Voluntary Disclosure of Profit Forecasts: Factors Influencing Information Disclosed during UK Takeover Bids

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A. Introduction

Most studies of forecast disclosure do not examine the information disclosed in forecasts, focusing instead on the dichotomous decision to disclose/not disclose a forecast (Imhoff, 1978; Cox, 1985; Waymire, 1985; Lev and Penman, 1990). More recent research has begun to examine the nature of the forecasts disclosed (qualitative vs. non-qualitative; point or range forecasts) (Pownall, Wasley and Waymire, 1993; Frankel, McNichols and Wilson, 1995). This paper takes the analysis one step further by analysing and explaining the information disclosed in forecasts after the initial disclosure decision is made.

Forecasts are rarely disclosed in the UK except in the case of new share issue prospectuses and during takeover bids where disclosure is generally voluntary. This contrasts with the US where management forecasts are routinely disclosed by many US companies. UK managements are generally reluctant to disclose forecasts routinely as these, once issued, would have to be formally reported on by accountants and financial advisors if the company is subsequently involved in a takeover bid.

Most research to date into forecast disclosure is based on US management earnings forecasts disclosed routinely on a voluntary basis. These management forecasts are generally obtained from news sources such as *The Wall Street Journal*. In this paper forecasts are obtained from primary sources – from takeover documents (offer and defence documents) published during UK takeover bids which are available publicly. As such forecasts have to be reported on by reporting accountants and financial advisors to the forecaster, practice has evolved such that most forecasts have a similar layout and format, with variations in the detailed disclosures in forecasts.

As information in forecasts is largely unregulated in the UK, a study of disclosures in forecasts can provide valuable insights into voluntary disclosure decisions. This in turn may be helpful in assisting policy makers to develop better regulations governing the disclosures in forecasts. In addition, these research findings may assist management in their disclosure choices.

This research attempts to examine forecast disclosure from the perspective of the detailed information reported in the forecasts rather than just (as in previous research) whether a forecast was disclosed or not. Forecasts generally disclose two distinct types of information: (1) Financial information and (2) assumptions underlying the forecast. Increased disclosure of financial information in forecasts is likely to be useful to users in understanding forecasts and in adding to their credibility. Assumptions, on the one hand, may provide more information on how the forecast is arrived at, but, on the other hand, may qualify the certainty of achieving the forecast. Forecasters may attempt to deal with uncertainty in forecasts through disclosure of assumptions.

A detailed analysis is made of the items and assumptions disclosed in forecasts. Items and assumptions are counted and negative binomial regression is applied in analysing the disclosures in forecasts against various independent variables expected to explain the voluntary disclosure of information. Results show that two factors explain most of the variation in the nature of information disclosed in forecasts: the forecast horizon involved and target company responses in contested bids. Company size was also a factor in relation to disclosure of items in forecasts.

I. Regulation of Takeovers in the UK

This paper is restricted to takeovers of public companies quoted on the London Stock Exchange. These companies may be acquired by the purchase of shares on the Stock

Exchange (uncommon because of legal regulations, and because *The City Code on Takeovers and Mergers* requires a compulsory offer once 30 percent of shares are acquired) or by an offer to all shareholders for all or part of the target's share capital. Offers to shareholders may be with the agreement of the target's management (agreed bids), may be hostile bids or may be competing bids (for example, where a white knight competes with a hostile bidder for the target). In this paper the term 'contested' bid is used to refer to hostile, white knight and other competing bids.

UK agreed bids are similar to US mergers (where bidders negotiate an agreement with management on the terms of the offer, and then submit the proposed agreement to a vote of target shareholders). Hostile bids are akin to tender offers in the US (where the bidder makes an offer directly to shareholders to buy some or all of the stock of the target firm). Proxy contests do not take place in the UK.

In the UK, when a bidder intends to make an offer for a company, notice of that fact should be communicated to the board of the target company. The target company board must immediately inform target shareholders and an offer document must be sent to target shareholders within 28 days. The board of the target company must circulate its views on the offer to its shareholders as soon as possible after despatch of the offer document.

Once the bidder has acquired, or has agreed to acquire, over 50 percent of the voting shares, the offer becomes 'unconditional'. Remaining target shareholders must either sell their shares to the bidder or remain as minority shareholders in the company.

Where the board of the target company is supporting the bid, the offer will be a recommended offer. If the directors decide to fight the bid, any defending circulars must be prepared with the same standards of care as if they were offer documents.

II. UK Regulation of Forecast Disclosure and Information in Forecasts

Inclusion of profit forecasts in takeover documents is regulated by the Stock Exchange's *Listing Rules* (London Stock Exchange, 1997) and the C*ity Code on Takeovers and Mergers* (Panel on Takeovers and Mergers, 1993) which applies to takeovers of listed and unlisted public companies but not to private companies. The Panel on Takeovers and Mergers interprets and enforces the Code.

Neither the Stock Exchange nor the Panel compels directors to make a forecast, with one exception – profit forecasts disclosed before the offer relating to unaudited results must be included in the bid documentation. Thus, most forecasts are made voluntarily, but some are included involuntarily in takeover documents.

Forecasts must be reported on by independent accountants and the company's financial advisors (except for forecasts made by a bidder offering cash). The accountants must satisfy themselves that the forecast, so far as the accounting policies and calculations are concerned, has been properly compiled on the basis of assumptions made.

The different approaches to regulation of forecast disclosure in the UK and the US is worth noting. In the UK, forecasts must be reported on by accountants and financial advisors but the information disclosed in forecasts is largely unregulated. In the US, the American Institute of Certified Public Accountants (AICPA) has published a *Guide for prospective financial statements* (1986) which makes recommendations, which are not mandatory, on the presentation and disclosure of prospective financial statements. Table 1 summarises UK and US regulations governing information to be disclosed in forecasts. The City Code influences disclosures in UK forecasts and the AICPA guide lays down minimum disclosures for US

forecasts. US recommended minimum disclosures are much more extensive than UK regulations.

Table 1: Regulation of information disclosed in forecasts

UK	**US (Minimum presentation)**
Profit before taxation[1]	Sales or gross revenues
Taxation[2]	Gross profit or cost of sales
Extraordinary items[2]	Unusual/infrequently occurring items
Minority interests[2]	Provision for income taxes
Assumptions	Discontinued operations/extraordinary items
	Net income
	Primary and fully diluted earnings per share
	Significant changes in financial position
	Forecast description, judgmental assumptions and caveat
	Summary of significant assumptions
	Summary of significant accounting policies

[1] At the time this research was carried out disclosure of profit was optional and some forecasts are not quantified (the Stock Exchange *Listing Rules* were amended in 1997 and now specify that the forecast should normally be of profit before tax (London Stock Exchange, 1997)

[2] Disclosure is only required when a forecast of profit before tax is made and only if the item is material

Because forecasts in UK prospectuses must be reported on by accountants and by the financial advisors to the takeover, they have become somewhat standardised as to format, but not as to disclosures therein. Specific disclosures vary from one line forecasts to forecasts covering two to three pages of detail. Forecasts have two distinct parts. Firstly there is the forecast itself which may be a qualitative statement ("*profits will be greater than last year*") or may contain forecast profit and loss account amounts. The second part contains the assumptions underlying the forecast, which vary from no assumptions to numerous assumptions disclosed.

B. Prior Research

There have been few previous studies of disclosure practices in profit forecasts. Dev (1973) provided some examples of the variety of wording used in UK forecasts. Montgomerie and Walker (1992), in a descriptive study, examined the accounting policies and disclosure of items in a selection of UK profit forecasts. Hartnett (1990) examined disclosure frequency, form and content and manner of presentation of 22 Australian forecasts. Hartnett, like Dev (1973), found considerable variation in the terminology used in the forecasts.

Most US studies are based on management disclosures of point and range forecasts of annual earnings. An exception is Pownall, Wasley and Waymire (1993) which examines the stock price effects of alternative types of management earnings forecasts that differ by form (interim and annual forecasts and point, range, minimum and maximum forecasts) and horizon.

In summary, prior research on the information disclosed in profit forecasts is very limited both in terms of description and explanation.

C. Motivations for Disclosure

Motivations for disclosure of information during takeovers are likely to be quite different to other disclosure situations. Unlike annual reports, takeover documents are used not simply to inform shareholders about aspects of firm activities but to persuade shareholders to support management by either voting in favour of the bid (bidder shareholders or target shareholders in friendly bids) or by rejecting the bid (target shareholders in hostile bids). Thus, the quality of forecast disclosures, and not just the amount forecast, is important in persuading shareholders to support management. Consistent with this point, some commentators (e.g. Sudarsanam, 1994) suggest that forecasts are for such a short period in the future that they convey very little new information to the market.

Motivations to disclose a forecast, and motivations to disclose information in forecasts, may be different. The very fact that there is a significant level of profit forecast disclosure during UK takeover bids, while there is little such disclosure in routine, periodical contexts, suggests intuitively that there are strong motives which prompt companies generally averse to routine disclosure of profit forecasts to overcome that aversion.

I. Motivations to Disclose Forecasts

Forecast disclosures are made in takeover documents sent to shareholders who are the primary audience for this information. Forecasts are normally made during takeover bids on a once-off basis to support arguments being put forward by directors. The nature of these arguments will differ depending on whether the forecaster is a bidding or target company and on whether the bid is agreed (i.e. recommended by target firm directors) or is contested.

Disclosure by bidding companies

In agreed bids, bidding company directors may wish to provide evidence in support of the value placed on shares offered as consideration for the acquisition. Bidders want to complete the bid at the lowest possible bid price. If the takeover is by means of share exchange, a profit forecast by the bidder is aimed at target shareholders to get them to accept the offer, and at bidder shareholders to ensure their approval of the bid. A profit forecast is disclosed to support the price of the shares being offered as consideration for the target.

Disclosure of profit forecasts is usually irrelevant in cash offers unless disclosure is desirable from the point of view of market confidence in the bid. However, in cash bids, bidders may raise the cash by issuing new shares to bidding company shareholders. A profit forecast in these circumstances may be published to support the price of the shares offered to bidding company shareholders.

In contested bids, bidders may disclose information to convince target company shareholders that becoming part of the bidder is an attractive proposition and that biding company management will run the target company business more profitability than existing management.

Disclosure by targets

In agreed bids, the offer document is sent out by the bidders but contains information (such as profit forecasts) obtained from, and published with the approval of, target firms. There are at least three reasons why a forecast might be disclosed by target companies in agreed bids:

- To justify the target directors' recommendation to shareholders to accept the offer: Such a forecast will be used to show that the price being offered by the bidder is adequate given

the forecast of earnings. In so doing, the forecast may disclose poorer than expected, or better than expected, results.

- The forecast may be a requirement of the bidder: Bidders may make it a condition of the bid price that target company directors underpin the earnings information given during bid negotiations by formally disclosing a profit forecast which must be reported on by accountants and financial advisors to the bid. The forecast in such cases acts as a form of reassurance of the terms of the bid for the bidder. The forecast is a validation of representations made in the course of negotiations with the bidder.
- To put information in the public domain which can subsequently be discussed privately without breaching insider trading rules.

In contested bids, target firms may issue one or more defence documents to shareholders, which may contain a profit forecast. Although these takeover documents are sent to target company shareholders, disclosures therein may also be intended for bidder company managements. In contested bids, disclosure of profit forecasts is one of a number of defence tactics open to target companies (Sudarsanam, 1991, 1995). Such a defence tactic is a uniquely UK phenomenon. Disclosure of a profit forecast represents one of the few actions managers can take without shareholder approval. Forecasts may be used by target company directors either to show that the shares are more valuable than the bid price or to show that target company management is better than bidder company management. It is also possible that disclosure of a forecast by target firms may be a signal to the bidder that target management intend to strongly resist the bid. Krinsky, Rotenberg and Thornton (1988) argue that disclosure of forecasts may allow target shareholders to search for "white knights" after a takeover bid is made.

There is evidence from Gray, Roberts and Gordon (1991) that more forecasts are voluntarily disclosed during contested bids. Hostile bids are characterised by attacks on the performance of management. Managements defending their performance are attacked when they do not disclose a forecast to support their claims of good performance. Hostile bids are characterised as being disciplinary bids - ones that management will be motivated to defend (Mørck, Shleifer and Vishney, 1988). Management will use whatever tactic is available to defend the bid. One such tactic is disclosure of a profit forecast.

The effect of competitive environments on disclosures in annual reports has been examined by Choi (1973). Choi found that firms competing for scarce capital upgraded and increased financial disclosure. Following Choi's competitive disclosure/capital need hypothesis, more forecasts are expected to be disclosed in contested bids. Contested takeovers are highly competitive environments. Competition may be explicit with more than one bidder vying for the target or, alternatively, may be in the form of target resistance.

II. Motivations to Disclose Information in Forecasts

Having made the decision to disclose a forecast, it is interesting and important to examine the subsequent process whereby management decide what information to include in the forecast. Intuitively, one would expect that increased detail in forecasts would add to their credibility, though the overall message (i.e. the forecast profit/loss) is the same. Alternatively, details disclosed in addition to the forecast amount may represent key factors driving the forecast result which directors want users to be aware of in understanding the forecast. Assumptions, on the other hand, qualify the certainty of making the forecast - the forecast will only be achieved if the underlying assumptions on which the forecast is made hold true.

Forecaster/Type of bid

Takeover bids in the UK may be categorised into three groups:

- Agreed or friendly bids - offers to shareholders made with the agreement of the target's management.
- Hostile bids - where the target company management indicate disagreement with the terms of the bid (usually that the price offered is too low).
- Competing bids - these are bids where there is more then one bidder competing for the target. Such bids may be with the agreement of target management (white knight bids) or may be hostile bids.

Forecasters' motivation for disclosure of information will differ depending on whether the bid is agreed or contested (defined in this paper as including hostile, competing and white knight bids). Forecasters can be categorised into four groups - bidders in agreed bids, bidders in contested bids, targets in agreed bids and targets in contested bids.

Agreed bids

In agreed bids, bidding company directors may wish to provide evidence in support of the value placed on shares offered as consideration for the acquisition. Bidders want to complete the bid at the lowest possible bid price. If the takeover is by means of a share exchange, a profit forecast by the bidder is aimed at target shareholders to get them to accept the offer, and at bidder shareholders to ensure their approval of the bid. The profit forecast is disclosed to support the price of the shares being offer as consideration for the target.

In agreed bids, target company directors may disclose a forecast to justify their recommendation to target shareholders to accept the offer. Such a forecast will be used to show that the price being offered by the bidder is adequate given the forecast of earnings. In so doing the forecast may disclose poorer than expected or better than expected results. In some cases disclosure of a profit forecast is a requirement of the bidder. Bidders may make it a condition of the bid price that target company directors underpin the earnings information given during bid negotiations by formally disclosing a profit forecast which must be reported on by accountants and financial advisors to the bid. The forecast in such cases acts as a form of insurance for the bidder.

Targets are expected to disclose more detail in their forecasts than bidders. Agency costs between target management and shareholders on the one hand, and between target management and bidders on the other hand, are particularly high. For example, target management may be more interested in retaining their jobs at the expense of shareholder gains from the takeover. Extra disclosures by target management may reduce these high agency costs.

Contested bids

A contested takeover bid is often fought by financial rather than legal tactics. One important tactic is a statement by directors about future prospects and profits in documents sent to shareholders either by target or bidder companies. This research assumes that the detailed disclosures in forecasts are essential to the credibility of forecasts. Information in forecasts, rather than just forecasts themselves, will be crucial to the persuasiveness of the arguments put forward by bidder/target managements in influencing shareholders to their point of view.

When a forecast is disclosed in a hostile bid, the forecast and the detailed information therein may be attacked by the other side. Predators closely examine the basis of the profit forecast. Any short term device, such as reduced research and development spending or pension holidays, as well as creative accounting, will be highlighted to the forecaster's

discomfort. Consequently, additional disclosures are expected during hostile bids to avoid attack by the other side and to underpin the credibility of the forecast.

In contested bids, target motives for disclosure may be to resist the offer, or to run up the price or a combination of both. The target company under attack by the bidder will have greater incentives to counter adverse comment from the bidder and publicity concerning the quality of its earnings.

More assumptions are expected in contested bid forecasts. Companies making a forecast in such conditions are likely to take a more bullish view of results than if they were making a forecast in an agreed bid. More bullish forecasts are riskier. This increased risk is likely to be accompanied by more assumptions in the forecast to reduce the risk.

Bidding companies control the timing of the approach and are more likely to make a bid when market conditions are favourable to the bidder. Making a forecast in such favourable circumstances is likely to carry less risk. Target company advisors are most likely to be sued if litigation follows a takeover. The greater the number of assumptions disclosed the greater the protection offered to those associated with the forecast. Fear of litigation by target company directors and their advisors may lead to increased disclosure of assumptions by targets.

In summary, additional detail is expected in forecasts disclosed during contested bids, particularly in target company forecasts. This additional detail is expected to increase the credibility of forecast disclosed. More assumptions are expected during contested bids, where the risk of being sued is greater if the forecast goes wrong. Targets are expected to disclose more assumptions because they and their advisors are more likely to be sued than bidders. As targets do not choose the timing of the bid, making a forecast may be riskier for them than for bidders.

Forecast horizon

It is not possible to measure risk associated with forecasts by examining their accuracy. Subsequent to the forecast, actual results (for comparison against forecast results) of companies successfully taken over are generally not available after takeover. Even where results of the firm taken over are separately disclosed, new managements are likely to have adopted new operating policies and different accounting assumptions which makes comparison of the forecast with actual results difficult. (Dev and Webb, 1972).

Forecast Horizon (days from the date of the forecast to the forecast period end date) has been found to be an important determinant of forecast accuracy (Dev and Webb, 1972; Hagerman and Ruland, 1979; Brown, Foster and Noreen, 1985; Mak, 1989; Keasey and McGuinness, 1991). Longer forecast horizons are associated with less accurate forecasts. The longer the forecast horizon the greater the uncertainty in the forecast. Forecast Horizon is therefore used in this paper as a proxy for the riskiness of forecasts.

A primary concern of management disclosing forecasts is fear of getting the forecast wrong which could result in loss of reputation for managers and their advisors, or worse, in litigation. It could therefore be expected that the riskier the forecast the less detail would be disclosed. Consequently riskier, longer horizon forecasts are expected to disclose less detailed information underlying the forecasts.

Forecasters may attempt to deal with uncertainty in forecasts through the disclosure of assumptions. More assumptions are expected to be disclosed in longer horizon forecasts to deal with the greater uncertainty inherent in such forecasts.

Management ownership

Agency theory posits that firms voluntarily disclose information to reduce agency costs. The degree of conflict between managers and shareholders is predicted to increase inversely with managers' ownership share (Jensen and Meckling, 1976). Therefore, as the managers' ownership share falls, monitoring and bonding costs will increase. Firms with lower percentage management ownership will have a higher level of monitoring and are more likely to disclose forecasts.

Ruland, Tung and George (1990) tested agency theory in the context of the voluntary disclosure of earnings forecasts. The only agency theory variable examined was ownership structure. Consistent with expectations, they found management ownership to be significantly lower for forecast disclosing firms.

Where the degree of conflict between managers and shareholders is high (i.e. when managers ownership of the firm is low) forecasts disclosed may be less credible to shareholders. Management may deal with this reduced credibility by increasing the detailed disclosures in forecasts. Thus, forecasts are expected to disclose more detail where management ownership is low. As risk in forecasts is not expected to be affected by level of management ownership, no relationship is expected between this variable and disclosure of assumptions in forecasts.

Size of firm

Previous studies have suggested many reasons why large companies might disclose more information than other companies (Singhvi and Desai, 1971; Firth, 1979). It is less costly for larger companies, with more sophisticated accounting and forecasting systems, to disclose forecasts. The cost of assembling the information is greater for small firms than large firms (SEC, 1977). This is particularly likely in the context of publishing a formal profit forecast (within the fairly tight time constraints of a takeover bid) which would need reliable forecasting systems.

Another possible explanation relating company size to disclosure is that large firms have a greater need for disclosure as their shares are more widely traded. Small firms are more reluctant to disclose because this may place them at a competitive disadvantage.

Cerf (1961), Singhvi and Desai (1971), Buzby (1974, 1975), Firth (1979), Chow and Wong-Boren (1987), Cooke (1989 and 1992) and Wallace, Naser and Mora (1994) have all documented that there is greater disclosure of financial accounting information by larger firms. Given these prior findings, larger companies are expected to disclose more information in their forecasts. No relationship is expected between size of forecaster and disclosure of assumptions in forecasts.

Industry

Industry is predicted to be related to disclosure for a number of reasons. Different industries have different proprietary costs of disclosure. Proprietary costs arise when competitors and potential market entrants gain advantage from information disclosed by firms. Also, profits in some industries are easier to forecast than in others.

Stanga (1976) found industry type to be a significant variable, whereas McNally, Eng and Hasseldine (1982) and Malone, Fries and Jones (1993) did not. Cooke (1992) found that manufacturing corporations in Japan disclosed significantly more information than non-manufacturing, regardless of quotation status. These studies indicate that industry may be a factor affecting disclosures in forecasts.

D. Research Methodology

I. Population and Selection of Sample

The sample chosen for study covers all takeover bids for companies listed on the London Stock Exchange during the period 1988 to 1992.

Acquisitions Monthly was used to obtain a list of all public company takeovers in the UK over the five year period of the study. In total, 705 completed and failed bids were listed for 1988 to 1992. Four bids listed by *Acquisitions Monthly* were excluded: two bids, occurring in late December, were included twice in two different years by *Acquisitions Monthly*; in one further case, the target had previously been taken over by a public company and was therefore a private company at the date of the second bid - this bid should not have been included as a public company takeover by *Acquisitions Monthly*; the fourth bid excluded did not take place, even though it was reported as a takeover by *Acquisitions Monthly*.

This study of forecast disclosure is unique in that it includes the full population of 701 bids (including 1,402 bidders and targets) made during the period. No bids, bidders or targets have been excluded from the study other than those mentioned in the previous paragraph which are not properly part of the population.

II. Data Collection

Forecasts were obtained from an examination of the takeover documents for the entire sample of 701 bids. Extel Financial's microfiche service contains microfiche copies of all documents issued by companies quoted on the London Stock Exchange. Any missing documents were obtained by writing directly to bidders, targets or their financial advisors.

III. Measurement of Disclosure

Disclosures in forecasts are measured using a counting method. Statistical problems arising from using a counting approach are addressed later in this paper.

Previous research has measured the quantity of disclosure using a disclosure index (see Marston and Shrives (1991) for a review article). Courtis (1992) questions the reliability of results generated from the use of such instruments. Marston and Shrives state that '*The validity of disclosure indices as a measure of information disclosure cannot be accepted without question. However, no other method for measuring disclosure has been developed.*' Ball and Foster (1982) comment that the '*more disclosure the better*' framework appears to guide this kind of research, and superior disclosure is operationalised as a higher index score.

All previous research using disclosure indices applied them to disclosures in annual reports. In these studies it is possible to specify an upper disclosure limit based on mandatory disclosures and on expected voluntary disclosures. Problems arise in constructing a disclosure index for disclosures in forecasts. It is more difficult to select a list of items that should be disclosed in forecasts as there are few legal, regulatory or professional guidelines as to what should be disclosed. For these reasons, a counting approach is used to measure disclosure. Regression methods suitable for count data are applied to analyse the results.

Motivations for disclosure of financial items in profit forecasts are likely to differ greatly from those influencing the disclosure of assumptions. Assumptions are chosen to give the best results for the company and act as caveats to forecasts. They therefore introduce doubt. Consequently, disclosure in forecasts is measured by two variables: number of items and number of assumptions disclosed in forecasts.

All items and assumptions disclosed were examined and counted. Each item disclosed counted for a value of one, except for subtotals generated which were ignored. A dividend forecast counted for one even when it was not included in the forecast (dividend forecasts are rarely reported on by accountants). Notes amplifying disclosure in forecasts were counted as one (even if the note disclosed more than one item). Thus, earnings per share in forecasts counted as one and notes describing earnings per share calculations also counted as one. A similar approach was used for counting assumptions.

It is not possible to take account of whether nondisclosure of items or assumptions arises because they are not relevant to firms (e.g. exceptional items). Most disclosure studies suffer to some extent from this limitation, although many attempt to identify whether or not particular disclosure items are applicable to firms. This would be very difficult in the context of the non-standard and entirely voluntary nature of disclosures in profit forecasts.

Disclosures were given equal weightings, assuming each item of disclosure is equally important. In practice, users may attach different importance weightings to items disclosed. However, estimating these subjective weightings is methodologically difficult. Results of user surveys are unreliable and depend on individual user group preferences, which may change over time (Dhaliwal, 1980). In this research, a user survey (on which the weightings would have been based) would have been carried out some time after the forecasts were published. Another criticism of user surveys is that attaching weights does not result in real economic consequences for those whose opinions are surveyed (Chow and Wong-Boren, 1987).

Marston and Shrives (1991) quote Spero (1979) as reporting that attaching weightings to disclosure scores is irrelevant, as firms that are better at disclosing '*important items*' are also better at disclosing '*less important items*'. Adding support to this conclusion, Firth's (1980) results were similar, using both weighted and unweighted disclosure scores. Robbins and Austin (1986) and Chow and Wong-Boren (1987) provide additional evidence that there may be no significant difference between weighted and unweighted disclosure indices.

IV. Independent Variables

There are four dummy variables depending on whether the forecaster is a bidder or target and on whether the bid is agreed or contested, as follows: Bidder in agreed bid, bidder in contested bid, target in agreed bid and target in contested bid. Contested bids are defined as including hostile bids, competing bids (where there is more than one bidder) and white knight bids.

Forecast Horizon was measured in days from date of the forecast to forecast period end. For the purpose of regression analysis this variable is scaled by the number of days in the year (365).

Company size is proxied by turnover measured in millions of pounds. Amounts were extracted from the most recent full set of accounts in each takeover document.

Percentage management ownership is taken from *Crawford's Directory of City Connections* and is the percentage of ordinary shares held by members of the board, their families and associates. *Crawford's Directory* is an annual publication. The directory for the same year as the bid was consulted. Where this information is not available in *Crawford's Directory*, beneficial interests of the directors and their families, as disclosed in the takeover documents, are used.

Industry codes are obtained from *Crawford's Directory.* Crawford's industry index is based on categories used by the *Financial Times* and used by the FT-Actuaries All-Share Index. A dummy variable for each of five categories: Capital goods, Consumer-durable goods, Consumer non-durable goods, Banks and financial and Other was computed.

As the distribution of Forecast Horizon, Company Size and Management Ownership are highly skewed, these variables are log-transformed for multiple regression analysis to reduce skewness (to lnForecast horizon, lnCompany Size and lnManagement Ownership).

V. Count Data Models

Disclosures in forecasts were measured using a counting approach. Resulting variables are non-normal, non-negative integer variables. Consequently the statistical techniques (mainly ordinary least squares (OLS) regression) applied in previous studies measuring disclosure are not suitable for this kind of data because they assume that error terms are normally distributed.

The standard statistical model for analysing count data is Poisson regression. The Poisson model, and variations thereon, have been used in many contexts in applied economics. These statistical models are reviewed in Winkelmann and Zimmermann (1995). The use of Poisson distribution for modelling non-negative integer values often involves empirically questionable assumptions. The Poisson regression model is restrictive in several ways:

- It assumes that the mean and variance of the counts are equal. This fails to account for the overdispersion (variance exceeding the mean) that characterises many data sets.
- It assumes that events occur independently over time.

The assumption that events occur independently over time is generally not a major problem in empirical studies, and is not a problem in this research given the type of data analysed. However, overdispersion may be a problem in this research.

Negative binomial regression

The negative binomial model may be derived from the Poisson model by incorporating a multiplicative random error term, which captures unobserved heterogeneity, into the model. When this random error term is "integrated out", the negative binomial model is obtained. Negative binomial regression is an extension of the Poisson regression model which allows the variance of the counts to differ from the mean and is a more flexible model for count data.

Using the same empirical data, Cameron and Trivedi (1986) compare five different count data models: ordinary least squares regression, normal, Poisson and two negative binomial models. They conclude that relatively few coefficients are sensitive to the choice of model, and those that are have relatively small *t*-ratios. Winkelmann and Zimmermann (1995) compare three different models: Poisson, hurdle Poisson and negative binomial regression. Negative binomial predictions outperform the other two models. It parameterises more parsimoniously and also has a higher log-likelihood. The authors conclude that one would therefore unanimously choose the negative binomial model.

Negative binomial regression evaluation

Three tests are performed to determine whether the fitted negative binomial model is adequate and well specified. A generalised Pearson chi-square statistic (Winkelmann and Zimmermann, 1995) is used as a measure of the goodness of fit of the negative binomial model. Pseudo R^2 is a measure of the extent to which alternative models (negative binomial regression in this research) outperform primitive ones (Poisson model) (Winkelmann and Zimmermann, 1995). Pseudo R^2, like R^2 in linear regression, is bounded to the interval [0,1]. It is 0 if no improvement occurred and 1 if the alternative model has a perfect fit. The

negative binomial model is one example of a generalised Poisson model which relaxes some of the restrictions of the Poisson model. Because the negative binomial model and the Poisson model are nested, a direct test assessing the validity of the restriction can be examined by a likelihood ratio test. The likelihood ratio test compares the unrestricted negative binomial model with the restricted Poisson model. Theta captures the degree of randomness of the model and is the distinguishing feature of negative binomial regression over the Poisson model.

E. Results

In all, 250 forecasts were disclosed. Under the rules of the Takeover Code, any forecast or statement made before the commencement of the offer that could be construed as a forecast must be published in takeover documents and be formally reported on. There were 27 such forecasts not made voluntarily. In addition, there are 13 forecasts which are repeats of forecasts made in previous bids. These are excluded from the sample, leaving 210 voluntary forecasts. Some firms disclosed more than one forecast. As shown in table 2, most forecasts are quantified. Forecasts generally indicate a range of profits rather than a specific point forecast.

Table 2: Quantification of forecasts

Degree of quantification	**No.**
Range forecasts	136 (60%)
Point forecasts	58 (24%)
Not quantified	16 (16%)
	210 (100%)

Tables 3 and 4 list the types of items and assumptions disclosed and frequency of their disclosure. In general, forecasts disclosed more assumptions than items. Forecasts contained an average of four items and five assumptions. The number of items disclosed in each forecast varied considerably, as did the variety. Most forecasts disclosed an amount for profit (variously defined as profit before taxation, after taxation, before taxation and extraordinary items etc.). Earnings per share was frequently disclosed, as was forecast dividends. The average number of assumptions disclosed is greater than the average number of items disclosed.

Table 3: Number of times item disclosed in forecasts

Item of disclosure	No.
Turnover	26
Exceptional items	50
Profit for the year (variously defined)	213
Taxation	68
Extraordinary items	45
Earnings per share	124
Forecast dividends	87
Sundry other disclosures	88
Notes to forecasts expanding on disclosures	
Earnings per share note	45
Exceptional and extraordinary items notes	30
Sundry other notes	77
Total number of items disclosed in all forecasts	853
Average per forecast	4

The variety of assumptions disclosed was considerable. Some assumptions appeared regularly in forecasts and used fairly standard wording.

Table 4: Number of times assumption disclosed in forecasts

Assumption	No.
No change/consistent accounting policies used (except for...)	154
No industrial disputes, wars etc.	105
No change in interest rates	85
No change in the rates or bases of taxation	82
Expenses in connection with the takeover excluded	73
No change in exchange rates	69
Continuation of present management	63
No change in legislation (except for...)	61
No change in fiscal/political/economic environment	56
No change in composition of the group	43
No change in the rate of inflation	43
No severe weather conditions	42
No change in commercial/operating policies	36
Trading volumes/sales margins consistent with previous/current	31
Planned transactions to go ahead	29
(Modified) historic cost convention followed	21
No change in product/raw material prices	17
No disruption to arrangements with suppliers	13
No adjustments for post balance sheet events	10
Other assumptions	104
Total number of assumptions disclosed	1,137
Average per forecast	5.4

Frequencies of Items and Assumptions are shown in table 5. Items is highly skewed towards lower numbers disclosed. Assumptions has a bimodal distribution, with a peak at one and another peak at nine assumptions disclosed.

Table 5: Frequencies of Items and Assumptions

	Items		Assumptions	
No. disclosed	**Number forecasts**	**Total disclosures**	**Number forecasts**	**Total disclosures**
0	12	0	24	0
1	39	39	26	26
2	25	50	21	42
3	26	78	19	57
4	32	128	13	52
5	24	120	13	65
6	13	78	9	54
7	12	84	13	91
8	9	72	16	128
9	6	54	19	171
10	4	40	9	90
11-15	6	75	27	345
16-18	2	35	1	16
	210	853	210	1,137

Table 6 summarises the characteristics of forecasts and forecasters. Of the 210 forecasts obtained, 47 were made by bidders, 157 by targets and 6 other (either group forecasts of target and bidder, or forecasts by subsidiary companies - all were subsequently reclassified as bidder forecasts). There were 93 forecasts disclosed in agreed bids, 111 in contested bids and 6 during white knight bids (subsequently reclassified as contested bid forecasts).

Forecasts are expected to differ depending on whether made by bidders and targets and on whether bids are agreed or contested. As a result, forecast are analysed into four categories by forecaster and type of bid as shown in table 6.

Forecasts are well represented in the five categories of industry.

Table 6: Characteristics of forecasters and forecasts

Forecasts by	
Forecaster by bid	
Bidder - agreed bids	31 (15%)
Bidder - contested bids	22 (10%
Target - agreed bids	62 (30%)
Target - contested bids	95 (45%)
	210 (100%)
Industry	
Capital goods	42 (23%)
Durable goods	24 (13%)
Non-durable goods	50 (28%)
Banks and financial	18 (10%)
Other	46 (26%)
	180 (100%)
Missing values	30
	210

Table 7 summarises the descriptive statistics for the continuous variables. The standard deviation of all the variables is very high. Company size is highly skewed. The difference in the mean and median of Forecast Horizon highlights that a substantial number of forecasts were published after the forecast period end (disclosing unaudited (and therefore forecast) results) and only a small number were published more than six months before.

Table 7: Descriptive statistics of all continuous variables

Variable	Mean	Median	Skew	Standard deviation	No.	Missing values	Total
Dependent variables							
Items	4.06	4.00	1.38	3.17	210	0 (0%)	210
Assumptions	5.41	5.00	0.49	4.26	210	0 (0%)	210
Independent variables							
Forecast Horizon	59.53	32.00	7.17	150.65	210	0 (0%)	210
Company Size	616.73	109.49	8.66	2226.94	198	12 (6%)	210
Management ownership	13.90	3.00	1.62	19.75	193	17 (9%)	210

I. Bivariate Analysis

Spearman correlations between Items and Assumptions and the dependent variables are reported in table 8. Although Items and Assumptions are significantly positively correlated, the correlation coefficient is not high at 0.24. It would not appear therefore that the two dependent variables are proxying the same factor.

Items is significantly correlated with DTA, DTC, Company size and Management Ownership. Significantly more items are disclosed in target company contested bid forecasts, and conversely, significantly less items are disclosed in target company agreed bid forecasts. Significantly more items are disclosed by larger forecasters and significantly fewer items are disclosed in forecasts of firms with higher management ownership. Firms in the durable goods industry sector disclose fewer items in their forecasts.

Assumptions is significantly correlated with Bidder (Agreed Bid), Bidder (Contested Bid), Target (Agreed Bid), Target (Contested Bid) and Forecast Horizon. Significantly fewer assumptions are disclosed in bidders' forecasts and by targets in agreed bid forecasts. Significantly more assumptions are disclosed in target company contested bid forecasts. Significantly more assumptions are disclosed in longer horizon forecasts. The correlation coefficient between Assumptions and Forecast Horizon is notably large at 0.67.

Table 8: Spearman correlations between Items and Assumptions and independent variables

Independent variable	Items	Assumptions
Assumptions	0.24**	
Bidder (Agreed Bid)	-0.09	-0.14*
Bidder (Contested Bid)	0.00	-0.17*
Target (Agreed Bid)	-0.36**	-0.22**
Target (Contested Bid)	0.39**	0.41**
Forecast Horizon	0.09	0.67**
Company Size	0.30**	0.09
Management Ownership	-0.25**	-0.06
Capital goods	0.07	-0.05
Durable goods	-0.15*	-0.05
Non-durable goods	0.07	0.09
Banks and financial	0.04	0.04
Other	-0.09	-0.08

** Significant at < 0.01; * Significant at < 0.05

Bivariate Spearman correlations between the independent variables are summarised in table 9. The highest correlation (other than intra-industry categories and between forecaster dummy variables) is -0.58 for Company size and Management Ownership. There are only two other readings higher than 0.30 (DTA- Management Ownership and DTC- Management Ownership) and four readings higher than 0.20. As one would expect, larger firms have significantly lower percentage managerial ownership.

In conclusion, there are few highly correlated independent variables in the sample of forecasters, and high correlations are absent from the data. In any event, high correlations between the independent variables are not a problem for the multivariate statistical technique (negative binomial regression) used to analyse disclosures in forecasts.

Table 9: Bivariate Spearman correlations for independent variables

	FHOR	SIZE	MO	DBA	DBC	DTA	DTC
Forecast Horizon (FHOR)							
Company size (SIZE)	0.00						
Management Ownership (MO)	-0.05	-0.58**					
Bidder (Agreed Bid) (DBA)	0.10	0.13**	0.02				
Bidder (Contested Bid) (DBC)	-0.15*	0.09	-0.03				
Target (Agreed Bid) (DTA)	-0.23**	-0.29**	0.32**				
Target (Contested Bid) (DTC)	0.22**	-0.01	-0.30**				
Capital goods[1]	-0.08	0.00	-0.09	-0.05	-0.03	-0.04	0.08
Durable goods[1]	-0.01	0.11	0.06	-0.03	0.12	-0.04	-0.06
Non-durable goods[1]	0.10	0.02	0.07	0.17*	0.06	0.01	0.06
Other[1]	-0.03	0.03	-0.05	0.06	-0.12	0.07	-0.02
Banks and financial[1]	0.02	-0.21**	0.02	-0.20	0.00	-0.01	-0.11

* Significant at < 0.05 ** Significant at < 0.01 Number of cases varied depending on availability of data on each pair of variables

[1] Correlations between industry groups and between Bidder (Agreed Bid), Bidder (Contested Bid), Target (Agreed Bid), Target (Contested Bid) are not reported. As one would expect, these correlations are high.

II. Multivariate Results

The tables that follow report negative binomial results analysing disclosures in forecasts by reference to the independent variables described earlier.

Items disclosed in forecasts

Table 10 reports negative binomial model results, where the dependent variable is Items. Three variables are significant: DTC, lnForecast Horizon and ln Company Size. Significantly more items are disclosed in forecasts of target companies in hostile bids, in lower horizon forecasts and by larger forecasters.

Table 10: Negative binomial model results - dependent variable Items

Number of observations: 166 forecasts
Log-likelihood: -371.36
Pearson chi-square goodness of fit: (154 d.f.) 285.94 Significance 0.00
Pseudo R^2: 0.77
Likelihood ratio test: 37.70 Chi-square (d.f. 1) 75.40 Significance 0.00

	Regression coefficients	**Std.error of coefficient**	**t statistic**	**p value**
Intercept	0.26	0.35	0.75	0.46
Bidder (Contested Bid)	0.43	0.37	1.16	0.25
Target (Agreed Bid)	-0.04	0.30	-0.12	0.91
Target (Contested Bid)	0.79	0.29	2.73	0.01*
LnForecast Horizon	-0.24E-03	0.12E-03	-2.00	0.05*
Ln Company size	0.14	0.04	3.20	0.00**
Ln Management Ownership	0.05	0.03	1.68	0.09
Capital goods	-0.06	0.26	-0.24	0.81
Durable goods	-0.53	0.29	-1.82	0.07
Non-durable goods	-0.11	0.27	-0.41	0.68
Other	-0.04	0.26	-0.15	0.88
Theta	5.19	1.47	3.54	0.00**

** Significant at < 0.01 * Significant at ≤ 0.05

Disclosure of assumptions

Table 11 reports negative binomial model results for Assumptions. Two variables are significant: DTC and lnForecast Horizon. Significantly more assumptions are disclosed by target companies in hostile bids, and in longer horizon forecasts.

Table 11: Negative binomial model results - dependent variable Assumptions

Number of observations: 166 forecasts
Log-likelihood: -385.99
Pearson chi-square goodness of fit: (154 d.f.) 267.66 Significance 0.00
Pseudo R^2: 0.90
Likelihood ratio test: 14.24 Chi-square (d.f. 1) 28.49 Significance 0.00

	Regression coefficients	**Std.error of coefficient**	**t statistic**	**P value**
Intercept	1.39	0.36	3.84	0.00**
Bidder (Contested Bid)	-0.02	0.25	-0.06	0.95
Target (Agreed Bid)	0.06	0.19	0.33	0.74
Target (Contested Bid)	0.65	0.19	3.48	0.00**
LnForecast Horizon	0.13E-02	0.12E-02	10.97	0.00**
Ln Company Size	0.02	0.03	0.62	0.53
LnManagement Ownership	0.01	0.02	0.54	0.59
Capital goods	-0.01	0.33	-0.04	0.97
Durable goods	0.07	0.34	0.22	0.83
Non-durable goods	0.12	0.32	0.36	0.72
Other	0.21	0.33	0.65	0.51
Theta	9.88	3.11	3.18	0.00**

** Significant at < 0.01 * Significant at ≤ 0.05

In summary, two factors explain most of the variation in items and assumptions disclosed in forecasts: target companies in contested bids and forecast horizon. Forecasts by targets in contested bids are significantly different from other forecasts disclosed. Contested bid target company forecasts contain significantly more detail and significantly more assumptions. This is consistent with the competitive environment of hostile bids. Forecasts may be attacked by the other side for inadequate disclosure, prompting greater disclosure of items. The greater chance of litigation arising from contested bids is likely to encourage those associated with forecasts (mainly advisors) to look for greater protection through the inclusion of more assumptions/caveats.

Fewer items are disclosed in shorter horizon forecasts. As predicted, more assumptions are disclosed in longer horizon forecasts. The longer the forecast horizon the greater the uncertainty in the forecast. More caveats or assumptions in the forecast are expected the greater the uncertainty.

F. Discussion and Conclusions

This paper reports the results of a comprehensive analysis of information disclosed in 210 profit forecasts. Forecasts are rarely disclosed by managements of UK firms. An exception is their disclosure during takeover bids. This presents an opportunity to examine and explain management disclosure practices in non-routine business settings such as during takeover bids. The influence of context on disclosure can thus be more closely assessed.

Disclosures in profit forecasts were examined to identify whether systematic differences exist amongst forecasting firms. Two variables measured disclosure: one based on the number of items disclosed and the other based on the number of assumptions disclosed in

the forecasts. It was suggested that management are motivated to disclose more detail in forecasts to add to their credibility and to disclose more assumptions the riskier the forecast.

The results show that the key factors explaining difference in disclosure behaviour are the forecast horizon involved and target company responses in contested bids. Company size was also a factor in relation to the disclosure of items in forecasts. More specifically, significantly more items were disclosed by larger forecasters, by target companies in contested bids, and in the provision of shorter horizon forecasts; Significantly more assumptions were disclosed in the provision of longer horizon, riskier forecasts and by target companies in contested bids.

There are a number of limitations to this research. When ranking firms on amount of disclosure, it has been assumed that the demand for disclosure is the same for all firms and that differences in disclosure are due solely to management's disclosure choices. However, the nature of a business and its complexity may also influence the amount of disclosures.

No adjustment is made for items and assumptions in forecasts not disclosed because they were not applicable to those forecasting firms. Were it possible to identify items and assumptions applicable/not applicable to firms, it is likely a more accurate measure of disclosures in forecasts would result.

The policy issue of whether forecasts should be disclosed has been extensively debated with the consensus against mandatory disclosure. However, this research has highlighted the extreme variability of disclosures in forecasts and the need for more guidance/standardisation on disclosures in forecasts. In particular, the study raises questions as to how assumptions are used in longer horizon, riskier forecasts. The evidence in this paper points to a need for improved regulation of information included in forecasts.

Because the findings of this research are specific to the takeover context of the study and may not apply to non-takeover situations, future research might be extended to examine forecast disclosures in other contexts. The importance of the takeover context to the results suggests the value of more research to study disclosures in specialist settings.

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