Cost of Capital, Strategic Disclosures and Accounting Choice

M. Gietzmann, Cass Business School and J. Ireland, London School of Economics*

CostofCap1e.doc
First version June 2003, this version November 2003.
Do not quote

Abstract:
Research by Botosan and Plumlee (2002) finds that firms' cost of capital increases the more timely are disclosures. B&P propose this can occur because more frequent disclosure can lead to increased volatility, which in turn increases cost of capital. While not disputing that increased frequency can lead to increased volatility we consider an alternative explanation for the B&P results. We suggest that the results may be driven by too restrictive a view having been taken concerning what constitutes corporate communication. In particular, implicit in the B&P analysis is an assumption that the whole communication strategy space is identified when testing the linkage between voluntary disclosures and the cost of capital. We suggest that such an assumption may be highly unrealistic in practice. Firms use a mix of message spaces to communicate with capital markets. In this research we consider empirically how to reinterpret and test B&P like hypotheses when firms are assumed to communicate along two strategic dimensions: via disclosures concerning strategic ventures, and in addition via choice of accounting policy. Contrary to B&P, we find a negative relationship between our measure of timely disclosure and cost of equity capital. Second, we find that firms making aggressive accounting choices have higher costs of capital than firms making conservative accounting choices. Finally, we find that firms that choose aggressive accounting policies can lower their cost of capital via increased disclosure whereas no such relationship is observed for 'conservative' firms. This is consistent with theory, that conservative firms benefit from lower cost of capital regardless of disclosure policy, therefore their disclosure policy may be driven by the fact that they perceive that benefits from increased disclosure are dominated by the costs.

* We gratefully acknowledge the comments of Marco Trombetta.

1. INTRODUCTION

RNS NUMBER: 5237R, Time 07:00:19, Alphameric PLC, 15 February 2002

Re: £7.5M ALBOS Contract awarded by Ladbrokes

Alphameric plc announces that its Retail Betting and Finance division has been awarded a contract by Ladbrokes, the UK's largest bookmaker, to supply its Alphameric Betting Office Display System ("ALBOS") to all of Ladbrokes' UK bookmaking shops.

The order for ALBOS licensed betting office systems and a central system suite of software is worth in excess of £7.5 million. Commencing at the beginning of March 2002, delivery of the solutions is expected to be complete by September of this year. Alan Morcombe, Chief Executive of Alphameric commented: "We are delighted to have been awarded this contract by the UK's largest bookmaker, which strengthens our position as the leading supplier of software to the retail betting market. "Whilst this contract increases our penetration of the six major UK bookmakers who between them operate around 5000 licensed betting offices ("LBO's), our Retail Betting and Finance division continues to secure good levels of business from the independent and smaller chains who together operate a further 3900 LBO's."

The above extract from the Regulatory News Service of the London Stock Exchange demonstrates how some firms are informing investors in a very timely fashion about their strategic position. The information concerning a key new contract took over ten months before it appeared in the annual financial report[1]. Understanding whether, when and why firms choose to make strategic disclosures is important in order to understand the role of information in financial markets. As the example illustrates, if one wants to analyse the economic effects of disclosure practice, restricting attention to voluntary disclosures that appear in annual financial reports (such as in Botosan (1997)) may give only a very partial picture of events. However, having highlighted this important point, it is not self-evident how to construct a total measure of disclosures. For instance, Hutton, Miller and Skinner (2001) develop a new method for attempting to consistently categorise voluntary disclosures. As we see from that study and others, two principle problems with disclosure measure construction are that it may be hard to identify the full population of disclosures, and from an interpretative stand point it may be difficult to consistently classify the form and type of disclosures.

[1] Note we are not claiming that these disclosures totally dominate those made in annual financial statements. Timely non-financial disclosures may still include important elements of uncertainty which may be resolved in the annual financial reports. For instance see Hemmer and Gigler (2001) or Lundholm (1999) on this point.

In contrast to the disclosure regime in the US, the centralised Regulatory News Service (RNS) of the London Stock Exchange goes some considerable way to remedying both these problems. First, until recently under the UK London Stock Exchange Listing Rules firms may not make disclosures which could be of a price sensitive nature on any other news service unless they have first disclosed the details on the RNS. That is, in principle the RNS should contain the universe of price sensitive disclosures.[2] Secondly, the RNS requires news items to be pre-assigned one of a list of one hundred standardised news item headings (RNS userguide). These two features make the difficult task of producing a disclosure measure somewhat more manageable. We therefore exploit these advantages by constructing our measure of disclosure for a sample of firms listed on the London Stock Exchange.

We investigate the relationship between voluntary strategic disclosure and the cost of equity capital. Some theory and anecdotal evidence suggests that the relationship should be negative (Easley and O'Hara (2003)). However, empirical research to date, as we shall see shortly, has proved inconclusive. Our research differs from prior research in three important respects. First, we exploit the unique regulatory environment of the UK in measuring disclosure. Secondly, this paper is the first cost of capital study in this area to use UK data. Finally, we test an alternative explanation for the positive relationship between timely disclosures and cost of capital that has been documented by some prior empirical research. The methodology that we use is explained in detail in Section 2. However, before doing so we will first review the existing empirical literature, and develop the hypotheses to be tested.

Prior Literature

The empirical relationship between *ex ante* cost of equity capital and disclosure in the US has been examined by Botosan (1997) and Botosan and Plumlee (2002a). Botosan (1997) regresses firm-specific estimates of the cost of equity capital on market beta, firm size, and a self-constructed measure of voluntary disclosure level based on annual report content. She finds that, for firms that attract a low analyst following, the results indicate that greater disclosure is associated with a lower cost of equity capital. In contrast, she finds no such association for firms with a high analyst following, which she suggests may be due to the limited nature of her voluntary disclosure measure (overall disclosure level is likely to be significantly different when analysts play a significant role in the communication process). Accordingly, Botosan and Plumlee (2002a) (hereafter B&P) extend the analysis to explore the effects of two further types of disclosure, namely quarterly and other published reports ('timely' disclosures), and investor relations activities.

B&P (2002a) find no association between the cost of equity capital and the level of investor relations activities, but after controlling for the two additional types of disclosure in a sample of firms with high analyst following, they show that the cost of equity capital decreases in the annual report disclosure level, as expected. However, they also show that the cost of equity capital *increases* in the level of timely disclosures. The latter result is contrary to expectations, but they suggest may be due to increased stock price volatility. Alternatively, Gietzmann and Trombetta (2003) argue that the B&P (2002a) results may be driven by the assumption that firms have a

[2] The recent investigation by the FSA into the sourcing of disclosures by Manchester United in the so called Beckham case illustrates one exception that was immediately picked up by the regulatory authorities.

restricted message space for communication. In particular, B&P restrict attention to corporate disclosures that occur in the annual reports, quarterly and other published information and other company disclosures that take place (for instance through presentations).

Gietzmann and Trombetta (2003) (hereafter G&T) argue that there are other potential messages that investors could rationally condition their investment decisions upon and that hence it may be misleading to draw inferences without recognising how the messages drawn from different message spaces may interact. To illustrate this they argue that investors may rationally want to condition their investment decisions not only upon disclosures but also upon whether or not firms adopt conservative accounting policies when producing financial statements. These are referred to as different message spaces because the way they function strategically is quite different. With a dichotomous accounting policy choice, firms may be separated into two groups depending upon whether or not management believes the company exceeds a critical cut-off value for future prospects. In contrast, firms receiving partial good news may disclose it, regardless of the underlying prospects, that is a separation between firms may occur according to a different parameter, nature of the news rather than underlying prospects.

This approach may provide some theoretical under pinning for the results in B&P (2002a), in which they find that firms that make more timely disclosures face an increased cost of capital. This can arise in the G&T (2003) setting when firms with 'good prospects' adopt a conservative accounting policy and then find little additional benefit from making timely voluntary disclosures. The remaining firms adopt aggressive accounting policies, and are accordingly penalised by the market, which charges them a higher cost of capital. If these 'aggressive' firms then receive good news (e.g. sign significant new contracts) they could disclose the news to try to separate themselves from the other firms who have adopted aggressive accounting. However, the beneficial effect of the disclosure in lowering the cost of capital faced by the aggressive firms may still leave them with a cost of capital above that of the firms adopting conservative accounting. That is, accounting policy choice may influence the cost of capital and this influence may not be (entirely) mitigated by voluntary disclosure through timely channels.

Without separating aggressive and conservative firms, we suggest that one may observe a positive relationship between timely disclosures and cost of capital because only aggressive firms make timely disclosures, whilst conservative firms benefit from the lowest costs of capital regardless. Therefore, accounting policy choice should be controlled for before drawing conclusions about the impact of disclosure on cost of capital, otherwise, one risks spurious associations.

In this paper, we examine the effects of accounting policy choice on the cost of equity capital, and on the relationship between cost of equity capital and disclosure level. To summarise, if accounting policy choice is correlated with both the dependent variable cost of equity capital, and disclosure level, but is not controlled for, then the coefficient on the disclosure level variable may be biased (correlated omitted variable). This is an alternative explanation for the results reported by B&P.

In order to examine these effects we must measure communication via the two message spaces, first accounting policy choice, and then disclosure. In order to test empirically whether accounting policy choice affects the cost of equity capital, and whether controlling for accounting policy choice changes the observed associations with voluntary disclosure, we must distinguish aggressive accounting policies from conservative policies. Prior research suggests two possible methods.

First, one can measure the overall level of earnings management undertaken by firms. This can be approached by estimating discretionary accruals (DA) using one of a family of related regression models (e.g. Jones, 1991). This method captures the net effect of a multitude of accounting choices.

Second, one can identify and classify firms' stated accounting policies. This will be easiest for firms with major transactions for which there is a clear choice between just two accounting policies, one is deemed aggressive and the other conservative. For example, much has been written about revenue recognition policies in the software industry, where sizeable revenues are often received from software licensing and other long-term arrangements such as maintenance and training contracts. Firms may either recognise sales revenue from these sources as soon as the contract for goods and services has been signed (aggressive), or later when the software has been delivered and add-on services performed (conservative). However, this method relies upon a clear dichotomy of accounting policy choice and sufficient disclosure of these choices, and will be complicated where firms adopt aggressive policies in certain respects but conservative policies in others. Because of these problems, in this paper we choose to categorise accounting policy choice according to estimated DA.

There is some prior empirical evidence of the relationship between voluntary disclosure and both DA and specific accounting policy choice (for example, over revenue recognition practices), but it is not exhaustive. Kasznik (1996) studies software firms in the US and finds that managers of aggressive reporting firms modify their disclosure behaviour following a (mandated) change towards more conservative accounting. Kasznik compares firms adopting aggressive revenue recognition policies with a matched control group of non-aggressive firms. His study indicates that managers of aggressive firms reduced the extent to which they issued earnings forecasts, and increased the frequency with which they modified their cash payout policy and disclosed non-financial information such as the development of new products. The first finding is explained by noting the costs associated with management forecast errors, and the notion that managers use accounting discretion to mitigate such consequences. In the absence of accounting discretion, managers face higher forecast error costs, and respond by reducing the number of forecasts. The latter findings are due to the increased benefits of communication through sources outside the financial statements, when communication through financial reporting channels such as accounting policy choice is restricted.

Kasznik (1999) also finds that managers who issue annual earnings forecasts use positive DA to manage reported earnings upward when earnings would otherwise be below management forecasts, whereas managers who underestimate earnings are more likely to revise their forecasts. This suggests that good news firms (with actual earnings above forecast) are more likely to make increased disclosures whereas bad news firms are more likely to use aggressive accounting, but does not directly compare disclosures made by firms making different accounting choices. In this paper we compare cost of equity capital in firms making both different accounting choices and different levels of disclosure.

Hypotheses

We test whether accounting policy choice is related to the cost of equity capital, whether companies making different accounting choices have different relationships between cost of capital and timely disclosures, and whether controlling for accounting

policy changes the observed relationship between timely disclosure and the cost of equity capital (because it is correlated with both disclosures and cost of capital).

Specifically, we test the following hypotheses:

H1 *Ceteris paribus,* firms making aggressive accounting choices have higher cost of capital than firms making conservative accounting choices.

H2 There is a negative relationship between timely disclosure and cost of capital in firms making aggressive accounting choices.

H3 Failing to control for accounting choice results in a spurious relationship being observed between timely disclosures and cost of capital.

Furthermore, we do not expect to observe a relationship between timely disclosure and cost of capital in firms making conservative accounting choices. The null hypothesis in each case is that there is no (spurious) relationship. Evidence for H3 would be provided in the form of an observation of a change in the direction and/or significance of the coefficient on timely disclosure in a regression model of cost of capital when accounting choice is included as an explanatory variable. We present evidence in support of H1 and H2 but do not find evidence in support of H3, as we do not replicate the positive relationship between timely disclosures and cost of capital observed by B&P. Instead, we find a significant, negative relationship between our measure of timely disclosures and cost of capital, that persists regardless of whether or not accounting choice is included as an explanatory variable. It is interesting to recall the opening quotation at this point. Differences in measures of a disclosure index, could arise because we are looking for disclosure events on a more timely basis than B&P. For instance, what they may be picking up, is the effect of secondary repetitive disclosures. These could occur after the initial disclosure event and 'poorly ranked' aggressive firms engage in more 'retelling the story' to try and influence perceptions.

However, as we show that the nature of the relationship between timely disclosure and cost of capital changes for aggressive and conservative firms, this does not rule out the possibility that the B&P positive result is indeed spurious.

2. METHODOLOGY

We perform OLS regressions of cost of equity capital against measures of voluntary disclosure, aggressive/conservative accounting policy choice, and control variables identified from prior literature. We estimate the model for a sample of information technology firms that are listed on the London Stock Exchange. The sample and details of data collection are described in Section 3. Descriptive statistics are presented in Section 4. This section describes the measures of cost of capital, voluntary disclosure, accounting policy choice, and control variables suggested by previous studies.

The first sub-section discusses the measurement of cost of equity capital. Since this cannot be directly observed it must be estimated. Next we develop our own index to measure timely disclosures. This is described in the second sub-section. Finally, we discuss the measurement and classification of accounting policy choice. As discussed in the introduction, we measure accounting policy choice on a continuum by estimating discretionary accruals (DA).

Section 5 reports the results of multivariate regression analysis of cost of equity capital against voluntary disclosure, accounting choice and control variables.

We report regression results with and without accounting choice as an explanatory variable. Excluding accounting choice enables us to determine whether we can replicate the results of Botosan (1997) and B&P (2002a). Subsequently including accounting choice allows us to both determine the association (if any) between accounting choice and cost of equity capital, and whether the original observed association between disclosure and cost of equity capital is spurious (biased coefficient). A positive relationship between the accounting choice variable and the cost of capital provides support for H1. After controlling for accounting choice in this way, if the observed relationship between timely disclosure and cost of capital changes from positive to negative, we may conclude that the earlier results are spurious (H3). If observed, a negative relationship between disclosure and cost of capital would be consistent with theory. A negative relationship for firms making aggressive accounting choices alone is consistent with G&T and provides support for H2.

Measuring the ex-ante cost of equity capital

Prior research uses variations of valuation formulae based on analysts' forecasts to impute the *ex-ante* cost of equity capital. Botosan (1997) uses the accounting based valuation formula developed by Edwards and Bell (1961), Ohlson (1995) and Feltham and Ohlson (1995), which she refers to as the EBO valuation formula. Starting with the dividend discount formula, and assuming that clean surplus accounting holds, this formula gives the market price P_t of a share at time t as a function of book value per share b_t plus the discounted sum of expected future abnormal earnings per share. This leads to equation (1):

$$P_t = b_t + \sum_{\tau=1}^{\infty} (1+r)^{-\tau} E_t\left[x_{t+\tau} - r b_{t+\tau-1}\right] \qquad (1)$$

where r is the cost of equity capital, and $x_{t+\tau}$ is earnings per share (EPS) at time $t+\tau$. E_t is the expectation at time t.

Following Abarbanell and Bernard (1994), Botosan then rewrites equation (1) in the following short-horizon form:

$$P_t = b_t + \sum_{\tau=1}^{T} (1+r)^{-\tau} E_t\left[x_{t+\tau} - r b_{t+\tau-1}\right] + (1+r)^{-T} E_t(P_T - b_T) \qquad (2)$$

Botosan sets $T = 4$ and solves the resulting fourth-degree polynomial equation for cost of equity capital r. She identifies four unique closed form solutions for r using *Mathematica* but does not report them, as presumably the expressions are very long. She reports that each expression r_i, i = 1 to 4, is a function of current book value and expectations of future book value in years 1 to 4, current share price and the expected share price in year 4, and expectations of future earnings in years 1 to 4.

Botosan then obtains data on current share price and current book value, and analysts' forecasts of future values, in order to estimate r_i for each firm. In each case, Botosan reports that she finds that two of the four possible solutions are undefined and one is unrealistic (negative). Therefore, she uses the remaining solution, as her estimate of cost of equity capital, hereafter, denoted r_{ACC}.

B&P (2002a) use a similar expression to equation (2), derived from the classic dividend discount model, to obtain the cost of equity capital, hereafter denoted r_{DIV}. This expression is given in equation (3) below, where $d_{t+\tau}$ is dividends per share. They note that the estimates produced by equations (2) and (3) should be identical

assuming that the clean-surplus relation holds, and report a high correlation (0.9) between the two estimates derived from the two forms of the model.

$$P_t = b_t + \sum_{\tau=1}^{T} (1+r_{DIV})^{-\tau} E_t[d_{t+\tau}] + (1+r_{DIV})^{-T} E_t(P_T) \quad (3)$$

We calculate cost of equity capital in a manner consistent with the approach followed by Botosan (1997) and B&P (2002a). However, Botosan (1997) and B&P (2002a and 2002b) obtain analyst forecast data from Value Line in order to construct their measures of cost of capital. In contrast, we have access to IBES data on analysts' forecasts, through DATASTREAM. Because we have IBES data and not Value Line data, our precise methodology follows Gebhardt et al. (2001) and Hail (2002). This is because IBES does not include forecast price data so the valuation model must be restated in an alternate (equivalent) form. Gebhardt et al. (hereafter GLS) and Hail also obtain their forecast data from IBES, deriving their cost of equity capital estimates using data available from IBES.

GLS also base their approach on the dividend discount model to derive their estimate, hereafter denoted r_{GLS}. They write their (equivalent) version of the finite horizon equation (3) in the following form:

$$P_t = b_t + \frac{FROE_{t+1} - r_{GLS}}{(1+r_{GLS})} b_t + \frac{FROE_{t+2} - r_{GLS}}{(1+r_{GLS})^2} b_{t+1} + TV \quad (5)$$

where:

b_t = book value from the most recent financial statement, divided by the number of shares outstanding in the current month, from IBES.

$FROE_{t+i}$ = forecasted ROE for period $t+i$. For the first three years, this variable is computed as $FEPS_{t+i}/b_{t+i-1}$ where $FEPS_{t+i}$ is the IBES mean forecasted EPS for year $t+i$ and b_{t+i-1} is the book value per share for year $t+i-1$. IBES mean EPS forecasts are explicity reported for years 1 and 2 and are obtained using IBES reported long-term growth rates for year 3. Beyond the third year, *FROE* is forecasted using a linear interpolation to the industry median ROE.

b_{t+i} = $b_{t+i-1} + FEPS_{t+i} - FDPS_{t+i}$ where $FDPS_{t+i}$ is the forecasted dividend per share for year $t+i$ estimated using the current dividend payout ratio k multiplied by the forecast EPS for year $t+i$.

The terminal value *TV* for any finite horizon *T* is calculated as follows:

$$TV = \sum_{i=3}^{T-1} \frac{FROE_{t+i} - r_{GLS}}{(1+r_{GLS})^i} b_{t+i-1} + \frac{FROE_{t+T} - r_{GLS}}{r_{GLS}(1+r_{GLS})^{T-1}} b_{t+T-1} \quad (6)$$

Therefore it is clear that their equation can be written in a slightly simplified form as:

$$P_t = b_t + \sum_{i=1}^{T-1} \frac{FROE_{t+i} - r_{GLS}}{(1+r_{GLS})^i} b_{t+i-1} + \frac{FROE_{t+T} - r_{GLS}}{r_{GLS}(1+r_{GLS})^{T-1}} b_{t+T-1} \quad (7)$$

whilst, remembering that $FROE_{t+i}$ is derived in three different ways – as an explicit forecast (i = 1 to 3), as a linear interpolation between the last explicit forecast and an industry target (i = 4 to T), and by assuming that the final return persists in perpetuity.

GLS use T = 12 but document that they also calculate cost of capital for other finite horizons with very similar results. The target industry median ROE, necessary for interpolating the forecasted ROE beyond the third year, is computed as the median of past ROEs from all firms in the same industry, excluding loss-making firms, over between 5 and 10 years of past data.

Hail (2002) uses a version of the Botosan (1997) residual income model reported in equation (2), but follows GLS (2001) in adopting a three-stage approach to

forecasting residual income and in deriving the terminal value. The estimated cost of equity capital derived from this model is hereafter denoted r_H and is given by the following equation (8), in which $T = 12$:

$$P_t = b_t + \sum_{i=1}^{T} \frac{E_t[x_{t+\tau} - r_H b_{t+\tau-1}]}{(1+r_H)^i} + \frac{E_t[x_{t+T+1} - r_H b_{t+T}]}{r_H (1+r_H)^T} \quad (8)$$

We adopt Hail's model. Both Hail (2002) and GLS (2001) report detailed examples of their costs of capital calculations. Our methodology is identical.

Measuring the level of disclosure

Firms which are listed on the London Stock Exchange are required to make timely disclosures of announcements relating to their activities which are relevant to an assessment of the value of their securities. Firms do this via the Regulatory News Service (RNS). Disclosures made via RNS fall under predetermined headings. The one hundred headings fall under the section headings: Company Appointments, Directors and Meetings (1-11); Deals, Transactions and Operational Updates (11-28); Offers (29-37); Financial Statements, Dividends and Corporate Actions (38-46); Other Statements and Announcements (47-59); Shareholder and POTAM disclosures (60-65); Equity Debt and Investment Trusts (66-81); Market, RNS and Related Announcements (82-92); Documents and Circulars (93-95); LSE Regulatory Benefits Announcements (96-100).

The headlines in the first section include compulsory disclosures such as Notice of AGM, which for obvious reasons do not differ between companies. Similarly the Other Statements and Announcements section includes the headings of Statement Re: Share Price Movement and Statement Re: Suspension which are 'forced' upon the company when there is unusual trading in the stock. Since our main concern is to capture voluntary disclosures concerning the strategic position of the company we restrict attention to the set of seventeen headings that fall under the Deals, Transactions and Operational Updates section. These headings are: Acquisition, Change of Adviser, Change of Name, Disposal, Drilling Report, Letter of Intent Signed, Merger Update, Product Launch, Agreement, Alliance, Contract, Joint Venture, Regulatory Application, Regulatory Approval, Research Update, Restructure Proposals, Trading Update.

Clearly some of these headings such as Drilling Report do not apply to the IT industry. Similarly Regulatory Application and Regulatory Approval does not either and we took the view that Change of Adviser and Change of Name did not typically relate to the companies change of strategic position. Hence when searching for 'strategic disclosures' we used Factiva's intelligent search routine to identify all RNS announcements for our sample of IT firms over the ten year period that referred to:
Acquisition or Letter of Intent Signed or Disposal or Merger Update or Product Launch or Agreement or Alliance or Contract or Joint Venture or Research Update or Restructure Proposals or Trading Update.

We construct our index from a ratio of *total news stories* which reference the above strategic disclosure terms and compare this to the number of RNS disclosures which reference the same strategic terms, for each company-year observation. We then rank the resulting values across the final sample and divide each one by the number of observations. Our ratio captures the importance of the disclosures on RNS rather than the frequency of disclosure *per se*. We do this to allow for companies with different amounts of news. Simply ranking the number of RNS disclosures would rate a company which happens to have more news as disclosing more than a

company which happens to have little news, even if they were both disclosing all of their news.

Identifying firms with aggressive accounting policies

There are two possible measures of aggressive accounting that could be used. As discussed in the introduction, one possibility is to attempt to construct a dichotomous indicator variable (or an index) by inspecting the accounting policies reported in the annual financial statements of the firms in our sample. This has several drawbacks. Firstly, accounting policy disclosures may not be sufficient to determine whether individual policies applied are aggressive or conservative.[3] Secondly, firms may use a mixture of aggressive and conservative policies with respect to different transactions. Finally, accounting policies may contain both aggressive and conservative features, and any classification of such hybrid policies would therefore be subjective.

Alternately, a version of the well-known Jones (1991) model from the earnings management literature can be used to estimate discretionary accruals (DA) for each firm, using accounts variables gathered from DATASTREAM. Using DA as a measure of aggressive accounting has advantages over the approach outlined above as it is less subjective, and it captures the combined effects of a multitude of accounting choices. Companies making more aggressive accounting policy choices would be expected to have higher levels of DA, in terms of either the absolute size of DA, or positive DA only.

DA cannot be directly observed. They are estimated by imposing a model of the non-discretionary component of total accruals (NDA) on total accruals (TA). TA are observable. In the original and modified versions of the Jones (1991) model (Jones, 1991; Dechow et al., 1985), TA are defined as the difference between operating income and operating cashflows, or, equivalently, as the change in non-cash current assets minus the change in current liabilities (excluding the current portion of long-term debt), minus depreciation and other long-term charges. In the simple version of the Jones model used by e.g. Gore et al. (2001), only working capital accruals are considered. Total working capital accruals (TWCA) are defined as the change in non-cash current assets minus the change in current liabilities (excluding the current portion of long-term debt), i.e. depreciation is not deducted.

Several different models of NDA have been used in the literature to estimate DA. The main model is that of Jones (1991). Dechow et al. (1995) created the Modified Jones Model, and DeFond and Jiambalvo (1994) used a cross-sectional version of the Jones Model. The original version of the Jones model is a time-series version. Both the time series and cross-sectional versions of the Jones and Modified Jones Models employ a regression-based expectation model to control for variations in NDA. The time-series versions require several years of data prior to the event year in order to form coefficient estimates for each firm individually. The cross-sectional versions form coefficient estimates for industry and event-period matched portfolios for each sample firm. These models are discussed in detail by several papers which compare the different methods (e.g. Dechow et al., 1995; Guay et al., 1996; Young, 1999; Bartov et al., 2001).

[3] This point is, of course, interesting in itself.

Dechow et al. (1995), Guay et al. (1996) and Young (1999) all report evidence that existing (time-series) models of DA induce systematic measurement error (the sign and/or magnitude of the measurement error in the estimated DA is related to the components of the NDA models). Of the various models examined, they find that the Jones-based procedure performs well. Bartov et al. (2001) examine cross-sectional Jones models, and find that they perform better than their time-series counterparts in detecting earnings management in firms receiving modified audit reports. The cross-sectional versions may also be preferred to time-series versions as the data requirements of the latter are likely to lead to survivorship bias, and the models have to assume that the estimated coefficients are stationary through time (in contrast, the cross-sectional versions assume that the estimated coefficients are constant within industry groups). We use the modified version of the Jones (1991) model developed by Dechow et al. (1995).

First we calculate TA using equation (9). CA are current assets (DATASTREAM #376) and CASH is cash (#375). CL are current liabilities (#389) and CBORR are the current portion of long-term debt (#309). DEPN is depreciation (#136).

$$TA_t = \Delta(CA_t - CASH_t) - \Delta(CL_t - CBORR_t) - DEPN_t \quad (9)$$

Then we use OLS to estimate the model in equation (10) separately over the companies in each industry group and year:

$$TA_t/ASSETS_{t-1} = \beta_0 (1/ASSETS_{t-1}) + \beta_1 (\Delta REV_t/ASSETS_{t-1}) + \beta_2 (PPE_{t-1}/ASSETS_{t-1}) + \varepsilon_J \quad (10)$$

ASSETS are total assets (#392), REV is sales turnover (#104) and PPE is the gross value of tangible fixed assets (#330). We use NDAJ and DAJ to identify the NDA and DA (respectively) obtained from this model.

In the original version of the Jones (1991) model, NDA are the predicted values from this regression, and DA are the resulting residuals. However, we use the modified Jones model. This is identical to the original Jones model except that the DA are no longer simply the residuals from the regression of equation (10). We use NDAM and DAM to denote the NDA and DA obtained from the modified Jones model. DAM are calculated from equation (11), using the coefficient estimates obtained from regression (10). REC are receivables (#367).

$$DAM_t = TA_t/ASSETS_{t-1} - \beta_0 (1/ASSETS_{t-1}) - \beta_1 [(\Delta REV_t/ASSETS_{t-1}) - (\Delta REC_t/ASSETS_{t-1})] - \beta_2 (PPE_{t-1}/ASSETS_{t-1}) \quad (11)$$

Finally, firms with aggressive accounting policies are defined as those making positive DA, whereas those making negative DA are defined as conservative.

3. DATA

We obtain the IT sector RNS disclosure data from Factiva for all UK listed firms that are classified on Factiva as within the Computers / Electronics or Internet / Online industry sectors. Accounting and market data (e.g. share price) is collected from DATASTREAM, and analysts' forecast data from IBES. IBES data is available through DATASTREAM. In total there were 131 companies identified by FACTIVA as operating in this sector at 31 December 2002. There were an additional 31 companies in the IT sector identified by DATASTREAM, and a further 2 companies identified in the *Financial Times*, making a maximum total sample size reporting financial statements in any one year of 164.

We collect data for these companies reporting over 10 calendar years from 1 January 1993 to 31 December 2002. If every company reported financial statements and made disclosures in each of the ten years, and there was no missing data, there would therefore be a total sample size of 1,640. The final sample that we analyse is, however, considerably smaller than this (301). Details are provided in Table 1.

Cost of capital

We estimate the cost of equity capital from share price and IBES analyst forecast data, as described in Section 2. Key parameters of the cost of capital model are the analysts' mean EPS forecasts for the next two years (F1MN and F2MN), the mean expected long-term growth rate (LTG), the current dividend payout ratio (PAYOUT), the current share price (P), the current book value per share (B), and the target ROE for the industry (TARGET). LTG is used to obtain the explicit EPS forecast figure for year 3 and thereafter the forecasts are calculated by linear interpolation to TARGET. PAYOUT is used to estimate forecast dividends per share by multiplying the ratio by the forecast EPS.

Because IBES analysts' EPS forecasts are not adjusted for subsequent capital events whereas other DATASTREAM per-share items are, F1MN and F2MN are multiplied by the DATASTREAM cumulative adjustment factor AF. LTG is either explicitly reported by IBES, or, where missing, is calculated directly from the EPS forecasts F1MN and F2MN. PAYOUT is either explicitly reported by DATASTREAM, or, where missing, is calculated as most recent dividends per share divided by most recent reported EPS. PAYOUT must be bounded by 0 and 1 and it is therefore necessary to adjust values greater than 1 to equal 1, and values less than 0 to equal 0. As the sample is a single industry, TARGET is calculated as the median ROE for all non loss-making company years in the sample prior to the year of interest.

Share prices for the cost of capital calculations are obtained from DATASTREAM. Share price (P) is collected at the date at which the IBES analysts' forecast data is collected. Ideally, all IBES and share price data would be collected at the same date each year, as soon as possible after the accounting year end but after the accounts have been published (so that the analysts' forecasts reflect the latest results). This would be possible if all the companies in our sample had the same accounting year ends, or at least year ends clustered in the same half of the year. For example, we could follow previous studies by collecting the IBES data as at 30 June in the year following the calendar year in which the accounting year end falls. However, companies in our sample have widely differing accounting year end dates that are spread throughout the calendar year. Therefore waiting until the 30 June following to collect analysts' forecasts data (a) decreases the likely relevance of accounts dated early in the calendar year to the analysts because of the length of time that has passed, and (b) it is possible that a second, subsequent set of accounts will have been published in the interim.

Therefore we collect IBES data at one of two possible dates for each company-year. First we examine the IBES analysts' forecasts data as at 31 December in the calendar year in which the accounting year end falls. If the analysts' forecasts at that date have been updated for the accounts for that year end, then this is the data that we collect. However, because of the delay between the end of an accounting period and the subsequent reporting of the relevant accounts, for many companies the IBES data at 31 December will not yet have been updated. The analysts' forecasts will reflect only accounts information from earlier, inappropriate accounting periods.

For these companies, we collect IBES data as at 30 June in the calendar year following. IBES reports the accounting period dates to which its analysts' forecasts data relates.

This is perhaps best illustrated with an example. Consider a company with year end of 31 December 2001. We will collect accounts data for the year ended 31 December 2001. But the IBES data collected at 31 December 2001 will still be reporting forecasts for that very financial year, as the analysts will not yet have access to the actual data. It is only when the financial statements are published, for example on 30 May 2002, that the analysts can 'update' their forecasts to the next financial year. Therefore, for this company we collect IBES data as at 30 June in the calendar year following, so that the forecasts reflect the correct accounts data.

We collect IBES and share price data at 31 December of the calendar year whenever the IBES data relates to the appropriate sets of accounts; where it does not we collect it from 30 June following as long as that data relates to the appropriate sets of accounts.

Finally, book value per share (B) is collected from DATASTREAM for the appropriate balance sheet date.

Disclosure

We obtain details of RNS and non-RNS disclosures from FACTIVA. These disclosures are used to calculate our disclosure measure (DISCLOSE). DISCLOSE is the ratio of the number of non-RNS disclosures (which reference the strategy terms), to RNS disclosures, over the period of one year ending on the date at which the IBES and share price data is collected.

Accounting choice

We obtain accounts data for all accounting periods ending within the ten calendar years from 1 January 1993 to 31 December 2002 from DATASTREAM. We use accounts data to estimate DA separately for each company-year observation.

Accounting periods end at varying points during the calendar year, and in some cases accounting periods change during a calendar year. Therefore, in some calendar years there is more than one balance sheet date and set of accounts. We use only the most recent set of accounts dated within the appropriate calendar year (although we retain matched lagged variables from the earlier set where necessary for the DA calculations). In some cases there are no accounting periods reported in a given calendar year. When accounting periods are not equal to a calendar year in length, profit and loss account variables are scaled accordingly. We calculate discretionary accruals (DAM) per the modified Jones model as described in Section 2.

Control variables

In addition to measuring cost of capital, disclosure and accounting choice, we collect data on control variables that we include in our regressions. These control variables are suggested by theory and prior research. Control variables used by Botosan and Plumlee (2002a) are: beta (estimated using the market model – minimum of 30 monthly returns over the 60 months prior to midpoint of the publication year of the annual report; value weighted market index); and the natural log of market value of

equity at the start of the year. We use the market model beta reported by DATASTREAM as at 30 June in the appropriate calendar year (BETA) when the IBES data is collected at 31 December; we use the figure reported at 31 December when the IBES data is collected at the following 30 June. These betas are calculated using monthly returns over the 60 months prior to the reported date. We also use the natural log of opening market value at the 31 December of the previous calendar year (LNMV) when the IBES data is collected at 31 December; we use the figure reported at 30 June when the IBES data is collected at 30 June in the following calendar year.

Botosan and Plumlee (2002b) also include five year forecasted earnings growth, defined as the difference in consensus forecasted earnings for year five and forecasted earnings for year four, divided by consensus forecasted earnings for year four. In addition to these, GLS (2001) suggest that the natural log of the ratio of long-term debt-to-market value (LNDMV), the natural log of dispersion in analyst forecasts (DISP), and the natural log of the book-to-market ratio (LNBMV), also explain cross-sectional variation in the cost of equity capital.[4] Of these variables, GLS find that the most important explanatory variables are LNBMV, dispersion, and earnings growth.[5] We use the variable LTG (described above) as a measure of earnings growth. We collect variables necessary to calculate LNBMV and LNDMV from DATASTREAM at the same date as opening market value, and finally we collect the coefficient of variation in 1 year ahead EPS forecasts from IBES in order to measure the natural log of dispersion (DISP). Because of zero values for a number of debt-to-market ratios, 1 is added to each observation of this variable before taking the natural log.

Finally, because Botosan (1997) finds different results for firms with different levels of analyst followings, we control for the number of analysts' forecasts (ANALYSTS). As our sample spans ten years during which economic conditions have changed, we also include a dummy indicator variable (YEAR) equal to one if the observation is post-1999, and zero otherwise.

Final sample size

There is a maximum of 1,640 observations in our data set (164 companies each year for 10 years). However, because of missing data and company life spans, the final sample consists of 321 observations. A further 13 observations are subsequently excluded as the either have negative (3) or large (10) values of estimated cost of capital (where 'large' costs of capital are defined as greater than 100%). The composition of our final sample by year is summarised in Table 1.

[Table 1 about here]

4. DESCRIPTIVE STATISTICS

Table 2 reports descriptive statistics for the final sample of 301 companies. The dependent variable COST varies from just under 1% to almost 61% but both its mean and median values are around 10%.

[4] GLS note that variables such as price momentum and trading volume should be excluded as they are mispricing variables.

[5] GLS also find that the mean implied industry risk premium is significant. However, as all companies in our sample come from the same industry, we exclude this variable from our analysis.

[Table 2 about here]

Companies make on average 6 RNS announcements during a year, and on average a further 18 news stories about each company appear. The maximum number of RNS disclosures is 34 compared to 485 other news stories. Four observations in our final sample both make no announcements, and have no new stories of any kind.

Approximately half of the companies make negative DA and are therefore classified as conservative; the remained make positive DA and are classified as aggressive.

An average of six analysts follows each company in any year.

5. RESULTS

We first regress COST on DISCLOSE and our control variables, but excluding our measure of accounting choice DAM. We do this to determine whether we also observe the positive relationship between timely disclosure and cost of capital reported by B&P. The results of this estimation are reported in the first column of Table 3.

[Table 3 about here]

The most striking result is the significant, negative coefficient on the timely disclosure variable (DISCLOSE). This is consistent with prior theory but not with the prior empirical results of B&P, and we reject H3. It is possible that this difference between our results and those of B&P is due to differences in the construction of the disclosure variable, (**and several alternative measures that we could have used are discussed later in this section when we perform sensitivity analysis**). Because we do not replicate B&P's results, we are unable to conclude whether the positive relationship observed by B&P is due to a failure to control for accounting choice.

Other significant variables in the model are LNMV, DISP, LNDMV, LTG, and YEAR. LNMV and LTG are negatively related to the cost of capital, whereas the other variables are all positively related. Therefore, the larger a company, or the higher its future expected growth, the lower its cost of capital, whereas companies with a wide dispersion in analysts' forecasts, high gearing, or in a poor economic climate (post-1999) have higher costs of capital. In total our model explains approximately 38% of the cross-sectional variation in cost of capital for firms in the IT industry.

Second, we repeat this regression but include DAM among the explanatory variables. The results of this estimation are reported in the second column of Table 3. As before, the coefficient on DISCLOSE is negative and significant. Therefore, including the additional accounting choice variable DAM has not changed the observed relationship between disclosure and cost of capital. However, we can see that the coefficient on DAM is positive and significant. Therefore we find support for H1, that companies making aggressive accounting choices (larger/positive DA) face higher costs of capital than other firms.

As before, LNMV, DISP, LNDMV, LTG and YEAR are also significant variables. The model explains almost 40% of the cross-sectional variation in cost of capital.

Finally, we divide the sample into firms making aggressive accounting choices (DAM>0) and those making conservative choices (DAM<=0). The results of these regressions are reported in Table 4. The first column of Table 4 reports the results for aggressive firms, and the second column reports the results for conservative firms.

[Table 4 about here]

The main difference between the results is that while DISCLOSE remains significant (and negative) for aggressive firms, it is no longer significant for conservative firms. This provides support for H2, and is in line with the theoretical findings of G&T that firms communicate via multiple message spaces and the effects of these messages may interact. In this case, aggressive firms may reduce their cost of capital by increasing disclosure, whereas conservative firms may not.

LDMV and LTG are significant for both types of firms. The coefficient on LDMV is positive for both types of firms but the coefficient on LTG is positive for aggressive firms, and negative for conservative firms, indicating that growth is viewed differently depending on accounting choice. Firms making aggressive accounting choices face higher costs of capital when high future growth is expected, whereas firms making conservative choices face lower costs of capital when high future growth is expected.

DISP remains significant for aggressive firms only, and YEAR remains significant for conservative firms only. The models explain around 30% of the cross-sectional variation in cost of capital in aggressive firms, and around 50% in conservative firms.

Alternative Measures of Agressive/Conservative Accounting Choice

We classify companies making aggressive accounting choices as those with positive DAM whereas conservative companies make negative DAM. We also examine two alternative classifications: classifying companies with DAM greater than the mean value of DAM as aggressive, and classifying companies with DA greater than the median value of DAM as aggressive.

Using these alternative definitions of aggressive and conservative firms does not qualitatively change the results of our regressions when they are performed separately over these two sub-populations.

6. CONCLUSIONS

We extend the literature in two ways. First, we examine the relationships between timely disclosure, cost of equity capital, and accounting choice. Accounting choice is a novel variable that theory suggests interacts with both cost of capital, and timely disclosure. Second, we are the first study to examine the relationship between disclosure and cost of capital using UK data. We analyse a sample of firms from the IT industry making strategic disclosures over a ten year period from 1 January 1992 to 31 December 2002.

Contrary to prior research on timely disclosure, but consistent with theory, we find a significant negative relationship between timely disclosure and cost of capital. Companies which disclose more benefit from lower costs of capital. We show that this relationship persists regardless of whether we control for accounting choice. We further show that there is a significant, positive relationship between accounting choice and cost of capital. Companies which make aggressive accounting choices have higher costs of capital. Finally, we show that the negative relationship between timely disclosure and cost of capital exists only for aggressive firms, whereas there is

no relationship between disclosure and cost of capital in conservative firms. This is consistent with the theoretical predictions of G&T, that companies communicate via multiple message spaces and that there are interactions between these message spaces. Therefore, failing to control for one signal such as accounting choice may result in spurious relationships being observed.

Table 1
Sample Composition by Year

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total
IT companies with accounts data in DATASTREAM	67	76	81	94	108	118	126	154	160	147	1,131
Less: missing FACTIVA disclosure data	25	21	23	33	33	30	24	21	19	23	251
Less: no RNS disclosures				1			2			1	4
	42	55	58	60	75	88	100	134	141	123	876
Less: missing variables necessary to calculate COST of capital	13	24	18	22	23	26	30	39	52	54	301
	29	31	40	38	52	62	70	95	89	69	575
Less: missing variables necessary to calculate DAM	4	1	3	1	6	4	6	16	6	2	49
	25	30	37	37	46	58	64	79	83	67	526
Less: missing analysts' forecasts dispersion measure DISP	4	7	5	9	14	13	14	30	41	23	160
Less: missing LNBMV (due to negative book value)	1		2	2	5	9	11	7	6	9	52
	20	23	30	26	27	36	39	42	36	35	314
Less: negative/large COSTs of capital				1	1		3	3	2	3	13
Final sample	20	23	30	25	26	36	36	39	34	32	301

Notes
There are a maximum of 164 IT companies in our sample reporting in any one calendar year.

Table 2
Descriptive Statistics

Variable	*Definition*	*Mean*	*Standard Deviation*	*Min*	*Median*	*Max*
COST	*Ex-ante* cost of equity capital	0.107	0.06	0.006	0.101	0.609
RNS	Number of RNS announcements	6.150	5.137	0	5	34
NON-RNS	Number of other news stories	18.073	36.422	0	7	485
DISCLOSE	Rank of ratio of non-RNS news stories to RNS disclosures	0.500	0.288	0.046	0.480	0.997
DAM	Discretionary accruals estimated using the modified Jones model	-0.015	0.153	-1.123	0.008	0.496
LNMV	Natural log of market value	5.396	1.382	1.866	5.277	8.956
BETA	Market-model beta	1.269	0.979	-0.270	1.040	7.560
LNBMV	Natural log of book-to-market ratio	-1.736	1.098	-8.927	-1.545	0.051
DISP	Natural log of dispersion in analysts' forecasts	2.119	1.335	-1.523	1.875	8.335
LNDMV	Natural log of debt-to-market ratio	2.535	2.117	0	2.419	6.717
LTG	Mean expected long-term growth rate	-0.243	7.086	-122.385	0.150	3.627
ANALYSTS	Number of analysts' forecasts	6.173	4.822	1	4	23
YEAR	Equals one if year is post 1999	0.349	0.477	0	0	1

Notes
There are 301 companies in the final sample.

Table 3
Estimation Results – Full Sample

Explanatory Variable	*Without Controlling for Accounting Choice*		*Controlling for Accounting Choice*	
DISCLOSE	-0.027	*	-0.026	*
	(0.012)		(0.011)	
DAM	-		0.050	**
			(0.019)	
LNMV	-0.008	*	-0.009	*
	(0.003)		(0.003)	
BETA	-0.001		-0.001	
	(0.003)		(0.003)	
LNBMV	0.003		0.002	
	(0.003)		(0.003)	
DISP	0.005	*	0.006	*
	(0.002)		(0.002)	
LNDMV	0.007	**	0.007	**
	(0.001)		(0.001)	
LTG	-0.003	**	-0.003	**
	(0.000)		(0.000)	
ANALYSTS	-0.000		0.000	
	(0.001)		(0.001)	
YEAR	0.027	**	0.026	**
	(0.008)		(0.008)	
Constant	0.130	**	0.133	**
	(0.014)		(0.014)	
R^2	38.27%		39.77%	
Adj. R^2	36.36%		37.69%	

Notes
The dependent variable is cost of equity capital (COST).
Variables are defined in Table 2.
There are 301 observations.
Standard errors are reported in (parentheses).
* - significant at the 5% level
** - significant at the 1% level

Table 4
Estimation Results – Aggressive and Conservative Firms

Explanatory Variable	*Aggressive Firms (DAM>0)*		*Conservative Firms (DAM<=0)*	
DISCLOSE	-0.029	*	-0.026	
	(0.014)		(0.017)	
LNMV	-0.000		-0.014	**
	(0.004)		(0.006)	
BETA	0.002		-0.002	
	(0.006)		(0.004)	
LNBMV	0.002		0.006	
	(0.003)		(0.005)	
DISP	0.008	**	0.001	
	(0.003)		(0.003)	
LNDMV	0.006	**	0.009	**
	(0.002)		(0.002)	
LTG	0.028	**	-0.004	**
	(0.005)		(0.000)	
ANALYSTS	-0.001		0.000	
	(0.001)		(0.002)	
YEAR	0.008		0.046	**
	(0.008)		(0.013)	
Constant	0.090	**	0.169	**
	(0.016)		(0.023)	
R^2	32.08%		52.71%	
Adj. R^2	27.95%		49.51%	

Notes
The dependent variable is cost of equity capital (COST).
Variables are defined in Table 2.
There are 301 observations in total. 158 of these are aggressive firms, 143 are conservative.
Standard errors are reported in (parentheses).
* - significant at the 5% level
** - significant at the 1% level

References

Arbanell, J. and V. Bernard (1994), 'Is the U.S. Stock Market Myopic?', Working paper, University of Michigan.

Bartov, E., F. A. Gul and J. S. L. Tsui (2001), 'Discretionary-Accruals Models and Audit Qualifications', *Journal of Accounting and Economics*, Vol. 30, pp. 421-452.

Botosan, C. A. (1997), 'Disclosure Level and the Cost of Equity Capital', *The Accounting Review*, Vol. 72, Issue 3 (July), pp. 323-349.

Botosan, C. A. and M. A. Plumlee (2002a), 'A Re-Examination of Disclosure Level and the Expected Cost of Equity Capital', *Journal of Accounting Research*, Vol. 41, Issue 1 (March), pp. 21-40.

Botosan, C. A. and M. A. Plumlee (2002b), 'Assessing the Construct Validity of Alternative Proxies for Expected Cost of Equity Capital', Working Paper, University of Utah.

Dechow, P., R. Sloan and A. Sweeney (1995), 'Detecting earnings management', *The Accounting Review*, Vol. 70, pp. 193-226.

DeFond, M. and J. Jiambalvo (1994), 'Debt Covenant Violation and Manipulation of Accruals', *Journal of Accounting and Economics*, Vol. 17, pp. 145-176.

Easley, D. and M. O'Hara, (2003), 'Information and the cost of capital', Working paper, Cornell University.

Easton, P. (2001), 'Doe the PEG Ratio Rank Stocks According to the Market's Expected Rate of Return on Equity Capital?', Working Paper, Ohio State University.

Edwards, E. and P. Bell (1961), 'The Theory and Measurement of Business Income', Berkely, CA: University of California Press.

Feltham, G. and J. Ohlson (1995), 'Valuation and Clean Surplus Accounting for Operational and Financial Activities', *Contemporary Accounting Research*, (Spring), pp. 689-731.

Gebhardt, W. R., C. M. C. Lee and B. Swaminathan (2001), 'Toward an Implied Cost of Capital', *Journal of Accounting Research*', Vol. 39 (1), pp. 135-176.

Gietzmann, M. B. and M. Trombetta (2003), 'Disclosure Interactions: Accounting Policy Choice and Voluntary Disclosure Effects on the Cost of Raising Capital', *forthcoming*.

Gigler F. and Hemmer T. (2001), "Conservatism, Optimal Disclosure Policy, and the Timeliness of Financial Reports"*, Accounting Review* 76(4): 471-93

Gore, P., P. F. Pope and A. K. Singh (2001), 'Non-audit services, auditor independence and earnings management', Lancaster University Working Paper.

Guay, W. R., S. P. Kothari and R. L. Watts (1996), 'A market-based evaluation of discretionary accrual models', *Journal of Accounting Research*, Vol. 34, pp. 83-105.

Hail, L. (2002), 'The impact of voluntary corporate disclosures on the *ex-ante* cost of capital for Swiss firms', *The European Accounting Review*, Vol.11 (4), pp. 741-773.

Hutton, A., B. Miller and D. Skinner (2001), 'The role of supplementary statements in the disclosure of management earnings forecasts', Working paper, Harvard Business School.

Jones, J. (1991), 'Earnings Management During Import Relief Investigations', *Journal of Accounting Research*, Vol. 29, pp. 193-228.

Kasznik, R. (1996), 'Financial Reporting Discretion and Corporate Voluntary Disclosure: Evidence from the Software Industry', Working paper, Stanford University.

Kasznik, R. (1999), 'On the Association Between Voluntary Disclosure and Earnings Management', *Journal of Accounting Research*, Vol. 37, Issue 1 (Spring), pp. 57-81.

Lundholm R.J. (1999), *"Historical Accounting and the Endogenous Credibility of Current Disclosures"*, Working Paper University of Michigan, September 1999

Ohlson, J. (1995), 'Earnings, Book Value, and Dividends in Security Valuation', *Contemporary Accounting Research*, (Spring), pp. 661-687.

Young, S. (1999), 'Systematic measurement error in the estimation of discretionary accruals: An evaluation of alternative modelling procedures', *Journal of Business Finance and Accounting*, Vol. 26(September-October), pp. 833-862.