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Accounting data and UK dividends

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Abstract

Purpose – Accruals data reflect managers' judgements and estimates. The purpose of this paper is to examine whether they provide users of accounts with additional insight into a firm's dividends beyond that conveyed by cash flows alone.

Design/methodology/approach – The authors employ regression analysis to examine the relative ability of earnings, cash flows and accruals to explain dividends.

Findings – It is found that both cash flows and accruals (earnings) possess significant explanatory power for dividends indicating that, on average, UK financial statements provide users with improved insight beyond that conveyed by cash flows alone.

Research limitations/implications – These results demonstrate the importance of accruals data for users of accounts. However, if accruals are manipulated for opportunistic purposes then their usefulness will likely be compromised and users of accounts will loose out. The study focuses on non-financial, UK dividend-paying firms only.

Practical implications – These results provide direct evidence that UK financial statement data has significant explanatory power for dividend-paying activity, which may be viewed as good news. However, this paper reiterates the need for those who prepare and audit accounts to ensure that accruals truly reflect a firm's financial situation and are not being "managed" to artificially boost reported earnings. Short-term accruals are an obvious focus for such activities.

Originality/value – The paper reports the first direct test of the link between disaggregated earnings components and UK dividends.

Keywords United Kingdom, Dividends, Cash flows, Earnings, Financial reporting, Accruals, UK dividends

Paper type Research paper

Introduction

US accounting concepts and standards often state that financial statements (the income statement, cash flow statement and balance sheet) are intended to complement each other. An information-set supplemented by accruals components of earnings should provide a better indication of future cash flows and dividend-paying ability than merely using cash flow data alone:

> The information provided in a statement of cash flows, if used with related disclosures and information in the other financial statements, should help […] to assess the enterprise's ability to […] pay dividends […] (Financial Accounting Standards Board (SFAS) 95, 1987, paragraph 5).

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The importance of financial statements in helping to assess dividend payments is reiterated in the *Framework for the Preparation and Presentation of Financial Statements* (§ 9(a)) adopted by the International Accounting Standards Board (2001) in April, and in the UK standard FRS1 first published in 1991. This opinion is also widespread among academic accountants:

> Accruals can be said to involve some implicit or explicit prediction of the future […] [and] may transform cash flows in order to provide a better indicator of future cash flows and dividend-paying ability than current cash flows do (Beaver, 1989, p. 7).

This paper examines whether accruals-based information in UK financial statements has the ability to provide improved explanatory power for dividend payments. If this is not the case then those involved with the preparation of financial statements need to consider whether UK accounting disclosures are failing in their intended aim to better inform owners and creditors.

The next section provides details of the research methodology and evidence from prior research studies. This is followed by a description of the dataset and the main results, including an investigation of how certain contextual factors may impact the information content of accruals. This is followed by a section detailing the implications of the results for those who use accounts and those who are responsible for their preparation. The final section is the conclusion.

Research issues and modelling

The matching and timing problems associated with using raw cash flow data have long been recognised and provide a rationale for the application of the accruals process. This process generates financial statement information that should provide users with a superior insight into a firm's performance over a given period, and its future prospects.

Prior studies like Barth *et al.* (2001) have examined this issue with regard to future cash flows and stock returns. Our focus will be on another major input into the valuation process – dividends. Along with price-earnings (P/E) models, dividend-yield valuation models are very popular with UK financial analysts (see Arnold and Moizer, 1984; Pike *et al.*, 1993; Barker, 1999) so it is important that UK financial statements provide analysts and other users with the necessary insight with regard to valuation-relevant data.

Accruals represent the difference between accounting earnings and cash flows, and they relate both to the long term (e.g. depreciation) and the short term (e.g. accounts receivable and payable). These data are often based on managers' judgements, estimates or forecasts, and so reflect a broader information set than current cash flows alone. If these data in UK financial statements fulfil their intended role then they should provide users of accounts with improved insight into a firm's performance (e.g. future cash flows, dividend-paying ability) and this should lead to benefits via improved accuracy of share valuation and, thus, superior asset allocation decisions.

Figure 1 shows the importance of the accruals process for investors. The accruals process allows the supplementing of basic cash flow data with non-cash information, such as managers' estimates and judgements (other information) to generate accounting earnings and other accounting items that are reported in UK financial statements. It is these data that are disclosed to investors and analysts and which feed into their valuation models. However, the accruals process is only worthwhile if it generates numbers that give a better insight into firm performance and prospects than merely reporting the raw data on cash flows alone.

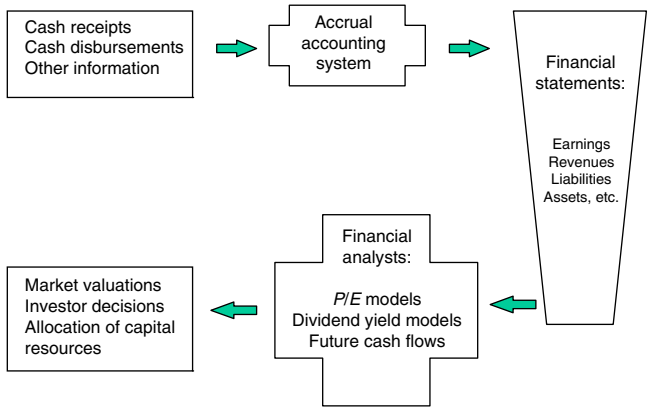

Figure 1.
The accrual process and its role in the market

The UK market is worth investigating separately from the US market due to differences in dividend-paying activity. In recent decades there has been a growing trend among US firms to engage in share repurchasing in place of dividend payments to shareholders (Skinner, 2008, p. 583). Interestingly, evidence from the UK shows a somewhat different picture. A survey of UK firms' dividend-paying behaviour, published by the European Corporate Governance Institute and co-authored by Trojanowski and Renneboog (2005) reports that in any sample year, five out of six UK firms pay dividends and that the trend was, if anything, modestly increasing during the 1990s. They contrast this with the existing evidence on US firms for the same period during which less than one-in-four paid dividends[1].

The starting point for our empirical analysis is the dividend model proposed by Lintner (1956), which presents dividend payments as a function of current earnings and lagged dividends. The model has been widely used by researchers in both accounting and finance (Brittain, 1964; Fama and Babiak, 1968; Fama, 1974; Ang, 1975; Hagerman and Huefner, 1980; Bar-Yosef and Lev, 1983; Nakamura and Nakamura, 1985; Thomson and Watson, 1989; Simons, 1994; Charitou and Vafeas, 1998; Charitou, 2000; Short *et al.*, 2002; Grullon and Michaely, 2002; Adelegan, 2003; Baker *et al.*, 2005; Tong and Green, 2005; McCluskey *et al.*, 2006; DeAngelo *et al.*, 2006).

Lintner (1956, p. 99) notes the caution of managers in deciding to change dividends relative to the previous year. This suggests that in most cases changes in current dividends will occur only in cases where managers believe that there will be a sustained change in future cash flow performance. Given that earnings data are expected to be a superior indicator of future cash flows than current cash flows alone (Beaver, 1989; Dechow, 1994) the presence of earnings as an explanatory variable in Lintner's model would seem appropriate.

However, a US study by Barth *et al.* (2001) reveals that the disaggregation of current year earnings into a set of component variables consisting of cash flows and individual accruals items releases significant additional explanatory power for a vector of future cash flows:

> [C]ash flow and the accrual components of current earnings all have significant predictive ability for cash flow up to four years ahead, and the signs are consistent with those estimated when predicting one-year-ahead cash flow (Barth *et al.*, 2001, p. 53).

This finding is important because variables that explain future cash flows for the next four years may have some potential power to explain current changes in dividends, assuming that current dividend changes reflect future performance.

We now present our variants of Lintner's (1956) dividend model in which the earnings variable is disaggregated following Barth *et al.* (2001). We begin by using the most popular format of Lintner's (1956) model in which dividend changes are a function of current earnings and lagged dividends:

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma E_{i,t} + \omega_{i,t} \tag{1}$$

where $D_{i,t}$, dividend of firm i for year t; $\Delta D_{i,t}$, change in dividends for firm i from year $t-1$ to year t, defined as $D_{i,t}-D_{i,t-1}$; $E_{i,t}$, reported earnings for firm i in year t.

Now, if we follow Barth *et al.* (2001) and denote the difference between earnings and cash flows as aggregate accruals (AGG) then we can disaggregate earnings into accruals and cash flows to generate a disaggregated version of Lintner's model:

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \phi AGG_{i,t} + \omega_{i,t} \tag{2}$$

We can now take the disaggregation of earnings to the next stage: Barth *et al.* breakdown earnings into cash flows (CF), changes in accounts payable (ΔAP), changes on accounts receivable (ΔAR), changes in inventory (ΔINV), depreciation/amortisation (DEP) and other accruals ($OTHER$). Barth *et al.* report that this level of disaggregation generates significant additional explanatory power for future cash flows, over and above that from the disaggregation of earnings into cash flows and aggregate accruals. Applying this form of earnings disaggregation to Lintner's model gives:

$$\begin{aligned}\Delta D_{i,t} = {} & \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \theta_1 \Delta AP_{i,t} + \theta_2 \Delta AR_{i,t} + \theta_3 \Delta INV_{i,t} + \theta_4 DEP_{i,t} \\ & + \theta_5 OTHER_{i,t} + \omega_{i,t}\end{aligned} \tag{3}$$

Given that dividend changes are a positive function of earnings in Lintner's model, the signs of the coefficients for each component of earnings are expected to be the same as each component's impact on earnings – positive for current cash flows, changes in inventory and changes in accounts receivable, and negative for changes in accounts payable and depreciation. We do not state any pre-experimental expectation on the sign of the residual component of accruals ($OTHER$).

Thus, we estimate three models to explain dividend changes, all of which are derived from Lintner's (1956) dividend model: first, the Lintner model itself, in its most commonly used format; second, Lintner's model with earnings disaggregated into cash flows and aggregate accruals; and finally, Lintner's model with accruals disaggregated into their individual items. We will examine variations in the explanatory power of these models and test for statistical significance in these differences using the Vuong (1989) test for non-nested models. Equation (3) includes a mix of items that appear in the income statement, the cash flow statement and the balance sheet. If Equation (3) has greater explanatory power than Lintner's model (Equation (1)) it may provide a rationale for the pricing of accruals in the market reported in studies like Subramanyam (1996) and Xie (2001).

In addition to disaggregating the earnings variable in Lintner's model we also examine the importance of earnings, an accruals-based performance measure, relative

to cash flows. US-based studies by Simons (1994) and Charitou and Vafeas (1998) have suggested that the relative importance of cash flows as an explanatory variable for dividends will likely vary with certain contextual factors so we will examine these using our UK dataset. We utilise the same model employed by Charitou and Vafeas (Equation (4)), which is conceptually equivalent to our Equation (2) above:

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma E_{i,t} + \delta CF_{i,t} + \omega_{i,t} \tag{4}$$

If we breakdown earnings into cash flows and accruals we get:

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma\left(CF_{i,t} + AGG_{i,t}\right) + \delta CF_{i,t} + \omega_{i,t} \tag{5}$$

This can be rearranged to show that:

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + (\gamma + \delta) CF_{i,t} + \gamma AGG_{i,t} + \omega_{i,t} \tag{6}$$

So we can see from Equation (6) that the Charitou and Vafeas model is equivalent to Lintner's model with earnings disaggregated into cash flows and accruals (i.e. Equation (2)). Empirically, the slopes for both earnings and accruals are the same number so both γ (in Equation (4)) and ϕ (in Equation (2)) will be identical. Essentially, the Charitou and Vafeas model examines the additional explanatory impact of using an accruals-based performance measure relative to cash flows alone.

The first of the contextual factors to be examined here is the impact of growth opportunities within our sample. Charitou and Vafeas suggest that the importance of cash flows in explaining dividends is likely to be greatest for mid-range growth firms, giving the following justification:

> High growth firms prefer to capitalize on their favourable investment prospects and have clear disincentives in paying operating cash flows as dividends [...]. Due to personal incentives, managers in firms with low growth may also prefer to invest operating cash flows, rather than paying additional dividends [...] (Charitou and Vafeas, 1998, p. 242).

A second contextual factor to be examined here is liquidity. Both Charitou and Vafeas (1998) and Simons (1994) mention this factor, the former suggesting that the explanatory power of cash flows for dividends is likely to be most notable for firms with low liquidity:

> Where inadequate cash flows are available, the firm's ability to change its dividend policy in response to its performance is constrained. [...] When cash flows are excessively high compared to earnings, the firm may not necessarily increase accordingly its dividend payout (Charitou and Vafeas, 1998, p. 240).

So the importance of cash flows is more clearly seen in the low-liquidity groupings whilst in the higher liquidity groupings the impact of cash flows is more ambiguous. Simons measures liquidity as the change in current cash flows but does not find any systematic empirical evidence for the importance of this contextual factor.

Simons (1994, p. 579) also postulates that the recent dividend history will impact the relative importance of cash flows in explaining dividends. Specifically, cash flow data are more important in explaining dividends when the recent dividend history is poor (i.e. where dividends fell between year $t-2$ and year $t-1$). The rationale is that where firms have had to cut dividends they are likely to respond more noticeably and quickly

by increasing dividends when cash flows increase than would have been the case if prior dividends had not been cut.

In order to assess the importance of these contextual factors, we estimate the Charitou and Vafeas model for sub-sample portfolios of firms to assess the relative magnitude of the coefficients for cash flows vs earnings. Following Charitou and Vafeas we measure growth opportunities using the market-to-book value ratio. However, we differ from their assessment of liquidity by using the current ratio – they measure liquidity as the level of aggregate accruals. With aggregate accruals being defined as the difference between earnings and cash flows, the middle quintile groups contain observations for which earnings and cash flows are very similar in magnitude; the result of this is to generate very significant multicollinearity problems when estimating the Charitou and Vafeas (1998) model for these quintiles. Using the current ratio provides us with a popular liquidity metric that avoids this problem. Following Simons, we assess the strength/weakness of the recent dividend history as the directional change in the previous year's dividends ($D_{t-1}-D_{t-2}$).

To assess the importance of cash flows relative to earnings (i.e. accruals) we examine the standardised OLS slope coefficients in each model. The standardisation procedure allows comparisons of the explanatory power of a variable by examining the size of the slope coefficient, which becomes scale free. The following section will introduce the data sources and the results of the main regression analyses.

Data and results

The data for this study are extracted from Datastream for dividend-paying, non-financial firms listed on the London Stock Exchange between 1994 and 2004. We include dead firms across the test period to avoid any survivorship bias within our sample. Firms are members of the following industry sectors: mineral extraction; building and construction; chemicals; electricals; engineering; paper and packaging; food production; household goods; healthcare; pharmaceuticals; hotels and leisure; media; retailers; pubs, breweries and restaurants; business support services; IT and computing; transport; utilities[2]. We collect the necessary accounting data for our main regression models: these data are then deflated by beginning-of-year total assets. Eliminating the extreme percentiles for each variable, and cases for which there are insufficient data to estimate our models, generates a total of 2,764 firm-year observations.

Table I presents the main descriptive statistics for our regression models' variables.

The tendency for reported earnings to be lower than cash flows, and for aggregate accruals to be negative, is typical of results reported in prior US and UK studies (Barth *et al.*, 2001; Al-Attar and Hussain, 2004).

We now present the regression results from our main test models all of which attempt to explain changes in dividends. We start with Lintner's model and then systematically disaggregate the earnings variable into cash flows and aggregate accruals, and then into cash flows and disaggregated accrual items. We will examine the explanatory power released by these disaggregations via both changes in R^2 values and statistical testing employing the Vuong test statistic for non-nested models.

Table II presents the main regression outputs for each of the estimated models, whilst Table III presents two-way testing of rival model.

Table II presents our main regression results, applying OLS analysis to the change in dividends ($\Delta D_{i,t}$). It may be noted from the outset that all the regression slopes take their expected signs. Table III provides details of the two-way comparisons of model-fit, showing changes in R^2 and Vuong test statistics.

Variable	Mean	Median	SD	Minimum	Maximum
ΔD	0.0032	0.0022	0.0116	−0.0523	0.0737
D_{t-1}	0.0386	0.0344	0.0228	0.0051	0.1660
CF	0.1147	0.1041	0.0773	−0.2071	0.4713
E	0.0724	0.0707	0.0701	−0.3254	0.3519
AGG	−0.0423	−0.0408	0.0690	−0.3766	0.2751
ΔAR	0.0236	0.0085	0.0645	−0.1602	0.5730
ΔINV	0.0142	0.0024	0.0443	−0.1150	0.3061
ΔAP	0.0144	0.0053	0.0438	−0.1039	0.3242
DEP	0.0490	0.0440	0.0290	0.0016	0.2074
OTHER	−0.0166	−0.0092	0.0661	−0.5207	0.2691

Notes: D_{t-1}, Total dividend for year $t-1$; ΔD_t, change in dividend from year $t-1$ to year t, defined as $D_t - D_{t-1}$; *E*, reported earnings in year *t*; *CF*, operating cash flows; *AGG*, aggregate accruals, defined as $E-CF$; ΔAP, change in accounts payable; ΔINV, change in inventory; ΔAR, change in accounts receivable; *DEP*, depreciation on tangible assets; *OTHER*, represents other accruals reported earnings$-(CF + \Delta AR + \Delta INV - \Delta AP - DEP)$; all variables are deflated by their respective beginning-of-year total assets ($n = 2764$)

Table I.
Descriptive statistics

We begin by examining the Lintner model in its most common format (Model I), where current earnings and lagged dividends are used to explain the change in current dividends. This model explains 26.9 per cent of the variation in dividend changes. However, when we disaggregate earnings into cash flows and aggregate accruals (Model II) the explanatory power of the model rises to 30.8 per cent. Conducting the Vuong test generates a *Z*-statistic of 5.56, which is significant at the 0.05 level.

The next stage is to disaggregate earnings to the level of cash flows and individual accruals components (Model III): the explanatory power of Model III is larger again, at 32.9 per cent. Given the previous result, it is obvious that this represents a further improvement on the traditional Lintner model, with a Vuong *Z*-statistic of 5.7 being significant at the 0.05 level. However, this further stage of disaggregation also improves on Model II: when aggregate accruals are replaced by the individual accrual components the 2.1 per cent increase in the explanatory power of the model also significant at the 0.05 level, with a Vuong *Z*-statistic of 3.12.

These results provide evidence that the explanatory power of the Lintner model can be improved through the disaggregation of accounting earnings into cash flows and accruals. This point is important for two reasons. First, it tells us that UK accruals data possess significant explanatory power with respect to dividend changes, across a large sample of UK firms. This is what may be expected if accruals data are fulfilling their intended role as a supplement to cash flows and a quantification of non-cash information such as managers' judgements and estimates.

Second, these results reiterate the assertions made by international accounting bodies that financial statements should be used in conjunction with each other for assessing future performance and dividend-paying ability. This is because the data in Equation (3) includes items from the income statement, the cash flow statement and the balance sheet.

We can now examine the importance of contextual factors on the usefulness of earnings, an accruals-based performance measure, relative to cash flows (see Table IV).

Turning first to the issue of growth opportunities we can see in panel A of Table IV that the relative importance of cash flows, when compared to earnings, is greatest

Variable (expected sign)	Model I	Model II	Model III
Intercept[a]	–	–	–
CF (+)			0.57* (24.01)
E (+)	0.41* (22.22)		
D_{t-1} (–)	−0.56* (−30.61)	−0.63* (−33.75)	−0.64* (−34.42)
AGG (+)		0.29* (14.92)	
ΔAR (+)			0.32* (12.61)
ΔINV (+)			0.24* (12.30)
ΔAP (–)			−0.19* (−7.90)
DEP (–)			−0.14* (−7.37)
$OTHER$ (±)			0.19* (8.74)
Adjusted R^2 (%)	26.9	30.8	32.9
F-value	508.7*	411.2*	194.1*

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma E_{i,t} + \omega_{i,t} \quad (1)$$

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \phi AGG_{i,t} + \omega_{i,t} \quad (2)$$

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \theta_1 \Delta AP_{i,t} + \theta_2 \Delta AR_{i,t} + \theta_3 \Delta INV_{i,t} + \theta_4 DEP_{i,t} + \theta_5 OTHER_{i,t} + \omega_{i,t} \quad (3)$$

Notes: D_{t-1}, Total dividend for year $t-1$; ΔD_t, change in dividend from year $t-1$ to year t, defined as $D_t - D_{t-1}$; E, reported earnings in year t; CF, operating cash flows; AGG, aggregate accruals, defined as $E-CF$; ΔAP, change in accounts payable; ΔINV, change in inventory; ΔAR, change in accounts receivable; DEP, depreciation on tangible assets; $OTHER$, represents other accruals reported earnings$-(CF + \Delta AR + \Delta INV - \Delta AP - DEP)$; all variables are deflated by their respective beginning-of-year total assets ($n = 2764$); *statistically significant at the 0.05 level using a one-tailed test for all variables were we have a pre-experimental expectation for the sign of the slope; two-tailed tests are employed otherwise; all slope coefficients are standardised OLS estimates. The standardised coefficients provide a relative indication of each variable's importance to the model. For variable X_j the standardised slope is the traditional OLS slope multiplied by the following ratio: (SD for X_j) ÷ (SD for the dependent variable, Y); for the intercept term the SD for X_j is 0 so estimates and t-values are not applicable; numbers in parentheses represent t-values

Table II.
Explaining current dividend changes with lagged dividends, current earnings, cash flows and accruals

for the mid-growth quintile: the standardised OLS slope for cash flows is 0.27 while that for earnings is only 0.17. This differential is much smaller in the other quintile groups.

Charitou and Vafeas (1998) also hypothesise that the relative importance of cash flow data in explaining dividends is likely to be greatest where liquidity is weakest. Our results, reported in panel B, appear to support this assertion. Although the slope for cash flows is reasonably stable across the quintiles, if we compare the respective slope estimates for cash flows and earnings we can see that the relative importance of cash flows is at its greatest in the lowest liquidity quintile: the slope for cash flows is 0.26 while the slope for earnings is only 0.22. Conversely, in the highest quintile the situation is reversed with the slope of cash flows (0.25) being notable lower than the slope for earnings (0.30).

Finally we look at Simons's hypothesis that the relative importance of cash flows will be greater in cases where a firm has a weak dividend history. Panel C reports that the slope for cash flows (0.34) is larger than the slope for earnings (0.24) where the

	Models: I vs II	Models: I vs III	Models: II vs III
ΔR^2 (%)	3.9	6.0	2.1
Vuong Z-statistic	5.56*	5.70*	3.12*

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma E_{i,t} + \omega_{i,t} \quad (1)$$

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \phi AGG_{i,t} + \omega_{i,t} \quad (2)$$

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \delta CF_{i,t} + \theta_1 \Delta AP_{i,t} + \theta_2 \Delta AR_{i,t} + \theta_3 \Delta INV_{i,t} + \theta_4 DEP_{i,t} + \theta_5 OTHER_{i,t} + \omega_{i,t} \quad (3)$$

Table III.
A two-way comparison of explanatory power of Lintner's dividend model and variant models

Notes: D_{t-1}, Total dividend for year $t-1$; ΔD_t, change in dividend from year $t-1$ to year t, defined as $D_t - D_{t-1}$; E, reported earnings in year t; CF, operating cash flows; AGG, aggregate accruals, defined as $E-CF$; ΔAP, change in accounts payable; ΔINV, change in inventory; ΔAR, change in accounts receivable; DEP, depreciation on tangible assets; $OTHER$, represents other accruals reported earnings$-(CF + \Delta AR + \Delta INV - \Delta AP - DEP)$; all variables are deflated by their respective beginning-of-year total assets ($n = 2764$); *statistically significant at the 0.05 level; when comparing these non-nested models we use the Vuong (1989)Z-test statistic to assess the significance of one model's superiority over another. The statistic is bidirectional and asymptotically distributed as standard normal

dividend history is weak, but that these slopes are indistinguishable (both 0.27) for the remaining cases.

Our results appear consistent with those identified in US studies by Charitou and Vafeas (1998) and Simons (1994) with regard to trends in the relative importance of accruals and cash flows. A major difference from these studies, however, is that for our sample of UK firms both cash flows and accruals (earnings) retain significant explanatory power across all contextual factors. The continual significance of UK cash flows is likely due to the fact that cash flows are formally reported in UK financial statements under FRS1, while many prior US studies have had to rely on a variety of cash flow estimation methods employed by researchers.

Implications for practice

The implications of this study's findings impact on two distinct groups: those who use annual reports for the assessment of corporate prospects and those who prepare the accounts. For those who use UK annual reports there are some positive aspects to these findings. In general, the findings support the suggestions of international accounting bodies that information contained in financial statements should allow investors to better assess corporate prospects and dividend-paying ability than if they were to rely solely on cash flow data.

The cash flow data used in this study were disclosed under FRS1, rather than being estimated, and these data have significant explanatory power for UK dividends. This suggests that FRS1 succeeded in generating useful data with a distinctive role to play in explaining firm performance, in addition to the information contained in accruals. This is a positive aspect from the viewpoint of accounting standard setters and users of accounts.

With regard to accruals numbers, these are intended to provide a superior insight into future performance but are usually based on estimates by managers and so are

Variable (expected sign)	Quintile 1 (low)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (high)
Panel A: *growth opportunities* (*market-to-book value*)					
Intercept[a]	–	–	–	–	–
CF (+)	0.21* (6.96)	0.20* (6.17)	0.27* (7.75)	0.19* (5.17)	0.12* (2.79)
E (+)	0.20* (6.85)	0.19* (5.90)	0.17* (4.80)	0.21* (5.69)	0.20* (4.34)
D_{t-1} (−)	−0.65* (−22.07)	−0.58* (−18.12)	−0.49* (−14.77)	−0.53* (−14.86)	−0.44* (−10.60)
Adjusted R^2 (%)	46.7	35.9	30.9	27.2	14.9
F-value	189.5*	121.7*	97.4*	81.6*	38.7*
Panel B: *liquidity* (*current ratio*)					
Intercept[a]	–	–	–	–	–
CF (+)	0.26* (5.97)	0.28* (6.50)	0.26* (6.61)	0.23* (5.64)	0.25* (6.02)
E (+)	0.22* (5.20)	0.30* (6.85)	0.29* (7.40)	0.23* (5.56)	0.30* (6.95)
D_{t-1} (−)	−0.55* (−13.00)	−0.64* (−16.22)	−0.61* (−16.30)	−0.57* (−14.87)	−0.38* (−9.33)
Adjusted R^2 (%)	21.6	30.8	31.1	26.8	18.5
F-value	59.8*	96.1*	97.8*	79.4*	49.6*

Variable (expected sign)	$D_{t-1}-D_{t-2}<0$	$D_{t-1}-D_{t-2}\geqslant 0$
Panel C: *recent dividend history* (*previous year's directional change in dividend-per-share*)		
Intercept[a]	–	–
CF (+)	0.34* (4.10)	0.27* (13.78)
E (+)	0.24* (2.94)	0.27* (14.10)
D_{t-1} (−)	−0.65* (−8.55)	−0.55* (−29.49)
Adjusted R^2 (%)	34.4	25.0
F-value	27.2*	332.8*

$$\Delta D_{i,t} = \alpha + \beta D_{i,t-1} + \gamma E_{i,t} + \delta CF_{i,t} + \omega_{i,t}$$

Notes: D_{t-1}, Total dividend for year $t-1$; ΔD_t, change in dividend from year $t-1$ to year t, defined as D_t-D_{t-1}; *E*, reported earnings in year *t*; *CF*, operating cash flows; all variables are deflated by their respective beginning-of-year total assets ($n = 2764$); *statistically significant at the 0.05 level using a one-tailed test for all variables were we have a pre-experimental expectation for the sign of the slope; two-tailed tests are employed otherwise; all slope coefficients are standardised OLS estimates. The standardised coefficients provide a relative indication of each variable's importance to the model. For variable X_j the standardised slope is the traditional OLS slope multiplied by the following ratio: (SD for X_j) ÷ (SD for the dependent variable, *Y*); for the intercept term the SD for X_j is 0 so estimates and *t*-values are not applicable; numbers in parentheses represent *t*-values

Table IV.
Earnings vs cash flows: the impact of contextual factors

potentially open to manipulation. It is reassuring to see that across this sample of UK firms, accruals data appear to provide additional explanatory power for dividend changes, in addition to their previously identified explanatory power for future cash flows (Al-Attar and Hussain, 2004; Al-Attar *et al.*, 2008).

Turning now to those who prepare financial statements for annual reports, several points can be made. First, the accruals data presented in UK annual reports appear, on average, to be serving the intended purpose of providing users with superior insight

into firm performance. This is what is expected and is generally good news for users of accounts, although the results do not tell us if alternative data or accrual-estimation mechanisms could provide even more insight.

Second, given the potential usefulness of individual accruals data to users of accounts, it is vital that no deliberate manipulation of these data be allowed to compromise the quality of accruals estimates. This could happen in cases where a firm's managers wish to artificially boost current year earnings, for example, in order to justify maintaining dividend levels beyond what might reasonable be expected given the level of "unmanaged" earnings. Evidence of such practices have been documented for US firms (see Daniel *et al.*, 2008) and is often associated with a desire to maintain dividend payments in the face of debt covenant restrictions, which often limit dividend payments in relation to the level of reported earnings. For UK firms there may also be a desire to maintain dividend coverage ratios at acceptable levels, which are considered important indicators by UK managers and analysts (Barker, 1999, p. 212).

The inappropriate use of accruals for earnings manipulation can lead to the diminishing of the information content of accruals (e.g. Dechow and Dichev, 2002; Richardson, 2003). It is short-term accruals components that are most susceptible to manipulation by managers, given that they rely on yearly estimates. Long-term accruals like depreciation are less likely to offer managers such flexibility from year-to-year in order to opportunistically manage annual earnings (Peasnell *et al.*, 2000).

It is not the intention of this paper to replicate the US study by Daniel *et al.* (2008) but their paper suggests that upward management of earnings via accruals would be less likely in cases where firms are cutting dividends, since there is no need to justify maintaining the dividend level. Among our sample there are 204 cases where dividends per share are reduced and 2,560 cases where dividends are maintained or increased. While there is no significant difference in long-term accruals (depreciation) between these two subsets, aggregate accruals are significantly higher for cases where dividends are maintained or increased (see Table V).

This suggests that it is the short-term accruals that are the main drivers for differences in earnings-increasing accruals. For example the greatest difference between the two sub-samples is for the earnings-increasing accrual ΔAR, which is 0.0377 higher for firms that do not cut dividends per share. The next greatest difference between the two sub-samples in this study is for the earnings-increasing accrual ΔINV, which is 0.0193 higher for firms that do not cut dividends per share.

The scope for inaccuracies in these two short-term accrual measures has been noted by Richardson *et al.* (2005, p. 449). They classify accruals for inventory and accounts receivable as being of "low reliability" due to the potential for manipulation by managers and the degree to which both rely on estimates and subjective judgement. As a result, any attempts to boost earnings are more likely to focus on these data items. The results in Table V appear to support the views of Richardson *et al.* (2005) and reiterate the need for preparers of financial statements to ensure that reported data for these items accurately reflect the true business conditions of the firm and are free of management manipulation. Thus, even though UK accruals appear to provide users of accounts with useful information, there may still be some contamination of accruals through earnings management by some firms' managers.

As noted earlier, the data for our study derive from non-financial, UK dividend-paying firms only. The authors acknowledge that his may result in some limitations on the generalisability of the findings. However, the sample covers a wide range of firms across size and industry.

Variable	Firms not cutting dividend per share Mean ($n = 2560$)	SD ($n = 2560$)	Firms cutting dividend per share Mean ($n = 204$)	SD ($n = 204$)	Examining the differences between these two sub-samples DIFF	*t*-test	MWU	KS
AGG	−0.0399	0.0665	−0.0719	0.0902	0.0320	4.69*	5.15*	2.34*
DEP	0.0492	0.0294	0.0467	0.0240	0.0025	1.42	0.52	1.11
"Low reliability" accruals:								
Δ*AR*	0.0263	0.0651	−0.0113	0.0445	0.0377	11.18*	10.07*	4.63*
Δ*INV*	0.0157	0.0444	−0.0036	0.0394	0.0025	6.66*	7.84*	3.80*

Notes: *AGG*, aggregate accruals (short and long term) = reported earnings − cash flows; *DEP*, depreciation (long-term accrual); Δ*INV*, change in inventory; Δ*AR*, change in accounts receivable; DIFF, difference in the mean values between the two sub-samples, (i.e. firms not cutting dividend − firms cutting dividend), presented here together with the *t*-test of this difference; MWU and KS are the *Z*-scores generated by SPSS® associated with the non-parametric Mann-Whitney *U*-test and the Kolmogorov-Smirnov test, respectively; *rejection of the null-hypothesis (no difference) at the 0.05 level using a two-tailed test

Table V.
Accruals and the decision to cut dividends per share

Conclusion

Accruals data reflect managers' judgements and estimates. They are intended to provide users with additional insight into a firm's performance and future prospects beyond that conveyed by cash flows alone. We examine the insight that UK cash flows and accruals (earnings) provide in the assessment of dividend-paying ability by using variants of Lintner's (1956) dividend model. The analysis identifies distinct and significant explanatory power for both cash flows and accruals. These results suggest that, on average, UK financial statements provide improved insight into corporate performance, proxied here by dividend changes, through the disclosure of accruals-based data. These data provide more explanatory power for dividends than merely relying on current cash flows, and this is consistent with the intended role of the accruals process.

Although the relative importance of cash flows vs accruals varies across contextual factors, both cash flows and accruals always retain significant explanatory power. These findings provide direct evidence to support the assertions within publications by international accounting bodies that financial statements (the income statement, cash flow statement and balance sheet) interrelate and complement each other with regard to the assessment of future performance and dividend-paying ability.

However, those who prepare accounts and those who use them need to be aware that opportunistic management of earnings numbers by company managers is likely to diminish the information content of accruals. It is vital that reported accruals data reflect accurately a firm's current and future financial position and are not manipulated to artificially boost earnings. Short-term accruals such as changes in accounts receivable and changes in inventory are the most likely candidates for this type of manipulation.

Notes

1. For a critique of the dataset used by Trojanowski and Renneboog (2005), see Oswald and Young (2004).
2. Our results are not sensitive to the inclusion/exclusion of utilities.

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Further reading

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