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Explaining UK Stock Returns*

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**Auditor Quality and the Role of Accounting Information in Explaining UK Stock Returns**

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## **Auditor quality and the role of accounting information in explaining UK stock returns**

### **Abstract**

Using a variance decomposition approach, we examine the importance of accounting information – in particular the cash flow and accruals components of earnings – in explaining the variation in UK company stock returns. We extend prior research by analysing whether auditor quality moderates the role of accruals and cash flows in driving returns on both a relative and an absolute basis. Moreover, we employ a new orthogonal variance decomposition which reduces the influence of the covariance terms on the variance decomposition results. In general, our results indicate that both components of earnings are important drivers of stock returns and suggest that the significance of both earnings components varies conditional on auditor quality. Although there are some similarities with US-based research, a number of differences are also evident. In particular, cash flow news seems more important in the UK than in the US.

# AUDITOR QUALITY AND THE ROLE OF ACCOUNTING INFORMATION IN EXPLAINING UK STOCK RETURNS

## 1. Introduction

This paper examines the relative importance of earnings and cash flow in explaining UK stock returns using a variance decomposition approach and investigates the extent to which this relationship is contingent upon auditor quality. The debate surrounding the importance to stock market participants of accounting information in general, and accruals and cash flows in particular, has an established history in the accounting literature (e.g. Ball and Brown, 1968; Wilson, 1986; Board and Day, 1989; Easton and Harris, 1991; Ali et al., 1995; Charitou and Edwards, 1990; Dechow, 1994). It is generally accepted that earnings play an important part in investors' valuation models - for example, as part of fundamental analysis based on the price earnings ratio (e.g. Arnold and Moizer, 1984; Barker, 1999; Demirakos et al. 2004). However, standard valuation techniques and models widely used in practice also emphasise the role of cash flow information in valuing companies (*ibid.*). The relative importance of earnings and cash flow is therefore essentially an empirical question.

In the absence of potentially distortive choices, the accruals components of earnings provide useful information to financial statement users since they capture potentially important transactions (such as purchases or sales of goods on credit) and expenses (such as depreciation and deferred taxation) that are ignored by pure cash based accounting. However, since preparers of financial statements often have incentives not to choose accounting policies that most faithfully represent the company's true economic performance, the value-relevance of accruals (rather than cash flow) is more likely to be deleteriously affected by accounting policy choices than cash flow.

In this paper, we employ the variance decomposition approach developed by Campbell (1991), Vuolteenaho (2002) and Callen and Segal (2004) to examine the importance of accruals and operating cash flows in explaining UK share returns. We then test whether the role of UK firm-level accruals and cash flows in driving equity share returns is conditional upon the quality of the firm's auditor. Building on Callen and Segal (2004), who find some evidence that in the US, accruals components of earnings are more important drivers of stock returns than cash flow components, we offer a number of contributions. First, this is the first paper to use a variance decomposition approach to investigate the role of accruals and cash flow in explaining stock returns outside the US. Although the UK and the US are often grouped together in accounting classification due to the many similarities in both accounting systems, empirical research shows that the characteristics can differ markedly. For instance, Pope and Walker (1999) find significant differences in the timeliness and conservatism of earnings in the UK and US, potentially due to extraordinary items and/or the speed at which good news is recognised in earnings. The approach of Callen and Segal (2004) has several advantages over conventional regressions approaches, not least consideration of time varying discount rates, which may be important to allow for in this context (e.g. Collins and Kothari, 1989; Ali and Pope, 1995).

Second, since there is evidence in prior literature suggesting that large (big 4) auditors produce higher quality audits (Davidson and Neu, 1993), are more accurate (Lennox, 1999) and constrain earnings management behaviour more (Becker et al., 1998; Francis et al., 1999), we hypothesise that the extent to which accruals and cash flow drive stock returns is a function of auditor quality. We follow Teoh and Wong (1993) in using large auditors (big 5/big 4) as a proxy for higher quality auditors and examine whether the relationship between accounting information and stock returns is stronger for higher quality audit clients. Third, we extend the variance decomposition analysis of Callen and Segal (2004) by using an estimation

procedure which effectively removes the covariance terms from the variance decomposition. This innovation makes interpretation of the variance effects easier in the absence of strong theoretical predictions of which earnings component should dominate. Finally, although it is at the expense of sample size (which nevertheless compares favourably with similar papers in this field), our data are taken directly from firms' statement of cash flows (rather than estimated from balance sheet data). Hribar and Collins (2002) find this to be an important advantage because balance sheet estimates of accruals are potentially contaminated.

The remainder of the paper is organised as follows. In the following section, we review prior literature on the role of accounting information in explaining share returns and outline the variance decomposition approach and how this differs from a conventional approach involving linear regressions of stock returns on accounting variables. We also set out our hypotheses, including why auditor quality may moderate the relationships we examine. Section 3 describes our methods and data while our results are presented in section 4. In the final section, we offer some conclusions and discuss areas for further research..

## **2. Prior Literature**

### *Usefulness of accounting information in stock markets*

The use of accounting information in stock market users' fundamental valuation models is well documented in the accounting literature; indeed Barker (1999) regards the prevalence of the price/earnings ratio as among the most pervasive findings in accounting research. A wide range of empirical studies dating back to Ball and Brown (1968) offer persuasive evidence that earnings are a significant determinant of stock returns, though the earnings response coefficient (ERC) has been found to vary across firms and over time (e.g. Kormendi and Lipe, 1987; Strong and Walker, 1993). What is far from clear, however, is the extent to which analysts and investors rely on the accruals and cash components of earnings individually.

Although, ultimately, cash is the measure of performance that investors are concerned with, over finite intervals, accruals have the advantage of being a less noisy measure flows because they are not as prone as cash flows to timing and matching problems (Dechow, 1994). Moreover, although accounting standard setters often assume a preference for discounted cash flow as a basis for equity valuation, analysts generally emphasise earnings in their investment reports (Govindarajan, 1980). On the other hand, management has more discretion over the measurement of accruals, so the potential increase in relevance is threatened by opportunistic behaviour by managers. As Dechow (1994: 5) observes, ‘to the extent that managers use their discretion to opportunistically manipulate accruals, earnings will become a less reliable measure of firm performance and cash flows could be preferable.’ In the absence of a clear theoretical order of preference, therefore, the issue of whether cash flows or accruals are most value-relevant is best resolved through empirical study.

Prior findings into the relative importance of cash flow and earnings to stock market returns in the UK are mixed, but they are generally suggestive of accruals (earnings) being more relevant than cash flows. Board and Day (1989) found that earnings have incremental explanatory power over cash flows, but not vice versa, while Ali and Pope, who use a non-linear specification and allow for intertemporal variation in parameters, find that both performance measures have incremental information content for returns individually, but cash flows do not have the predicted positive sign over all time periods studied. In the US, Wilson (1987) finds high (low) cash flow (accruals) components result in larger market response, though Bernard and Stober (1989) later find few consistent results and conclude it is difficult to model these relationships parsimoniously.

The basis of the approach we adopt is that shocks (or revisions) to stock returns are proportional to shocks to earnings (Callen, 2009). Most prior research into the returns-earnings relationship involves linear regressions of (levels of and/or changes in) stock returns

on earnings and their components, with inferences based on the magnitude of the cash flow or earnings response coefficient (e.g. see Habib, 2007 and references therein). As noted by Callen et al. (2005) and Callen (2009), however, such ‘mean’ effects can be complemented by examination of the relative variance contribution of earnings and their sub-components. This is because even if a large and significant response coefficient is found for accruals and/or cash flows, the way returns respond to such factors depends on the magnitude of the coefficient *and* the variance of accruals and cash flows. It is therefore possible that a given earnings component may have a relatively large response coefficient, but if it does not vary substantially, *ceteris paribus*, it may have a relatively low impact on revisions to returns and *vice versa*. We therefore base our analysis on the variance decomposition of Callen and Segal (2004).<sup>1</sup>

Callen and Segal (2004, proposition 4; eqs. A17-A18) take Vuolteenaho’s model and demonstrate (*inter alia*) that unexpected changes in time  $t$  log cum-dividend excess stock returns (denoted  $r_t^c$ ) can be expressed as a function of changes in expectations of the accruals component of earnings (denoted  $acce_{t+j}$ ), changes in expectations of the cash flow component of earnings (denoted  $cfe_{t+j}$ ) and changes in expected future returns as follows:

$$r_t^c - E_{t-1}(r_t^c) = \Delta E_t \sum_{j=0}^{\infty} \rho^j (cfe_{t+j} - f_{t+j}) + \Delta E_t \sum_{j=0}^{\infty} \rho^j acce_{t+j} - \Delta E_t \sum_{j=1}^{\infty} \rho^j r_{t+j}^c \quad (1)$$

Where  $\rho$  is a constant error approximation term typically close to 1. Following on from equation (1) above, the variance of the unexpected returns can be decomposed into three factors, as follows:

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<sup>1</sup> As stated more forthrightly by Callen (2009: 141): ‘value relevance cannot be measured solely by reference to a return–earnings regression. The variance of unexpected returns is equally important for determining value relevance.’

$$\begin{aligned} \text{var}\{r_t^c - E_{t-1}(r_t^c)\} &= \text{var}(N_{r^c,t}) + \text{var}(N_{cfe,t}) + \text{var}(N_{acce,t}) - 2\text{cov}(N_{r^c,t}, N_{acce,t}) \\ &- 2\text{cov}(N_{r^c,t}, N_{cfe,t}) + 2\text{cov}(N_{acce,t}, N_{cfe,t}) \end{aligned} \quad (2)$$

Where  $N_{r^c,t}$  represents news about future discount rates (i.e.,  $\Delta E_t \sum_{j=0}^{\infty} \rho^j r_{t+j}^c$ ),  $N_{cfe,t}$  represents

cash flow news (i.e.,  $\Delta E_t \sum_{j=0}^{\infty} \rho^j (cfe_{t+j} - f_{t+j})$ ) while  $N_{acce,t}$  represents accruals news (i.e.,

$\Delta E_t \sum_{j=0}^{\infty} \rho^j acce_{t+j}$ ).<sup>2</sup> Using Campbell's log-linear approach as a foundation, Equation (2) thus

provides an opportunity to estimate how the variance of stock returns is distributed across the main components of what is usually considered as the 'numerator' of a typical earnings-based valuation model (i.e., the cash flow and accruals news) and what is typically the denominator, in the form of expected future return news.<sup>3</sup>

Our study is the first to employ the firm-level variance decomposition approach on accounting data outside the US. Our data are for a sample of UK listed companies involving taken directly from the statement of cash flows, as (then) required under *FRS 1*. Although the UK and US accounting regimes are often considered to be somewhat similar (for instance, both regimes are characterised by a heavy reliance on stock market finance, both have a well developed audit profession and both have national private sector accounting standard setting bodies – at least for the period we examine), research shows that the outputs of each system can be substantially different (e.g., Weetman and Gray, 1990). For instance, Pope and Walker (1999) find differences between the UK and US in the timeliness properties of earnings, which are attributed to greater discretion over the treatment of extraordinary items before the

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<sup>2</sup> As noted by Callen and Segal (2004), this development of Vuolteenaho's model is based on the approximation  $\ln(1+z) \approx z$ . Note that this approximation becomes less reliable the larger the value of  $z$ .

<sup>3</sup> Note that while this representation of prices and returns may seem initially unfamiliar, Campbell and Shiller's (1988a; 1988b) analysis, which is, as noted by Callen (2009) a precursor to Vuolteenaho's model, nests the more familiar Gordon growth model as a special case.

introduction of *FRS 3*. Although we have no clear prediction of systematic differences between the UK and the US, we nevertheless offer additional evidence on the extent to which the variance decomposition results of Callen and Segal (2004) generalise to a non-US jurisdiction.

#### *Accounting information and auditor quality*

The hypothesis above assumes that the relative importance of cash flow news and accruals news is unconditional or constant across firms. In this section, we discuss the idea that the variance contribution of accruals and cash flow is conditional upon the quality of the auditor attesting to the truth and fairness of the financial statements.

An obvious problem in investigating the effect of audit quality on the relationship between accounting and stock market variables is the unobservable nature of audit quality. An empirical proxy for audit quality is therefore necessary in order to operationalise the hypothesis. Such proxies generally measure perceived, rather than actual audit quality. As argued by Watkins et al. (2004), audit quality consists of two components: reputation (comprising *perceived* competence and independence) and monitoring strength (comprising *actual* competence and independence). The former results in a higher degree of user confidence in the financial statements (i.e., the information has a high degree of credibility), while the latter results in a closer correspondence between the information and the true economic circumstances (i.e., higher quality information). In our empirical analysis, we use auditor size as an indicator of audit quality following prior research. More specifically, we assume that large (big 4) auditors are associated with higher audit quality than small (non big 4) auditors, in line with suggestions in Titman and Trueman (1986), who show in the context of initial public offerings that firm value is an increasing function of audit quality. Although this is a somewhat rudimentary representation of audit quality, it is one that is readily

implementable and has been widely used in prior research (see, e.g., Becker et al., 1998; Clarkson, 2000; Krishnan, 2003). It is also a valid surrogate in that it has received considerable support from prior empirical research. Davidson and Neu (1993), for example, find support for the hypothesis that larger audit firms do indeed produce higher quality audits than smaller audit firms when auditing management earnings forecasts. In addition, Blokdiik et al. (1998) find evidence that the audit programs of large (big 5) audit firms are of a higher quality than those of small (non-big 5) audit firms, even though the amount of audit effort does not differ.

Although there have been no studies of the effect of auditor quality on the relative contribution of cash flow and accruals to variation in stock returns, there has been related research into the effect of auditor quality on the relationship between stock returns and earnings. Based on an adaptation of the model by Holthausen and Verrecchia (1998), Teoh and Wong (1993) hypothesise that because investors attach more credibility to financial statements audited by higher quality auditors, the stock market reaction to earnings depends on the audit firm attesting that the financial statements show a true and fair view. Consistent with this hypothesis, they find that the earnings response coefficient of firms audited by large (big 8) auditors is significantly larger than the corresponding coefficient for firms audited by smaller auditors. These results also hold for a matched sample of big 8 and non-big 8 firms.

Based on the level of non-audit services, Gul et al. (2006) also find that the value relevance of earnings is affected by audit quality. In particular, for a sample of 840 Australian firms, they find that the earnings response coefficient is a decreasing function of non-audit service fees, and this relationship is strongest for small (non big 6) auditors. They call for more research into these issues in other environments, such as in the UK.

Overall, we therefore expect that the quality of a company's accounting data, which includes the cash flows and accruals information, will be more important in driving stock

returns if the data are verified by large audit firms. We also expect that accruals will be relatively more important than cash flows in driving returns for clients of large auditors than small auditors. In the following section, we describe the sources of data and methodology used in our estimation procedures.

### 3. Methodology and Data

#### *Variance decomposition estimation*

We follow previous research (e.g., Campbell, 1991; Vuolteenaho, 2002; Callen and Segal, 2004) in using a log-linear vector-auto-regression approach (VAR) for the variance decomposition. In particular, we use a one-period lagged VAR specification assuming that the vector of firm-specific state variables  $z_{i,t}$  follows a multivariate log-linear vector autoregressive process:

$$z_{i,t} = \Gamma z_{i,t-1} + \eta_{i,t}$$

Here, the VAR coefficient matrix  $\Gamma$  is assumed to be constant over time and across firms (though we allow  $\Gamma$  to vary in our analysis of auditor quality) and where the residuals  $\eta_{i,t}$  are vectors of shocks with a variance-covariance matrix  $\Sigma$ .<sup>4</sup> It is important to note that this approach assumes that stock returns and their determinants are stationary (or at least cointegrated); however, as noted by Callen (2009), this assumption also underpins most standard tests of value relevance, including univariate time series tests and cross sectional tests with a time-component. The state variables that constitute  $z_{i,t}$  are log excess returns ( $r_t^c$ ), cash flow ( $cf_e$ ), accruals ( $acce_t$ ) and the log book/market ratio ( $bm_t$ ) as follows (all mean adjusted):

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<sup>4</sup> We assume that the state vector is constant across firms, rather than across industries, because of the number of observations in our sample.

$$r_t^c = \alpha_1 r_{t-1}^c + \alpha_2 cfe_{t-1} + \alpha_3 acce_{t-1} + \alpha_4 bm_{t-1} + \eta_{1t} \quad (3)$$

$$cfe_t = \beta_1 r_{t-1}^c + \beta_2 cfe_{t-1} + \beta_3 acce_{t-1} + \beta_4 bm_{t-1} + \eta_{2t} \quad (4)$$

$$acce_t = \gamma_1 r_{t-1}^c + \gamma_2 cfe_{t-1} + \gamma_3 acce_{t-1} + \gamma_4 bm_{t-1} + \eta_{3t} \quad (5)$$

$$bm_t = \delta_1 r_{t-1}^c + \delta_2 cfe_{t-1} + \delta_3 acce_{t-1} + \delta_4 bm_{t-1} + \eta_{4t} \quad (6)$$

We follow Callen and Segal's approach to provide estimates of the variance decomposition, though we use standard OLS (rather than WLS) regression to provide estimates of the coefficients in  $\Gamma$  and use bootstrapped, rather than Jackknife, standard errors. Preliminary robustness tests reveal that jackknife standard errors are not significantly different to those obtained via a bootstrapping procedure. Moreover, as noted in the introduction, we also employ an orthogonal variance decomposition method which has the appealing effect of facilitating easier interpretation of the variance decomposition estimates due to the removal of the influence of covariances terms. Details of this procedure are provided in Wong, (2008).

In line with Callen (2009) and based on equation (1) above, we estimate revisions in cash flows, accruals and expected future returns, respectively, as follows:

$$\left(\mathbf{e}'_2 + \boldsymbol{\lambda}'_2\right)\boldsymbol{\eta}_t + \left(\mathbf{e}'_3 + \boldsymbol{\lambda}'_3\right)\boldsymbol{\eta}_t - \boldsymbol{\lambda}'_1\boldsymbol{\eta}_t \quad (7)$$

Where  $\boldsymbol{\lambda}'_k = \mathbf{e}'_k \boldsymbol{\rho} \boldsymbol{\Gamma} (\mathbf{I} - \boldsymbol{\rho} \boldsymbol{\Gamma})^{-1}$ . The variance and covariance terms set out in (2) are obtained from the variance-covariance matrix in the manner set out in Callen (2009, eq. 29). Note from equation (1) that this is the 'direct' way of estimating accruals news and cash flow news. As Callen and Segal (2004) and Callen (2009) note, it is also possible to estimate these statistics using an alternative (residual) formulation, yielding results that are theoretically (but not necessarily empirically) equivalent to (7). We discuss this further below.

### *Data*

Our data are drawn from two sources. First, we obtain stock returns, prices, firm size (market value) and the market to book ratio from *Datastream*. We use both live and dead returns in

order to mitigate the effects of survivorship bias. For the accounting information, i.e., cash flow from operations, profit and book value data, we use the Financial Analysis Made Easy (FAME) database for the period 1996 – 2004. Firm-years with negative book value are discarded. This period is the longest we can use due to the general lack of availability of time-series auditor information, cash flow data not being available on FAME before 2006 and the change to International Financial Reporting Standards by listed UK companies in 2005. Importantly, we also use the FAME data as reported on the disks as they were available since this also helps reduce the potential effects of survivorship bias.

An important feature of our data set is that we compute accruals directly from the income statement rather than from the balance sheet. We define accruals as the difference between profit after tax and cash flows from operations (as defined by *FRS 1 Cash Flow Statements*). Our approach is therefore one that captures total accruals, consistent with Hribar and Collins (2002), who note that this approach results in a more precise measurement of accruals because use of balance sheet estimates can be seriously affected by non-articulation in the presence of mergers, acquisitions and translation of foreign subsidiary accounts.<sup>5</sup>

Table 1 provides descriptive statistics for our main sample of 3,711 observations (firm years for 792 firms) and for the two sub-groups based on auditor size. As stated above, the main sample is considerably smaller than that of Callen and Segal (2004). Table 1 shows that annual returns have a mean and median of around 16% and 5% respectively. These are broadly in line with corresponding figures reported by Pope and Walker's (1999) UK sample of 16% and 9% respectively and also with the US sample of Callen et al. (2005) at 17% and 8%. We note that large auditor concentration is high at 81%, consistent with prior research for

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<sup>5</sup> Indeed, Hribar and Collins (2002: 133) conclude that results of research into the particular issue of differential capital market effects of cash flows and accruals might be biased against rejection of the null hypothesis by use of balance sheet estimates of accruals.

the UK listed sector (e.g. Clatworthy and Peel, 2007). A comparison of the statistics in Panels B and C show that there are differences between the means of the main variables (and in the cases of accruals, cash flow and the book to market ratio, these differences are statistically significant at  $p < 0.05$ ).

#### **4. Results**

Before turning to our variance decomposition results, we perform standard regression tests for the full sample and the two subsamples in order to compare the response coefficients for cash flows and accruals. As noted by Callen et al. (2005), the value relevance of earnings components comprises both mean and variance effects and different pictures may emerge depending on which version is examined. Prior research using similar regressions has produced mixed results on the relative importance of accruals (or, more generally, earnings) and cash flows and even a cursory review of the literature reveals a variety of model specifications. As a result, we report three models, in the first, returns are regressed on levels of accruals and cash flows (e.g., see Board and Day, 1989), the second on changes in accruals and cash flow (as in the simple univariate AR(1) model set out in Callen et al., 2005 and Callen, 2009) and the third on both levels and changes (e.g. Charitou and Clubb, 2001), the latter assuming that accruals and cash flows contain both permanent and transitory components (Easton and Harris, 1991).

Overall, based on a comparison of the coefficients from the various models, no consistent picture regarding the relative importance of accruals and cash flow emerges. In the levels only models, the response coefficient for accruals is higher than that for cash flows for the full sample (0.437 versus 0.347). This is also the case for clients of large auditors (0.410 versus 0.322) and both differences are significant in Wald tests (at  $p < 0.01$ ). For small auditors, however, the difference is not statistically significant ( $p = 0.40$ ). For the changes

models, the coefficients for changes in cash flows dominate for large auditor clients and for the whole sample: in both cases, the difference is significant at  $p < 0.05$ . For small audit clients, however, the difference is not significant. Finally, the sum of the coefficients for accruals and cash flows in the models with both levels and changes are very similar and are not statistically different (for both groups). Based on the model chosen, therefore, one can interpret the results in table 2 as being supportive of accruals (levels regressions) or cash flow (changes regressions) being more value relevant, or there being no difference between them (combined models).

A comparison of the two samples using the standard ERC model shows that unexpected changes to both cash flows and accruals are higher for large auditors, consistent with the accounting information being generally more value-relevant, and in line with the findings of Teoh and Wong (1993). For the combined models, the response coefficients for changes in accruals and cash flow are higher for the large auditor group, whereas the counterparts for levels of these variables are lower for large auditor clients. The results are therefore not conclusive. We therefore turn to an analysis of the variance of returns using our main variance decomposition analysis.

Our results based on the variance decomposition analysis are presented in Tables 3-6. Table 3 shows the overall ‘unconditional’ results for comparison with those of Callen and Segal (2004), which are based on US firms, while Tables 4 and 5 report those for large auditors and small auditors respectively. The VAR coefficient matrix in Panel A of Table 3 includes estimates which are broadly in line with those in prior research. For instance, for the overall sample, the persistence of stock returns is low, whereas lagged values of the book to market are the most important determinants of the current book to market ratio. The variance decomposition results for the whole sample of 3,711 firms presented in Table 3 Panel B indicate that return news (variance of 0.033) cash flow news (variance of 0.553) and accruals

news (0.259) are significant in driving unexpected current stock returns (all at  $p < 0.01$ ). The difference between the variances of cash flows news and the accruals news of 0.294 is also significant at  $p < 0.01$ . When we use the orthogonalised variance decomposition, which reduces the impact of the covariance terms, the difference falls to 0.235, but it remains significant. In general, our results are in contrast to those of Callen and Segal (2004). Unlike Callen and Segal's (2004) results where accruals dominate (though not always significantly in equivalent models to ours), the cash flow component appears more influential and the difference is statistically significant (using both methods of variance decomposition). Overall, our findings suggest that both cash flow and accruals components of earnings are significant drivers of returns, but that cash flows seem more important. This contrasts with other UK research based on ERCs which suggests that cash flow plays a less influential role (e.g. Board and Day, 1989; Charitou et al., 2001).

When the samples are split by auditor type, we find that some evidence that the extent of the influence of accounting information varies between the two groups of firms, though again, there is no consistent pattern. First, the difference in the persistence of accruals between large and small auditors in Tables 4 and 5 is noteworthy (with accruals for clients of large auditors being considerably higher [0.196] than for clients of small auditors [0.121]). Turning to the variance decomposition, the influence of returns news of the large and small auditees appears similar (0.031 and 0.042) and is significant in both cases. However, a comparison of the results in Tables 4 and 5 reveals that both earnings and cash flow components are more influential for large auditors than for small auditors. The difference between the two is larger for clients of large auditors and significant, irrespective of the decomposition measure used. Thus, the evidence in Tables 4 and 5 is consistent with accounting information being more influential if the firm's financial statements are audited by a large auditor. However, in contrast to expectations, the variance of cash flow news is more

important than accruals news for both groups and there is no evidence that accruals are relatively more important when the financial statements are audited by a higher quality auditor.

One major problem with a comparison of Tables 4 and 5 is that the samples of large and small auditor clients are very different for reasons other than their choice of auditor. In particular, it has been shown that firm size plays an important role in the auditor selection decision. Accordingly, we report in table 6 provisional results for a sample of large auditor clients that are closest in size to the non-big 4 group (without replacement, which is why the sample sizes differ). Due to the dramatic loss of observations, however, the results become somewhat unstable. Furthermore, the estimates of the variance contributions in Panel B of Table 6 are statistically insignificant and standard errors are far larger than for the full sample. Unfortunately, therefore, data restrictions prohibit reliable conclusions being drawn from this particular set of results.

## **5. Discussion and Conclusions**

Based on a variance decomposition framework using a sample of UK listed companies, this examines the importance of accounting information in driving stock returns with particular emphasis on the relative role of accruals and cash flow and the importance of auditor type as a proxy for audit quality. Our results suggest a degree of consistency with prior US based evidence (i.e., accruals and cash flow news are both important) yet there are some important differences. In particular, in general, and in contrast to prior UK-based research, cash flows seem relatively more important than accruals in explaining stock returns. Moreover, our main findings are that, in line with studies using conventional measures such as earnings response coefficients, auditor type may play an important role in moderating the relationships between stock returns, cash flows and accruals.

We note that that our results need further investigation and additional data will be necessary. It is highly likely that the differences in our samples are partially attributable to different characteristics of the firms, as well as auditor effects. However, a matched sample approach as conducted by Teoh and Wong (1994) did not yield satisfactory results due to a serious loss of data.

## References

- Ali, A. and Pope, P.F., 1995. The incremental information content of earnings, funds flow and cash flow: The UK evidence. *Journal of Business Finance and Accounting*, 22(1): 19-34.
- Arnold, J. and Moizer, P. 1984. A Survey of the Methods Used by UK Investment Analysts to Appraise Investments in Ordinary Shares. *Accounting and Business Research*, Summer: 195-207.
- Ball, R. and Brown, P. 1968. An Empirical Evaluation of Accounting Numbers. *Journal of Accounting Research*, 6: 159-178.
- Barker, R.G. 1998. The Market for Information: Evidence from Finance Directors, Analysts and Fund Managers. *Accounting and Business Research*, 29, No. 1:1-20.
- Barker, R. 1999. Survey and Market-Based Evidence of Industry-Dependence in Analysts' Preferences Between the Dividend Yield and Price-Earnings Ratio Valuation Models. *Journal of Business Finance and Accounting*, 26, No. 3: 393-418.
- Becker, C.L., M.L. Defond, J. Jiambalvo, and K. R. Subramanyam. 1998. The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research* 15, no. 1 (Spring98): 1-24.
- Board, J.L.G. and Day, J.F.S. 1989. The information content of cash flow figures. *Accounting and Business Research*, 20: 3-11.
- Callen, J.L., Hope, O.-K. & Segal, D., 2005. Domestic and Foreign Earnings, Stock Return Variability, and the Impact of Investor Sophistication. *Journal of Accounting Research*, 43(3), 377-412.
- Callen, J.L. & Segal, D., 2004. Do Accruals Drive Firm-Level Stock Returns? A Variance Decomposition Analysis. *Journal of Accounting Research*, 42(3), 527-560.
- Campbell, J.Y., 1991. A Variance Decomposition for Stock Returns. *The Economic Journal*, 101(405), 157-179.
- Charitou, A. and Edwards, K.J. 1990. Valuation of Earnings, Cash Flows and their Components: An Empirical Investigation. *Journal of Accounting, Auditing and Finance*, 5, No. 4: 475-497.
- Charitou, A. & Clubb, C., Earnings, cash flows and security returns over long return intervals: Analysis and UK evidence. *Journal of Business Finance & Accounting*, 26(3/4), 283.
- Charitou, A., Clubb, C. & Andreou, A., (2001) The effect of earnings permanence, growth and firm size on the usefulness of cash flows and earnings in explaining security returns: Empirical evidence for the UK. *Journal of Business Finance & Accounting*, 28(5/6), 563.
- Charitou, A., Clubb, C. & Andreou, A., 2000. The value relevance of earnings and cash flows: Empirical evidence for Japan. *Journal of International Financial Management & Accounting*, 11(1), 1.

Clubb, C.D.B., 1995. An empirical study of the information content of accounting earnings, funds flow and cash flow in the UK. *Journal of Business Finance & Accounting*, 22(1), 35.

Clarkson, P.M., 2000. Auditor Quality and the Accuracy of Management Earnings Forecasts. *Contemporary Accounting Research*, 17(4), 595-622.

Davidson, R.A. & Neu, D., 1993. A Note on the Association between Audit Firm Size and Audit Quality. *Contemporary Accounting Research*, 9(2), 479-488.

Easton, P.D. and Harris, T.S. 1991. Earnings as an Explanatory Variable for Returns. *Journal of Accounting Research*, 29, No. 1: 19-36.

Francis, J., Maydew, E.L. and Sparks, H.C. 1999. The role of big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice and Theory*, 18:17-34.

Govindarajan, V. 1980. The objectives of financial statements: An empirical study of the use of cash flow and earnings by security analysts. *Accounting, Organizations and Society*, 5(4): 383-392.

Habib, A., 2007. The role of accruals and cash flows in explaining security returns: Evidence from New Zealand. *Journal of International Accounting, Auditing and Taxation*, 17(1), 51-66.

Hribar, P. & Collins, D.W., 2002. Errors in Estimating Accruals: Implications for Empirical Research. *Journal of Accounting Research*, 40(1), 105-134.

Kormendi, R. & Lipe, R., 1987. Earnings Innovations, Earnings Persistence, and Stock Returns. *Journal of Business*, 60(3), 323-45.

Krishnan, G.V., 2003. Audit Quality and the Pricing of Discretionary Accruals. *Auditing*, 22(1), 109.

Lee, P.J., Taylor, S.J. & Taylor, S.L., 2006. Auditor Conservatism and Audit Quality: Evidence from IPO Earnings Forecasts. *International Journal of Auditing*, 10(3), 183-199.

Lennox, C. 1999. Are large auditors more accurate than small auditors?, *Accounting and Business Research*, 29 (3):217-228.

McMeeking, K., Peasnell, K. and Pope, P.F. 2006. The determinants of the UK big firms premium, *Accounting and Business Research*, 36 (3): 207-231.

Pope, P.F. and Walker, M. 1999. International Differences in the Timeliness and Conservatism and classification of earnings. *Journal of Accounting Research*, 37: 53-87

Strong, N. & Walker, M, 1993. The explanatory power of earnings for stock returns. *The Accounting Review* 68(2): 385-399.

Teoh, S.H. & Wong, T.J., 1993. Perceived auditor quality and the earnings response coefficient. *The Accounting Review*, 68(2), 346.

Vuolteenaho, T., 2002. What Drives Firm-Level Stock Returns? *Journal of Finance*, 57(1), 233-264.

Weetman, P. and Gray, S.J. 1990. International Financial Analysis and Comparative Corporate Performance: The Impact of UK Versus US Accounting Principles On Earnings. *Journal of International Financial Management and Accounting*, 2, No. 2: 111-130.

Wilson, P. 1986. The relative information content of accruals and cash flows: Combined evidence at the earnings announcement and annual report release date. *Journal of Accounting Research*, 62: 293:322.

Wong, W. 2008. A Unique Orthogonal Variance Decomposition. *Cardiff University Working Paper*.

**Table 1**  
**Descriptive statistics**

<b>Panel A: Full sample (n = 3711)</b>				
	Mean	Median	Std. dev.	Variance
Annual return	0.1601	0.0527	0.7676	0.5892
Log excess returns ( $r_t^c$ )	-0.0454	0.0004	0.5166	0.2669
Cash flow ( $cfe_t$ )	0.3056	0.2414	0.4665	0.2176
Accruals ( $acce_t$ )	-0.2228	-0.1595	0.3651	0.1333
Log book/market ratio ( $bm_t$ )	-0.5319	-0.4253	0.8871	0.7869
<b>Panel B: Large auditor sample (n = 3006)</b>				
	Mean	Median	Std. dev.	Variance
Annual return	0.1485	0.0486	0.6987	0.4882
Log excess returns ( $r_t^c$ )	-0.0512	-0.0015	0.5176	0.2679
Cash flow ( $cfe_t$ )	0.3293	0.2578	0.4825	0.2328
Accruals ( $acce_t$ )	-0.2381	-0.1677	0.3775	0.1425
Log book/market ratio ( $bm_t$ )	-0.5878	-0.4947	0.8886	0.7897
<b>Panel C: Small auditor sample (n = 705)</b>				
	Mean	Median	Std. dev.	Variance
Annual return	0.2092	0.0795	1.0090	1.0181
Log excess returns ( $r_t^c$ )	-0.0205	0.0242	0.5120	0.2622
Cash flow ( $cfe_t$ )	0.2045	0.1816	0.3747	0.1404
Accruals ( $acce_t$ )	-0.1574	-0.1225	0.2985	0.0891
Log book/market ratio ( $bm_t$ )	-0.2934	-0.1570	0.8403	0.7061

*Notes*

Data are for UK firms from 1996-2004 using *Datastream* (including dead company files) for returns data and *FAME* for accounting data.

Log excess returns are based on annual returns for the period ended three months after the year end less the risk free rate.

Cash flow is cash flow from operations (from cash flow statement) scaled by opening book value.

Accruals are defined as profit minus cash flow from operations.

Large auditor is a binary variable taking a value of 1 if the firm is audited by a big 5/big 4 auditor, 0 otherwise.

<b>Table 2</b>									
<b>Contemporaneous OLS Return Regression Results</b>									
	<i>Levels only</i>			<i>Changes only</i>			<i>Levels and changes</i>		
	<i>Full sample</i>	<i>Large auditors</i>	<i>Small auditors</i>	<i>Full sample</i>	<i>Large auditors</i>	<i>Small auditors</i>	<i>Full sample</i>	<i>Large auditors</i>	<i>Small auditors</i>
<i>acce</i>	0.437 (9.88)**	0.410 (8.68)**	0.538 (4.57)**	-	-	-	0.315 (6.35)**	0.284 (5.29)**	0.440 (3.60)**
<i>cfe</i>	0.347 (9.72)**	0.322 (8.67)**	0.491 (4.72)**	-	-	-	0.244 (6.09)**	0.211 (4.98)**	0.451 (4.17)**
$\Delta acce$	-	-	-	0.321 (7.99)**	0.332 (7.30)**	0.273 (3.24)**	0.220 (5.29)**	0.242 (5.08)**	0.138 (2.07)*
$\Delta cfe$	-	-	-	0.412 (7.77)**	0.419 (7.01)**	0.387 (3.39)**	0.291 (5.12)**	0.323 (4.95)**	0.115 (1.10)
Constant	-0.054 (6.18)**	-0.059 (6.19)**	-0.036 (1.70)	-0.056 (7.70)**	-0.062 (7.98)**	-0.027 (1.43)	-0.057 (6.14)**	-0.062 (6.10)**	-0.046 (1.95)
Observations	3711	3006	705	3711	3006	705	3711	3006	705
R-squared	0.06	0.05	0.10	0.06	0.06	0.05	0.08	0.08	0.11
<p>Robust t statistics in parentheses  * significant at 5%; ** significant at 1%</p> <p>Log excess returns <math>r_t^c</math> are based on annual returns for the period ended three months after the year end.</p> <p>Cash flow <math>cfe_t</math> is cash flow from operations (from cash flow statement) scaled by opening book value.</p> <p>Accruals <math>acce_t</math> are defined as profit minus cash flow from operations scaled by opening book value.</p>									

**Table 3**  
Variance decomposition results for total sample (n = 3711)

<b>Panel A: VAR coefficient matrix <math>\Gamma</math></b>				
<i>Dependent variables (bootstrapped standard errors in parentheses)</i>				
<i>Regressors</i>	$r_t^c$	$cfe_t$	$acce_t$	$bm_t$
$r_{t-1}^c$	0.013 (0.022)	0.007 (0.016)	0.091** (0.014)	-0.153** (0.022)
$cfe_{t-1}$	0.075** (0.030)	0.313** (0.038)	-0.002 (0.028)	0.025 (0.046)
$acce_{t-1}$	-0.002 (0.039)	0.072 (0.041)	0.179** (0.033)	0.167** (0.059)
$bm_{t-1}$	0.103** (0.011)	-0.150** (0.016)	0.103** (0.012)	0.727** (0.013)
<b>Panel B: Variance decomposition</b> <i>(bootstrapped standard errors in parentheses)</i>				
	$\text{var}(N_{r^c,t})$	$\text{var}(N_{cfe,t})$	$\text{var}(N_{acce,t})$	
	0.033** (0.006)	0.553** (0.059)	0.259** (0.027)	
Difference ( $N_{cfe,t}, N_{acce,t}$ )	0.294** (0.044)			
Orthogonalised difference ( $N_{cfe,t}, N_{acce,t}$ )	0.034** (0.008)			
<i>Notes</i>				
* significant at 5%; ** significant at 1%				
Bootstrapped standard errors are in parentheses.				
Data are for UK firms from 1996-2004 using <i>Datastream</i> (including dead company files) for returns data and <i>FAME</i> for accounting data.				
Log excess returns $r_t^c$ are based on annual returns for the period ended three months after the year end.				
Cash flow $cfe_t$ is cash flow from operations (from cash flow statement) scaled by opening book value.				
Accruals $acce_t$ are defined as profit minus cash flow from operations scaled by opening book value.				
$bm_t$ is the log of the book to market ratio.				

**Table 4**  
**Variance decomposition results for large audit firm clients (n = 3006)**

**Panel A: VAR coefficient matrix  $\Gamma$**

*Dependent variables (bootstrapped standard errors in parentheses)*

<i>Regressors</i>	$r_t^c$	$cfe_t$	$acce_t$	$bm_t$
$r_{t-1}^c$	0.005 (0.024)	0.004 (0.018)	0.104** (0.016)	-0.153** (0.023)
$cfe_{t-1}$	0.069* (0.034)	0.295** (0.043)	0.003 (0.031)	0.071 (0.038)
$acce_{t-1}$	-0.011 (0.044)	0.048 (0.047)	0.196** (0.037)	0.226** (0.049)
$bm_{t-1}$	0.101** (0.011)	-0.163** (0.018)	0.109** (0.013)	0.729** (0.013)

**Panel B: Variance decomposition**  
*(bootstrapped standard errors in parentheses)*

	$\text{var}(N_{r^c,t})$	$\text{var}(N_{cfe,t})$	$\text{var}(N_{acce,t})$
	0.031** (0.007)	0.593** (0.067)	0.288** (0.032)
Difference ( $N_{cfe,t}, N_{acce,t}$ )	0.305** (0.049)		
Orthogonalised difference ( $N_{cfe,t}, N_{acce,t}$ )	0.033** (0.008)		

*Notes*

\* significant at 5%; \*\* significant at 1%

Bootstrapped standard errors are in parentheses.

Data are for UK firms from 1996-2004 using *Datastream* (including dead company files) for returns data and *FAME* for accounting data.

Log excess returns  $r_t^c$  are based on annual returns for the period ended three months after the year end.

Cash flow  $cfe_t$  is cash flow from operations (from cash flow statement) scaled by opening book value.

Accruals  $acce_t$  are defined as profit minus cash flow from operations scaled by opening book value.

$bm_t$  is the log of the book to market ratio.

**Table 5**  
**Variance decomposition results for small audit firm clients (n = 705)**

**Panel A: VAR coefficient matrix  $\Gamma$**

*Dependent variables (bootstrapped standard errors in parentheses)*

<i>Regressors</i>	$r_t^c$	$cfe_t$	$acce_t$	$bm_t$
$r_{t-1}^c$	0.046 (0.049)	0.015 (0.032)	0.017 (0.031)	-0.167** (0.055)
$cfe_{t-1}$	0.097 (0.076)	0.363** (0.085)	0.020 (0.068)	-0.146 (0.143)
$acce_{t-1}$	0.036 (0.084)	0.153 (0.083)	0.121 (0.065)	-0.056 (0.170)
$bm_{t-1}$	0.109** (0.028)	-0.073* (0.031)	0.064* (0.027)	0.716** (0.033)

**Panel B: Variance decomposition**  
*(bootstrapped standard errors in parentheses)*

	$\text{var}(N_{r_t^c})$	$\text{var}(N_{cfe_t})$	$\text{var}(N_{acce_t})$
	0.042* (0.020)	0.328** (0.099)	0.135** (0.039)
Difference ( $N_{cfe_t}, N_{acce_t}$ )	0.194** (0.076)		
Orthogonalised difference ( $N_{cfe_t}, N_{acce_t}$ )	0.176** (0.054)		

*Notes*

\* significant at 5%; \*\* significant at 1%

Bootstrapped standard errors are in parentheses.

Data are for UK firms from 1996-2004 using *Datastream* (including dead company files) for returns data and *FAME* for accounting data.

Log excess returns  $r_t^c$  are based on annual returns for the period ended three months after the year end.

Cash flow  $cfe_t$  is cash flow from operations (from cash flow statement) scaled by opening book value.

Accruals  $acce_t$  are defined as profit minus cash flow from operations scaled by opening book value.

$bm_t$  is the log of the book to market ratio.

**Table 6**  
**Variance decomposition results for size-matched large audit firm clients (n = 556)**

<b>Panel A: VAR coefficient matrix <math>\Gamma</math></b>				
<i>Dependent variables (bootstrapped standard errors in parentheses)</i>				
<i>Regressors</i>	$r_t^c$	$cfe_t$	$acce_t$	$bm_t$
$r_{t-1}^c$	0.065 (0.055)	0.066* (0.032)	0.093** (0.034)	-0.227** (0.052)
$cfe_{t-1}$	0.132 (0.085)	0.463* (0.092)	0.011 (0.091)	-0.006 (0.120)
$acce_{t-1}$	-0.026 (0.112)	0.207* (0.102)	0.218 (0.113)	0.111 (0.159)
$bm_{t-1}$	0.126** (0.028)	-0.126** (0.040)	0.145** (0.032)	0.713** (0.041)
<b>Panel B: Variance decomposition</b> <i>(bootstrapped standard errors in parentheses)</i>				
	$\text{var}(N_{r^c,t})$	$\text{var}(N_{cfe,t})$	$\text{var}(N_{acce,t})$	
	0.050 (0.031)	0.766 (0.393)	0.384 (0.346)	
Difference ( $N_{cfe,t}, N_{acce,t}$ )	0.382 (0.304)			
Orthogonalised difference ( $N_{cfe,t}, N_{acce,t}$ )	0.310 (0.276)			
<i>Notes</i>				
* significant at 5%; ** significant at 1%				
Bootstrapped standard errors are in parentheses.				
Data are for UK firms from 1996-2004 using <i>Datastream</i> (including dead company files) for returns data and <i>FAME</i> for accounting data.				
Log excess returns $r_t^c$ are based on annual returns for the period ended three months after the year end.				
Cash flow $cfe_t$ is cash flow from operations (from cash flow statement) scaled by opening book value.				
Accruals $acce_t$ are defined as profit minus cash flow from operations scaled by opening book value.				
$bm_t$ is the log of the book to market ratio.				