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PREDISCLOSURE INFORMATION SEARCH INCENTIVES, FIRM SIZE, ANALYST FOLLOWING AND CORPORATE NEWS

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ABSTRACT

This paper explores whether firm size or analyst coverage is a more significant variable in explaining the richness associated with a firm's information environment. The results presented in prior research investigating this issue are conflicting. The paper contributes to the literature by adopting a broader measure of a firm's total information environment than that employed in prior research. The sample of stocks is drawn from the constituents of the FTSE 100 and FTSE 250 indices over the two-year period 1 January 1994 to 31 December 1995. Both variables (size and coverage) are found to be significantly related to firm information availability in a univariate sense. However, in a multivariate context firm size dominates analyst coverage and analyst coverage ceases to be statistically significant. The results have important implications for researchers who incorporate proxies for the richness associated with a firm's information environment ("predisclosure information availability") in measuring the price and/or trading volume response to corporate news events.

INTRODUCTION

Market prices are set as the resolution of differences in the valuation assessments of market participants. Investors make such assessments based on analysis of the existing information set available to them. The market information environment is both rich and complex and will consist of information provided by the firm itself and by many other parties, including the sell-side analyst. Company share price changes and trading volume activity occur as new information comes to the market altering investors' expectations. The market reaction to news events is dependent on the amount of predisclosure information available to the market. The two empirical proxies explored in the extant literature for predisclosure information availability, and hence the richness of a firm's information environment, are (1) the number of analysts following a stock and (2) firm size.

Bhushan (1989) devised a general framework whereby the aggregate demand and supply of analysts' services are functions of the per unit price of analysts' services and a number of firm characteristics. The argument is that analysts will cover firms and engage in the acquisition of company news to the extent that the

economic benefits of so doing outweigh the search and associated costs. Bhushan finds that the number of analysts following a firm increases with firm size, institutional ownership and return variability. O'Brien and Bhushan (1990) find that analyst following increases when a firm's return volatility has declined, increases more for firms in regulated industries and in industries with a large number of firms. Brennan and Hughes (1991) find that analyst following is greater for firms with lower share prices and that the number of analysts increases after a stock split. Lang and Lundholm (1996) find that firms with more informative disclosure policies have a higher analyst following. Barth, Kasznik and McNichols (2001) find that analyst following is greater for firms with larger research and development and advertising expenses relative to their industry.

A parallel literature to the analyst studies suggests that a firm's market capitalisation (firm size) is an adequate descriptor of the amount of predisclosure information available about a company. Atiase (1985) argues that investors have greater incentives to gather information for larger firms as trading profits are directly proportional to firm size, i.e., knowledge that the equity of a large firm is mispriced by one per cent could be used to generate a larger net trading profit than if a small firm's equity were mispriced by one per cent. The empirical literature is supportive of an inverse relationship between firm size and the news content of individual news events (Atiase, 1985; Freeman, 1987; Dempsey, 1989).

The empirical evidence on whether firm size or the number of analysts following a stock is a better measure of the richness of a firm's information environment is mixed. Dempsey (1989) finds that analyst following dominates firm size in explaining the price reaction to earnings announcements. However, Cho and Harter (1995) report that firm size dominates the number of analysts following a stock in explaining the degree of predisclosure information available about a stock[1]. Arguably neither of these studies is a true test of the relative role of company size and the number of analysts following a stock in explaining firm information availability. Dempsey is concerned with the market announcement around a single event, firms' annual earnings' announcements. Cho and Harter use the dispersion of analysts' earnings forecasts as their measure of information availability and compare whether analyst coverage or firm size is more negatively correlated with this variable. They argue their approach measures predisclosure information in a broader sense than the market's response to earnings announcements on its own. Essentially Cho and Harter argue that the greater the information asymmetry the more difficulty analysts will have in forecasting earnings, and hence the greater the dispersion of analysts' earnings forecasts. As the amount of information about the firm increases analyst opinions will tend to merge. However, Barry and Jennings (1992) and Abarbanell, Lanen and Verrecchia (1995) suggest that dispersion among analysts' forecasts itself may be an imperfect proxy for information availability as individual analysts may hold different components of the information set emitting opposing signals. Thus, they argue, an increase in the market information set may, in certain circumstances, increase rather than decrease the dispersion in analysts earnings forecasts if analysts do not share the same information set.

This study models information availability and hence the richness of a firm's predisclosure information environment as a function of the proportion of companies' economically significant market-adjusted price changes and trading volume movements that are triggered by news "available" to the market[2]. The paper argues that this is a superior measure of predisclosure information availability than that adopted in either Dempsey (1989) or Cho and Harter (1995). Regression analysis is performed using these measures of information availability (one for price and one for trading volume) as the dependent variable and number of analysts following and firm size as the independent variables. The results support univariate significance for both proxies (number of analysts and firm size) for the amount of predisclosure information. In the multi-regression models, however, firm size remains statistically significant whilst number of analysts does not.

The results therefore suggest that firm size rather than number of analysts following a stock is a better proxy for the amount of predisclosure information available. Inasmuch as firm size is a more parsimonious proxy to obtain than the number of analysts following a stock, these results are of direct relevance to researchers in selecting a proxy for the richness associated with a firm's information environment.

The remainder of the paper is organised as follows. The next section describes and justifies the measure of predisclosure information availability (richness of a firm's information environment). This is followed by a description of the data and reports descriptive statistics on the measure of the richness of a firm's information environment. In the next section the empirical tests of the relationship between predisclosure information availability and analyst following and firm size are described. In the final section provides a summary and conclusions.

PREDISCLOSURE INFORMATION AVAILABILITY

Arriving at an all-inclusive measure for the amount of information available about a firm and hence the richness of a firm's information environment is a daunting task. Company share price movements and trading volume activity may be driven by a combination of "publicly available" and "insider" information. However, as McGoun (1990) points out, the distinction between information that is publicly available and information that is available to certain investors or groups of investors is only clear in the extremes. For instance, in relation to "publicly available" information we can ask: when does information become public and which investors are the public? The classic "insiders" are company directors. In addition sell-side analysts may also be categorised as "insiders" or quasi-insiders". The methodology described below is, inter alia, designed to capture "economically significant" share price movements and trading volume activity triggered by these two types of capital market participants.

The measure of predisclosure information availability

The richness of a firm's information environment - and hence the amount of corporate predisclosure information available to the market - is defined as the proportion of FTSE 100 and FTSE 250 companies' economically significant market-adjusted share returns and trading volume activity that are triggered by "corporate news". Restricting attention to economically significant returns and volumes ensures that only value-relevant information is considered with results not distorted by non-price sensitive information or noise[3]. It is expected that, if information events are driving firms' largest price changes and trading volume movements, it should be captured by the selected sources of corporate news[4].

The research first identifies firms' largest market-adjusted price changes and trading volume movements and then explores for the news items that are driving such economically significant movements.

To identify the largest price changes, the following models are run:

$$AR_{it} = R_{it} - ER_{it} \quad (1)$$

where:
AR_{it} = the abnormal return associated with firm i on day t,
R_{it} = actual return for firm i on day t, and
ER_{it} = expected return for firm i on day t.

The expected return generating model[5] is as follows:

$$ER_{it} = \beta_i R_{mt} \quad (2)$$

where:
R_{mt} = return on the FT All Share Index on day t, and
β_i = LBS[6] beta coefficient for firm i.

This is the market model with no intercept term. An intercept term is not relevant, as firm price changes are ranked in order of magnitude for each individual firm and a constant term will not impact the ranking. In addition, previous research has shown that the intercept term is not statistically significant (Brown and Warner 1980, 1985)[7].

Returns are calculated using log prices[8], adjusted for dividends as follows:

$$\ln(P_t + D_t) - \ln(P_{t-1}) \quad (3)$$

where:
ln = natural log,
P_t =price in time period t,
D_t = dividend in time period t, and
t = time on a daily basis.

Firm i price changes are defined as "major" or "economically significant" if they are in excess of two standard deviations above or below the average abnormal return (AR). *A priori,* such price movements, given their size, are likely to be associated with firm specific news releases and not attributable to news events

communicating little new market-relevant information or noise. Approximately 12 such observations per firm each year[9] are expected.

The abnormal volume metric employed is defined as:

$$\lambda_{it} = AV_{it} - EV_{it} \quad (4)$$

where:
λ_{it} = abnormal volume residual for firm i on day t,
AV_{it} = actual proportion of the shares of firm i trading on day t, and
EV_{it} =expected proportion of the shares of firm i trading on day t.

The expected volume-generating model is:

$$EV_{it} = \gamma_i + \delta_i V_{mt} \quad (5)$$

where:
EV_{it} = expected proportion of the shares of firm *i* trading on day t,
V_{mt} = proportion of total shares traded on the LSE on day t, and
γ_i, δ_i = the intercept and slope estimates respectively.

This model is consistent with Bamber (1986, 1987) and Ziebart (1990).

However, identifying economically significant trading volume activity involves two issues that are not present in the calculation of economically significant price changes. First, trading volume may not be normally distributed. Second, a two-tailed test is inappropriate, as only the largest market-adjusted volumes are relevant. Thus large trading volume movements are driven by either positive or negative firm-specific news.

Major market adjusted trading volume movements are identified based on the number of economically material price changes observed for each firm. Thus, if a firm has 24 such returns over the two-year period of the study then the 24 largest market-adjusted trading volume movements are chosen for analysis[10].

The major price changes and trading volume activity are matched to firm-related news events using four key information sources readily available in the UK:

1. London Stock Exchange Regulatory News Service
2. Financial Times
3. McCarthy Information
4. Investext [11]

Including the Stock Exchange Regulatory News Service as one of the key sources of company news ensures that trades by directors are picked up, as all directors' dealings have to be reported to the Stock Exchange and disclosed to the market via the Regulatory News Service.

To capture the firm-specific news events driving major (economically significant) price movements and trading volume activity, a seven-day window is employed. This comprises the day of the price change itself (t=0), the immediately preceding day (t=–1) and the five-day period following the major price change or

trading volume movement (t=+1,....+5) to avoid problems associated with news reporting delays or information event anticipation [12, 13].

DATA AND DESCRIPTIVE STATISTICS

The sample consists of all industrial companies in the FTSE 100 and FTSE Mid-250 indices[14] (excluding financials) for the two-year period 1 January 1994 to 31 December 1995 [15].

The original sample, consisting of 254 industrial firms, is narrowed down to 215 with firms in the original list eliminated for the following reasons:

1. If share price or trading volume data is not available for the firm for the full period 1 January 1993 to 31 December 1995, and/or
2. The firm itself is not in existence for the entire period of the study, or had merged or de-merged.

The requirement for the extra year 1993 is to allow the derivation of appropriate benchmarks used in the return and trading volume models[16,17].

The sample companies are drawn from 32 different stock market sectors and there is no obvious bias.

Daily share price data is obtained from *FT EXTEL*. Daily trading volume data and dividend data is obtained from Datastream International. The *Financial Times*/Actuaries All Share Index is used as the market index.

Table 1 shows that across the full sample, 65 per cent of major (economically significant) price changes and 63 per cent of major (economically significant) trading volume activity are related to company specific news. Consequently 35 per cent of abnormal price movements and 37 per cent of abnormal trading volume movements are apparently not related to the selected sources of reported news[18]. A potential concern is whether the methodological approach has captured substantially all available sources of publicly available information to match to company price changes and trading volume activity[19]. **Table 1** additionally shows that for FTSE 100 firms, the largest companies trading on the London Stock Exchange, around 80 per cent of significant price changes and trading volumes are associated with public domain information compared with less than 60 per cent for the next size cohort (FTSE Mid-250 capitalisation stocks). These findings are consistent with prior research showing the incentives for information gathering and financial press dissemination are directly related to firm size (Grant, 1980; Atiase, 1985).

TABLE 1: PROPORTION OF SIGNIFICANT PRICE CHANGES (TRADING VOLUMES) APPARENTLY UNEXPLAINED BY PUBLICLY AVAILABLE INFORMATION

	Price changes	Trading volumes
All companies	35%	37%
FTSE 100	18%	21%
FTSE Mid-250	44%	45%

EMPIRICAL TESTS ON THE RELATIONSHIP BETWEEN PREDISCLOSURE INFORMATION AVAILABILITY AND ANALYST COVERAGE AND FIRM SIZE

Dependent variable

The measures of predisclosure information availability are based on the approach adopted in the previous section. The dependent variable **%price** (**%volume**) represents the percentage of a firm's major (economically significant) price changes (trading volume movements) driven by firm news over the two-year period 1 January 1994 to 31 December 1995.

Independent variables

The analyst following variable (**NOA**) is defined as the average number of analysts producing one-year ahead earnings forecasts for firm i. Specifically the average is calculated based on the total number of analysts producing one-year ahead forecasts in January 1994 plus the equivalent number for January 1995 divided by two. Implicit in this proxy is that analysts do not differ in quality. The same approach was adopted for firm size where (**Size**) is based on the logs of market value[20].

Regression results are presented in **Table 2**. Output for models (1) through (3), based on **%price**, appear in the upper portion of the table, and output for models (4) through (6), based on **%volume**, appear in the lower portion.

An examination of regression estimates of model (2) and model (5) indicates that firm size (**Size**) itself is a significant predictor of the richness associated with a firm's information environment (t= 12.55 and t= 13.49 respectively), corroborating earlier findings in the literature. The associated R^2s are 0.42 and 0.46 respectively. The results from models (1) and (4) likewise confirm univariate significance for analyst following (**NOA**) (t=9.12 and t=11.29 respectively). The associated R^2s are 0.28 and 0.37. As to the incremental explanatory power of the two information proxies, **Size** in the multi-variate (price) regression continues to be significant (t=7.50) whilst **NOA** does not (t= 1.58). In a multi-variate context the R^2 increases slightly (0.42 to 0.43) over the R^2 for **Size** alone. In the multi-variate (volume) regression similar results are reported (t= 6.95 and t=1.52) for **Size** and **NOA** respectively[21].

TABLE 2: COMPARATIVE REGRESSION RESULTS FOR ANALYST FOLLOWING AND FIRM SIZE AS PROXIES FOR THE RICHNESS OF A FIRM'S INFORMATION ENVIRONMENT

Panel A: Models employing %price as the dependent variable

Model										
(1)	$\%price_i$	=	α	+	$\beta_1 NOA_i$	+	ε_i			
	coefficients:		0.45		0.02					
	t-statistics:		12.99*		9.12*					
	R^2 = 0.28 (adjusted)									
(2)	$\%price_i$	=	α	+	$\beta_2 Size_i$	+	ε_i			
	coefficients:		–0.02		0.11					
	t-statistics:		–0.35		12.55*					
	R^2 = 0.42 (adjusted)									
(3)	$\%price_i$	=	α	+	$\beta_3 Size_i$	+	$\beta_4 NOA_i$	+	ε_i	
	coefficients:		0.01		0.10		0.01			
	t-statistics:		0.21		7.50*		1.58			
	R^2 = 0.43 (adjusted)									

Panel B: Models employing %volume as the dependent variable

Model										
(4)	$\%volume_i$	=	α	+	$\beta_5 NOA_i$	+	ε_i			
	coefficients:		0.41		0.02					
	t-statistics:		13.08*		11.29*					
	R^2 = 0.37 (adjusted)									
(5)	$\%volume_i$	=	α	+	$\beta_6 Size_i$	+	ε_i			
	coefficients:		–0.03		0.11					
	t-statistics:		–0.57		13.49*					
	R^2 = 0.46 (adjusted)									
(6)	$\%volume_i$	=	α	+	$\beta_7 Size_i$	+	$\beta_8 NOA_i$	+	ε_i	
	coefficients:		0.04		0.08		0.01			
	t-statistics:		0.64		6.95*		1.52			
	R^2 = 0.49 (adjusted)									

* = *statistically significant at* α= *0.01.*

The results are contrary to expectations insofar as firm size is just one firm characteristic and analysts may condition on other characteristics, in addition to size alone, that yield high payoffs relative to information search costs.

However, analysts' decisions to follow firms may be driven in part by factors unrelated to company news (information) gathering per se. Carleton, Chen and Steiner (1998) report evidence that analysts' decisions to follow stocks are in part driven by the propensity of such stocks to be candidates for raising finance on the capital markets. In other words, analysts follow stocks that help their brokers receive underwriting contracts.

In addition, a major factor determining analysts' decisions to follow stocks is the level of institutional ownership (O'Brien and Bhushan, 1990). Institutions tend to follow larger stocks (O'Brien and Bhushan) and stocks that have higher quality ratings (Chung, 2000) as such factors have been used as evidence in legal cases to satisfy standards of fiduciary responsibility (Moyer, Chatfield and Sisneros, 1989).

Consequently larger market capitalisation stocks may attract greater analyst coverage than is warranted from an informational efficiency perspective.

In addition, the literature suggests analysts are not necessarily unbiased processors of corporate news and may underreport or even suppress negative news. There are incentives for analysts to bias optimistically their earnings forecast revisions and recommendations in order to maintain links with management (Francis and Philbrick, 1993), to preserve the investment banking relationship (Dugar and Nathan, 1995), or to maximise trading commission (Darlin, 1983). For negative news this may mean that sell recommendations and negative earnings forecast revisions are suppressed (McNichols and O'Brien, 1997). In other words negative news is less likely to be disseminated by the sell-side analyst thus effectively vitiating their role in communicating news, in particular negative news, to the equity markets. In aggregate, therefore, analysts' conflicting incentives may explain the dominance of company size over analyst coverage.

This research shows that firm size rather than analyst coverage is a better proxy for the amount of predisclosure firm information available in the market. The results in this regard are consistent with those reported by Cho and Harter (1995) and contrast with those of Dempsey (1989). As firm size is a more parsimonious proxy to obtain than analyst coverage the results are of practical significance to researchers.

SUMMARY AND CONCLUSIONS

Analysts' decisions to gather and disseminate company-related information are expected to be made within a multi-dimensional search cost-benefit framework. Analysts will focus attention on the set of firm characteristics expected to yield the highest payoff taking into account analysts' search costs. Atiase (1985) suggests that firm size will be a dominant characteristic. However, other firm characteristics may also influence analysts' search frameworks (Barth et al., 2001). Thus employing analyst following as a proxy for predisclosure information may be expected to be superior to firm size alone. The prior empirical literature on this issue is conflicting. Dempsey (1989) reports that analyst coverage is superior to size whereas Cho and Harter (1995) report contrary results. These contradictory results may be in part attributable to the measures of predisclosure information availability employed in these studies.

This research adopts a broader measure of predisclosure information availability than that employed in prior research, and investigates whether the number of analysts following a stock or firm size is a better proxy for the richness of a firm's information environment. The sample firms consist of the constituents of the FTSE 100 and FTSE 250 indices over the two-year period 1 January 1994 to 31 December 1995.

This paper finds that firm size rather than analyst coverage is a better proxy for the amount of predisclosure information in the marketplace. The results are consistent with analysts' decisions to cover firms being determined, at least in part,

by factors unrelated to company news acquisition and dissemination and the informational efficiency of the markets.

The results have important implications for researchers who condition on proxies for predisclosure information availability in measuring the price and/or trading volume response to firm specific events such as the release of the preliminary results etc.

NOTES

1 Other studies that condition on both size and analyst following are more concerned with issues related to the tendency for firms to exhibit anomalous price behaviour. For example, Hong, Lim and Stein (2000) find that holding size fixed, momentum strategies work better among stocks with greater analyst coverage. Brennan, Jegadeesh and Swaminathan (1993) find, after controlling for firm size, firms followed by more analysts tend to respond more rapidly to new information.

2 The paper focuses on both price reaction and trading volume activity. Price movements reflect changes in the market's consensus expectations generated by a news release (Beaver, 1968), whereas trading volume activity reflects changes in the expectations of individual investors (heterogeneous expectations) or differential interpretations consequent on the news release (Karpoff, 1986; Kim and Verrecchia, 1991).

3 The approach is conceptually similar to the predictive study of Beneish, Lee and Tarpley (2001) who focus on the characteristics of stocks exhibiting extreme price movements (top and bottom two per cent of all stocks). They argue such price movements are of particular interest to fund managers and investors and hence the investigation of their determinants is a worthwhile research exercise.

4 Essentially this paper makes the same argument as Cutler, Poterba and Summers (1989): 'Although the hypothesis that stock prices move in response to news that is observed by market participants but not by investigators studying the market is irrefutable, we are skeptical of this possibility. News important enough to account for large swings in the demand for corporate securities would almost surely leave traces in... media reports about (market) movements.'

5 The model was also re-run assuming beta = 1 with no difference in reported results. In other words, the days that triggered economically significant price changes using the LBS betas also triggered economically significant price changes when a beta of 1 was assumed. As an additional test, the model was re-run using company price changes themselves as the return-generating model, hence ignoring the impact of the market. Again adopting such an approach did not alter the previous results. (See also footnote 7).

6 Betas are obtained from the London Business School (LBS) Risk Measurement Service (RMS). The stock beta estimate from the January–March RMS book was used as the proxy for the market's *ex ante* estimate of systematic risk for the calendar year since the January–March book is based on share price movements up to and including 31 December of the previous calendar year.

7 As daily data and short event periods are used, more sophisticated return generating models are unlikely to add to the results (Kothari, 2001 § 4.4.1.1).

8 Share prices are taken from Datastream and are adjusted to reflect share splits, rights issues etc.

9 If log returns are normally distributed these residuals will lie in the 2½ per cent tails of the normal distribution. As there are approximately 250 trading days in the year, there will be approximately 12 observations per firm per year. Diagnostic tests confirm that the market model residuals generated can reasonably be characterized as being normally distributed and the residuals fall within acceptable limits for kurtosis (less than 3) and skewness (not exceeding 1.2).

10 As an additional test, the results reported in **Table 2** were re-run using the largest 1 per cent of positive price movements and negative price movements (total 2 per cent) and the corresponding 2 per cent largest trading volume movements. The reported results were not affected by adopting such an approach.

11 The London Stock Exchange Regulatory News Service lists all mandated price sensitive company news announcements by the London Stock Exchange. The *Financial Times* archive is available on CD-ROM, and is a huge database of financial and economic news. In addition, the McCarthy Information fiches were accessed. These provide a unique compilation of company, industry, and market information and news on firms. More than 150,000 articles are selected from more than 40 newspapers and business magazines each year, indexed by company name, industry, country, and type of news. McCarthy is also available on CD-ROM. Investext features research reports from more than 630 investment banks, brokerage houses and research firms worldwide, including the top UK based firms.

12 Prior disclosure may particularly be a problem in relation to analysts' investment recommendations where there are incentives to disseminate such releases to clients prior to the market as a whole. There is some such evidence from studies examining the price and trading volume impact of the secondary dissemination of analysts' stock recommendations in the financial press which document price movement prior to "public" disclosure (Davies and Canes, 1978; Bauman, Datta, and Iskander-Datta, 1995).

13 As a sensitivity test the results in **Tables 1** and **2** below were re-run with the more restrictive window [-1,+1] with no impact on the reported results in **Table 2**. Thus extending the end of the window from +1 to +5 does not significantly affect the results in **Table 2**. (In fact, 80 per cent of the economically significant price changes and trading volume movements occur within the interval [-1, +1]).

14 These indices represent the largest 350 firms by market capitalisation quoted on the London Stock Exchange.

15 The mean market capitalisation of the sample stocks is in £2,160 million with an associated standard deviation of £3,850 million. The median is £890 million. The maximum and minimum values are £29,300 million and £75 million respectively.

16 The standard deviations used to identify the residuals are based on the standard deviations from the previous calendar year. Thus, for example, the British Telecom price outliers for 1994 are estimated by initially calculating the market-adjusted returns by running the market model for the 1994 period. Next, the standard deviations generated from the market model residuals in the 1993 calendar year were applied and all residual price movements for 1994 that lie in excess of two standard deviations from the mean residual were identified. (The 1993 standard deviations are used to identify the 1994 outliers as they are the proxy for the market's *ex ante* measure of British Telecom's market-adjusted price variability in 1994).

17 Trading volume δ_i factors are calculated using daily data observations for the previous calendar year. Thus, in equation 5, the δ_i coefficient generated from the

1993 calendar year regression is used as the proxy for how company trading volume varies with market trading volume for the 1994 calendar year. This approach is analogous to that adopted for price changes. The average coefficient of determination for the market-adjusted trading volume regression is 8 per cent with a range from zero to 30 per cent. These results are consistent with previous research using daily data (Bamber 1986; Morse, 1982). The slope coefficient (δ_i) is significant at $\alpha = 0.05$ in all but 6 per cent of cases whilst the intercept term (γ_i) is only significant at $\alpha = 0.05$ in 3 per cent of cases.

18 Such findings are consistent with Ryan (2001). Ryan (2001) finds, using the expert market knowledge of stockbroking analysts, that even for large companies in excess of 30 per cent of firm price changes are triggered by "soft" events relating to fads, fashion, sentiment etc. as hypothesized by Roll (1988). Such events, perhaps due to their intangibility, are not routinely reported in the financial press and related media and therefore will not be picked up by the sources of company news.

19 To investigate whether the three company news sources are deficient, a pilot study of five companies was conducted using Reuters Business Briefing (RBB), which is the most detailed information source available in the UK, although not generally available for academic research purposes. The research examined whether price and trading volume movements unexplained by reference to the original three sources can be explained by news events reported on RBB. In fact, no incremental information of a value relevant nature was reported that could potentially explain the unexplained price and volume movements in these cases. This leads to the conclusion that even the use of Reuters, were this available, would be unlikely to add much value to the study and the three original sources of company news are robust. It is unlikely that a material amount of public domain value-relevant news was missed.

20 To allow for non-stationarity across time in the distributions of **Size** and **NOA** in computing the average, the NOA variable for 1995 is restated in 1994 terms as follows: restated $NOA_{i,\ 1995} = NOA_{i,\ 1995}$ x median (NOA_{1994})/median (NOA_{1995}). A similar methodology is adopted to calculate restated $Size_{i,1995}$.

21 In the multi-variate models the correlation co-efficient between **Size** and **NOA** is 0.72 suggesting that more analysts follow larger firms than smaller ones and vice versa. Notwithstanding this they are not perfect proxies for one another. If they were the correlation coefficient would approach 1.0 and neither variable would be significant in a multi-variate setting as the independent effects of each could not be separated (i.e. a classical multicollinearity problem).

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