy may still be the single most important distinguishing characteristic in analyst arguments, in the multivariate case profitability considerations now assume importance.

For hold advice the only significant distinguishing theme from sell (at the 10% level) is Profitability – positive. Table 1 shows how this category predominates across brokerage firms.²⁴

Table 8 presents the logit analysis omitting the hold reports. The resulting model substitutes Management and Strategy – neutral with Market Conditions – negative (significant at the 5% level) in distinguishing between buy and sell directly. The greater the reference to the profitability and management themes and the fewer the mentions of adverse market conditions, the more likely is buy as opposed to sell advice.²⁵

²⁴ If the multinomial ordinal logit is rerun with buy as the reference category then only Management and Strategy – neutral is significant at conventional levels (in this case at 5%) in distinguishing hold from buy advice.

²⁵ On a univariate basis, the three themes significant in the 3-group Kruskal-Wallis analysis of variance at the 5% level are now significant at better than $\alpha = 0.01$, and Profitability – positive replaces Financial Position – positive as significant at the 10% level.

6. Discussion, limitations and conclusions

Research to date into the financial analyst company report has been largely restricted to quantification and analysis of content (e.g. Previts et al., 1994; Rogers and Grant, 1997). Whereas this is important in its own right, it is not possible to infer analyst information needs directly from frequency of mention of information items in their reports. The ultimate analyst judgment – what recommendation to make on a stock (Schipper, 1991: 106) needs to be linked with report content to understand what information is decision useful *in reality*.

Although, as Rogers and Grant (1997:26) point out, it is reasonable to assume that analysts prepare reports designed to communicate efficiently and effectively and lack incentives to introduce extraneous information, nonetheless this refers only to their conscious motivations. It is unlikely that analysts have the necessary self-insight into their intuitive judgmental processes to determine the subset of considerations that drive a particular security recommendation (Mear and Firth, 1987).

Analyst reports constitute the formal explanations of their stock recommendations and are not records of their decision processes (Govindarajan, 1980). In fact, we may speculate on whether we will ever be able to understand the nature of these highly complex judgments when they are made in real world contexts and in the presence of real world incentive structures and conflicts of interest (Schipper, 1991: 116).

The approach we adopt here to overcome such problems is to relate information cues derived from content analysis of analyst company reports (our theme variables) to the actual analyst stock recommendations (buy, hold, sell) using a linear modelling approach. *A priori*, the component model (information) variables are those that are decision relevant. Measures that are not significant may be less important or actually redundant.

Considered on a univariate basis, only four themes are significant in distinguishing between the different types of recommendation in our sample of company reports, three concerned with non-financial qualitative information (Management and Strategy – positive and neutral and Market Conditions – negative) and one (the least significant) with Financial Position – positive, predominantly balance sheet based measures. On the other hand, the overall Profitability theme has the greatest volume of mentions in the reports (36.1%).

On a multivariate basis, only three thematic variables are significant in the multinomial ordinal logit model that predicts an analyst's judgment, Management and Strategy – neutral, Profitability – positive and Management and Strategy – positive. The greater the frequency (assumed proportional to importance) of these three types of mention the more likely the derived linear model predicts a buy

recommendation, and the fewer the mentions the higher the probability of sell advice. Good income statement results or expectations now become important in this multivariate framework, although balance sheet considerations no longer are. Nonetheless, management considerations still dominate.

What are the implications of our results for the financial reporting process? Firstly, our results demonstrate that profit numbers and earnings forecasts are not necessarily the most important information items used by analysts in their firm valuation decisions.²⁶ Secondly, the potential relevance of balance sheet measures may also be being overstated. Finally, and most importantly, non-financial information is crucial, much of which is informal and generated directly by the company (Holland, 1998). Demonstrably, analysts rely crucially on non-financial, soft, qualitative and imprecise information in their primary task of making stock recommendations. Consideration of a firm's management and strategy, although occupying only a small part of an analyst's report, is the key single determinant.^{27,28}

As investment analysts are primary users of financial information and key information intermediaries, such conclusions need to be taken into account in accounting policy making and standard setting to enhance the utility and relevance of financial reports to users. In parallel with Rogers and Grant (1997:25), our results suggest that the financial reporting process could be improved by including such additional qualitative types of information; the scope of auditing services would then need to be re-evaluated to monitor these new disclosures.

This study is of an initial nature and is subject to potential limitations. The definition of the variables we use is open to amelioration by a better approach to grouping information units into common themes. However, the more refined the classification the greater the number of themes leading to reduced number of occurrences in each case, and thus lower discriminant potential.

²⁶ Note that our interest here differs from that of Francis and Soffer (1997) who are concerned with the market reaction to stock recommendations and earnings forecast revisions conditional on each other. Although the authors conclude that neither subsumes the information in the other, their empirical results (Table 3) demonstrate the principal security return driver is the categorical stock recommendation, with the incremental contribution of earnings forecast revisions, albeit statistically significant, quite limited in economic terms.

²⁷ We may, however, perhaps view management and strategy considerations as implicitly proxying for long-term profit forecasts in narrative form.

²⁸ Interestingly, Barker (2000) based on direct observation and interview, also argues that financial statement analysis is not a core competence for analysts, in practice, and earnings (and accounting information) play only a limited role in their information environment.

We also assume that each analyst report contains the necessary argumentation associated with the recommendation. In the case of brief reports published in response to results announcements, it is possible that only incremental information is being dealt with.

In addition, we might speculate that a larger sample size or one more homogeneous in terms of industry groups or report trigger could lead to enhanced results, although such a sample would be difficult to obtain because of the many factors that would need to be controlled for.

Finally, as with all content analysis, the assumption of importance of information item being directly proportional to frequency of mention and other related issues may not be fully realistic (Weber, 1990: 70–73). The process of writing even a technical report is far more complex and subtle than this (Ragin, 1995). However, this is a price that has to be paid to obtain a systematic description of textual narrative in all content analysis procedures, and the benefits clearly outweigh the disadvantages.

Nonetheless, our study is able to make an original contribution to the understanding of the importance of different information types to analysts by explicitly relating company report content to the nature of the stock recommendation made. Further work could usefully focus on the information drivers of recommendation changes (Womack, 1996; Francis and Soffer, 1997) and whether there is a difference in brokerage house style across different firms.

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