ARTICLE IN PRESS

The British Accounting Review xxx (2012) 1–11

Contents lists available at SciVerse ScienceDirect

The British Accounting Review

journal homepage: www.elsevier.com/locate/bar

Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?

Sulaiman Mouselli [a,*], Aziz Jaafar [b], Khaled Hussainey [c]

[a] *Faculty of Economics, Damascus University, Damascus, Syria*
[b] *Bangor Business School, Bangor University, Bangor, LL57 2DG, UK*
[c] *Stirling Management School, University of Stirling, Stirling, FK94LA, UK*

ARTICLE INFO

Article history:
Received 15 September 2010
Received in revised form 10 June 2011
Accepted 17 June 2011

Keywords:
Accruals quality
Asset pricing
Disclosure quality
Information risk

ABSTRACT

The impact of accruals quality and disclosure quality on stock returns is a topical issue in market-based accounting research. Most of the debate is centred on their incremental ability to predict future earnings. Recent studies suggest that higher information risk proxied by either lower accruals quality or lower disclosure quality results in higher stock returns. This paper examines the relationship between accruals quality and disclosure quality, and investigates whether they are complements or substitutes in explaining the time-series variation in portfolio returns. Applying portfolio groupings, we find a positive association between accruals quality and disclosure quality, suggesting that firms with higher disclosure quality engage less in earnings management and have higher accruals quality. Asset pricing tests show that an accruals quality factor and a disclosure quality factor explain the time-series variation in the excess returns of similar sets of portfolios. This suggests that they contain similar information and confirms the substitutive nature of accruals quality and disclosure quality factors.

1. Introduction

A large body of theoretical research suggests that information risk is a non-diversifiable risk (e.g., Easley and O'Hara, 2004; O'Hara, 2003). Among the suggested proxies for information risk are accruals quality and disclosure quality (see for example, Francis, LaFond, Olsson, & Schipper, 2005; Hussainey & Mouselli, 2010). However, there is no consensus either on how to proxy this information risk or on the relationship between different measures. We address this concern by considering the link between two widely used measures of information risk: accruals quality and disclosure quality. Both have been defined variously in the extant literature but none of these definitions has achieved universal acceptance. In this study, accruals quality is defined as the extent to which accruals are well captured by fitted values obtained by regressing the change in non-cash working capital on changes in a firm's economic conditions (Beneish, 1998; Dechow, Sloan, & Sweeney, 1995). Another concept of accruals quality proposed by Dechow and Dichev (2002) refers to the degree to which accruals map into cash flows. With respect to disclosure quality, Diamond and Verrecchia (1991) define the term as the accuracy of investors' beliefs about share prices following the disclosure, while Hopkins (1996) views it as the degree to which investors can easily read and understand the information. Our definition of disclosure quality refers to the quantity of future-oriented earnings statements in the annual report narrative sections.

Prior research indicates that accruals quality is associated with information asymmetry (Dye, 1985; Richardson, 2000; Trueman & Titman, 1988). Further, the level of corporate disclosure is negatively associated with the level of information asymmetry between managers and outside investors (Glosten & Milgrom, 1985; Lang & Lundholm, 1993, 1996; Welker, 1995).

* Corresponding author.
E-mail addresses: sulaimanmouselli@hotmail.com (S. Mouselli), a.jaafar@bangor.ac.uk (A. Jaafar), Khaled.Hussainey@stir.ac.uk (K. Hussainey).

0890-8389/$ – see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.bar.2011.12.004

Drawing upon these two streams of literature, we examine the degree to which accruals quality is related to corporate disclosure and in particular, whether accruals quality and disclosure quality are complements or substitutes in explaining the time-series variation in portfolio returns.

We use the absolute value of discretionary accruals as a proxy for a firm's accruals quality, a measure of earnings management that has been used extensively in prior studies. In essence, earnings management is the result of some degree of flexibility accorded by Generally Accepted Accounting Practices (GAAP) as well as the discretion managers have in reporting their financial performance. Managers may use this discretion either to manage earnings opportunistically (Christie & Zimmerman, 1994) or to communicate private value-relevant information about future performance (Healy and Palepu, 2001). However, much of the prior literature finds that earnings management is carried out in order to either mislead financial statement users or to bias contractual outcomes that depend on accounting earnings (e.g. Burgstahler & Eames, 2003). This study focuses on accruals which represent the difference between a firm's reported earnings and its cash flows. Large positive accruals indicate that earnings are much higher than the cash flows generated by the firm. This difference arises due to accounting conventions concerning when and how much revenues and expenditures are recognised. Prior empirical studies (e.g., Houge & Loughran, 2000; Richardson, Sloan, Soliman, & Tuna, 2006; Sloan, 1996) find that the accruals component of earnings can be used to predict future stock returns, and demonstrate that a trading strategy based on this predictability results in significant abnormal returns. Our proxy for disclosure quality is based on the number of future-oriented statements in the narrative sections contained in the corporate annual report that contain earnings-related topics.

Previous theoretical and empirical research provides mixed evidence on the relationship between accruals quality and disclosure quality. Grossman and Hart (1980); Milgrom (1981) and Verrecchia (1983, 2001) argue that information asymmetry between firm managers and outside shareholders generates a demand for increased disclosure and provides an incentive for firms to disclose, because the value of incremental information is greater in this environment. Firms with poor accruals quality provide more comprehensive disclosure, because the extent of information asymmetry between the firm and investors is higher in such firms. On the contrary, Dye (1985); Jung and Kwon (1988) and Verrecchia (1990) develop theoretical models to show that, firms have incentives to disclose less information, as earnings quality decreases.[1] Firms with poor earnings quality disclose less information, because investors treat the disclosure of such firms as less credible. A more recent study by Francis, Nanda, and Olsson (2008) also confirms the complementary association between earnings quality and voluntary disclosure, suggesting that firms with good earnings quality select higher levels of disclosure *vis-à-vis* firms with poor earnings quality. However, this link disappears when they control for earnings quality, implying that voluntary disclosure has little or no distinct pricing effect.

This paper examines the relationship between accruals quality and disclosure quality for UK non-financial firms that are listed on the stock market during the period July 1997 – June 2004. We report empirical evidence for a positive association between accruals quality and disclosure quality, which suggests that firms with higher disclosure quality engage less in discretionary accruals. Moreover, asset pricing tests show that both an accruals quality factor (AQF) and a disclosure quality factor (DQF) explain the time-series variation in excess returns for similar sets of portfolios. This suggests that the AQF and DQF contain similar information and is consistent with the notion that accruals quality and disclosure quality are close substitutes.

Our contribution to market-based accounting research is two-fold. First, we extend the literature on corporate disclosure and accruals quality. Specifically, we examine the empirical relationship between disclosure quality, accruals quality and stock returns. Second, Fama and French (1993, 1996) demonstrate that risk factors constructed on the basis of book-to-market (HML) and market value (SMB) are incrementally important in explaining the time-series variation of US portfolio returns. We estimate accruals quality and disclosure quality factors and add them to the Fama–French three-factor model, in order to investigate their usefulness in explaining the component of the time-series variation of UK portfolio returns that is otherwise unexplained by the original Fama–French factors. We examine whether accruals quality and disclosure quality, interpreted as risk factors, are complements or substitutes in explaining the time-series variation in portfolio stock returns. To the best of our knowledge, there is no prior work that addresses this issue.

The remainder of this paper is organised as follows. Section 2 reviews the previous literature, and develops our research questions. Sections 3 and 4 describe the proxies used for disclosure quality and accruals quality, respectively. Section 5 describes the data. Section 6 presents and interprets the empirical results. Section 7 concludes the study.

2. Disclosure quality, accruals quality and stock returns

This study builds on extant research concerning the link between corporate disclosure and accruals quality. With respect to corporate disclosure, the discretion exercised by managers in disclosing privately-held information has been examined both analytically and empirically in prior literature. Analytical models suggest that managers disclose private information because investors would interpret it as information censoring and discount the value of the firm accordingly. Corporate disclosure transforms private information into public information and reduces the information asymmetry between managers and outside shareholders (Diamond & Verrecchia, 1991; Kim & Verrecchia, 1994). Furthermore, increased disclosure

[1] The term 'earnings quality' in itself has no established definition and has been used with different interpretations. Some relate to the persistence and predictability of earnings, i.e., earnings that provides a good indication of future earnings (e.g. Dechow & Schrand, 2004; Penman, 2003). Others relate to the accurate representation of underlying economic transactions and events (e.g., Chan, Chan, Jegadeesh, & Lakonishok, 2006).

Please cite this article in press as: Mouselli, S., et al., Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?, *The British Accounting Review* (2012), doi:10.1016/j.bar.2011.12.004

allows outsiders to be more confident that transactions occur at fair prices, leading to increased liquidity, reduced cost of capital and increased analyst following (Botosan, 1997; Botosan & Plumlee, 2002; Healy & Palepu, 2001; Lambert, Leuz, & Verrecchia, 2007; Sengupta, 1998). For example, Botosan (1997) documents that a greater level of corporate disclosure is associated with a lower cost of equity capital. Similarly, Sengupta (1998) finds that high disclosure ratings are inversely associated with the cost of debt. Botosan and Plumlee (2002) document that the cost of equity capital decreases in the annual report disclosure level but increases in the level of disclosure in quarterly reports. Finally, many empirical papers report that voluntary disclosure improves investors' ability to anticipate future earnings changes (see for example, Gelb & Zarowin, 2002; Hussainey, Schleicher, & Walker, 2003; Lundholm & Myers, 2002; Schleicher & Walker, 1999).

Prior research also demonstrates a link between accruals quality and information asymmetry. Dye (1985) and Trueman and Titman (1988) develop analytical models suggesting that the existence of information asymmetry between managers and outside shareholders is a necessary condition for earnings management.[2] In a similar vein, Richardson (2000) argues that management's discretionary ability to manage earnings increases as the information asymmetry between management and shareholders increases. The degree of information asymmetry, measured by the bid-ask spread and the dispersion in analysts' forecasts, is positively related to the propensity for earnings management.

Theory provides conflicting conjectures on the relationship between disclosure quality and accruals quality. One body of literature (Grossman & Hart, 1980; Milgrom, 1981; Verrecchia, 1983) suggests that managers disclose information because outside investors view non-disclosure of information as unfavourable and as a result, mark down the firm's value. Information asymmetry between managers and outside shareholders creates a demand for disclosure and provides an incentive for firms to disclose, because the value of additional information is greater in this setting. Consequently, firms with poor financial reporting quality provide more comprehensive disclosure, because information asymmetry between the firm and investors is higher in such cases. If a measure of the firm's accruals quality is used to proxy for information asymmetry, the implication is that the extent of a firm's disclosure is inversely related to accruals quality. Based on the contrary view that accruals quality and disclosure quality are complements, another strand of literature suggests that managers have incentives to disclose more, as financial reporting quality increases (Verrecchia, 1990). Firms with poor accruals quality will provide less expansive disclosure, because investors tend to treat such disclosure as less credible.

Drawing upon the conflicting theoretical evidence described above, it is not surprising that empirical research has also provided mixed results on the direction of the relationship between disclosure quality and accruals quality. In tests using management forecasts as a proxy for voluntary disclosure and earnings volatility as a proxy for information quality, Imhoff (1978); Cox (1985) and Waymire (1985) demonstrate that forecast frequency is inversely related to earnings volatility. Francis et al. (2008) report that firms with high earnings quality have more expansive voluntary disclosure than firms with poor earnings quality. On the contrary, Lang and Lundholm (1993) use the Association for Investment Management Research (AIMR) ratings as a proxy for voluntary disclosure, and the correlation between annual returns and annual earnings as a proxy for financial reporting quality. They report an inverse relationship between the level of disclosure and the quality of financial reporting. In particular, firms with low returns-earnings correlations have higher AIMR ratings. Similarly, Tasker (1998) reports an inverse relationship between the likelihood that a firm uses conference calls (proxy for DQ) and earnings informativeness. Nevertheless, Dargenidou, McLeay, and Raonic (2011) show both disclosure and accruals jointly affect earnings expectations that are included in current stock returns. In an asset pricing model, recent empirical evidence shows that an accrual quality (AQ) factor and a disclosure quality (DQ) factor explain the time-series variation in portfolio returns (e.g., Core, Guay, & Verdi, 2008; Hussainey & Mouselli, 2010).

Based on the above, this paper aims to answer the following two questions. First, what is the relationship between corporate disclosure and a firm's accruals quality? Second, are disclosure quality and accruals quality substitutes or complementary in explaining the time-series variation in portfolio returns?

3. Disclosure quality measure

The measurement of the quality of corporate disclosure is extraordinarily difficult due to the lack of a clear definition of 'quality' (Beyer, Cohen, Lys, & Walther, 2010). Therefore, we use a narrow definition for disclosure quality; the quantity of future-oriented earnings statements in annual report narrative sections. This measure is chosen due to the fact that the inclusion of future-oriented information in the annual report narratives is highly recommended by the UK Accounting Standards Board (ASB, 2006). In particular, the ASB has recommended the adoption of a revised Operating and Financial Review (OFR), which "… should have a forward-looking orientation identifying those trends and factors relevant to the members' assessment of the current and future performance of the business and the progress towards the achievement of long-term business objectives" (ASB, 2006, pp. 9–10). Following the withdrawal of the legal requirement to publish OFR, it has been reduced to a statement of best practice. Second, prior research indicates that future-oriented earnings statements increase the stock market's ability to forecast future earnings changes (Hussainey et al., 2003; Hussainey & Walker, 2009; Hussainey & Mouselli, 2010; Schleicher, Hussainey, & Walker, 2007; Schleicher & Walker, 1999).

[2] Dye (1988) posits the existence of overlapping groups of buying and selling shareholders. Selling shareholders allow managers to adopt a certain earnings management strategy in order to impress buying shareholders. The manager has an information advantage over outside investors. Hence, information asymmetry is a necessary condition for earnings management in this setting.

Please cite this article in press as: Mouselli, S., et al., Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?, *The British Accounting Review* (2012), doi:10.1016/j.bar.2011.12.004

We follow Hussainey et al. (2003) and obtain disclosure scores for a large-scale sample of UK non-financial firms. Hussainey et al. (2003)'s study is considered as an early response to Core's (2001) recommendation that improved disclosure measures should be developed, perhaps drawing on techniques borrowed from disciplines such as computer science, linguistics and artificial intelligence. Hussainey et al. (2003) use a text analysis software package to automate the generation of disclosure scores (i.e. the number of future-oriented earnings statements in the narrative sections of corporate annual reports).

Following Hussainey et al. (2003), DQ scores are calculated for our sample firms in three stages. First, we search annual report narrative sections for the existing future-oriented statements. We use the future-oriented keywords list suggested by Hussainey et al. (2003, p. 277) for this purpose. This list contains thirty five keywords as well as future year numbers preceded by one of the following prepositions: 'during', 'for', 'in', 'into', 'of', 'through' or 'throughout. Panel A Table 1 shows our list of future-oriented keywords. Second, we search annual report narrative sections for earnings statements. We use the list of earnings keywords suggested by Hussainey et al. (2003, p. 280) for this purpose. This list represents earnings topics relevant to stock markets, and is based on exploring types of information in a sample of brokerage reports (see Hussainey et al., 2003 for more details). This list includes twelve keywords as shown in Panel B Table 1. Finally, we count the number of sentences that include at least one future-oriented keyword and at least one earnings indicator.

4. Accruals quality measure

A number of approaches have been used in the extant literature in estimating accruals quality (AQ). In this paper, we use absolute discretionary accruals as our proxy for AQ.[3] We estimate discretionary accruals using the modified-Jones model (Dechow et al., 1995). The advantages and disadvantages of this model are discussed by Guay, Kothari, and Watts (1996), Young (1999), Thomas and Zhang (2000), Fields, Lys, and Vincent (2001), Lo (2008), Dechow, Ge, and Schrand (2010) and DeFond (2010). According to Botsari and Meeks (2008), while the modified-Jones model has drawbacks, no alternative approach offers a superior solution to the problem of estimating discretionary accruals; and according to Subramanyam (1996), discretionary accruals estimated using this model are priced by the market.

In estimating the modified-Jones model, we employ a cross-sectional model in order to maximise the sample size and avoid the problem of survivorship bias that is inherent in the use of a firm-specific time-series approach (DeFond & Subramanyam, 1998; Peasnell, Pope, & Young, 2005). Bartov, Gul, and Tsui (2000) report that the cross-sectional model performs better than the time-series model in detecting earnings management, and Subramanyam (1996) demonstrates that the parameter estimates in the cross-sectional model are more accurate than their time-series counterparts, owing to the larger number of degrees of freedom. Following extant studies, we focus on the discretionary component of total current accruals (TCA).[4]

The total current accrual for firm i in year t is defined as:

$$TCA_{i,t} = (\Delta CA_{i,t} - \Delta Cash_{i,t}) - (\Delta CL_{i,t} - \Delta STDebt_{i,t}) \quad (1)$$

where

ΔCA = change in current assets
ΔCL = change in current liabilities
ΔCash = change in cash and cash equivalent
ΔSTDebt = change in short-term debt

To compute the discretionary accruals for a given firm-year observation, we first estimate the following equation using ordinary least squares (OLS) for all sample firms in each industry sector for which at least 10 observations were available in year t:

$$\frac{TCA_{i,t}}{TA_{i,t-1}} = \alpha_1\left(\frac{1}{TA_{i,t-1}}\right) + \alpha_2\left(\frac{\Delta REV_{i,t}}{TA_{i,t-1}}\right) + \varepsilon_{i,t} \quad (2)$$

where: $\Delta REV_{i,t}$ is the change in firm i's revenue in year t. Deflation of each variable by the lagged value of firm i's total assets ($TA_{i,t-1}$) corrects for heteroscedasticity in the disturbance term of the model specified in terms of variables that are not

[3] Another accruals quality measure widely used in the extant literature, introduced by Dechow and Dichev (2002) and modified by McNichols (2002), is based on the standard deviation of the residuals calculated from a model of working capital accruals. Several studies use this measure as a proxy for accruals quality (Francis et al., 2005). However, recent evidence suggests that the standard deviation of residual accruals is not a valid proxy of either accounting quality or overall earnings quality. For example, Hribar and Nichols (2007) find that firms with negative cash from operations also have larger residuals from models of working capital accruals. In view of this evidence, we elect to use discretionary accruals based on the modified-Jones model of Dechow et al. (1995).

[4] Beneish (1998) argues that modelling total current accruals is appealing, because earnings management via the depreciation accrual is limited, as any change in the useful life or depreciation method has to be disclosed in the financial statements. Furthermore, it is difficult for managers to manage earnings through depreciation by timing capital expenditures.

Please cite this article in press as: Mouselli, S., et al., Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?, *The British Accounting Review* (2012), doi:10.1016/j.bar.2011.12.004

Table 1
Disclosure keywords.

Panel A: Future-oriented keywords			
Accelerate	Estimate	Next	Scope for, Scope to
Anticipate	Eventual	Novel	Shall
Await	Expect	Optimistic	Shortly
Coming (financial) years	Forecast	Outlook	Should
Coming months	Forthcoming	Planned, Planning	Soon
Confidence, Confident)	Hope	Predict	Will
Convince	Intend, Intention	Prospect	Well placed, Well positioned
Current (financial) year	Likely, Unlikely	Remain	Year(s) ahead
Envisage	Look forward, Look ahead	Renew	Future year numbers (1997; 1998; 1999; 2000; 2001;)
Panel B: Earnings-related keywords			
Benefit	Contribution	Loss	Profitability
Break even	Earnings	Margin	Return
Budget	EPS	Profit	Trading

Notes: Panel A contains the list of keywords that are used to identify future-oriented statements in the annual report narrative sections. The future year numbers must be preceded by one of the following prepositions: 'during', 'for', 'in', 'into', 'of', 'through' or 'throughout'. Panel B contains 12 earnings-related keywords. The list is identified from a sample of sell-side analysts' reports. Where applicable, the plural of a keyword is also included in the text search.

deflated, following prior work in this area. Using the industry- and year-specific estimates of α_1 and α_2, we estimate for each sample firm the non-discretionary portion of its total current accruals as follows:

$$NDAC_{i,t} = \hat{\alpha}_1\left(\frac{1}{TA_{i,t-1}}\right) + \hat{\alpha}_2\left(\frac{\Delta REV - \Delta AR_{i,t}}{TA_{i,t-1}}\right) \tag{3}$$

The non-discretionary accruals (NDAC), which represents the portion of total current accruals dictated by the firm's sales growth, is viewed as independent of managerial discretion. In (3), we subtract the change in accounts receivable (ΔAR) from sales growth to allow for the possibility of credit sales manipulation by the firm, which might allow more generous credit terms to obtain sales prior to an earnings announcement (Dechow et al., 1995). We define absolute discretionary accruals (DAC) as the remaining portion of the total current accruals:

$$\left|DAC_{i,t}\right| = \left|\frac{TCA_{i,t}}{TA_{i,t-1}} - NDAC_{i,t}\right| \tag{4}$$

Accruals quality is proxied by absolute discretionary accruals (DAC). *Ceteris paribus*, the higher the numerical value of DAC, the lower is the accruals quality.

5. Data and descriptive statistics

The sample period for the present study is July 1997 – June 2004. The source used for the annual report narrative sections (chairman's statements and OFR), the Dialog database, was discontinued by Thomson Financial in mid-2004. The year 2002 is the last for which comprehensive annual reports coverage is available.[5] The initial sample of accruals quality data, which covers all UK non-financial firms for which the accruals quality measure is available, comprises 7989 firms. We match this data with 6999 non-financial firms with at least one annual report available from Dialog, and remove firms with missing accounting information. The final sample consists of 5723 usable firm-year observations. We use the accruals quality and disclosure quality scores for 1996 to construct quintile portfolios of accruals quality and disclosure quality, respectively, from July 1997 to June 1998, through July 2003 – June 2004. The empirical model involves a simple modification to the Fama and French (1993) model to accommodate possible accruals quality and disclosure quality factors. We estimate risk models for two sets of portfolios: 16 intersected size-BM portfolios and 20 industry portfolios, based on a time-series of 84 monthly observations.

Fama and French (1993) run time-series regressions of portfolio excess returns on three risk factors as follows:

$$R_{i,t} - R_{f,t} = a_i + \beta_{iM}\left(R_{Mt} - R_{f,t}\right) + \beta_{iHML}HML_t + \beta_{iSMB}SMB_t + \varepsilon_{i,t} \tag{5}$$

where: R_{Mt} is the return on the market portfolio. HML_t, SMB_t are the value factor and size factor for month t (explained below), respectively.

Our sample for the construction of Fama–French factors (HML and SMB) uses monthly returns data for all UK listed firms, live and dead, over the period July 1997 – June 2004. To avoid survivorship bias, we include in our sample companies that

[5] We acknowledge that the narrative sections of annual reports have become more standardised, and have expanded greatly since 2004. The non-availability of a database for annual report narratives in text format for a large sample of UK firms makes it difficult to extend our analysis beyond 2004.

Please cite this article in press as: Mouselli, S., et al., Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?, *The British Accounting Review* (2012), doi:10.1016/j.bar.2011.12.004

have been delisted due to merger or failure. We exclude companies with more than one class of ordinary share, companies with negative book-to-market ratios, and companies belonging to the financial sector to be consistent with Dimson, Nagel, and Quigley (2003). Annual accounting data is obtained from Datastream, and monthly returns data from the London Share Price Database (LSPD).

In the construction of the portfolios, when a component stock delists during a portfolio holding period, the proceeds from delisted stock are assumed to be distributed among other stocks in the portfolio in proportion to their weights. We set the delisting returns to −100% when the LSPD death type is liquidation (7), quotation cancelled for reason unknown (14), receiver appointed/liquidation (16), in administration (20) or cancelled and assumed valueless (21). We use the value-weighted return on the Financial Times All Share index as a proxy for the return on the market portfolio.

We follow Dimson et al. (2003) in constructing the Fama–French factors. At the end of June for each year *t*, stocks are allocated to two groups, small (S) or big (B), on the basis of being above or below the 70th percentile of the distribution of market value. Stocks are also allocated, independently, to three book-to-market groups, low (L), medium (M) or high (H), according to the breakpoints of the bottom 40%, middle 20% and top 40% of the values of BM recorded at the end of year *t*-1. Six size-BM portfolios (SL, SM, SH, BL, BM, BH) are defined by the intersections of the two size and three BM groups. We calculate the value-weighted monthly returns for the six size-BM portfolios for the subsequent twelve months.

SMB is defined as the monthly difference between the average of the returns on the three small size portfolios (SL, SM, SH) and the average of the returns on the three big size portfolios (BL, BM, BH). HML is calculated as the difference between the average of the returns on the two high BM portfolios (BH, SH) and the average of the returns on the two low BM portfolios (BL, SL).

The sample for both the accruals quality factor (AQF) and disclosure quality factor (DQF) is the common sample of 5723 usable firm-year observations. To construct the AQF, we partition the firms into five groups on the basis of the AQ score. The AQF is defined as the difference between the average of the value-weighted two lowest accruals quality score (highest numerical value of |DAC|) portfolio returns and the average of the value-weighted returns on the two highest accruals quality score (lowest numerical value of |DAC|) portfolios. Similarly, the DQF is constructed from the difference in average value-weighted returns between the two lowest disclosure quality score portfolios and the two highest disclosure quality score portfolios.

6. Empirical results

6.1. The association between accruals quality and disclosure quality

Table 2 reports descriptive statistics for the factors. First, the Fama–French factors, SMB and HML, and the AQF and DQF factors, all have positive average values, while the excess market return has a negative average value. None of these average values is significantly different from zero. The positive AQF, although insignificant, suggests that firms with the lowest accruals quality score generate higher returns than firms with the highest accruals quality score. This is consistent with low information quality firms generating a high equity premium. Second, the monthly average returns of AQF and DQF, 0.003763 and 0.003727 respectively, are similar. A highly significant sample correlation coefficient between AQF and DQF of 0.78 indicates a positive association between disclosure quality and accruals quality.

To answer our first research question, regarding the relationship between accruals quality and disclosure quality, we sort the firms that were alive at the end of June of each year into six portfolios on the basis of their disclosure quality scores. Table 3 reports descriptive statistics. Firms with low disclosure quality scores also tend to have low accruals quality (high |DAC|), and vice versa. The relation is monotonic: moving from the low to the high disclosure quality portfolios, accruals quality increases. This result is consistent with a recent study by Francis et al. (2008), which reports a positive association between earnings quality and voluntary disclosure.

Table 2
Summary statistics for, and correlations between, the five risk factors (R_m-R_f, SMB, HML, AQF and DQF).

	R_m-R_f	SMB	HML	AQF	DQF
Panel A: Summary statistics for monthly returns					
Mean	−0.00055	0.00283	0.007148	0.003763	0.003727
Median	0.002136	0.006029	0.004805	0.001653	0.002125
Std. dev.	0.045341	0.039416	0.037698	0.032969	0.028263
Panel B: Correlations					
R_m-R_f	1	−0.11	−0.25**	0.14	−0.08
SMB		1	−0.29***	0.44***	0.37***
HML			1	−0.61***	−0.56***
AQF				1	0.78***
DQF					1

Notes: R_m-R_f is the excess return on the market portfolio. SMB is the size factor defined as the monthly difference between average return on small size portfolios and the average return on big size portfolios., HML is the value factor defined as the monthly difference between average return on the high B/M portfolios and the average return on the low B/M portfolios, AQF is the return on the accruals quality factor and DQF is the return on the disclosure quality factor.
,* denote significance at 5% and 1%, respectively.

Table 3
Descriptive statistics for non-DQ and DQ portfolios.

Portfolio	Monthly return (%)	ln(ME)	BM	DQ	|DAC|	Firms
0	−1.21	5.6	0.77	0	0.16	75
Low	0.93	5.22	0.77	1.16	0.13	124
2	0.71	5.84	0.81	2.57	0.12	186
3	0.64	6.11	0.73	4.07	0.1	131
4	0.05	6.78	0.74	5.87	0.09	145
High	0.38	7.74	0.73	10.55	0.07	156

Notes: Monthly returns are value-weighted returns. BM is the ratio of book equity to market equity. ME is the market equity. |DAC| is absolute discretionary accruals measured using the modified-Jones model. A higher numerical value of |DAC| indicates lower accruals quality, and vice versa. All ratios are computed at the end of June of year t. Portfolios are formed annually, based on DQ. Portfolio 0 comprises all firms with zero DQ for year t. Portfolio Low comprises the lowest quintile of firms sorted on the basis of DQ. Portfolio High comprises the highest quintile of firms based on DQ.

There is a positive association also between firm size, proxied by the natural logarithm of market value, and the quality of disclosure. Monthly returns for firms with high DQ and AQ are lower than those for firms with low DQ and AQ. This supports the risk-based theory in which investors demand higher returns for investing in risky (low AQ and DQ) firms.

6.2. Accruals quality and disclosure quality: substitutes or complements?

Prior studies report that an AQF and a DQF are significant in explaining the time-series variation in portfolio returns (Core et al., 2008; Hussainey & Mouselli, 2010). The question we are trying to answer here is: are these factors substitutes for each other, or are they complementary? In other words, do these factors proxy for the same risk and contain the same information? If this is true, we expect them to explain the same set of portfolios (i.e., the 16 size-BM portfolios and the 20 industry portfolios).

To address this question, we run the following time-series regressions on the excess returns of the 16 size-BM portfolios:

$$R_{i,t} - R_{f,t} = a_i + \beta_{iM}\left(R_{Mt} - R_{f,t}\right) + \beta_{iHML}HML_t + \beta_{iSMB}SMB_t + \beta_{iAQ}AQF_t + \varepsilon_{i,t} \quad (6)$$

$$R_{i,t} - R_{f,t} = a_i + \beta_{iM}\left(R_{Mt} - R_{f,t}\right) + \beta_{iHML}HML_t + \beta_{iSMB}SMB_t + \beta_{iDQ}DQF_t + \varepsilon_{i,t} \quad (7)$$

where:

AQF_t, DQF_t are the returns for month t for the AQ and DQ factors, respectively. We use standard t-tests to evaluate the significance of the coefficients on the AQ and DQ factors individually, and the Gibbons, Ross, and Shanken (1989) GRS F-test to examine the joint significance of the intercepts and the Seemingly Unrelated Regressions (SUR) for the joint significance of the coefficients. If the coefficients of a tested risk factor are jointly significant, then this variable is a useful factor in explaining portfolio returns and vice versa.

Lo and MacKinlay (1990) warn against using portfolios formed on the basis of any characteristic that is known to be associated with returns in testing asset pricing models. Berk (2000) shows that sorting stocks into portfolios, based on a variable known a priori to be correlated with returns, increases the variation in realised excess returns across portfolios, and biases the test towards rejection of an economically correct asset pricing model. Accordingly we also use industry portfolios in our asset pricing tests.

We use the London Share Price Database Industrial Classification (G17) and the FTSE Industrial Classification Benchmark (ICB) to construct 20 industry portfolios. We calculate the value-weighted returns of these portfolios on the assumption that they are bought and held for a year. Repeating this process, year by year, produces a time-series of portfolio monthly returns from July 1997 to June 2004. The excess returns on these 20 portfolios are also used as dependent variables in the time-series regressions.[6]

In order to examine the incremental explanatory power of AQF and DQF, we construct the first principal component analysis factor (PCAF) from AQF and DQF and run the following time-series regressions on both sets of portfolios:

$$R_{it} - R_{ft} = a_i + \beta_{iM}\left(R_{Mt} - R_{f,t}\right) + \beta_{iHML}HML_t + \beta_{iSMB}SMB_t + \beta_{iAQ}PCAF_{PQ} + \varepsilon_{i,t} \quad (8)$$

Given that the first principal component factor constructed from a set of variables should capture most of the variation in these variables, we expect the new factor (PCAF) to capture the information of these variables and combine their explanatory power. This will enable us to summarise the information of both variables in a single variable, and test whether PCAF can explain the average excess returns on the portfolios better than either AQF and DQF.

[6] Descriptive statistics for both sets of portfolios are reported by Hussainey and Mouselli (2010).

Panel A of Table 4 shows that the *p*-values from the *F*-tests for the joint significance of the loadings are less than 1%. This result is consistent with the findings, that SMB, HML and excess market returns are significant in explaining the time-series variation of size-BM portfolio returns in the UK.

Panel B of Table 4 reveals that the AQF explains the time-series variation of six individual portfolios, while the DQF explains the time-series variation of seven individual portfolios. These results suggest that the disclosure quality and accruals quality factors contain similar information, and explain the variation in the same set of portfolios. The *F*-statistics from the SUR estimation indicate that the AQF and DQF are also significant risk factors in explaining the time-series variation in portfolio returns, with *p*-values of less than 1%. Moreover, PCAF explains the time-series variation in seven individual portfolios. The *F*-statistic for the significance of PCAF is larger than the *F*-statistics for the significance of AQF and DQF. This result suggests that AQF and DQF contain similar information, and can be viewed as substitutes for each other.

Panel A of Table 5 is consistent with our previous results for the 16 size-BM portfolios regarding the significance of Fama–French factors. The SMB, HML and excess market returns factors are significant in explaining the time-series variation of industry returns in the UK. The *F*-statistics from the SUR estimation in Panel B of Table 5 indicate that the AQF and DQF are significant risk factors in explaining the time-series variation in portfolio returns, with *p*-values less than 1%. The AQF, with nine significant coefficients, has greater explanatory power for the time-series variation in individual portfolio returns than the DQF, with seven significant coefficients. Moreover, the PCAF explains the time-series variation of 10 individual portfolio returns. As before, it appears that AQF and DQF contain similar information, and can be interpreted as substitutes for one another.

Table 4
Loadings from time-series regressions for 16 size-BM portfolios.

	Low	2	3	High	Low	2	3	High	
Panel A: Loadings on the Fama–French factors									
			α				t_{α}		*F*
Small	0.80	0.59	0.46	0.77	1.00	1.03	1.13	3.16	1.29
2	0.16	0.00	0.01	0.28	0.31	0.00	0.03	0.83	0.19
3	−0.48	−0.08	0.00	0.33	−1.41	−0.33	−0.01	1.32	
Big	−0.08	0.20	−0.15	0.30	−0.31	0.76	−0.49	0.57	
			β_M				t_{β}		*F*
Small	0.88	0.72	0.69	0.46	5.83	5.26	9.53	6.87	48.19
2	1.16	0.92	0.79	0.79	10.43	10.24	15.40	10.92	<0.01
3	1.24	1.07	0.80	0.85	14.81	15.25	10.47	10.19	
Big	0.84	0.94	0.89	1.30	12.87	15.33	8.63	8.04	
			β_{SMB}				t_{β}		*F*
Small	1.34	1.15	0.96	0.70	5.40	4.98	9.02	6.94	>100
2	1.31	1.02	0.84	0.82	12.62	9.89	12.05	8.55	<0.01
3	1.12	1.00	0.89	0.88	14.26	15.21	14.85	13.37	
Big	−0.09	−0.06	0.02	0.33	−1.29	−0.76	0.25	2.41	
			β_{HML}				t_{β}		*F*
Small	−0.57	−0.10	0.07	0.15	−2.37	−0.74	0.57	1.41	22.69
2	−0.27	−0.02	0.35	0.49	−1.70	−0.26	4.07	4.71	<0.01
3	−0.23	0.36	0.53	0.69	−2.31	5.66	5.38	6.98	
Big	−0.55	0.28	0.55	0.73	−6.80	2.84	4.47	4.89	
Adj-R^2			Low	2	3	High			
Small			54.41	55.00	62.15	59.24			
2			78.40	77.96	76.57	64.97			
3			82.61	87.42	81.35	80.65			
Big			80.71	73.81	70.05	54.89			
Panel B: Loadings on AQF, DQF, and PCAF of the four factor models									
			β_{AQ}				t_{β}		*F*
Small	**1.36*****	0.57	0.28	0.05	3.85	1.64	1.36	0.38	6.38
2	**0.75*****	**0.43*****	0.02	−0.09	3.82	4.54	0.19	−0.84	<0.01
3	**0.50*****	−0.09	**−0.24*****	**−0.35*****	4.04	−1.32	−2.70	−4.46	
Big	−0.04	−0.11	−0.21	0.06	−0.33	−1.27	−1.37	0.38	
			β_{DQ}				t_{β}		*F*
Small	**1.44*****	0.76	0.33	0.12	2.83	1.92	1.64	0.81	6.44
2	**0.74*****	**0.36*****	−0.03	−0.17	5.09	3.30	−0.35	−0.98	<0.01
3	**0.44*****	**−0.20****	**−0.32*****	**−0.33*****	2.99	−2.41	−2.95	−3.44	
Big	0.00	−0.12	−0.29	−0.21	0.03	−0.98	−1.89	−0.94	
			β_{PQ}				t_{β}		*F*
Small	**0.05*****	0.02	0.01	0.00	4.19	1.94	1.60	0.65	9.13
2	**0.03*****	**0.01*****	0.00	0.00	4.79	4.88	−0.08	−1.23	<0.01
3	**0.02*****	**0.00****	**−0.01*****	**−0.01*****	4.10	−2.23	−2.90	−4.27	
Big	0.00	0.00	−0.01	0.00	−0.17	−1.15	−1.71	−0.42	

Notes: This table reports the loadings from time-series regressions for 16 size-BM portfolios. The t-statistics are corrected for heteroscedasticity and serial correlation, using the Newey–West estimator with five lags. The sample period is July 1997 to June 2004. The last column reports *F*-statistics, and their *p*-values, from a GRS *F*-test for the intercept terms and from Seemingly Unrelated Regression (SUR), testing the joint significance of the remaining loadings. The intercepts are in percentages. The intercepts are in percentages. **,*** denote significance at 5% and 1%, respectively.

Table 5
Loadings from time-series regressions on 20 industry portfolios.

Industry	α	t_α	β_M	$t_{\beta(M)}$	β_{SMB}	$t_{\beta(SMB)}$	β_{HML}	$t_{\beta(HML)}$	Adj-R^2
Panel A: Loadings on the Fama–French factors									
1	−0.07	−0.07	0.79	3.04	0.52	2.21	0.50	1.63	16.12
2	−0.22	−0.53	0.95	7.83	0.38	2.38	0.35	2.69	46.93
3	0.40	0.55	1.43	7.38	0.30	1.69	0.61	2.58	49.04
4	−0.08	−0.18	1.13	9.98	0.48	3.46	0.65	5.88	58.31
5	0.59	0.89	1.39	10.11	0.09	0.38	0.64	3.17	46.37
6	0.87	1.74	0.61	6.49	0.47	4.47	0.17	1.80	28.91
7	0.02	0.02	1.88	6.62	1.33	4.27	0.07	0.28	54.45
8	−0.63	−1.29	1.17	7.80	0.62	5.12	0.54	3.27	57.17
9	−0.10	−0.25	1.03	7.47	0.38	3.33	0.34	2.13	58.67
10	−0.22	−0.63	1.07	12.90	0.58	7.44	0.00	−0.02	68.63
11	0.18	0.28	1.21	8.18	0.33	1.68	0.26	1.40	37.01
12	0.08	0.19	0.58	3.74	−0.04	−0.31	0.44	1.88	27.16
13	0.79	1.31	0.85	4.47	−0.05	−0.18	0.45	2.11	28.17
14	−0.17	−0.31	0.57	4.74	−0.24	−1.53	0.14	0.95	21.36
15	0.08	0.17	0.57	5.00	−0.05	−0.39	0.46	2.36	30.27
16	0.17	0.34	0.84	5.26	0.24	1.53	0.31	1.19	33.09
17	0.12	0.17	1.26	9.91	0.59	3.54	−0.48	−2.00	53.51
18	−0.39	−0.84	1.19	8.57	0.41	3.15	0.59	3.79	63.14
19	0.12	0.10	1.98	8.17	1.17	4.90	−1.02	−2.73	61.23
20	0.70	1.35	0.89	5.13	−0.35	−2.13	−0.44	−1.70	47.18
F	0.7		59.63		6.37		6.49		
P-value	0.83		< 0.01		< 0.01		< 0.01		

Industry	β_{AQF}	$t_{\beta(AQF)}$	β_{DQF}	$t_{\beta(DQF)}$	β_{PCAF}	$t_{\beta(PCAF)}$
Panel B: Loadings on AQF, DQF, and PCAF of the four factor models						
1	−0.44	−1.29	−0.52	−1.30	−0.02	−1.40
2	−0.26	−1.02	−0.40	−1.10	−0.01	−1.06
3	0.13	0.41	−0.17	−0.47	0.00	−0.04
4	**−0.41****	−2.26	**−0.61****	−2.33	**−0.02****	−2.20
5	−0.28	−0.82	−0.56	−1.81	−0.01	−1.36
6	0.04	0.23	−0.06	−0.29	0.00	−0.05
7	**−0.76*****	−2.81	−0.53	−1.73	**−0.02****	−2.41
8	**−0.73*****	−3.26	**−0.81*****	−3.44	**−0.03*****	−3.27
9	**−0.46*****	−2.99	−0.36	−1.92	**−0.01*****	−2.62
10	−0.17	−1.05	−0.28	−1.74	−0.01	−1.46
11	**−1.24*****	−5.13	**−1.26*****	−5.62	**−0.04*****	−5.63
12	**−0.55*****	−2.78	**−0.90*****	−3.96	**−0.02*****	−3.54
13	−0.51	−1.93	**−0.77*****	−2.86	**−0.02*****	−2.99
14	−0.06	−0.28	−0.08	−0.37	0.00	−0.38
15	−0.29	−1.55	−0.23	−0.97	−0.01	−1.41
16	−0.31	−1.44	−0.42	−1.74	−0.01	−1.71
17	**0.78*****	3.17	0.48	1.89	**0.02*****	3.14
18	**−0.44*****	−3.22	**−0.60*****	−4.51	**−0.02*****	−3.76
19	1.12	1.95	0.82	1.72	0.03	1.88
20	**0.71*****	3.25	**1.03*****	3.69	**0.03*****	3.68
F	5.44		4.04		5.85	
P-value	<0.01		<0.01		<0.01	

Notes: This table reports the loadings from time-series regressions for 20 industry portfolios. The t-statistics are corrected for heteroscedasticity and serial correlation, using the Newey–West (1987) estimator with five lags. The sample period is July 1997 to June 2004. The last two rows report *F*-statistics, and their *p*-values. For the intercepts, *F*-stat is computed from GRS *F*-stats, testing the joint significance of the intercepts. However, *F*-stats for the remaining coefficients are from a Seemingly Unrelated Regression (SUR), testing the joint significance of the loadings. The intercepts are in percentages. The intercepts are in percentages. **,*** denote significance at 5% and 1%, respectively.

7. Conclusion

This study examines the relationship between two proxies of information risk, accruals quality and disclosure quality, employs the absolute value of discretionary accruals as a proxy for a firm's accruals quality, and the number of future-oriented statements in corporate annual report narrative sections containing earnings-related topics as a proxy for corporate disclosure quality. We examine whether disclosure quality and accruals quality are complements or substitutes as risk factors in explaining the time-series variation in portfolio returns.

The results from the portfolio groupings suggest a positive association between accruals quality and voluntary disclosure, consistent with Lobo and Zhou (2001) and Francis et al. (2008). These findings carry implications for the regulatory bodies' efforts in encouraging firms to enhance information disclosure, in order to increase the incentives for managers to meet earnings expectations. Our findings are consistent with the Verrecchia's (1990) theoretical model, in which an increase in the quality of information available to managers leads to more disclosure on their part. When managers engage less in earnings management, the information quality of earnings is higher, and more information is disclosed. On the contrary, asset pricing tests show that an accruals quality factor (AQF) has more explanatory power than a disclosure quality factor (DQF) for the time-series variation in the excess returns on 20 industry portfolios. DQF has more explanatory power than AQF, however, for the time-series variation in the excess returns on 16 size-BM portfolios. These findings imply that, although accruals quality and disclosure quality are complementary sources of information for investors, AQF and DQF, interpreted as risk factors, are substitutes rather than complements. A principal components analysis factor (PCAF), which combines AQF and DQF, has slightly more explanatory power than either AQF or DQF individually.

Several further observations can be made. First, market participants may tend to view firms with higher levels of disclosure as likely to demonstrate superior earnings quality. Second, an asset pricing implication of the results is that accruals quality and disclosure quality factors can be used interchangeably in asset pricing tests, because these two risk factors contain similar information content.

One limitation of this study is that it uses the number of future-oriented disclosures as a proxy for disclosure quality. However, other disclosure quality attributes (such as verifiability, comprehensiveness, readability, neutrality, comparability and relevance) should also be considered to provide a reasonable proxy for disclosure quality. Further research could refine our disclosure quality measures by considering these other attributes and examining the extent to which disclosure quality and accruals quality are substitutes or complements in explaining the time-series variation in portfolio returns. In addition, future research could shed light on the extent to which our findings are applicable to other European countries. It would be interesting to examine the period of the recent financial crisis to investigate whether accruals quality and disclosure quality are influenced by economic circumstances. Finally, this paper employs the Fama–French model as the benchmark asset pricing model in the UK stock market. Hence, testing the robustness of our result using alternative models such as the Carhart (1997) model is another possible avenue for future research.

Acknowledgements

We wish to thank the two anonymous referees and one of the editors, Mike Jones, for their invaluable comments. Khaled Hussainey gratefully acknowledges the financial support from the British Academy (Grant Reference No: SG091190).

References

ASB. (2006). *Reporting statement (RS) 1, the operating and financial review*. London: ASB Publications.
Bartov, E., Gul, F. A., & Tsui, J. S. L. (2000). Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics, 30*, 421–452.
Beneish, M. D. (1998). Discussion of "Are accruals during initial public offerings opportunistic?". *Review of Accounting Studies, 3*, 209–221.
Berk, J. B. (2000). Sorting out sorts. *The Journal of Finance, 55*, 407–427.
Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: review of the recent literature. *Journal of Accounting and Economics, 50*, 296–343.
Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *The Accounting Review, 72*(3), 323–349.
Botosan, C., & Plumlee, M. (2002). A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research, 40*(1), 21–40.
Botsari, A., & Meeks, G. (2008). Do acquirers manage earnings prior to a share for share bid? *Journal of Business Finance & Accounting, 35*(5&6), 633–670.
Burgstahler, D., & Eames, M. (2003). Earnings management to avoid losses and small decreases: are analysts fooled? *Contemporary Accounting Research, 20*(2), 253–294.
Carhart, M. (1997). On persistence in mutual fund performance. *Journal of Finance, 52*, 57–82.
Chan, K., Chan, L., Jegadeesh, N., & Lakonishok, J. (2006). Earnings quality and stock returns. *Journal of Business, 79*(3), 1041–1082.
Christie, A., & Zimmerman, J. (1994). Efficient and opportunistic choices of accounting procedures. *The Accounting Review, 69*, 539–567.
Core, J. E. (2001). A review of the empirical disclosure literature: discussion. *Journal of Accounting and Economics, 31*(3), 441–456.
Core, J. E., Guay, W., & Verdi, D. (2008). Is accruals quality a priced risk factor? *Journal of Accounting and Economics, 46*, 2–22.
Cox, C. T. (1985). Further evidence on the representativeness of management earning forecasts. *The Accounting Review, 60*, 692–701.
Dargenidou, C., McLeay, S., & Raonic, I. (2011). Transparency, disclosure and the pricing of future earnings in the European market. *Journal of Business Finance and Accounting, 38*, 473–504.
Dechow, P., & Dichev, I. (2002). The quality of accruals and earnings: the role of accrual estimation errors. *The Accounting Review, 77*, 35–59.
Dechow, P. M., Ge, W., & Schrand, C. (2010). Understanding earnings quality: a review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*, 344–401.
Dechow, P., & Schrand, C. (2004). *Earnings quality*. Charlotteville: The Research Foundation of CFA Institute.
Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*, 193–225.
DeFond, M. (2010). Earnings quality research: advances, challenges and future research. *Journal of Accounting and Economics, 50*, 402–409.
DeFond, M. K., & Subramanyam, K. R. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics, 25*, 35–67.
Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *Journal of Finance, 46*, 1325–1359.
Dimson, E., Nagel, S., & Quigley, G. (2003). Capturing the value premium in the United Kingdom. *Financial Analysts Journal, 59*, 35–45.
Dye, R. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research, 23*, 123–145.
Dye, R. (1988). Earnings management in an overlapping generations model. *Journal of Accounting Research, 26*(2), 195–235.
Easley, D., & O'Hara, M. (2004). Information and the cost of capital. *Journal of Finance, 59*, 1553–1584.
Fama, F., & French, K. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33*(1), 3–56.
Fama, E. F., & French, K. R. (1996). Multifactor explanations of asset pricing anomalies. *Journal of Finance, 51*, 55–84.
Fields, T., Lys, T., & Vincent, L. (2001). Empirical research on accounting choice. *Journal of Accounting and Economics, 31*(1–3), 255–307.
Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics, 39*, 295–327.
Francis, J., Nanda, D., & Olsson, P. (2008). Voluntary disclosure, earnings quality, and cost of capital. *Journal of Accounting Research, 46*, 53–99.
Gelb, D. S., & Zarowin, P. (2002). Corporate disclosure policy and the informativeness of stock prices. *Review of Accounting Studies, 7*(1), 33–52.
Gibbons, M. R., Ross, S., & Shanken, J. (1989). A test of the efficiency of a given portfolio. *Econometrica, 57*, 1121–1152.
Glosten, L., & Milgrom, P. (1985). Bid, ask, and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics, 14*, 71–100.

Grossman, S., & Hart, O. D. (1980). Disclosure laws and takeover bids. *Journal of Finance, 35*, 323–334.
Guay, W. R., Kothari, S. P., & Watts, R. (1996). A market-based evaluation of discretionary accrual models. *Journal of Accounting Research, 34*(Suppl. 3), 83–105.
Healy, P., & Palepu, K. (2001). Information asymmetry, corporate disclosure, and the capital markets: a review of the empirical disclosure literature. *Journal of Accounting and Economics, 31*(1–3), 405–440.
Hopkins, P. (1996). The effect of financial statement classification of hybrid financial instruments on financial analysts' stock price judgements. *Journal of Accounting Research, 34*, 33–50.
Houge, T., & Loughran, T. (2000). Cash flow is king: cognitive errors by investors. *Journal of Psychology and Financial Markets, 1*, 161–175.
Hribar, P., & Nichols, D. (2007). The use of unsigned earnings quality measures in tests of earnings management. *Journal of Accounting Research, 45*, 1017–1053.
Hussainey, K., & Mouselli, S. (2010). Disclosure quality and stock returns in the UK. *Journal of Applied Accounting Research, 11*, 473–504.
Hussainey, K., Schleicher, T., & Walker, M. (2003). Undertaking large-scale disclosure studies when AIMR-FAF ratings are not available: the case of prices leading earnings. *Accounting and Business Research, 33*(4), 275–294.
Hussainey, K., & Walker, M. (2009). The effects of voluntary disclosure policy and dividend propensity on prices leading earnings. *Accounting and Business Research, 39*(1), 37–55.
Imhoff, E. (1978). The representativeness of management earnings forecasts. *The Accounting Review, 53*, 836–850.
Jung, W. O., & Kwon, Y. K. (1988). Disclosure when the market is unsure of information endowment of managers. *Journal of Accounting Research, 26*, 146–153.
Kim, O., & Verrecchia, R. (1994). Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics, 17*, 41–67.
Lambert, R., Leuz, C., & Verrecchia, R. (2007). Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research, 45*, 385–419.
Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research, 31*(2), 246–271.
Lang, M., & Lundholm, R. (1996). Corporate disclosure policy and analyst behaviour. *The Accounting Review, 71*, 467–492.
Lo, K. (2008). Earnings management and earnings quality. *Journal of Accounting and Economics, 45*, 350–357.
Lo, A. W., & MacKinlay, A. C. (1990). Data-snooping biases in tests of financial asset pricing models. *The Review of Financial Studies, 3*, 431–467.
Lobo, G. J., & Zhou, J. (2001). Disclosure quality and earnings management. *Asia-Pacific Journal of Accounting & Economics, 8*, 1–20.
Lundholm, R., & Myers, L. (2002). Bringing the future forward: the effect of disclosure on the returns-earnings relation. *Journal of Accounting Research, 40*(3), 809–839.
McNichols, M. (2002). Discussion of the quality of accruals and earnings: the role of accrual estimation errors. *The Accounting Review, 77*, 61–69.
Milgrom, P. (1981). Good news and bad news: representation theorems and applications. *Bell Journal, 12*, 380–391.
Newey, W. K., & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica, 55*, 703–708.
O'Hara, M. (2003). Presidential address: liquidity and price discovery. *Journal of Finance, 58*, 1335–1354.
Peasnell, K. V., Pope, P. F., & Young, Y. (2005). Board monitoring and earnings management: do outside directors influence abnormal accruals? *Journal of Business, Finance and Accounting, 32*, 1311–1346.
Penman, S. (2003). *Financial statement analysis and security valuation* (2nd ed.). New York: Wiley.
Richardson, V. (2000). Information asymmetry and earnings management: some evidence. *Review of Quantitative Finance and Accounting, 15*(4), 325–347.
Richardson, S., Sloan, R., Soliman, M., & Tuna, I. (2006). The implications of firm growth and accounting distortions for accruals and profitability. *The Accounting Review, 81*, 713–743.
Schleicher, T., Hussainey, K., & Walker, M. (2007). Loss firms' annual report narratives and share price anticipation of earnings. *The British Accounting Review, 39*(2), 153–171.
Schleicher, T., & Walker, M. (1999). Share price anticipation of earnings and management's discussion of operations and financing. *Accounting and Business Research, 29*(4), 321–335.
Sengupta, P. (1998). Corporate disclosure quality and the cost of debt. *The Accounting Review, 73*(4), 459–474.
Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review, 71*, 289–315.
Subramanyam, K. R. (1996). The pricing of discretionary accruals. *Journal of Accounting and Economics, 22*, 249–281.
Tasker, S. (1998). Bridging the information gap: quarterly conference calls as a medium for voluntary disclosure. *Review of Accounting Studies, 3*, 137–167.
Thomas, J., & Zhang, X. (2000). Identifying unexpected accruals: a comparison of current approaches. *Journal of Accounting and Public Policy, 19*(4&5), 347–376.
Trueman, B., & Titman, S. (1988). An explanation for accounting income smoothing. *Journal of Accounting Research, 26*, 127–139.
Verrecchia, R. (1983). Discretionary disclosure. *Journal of Accounting and Economics, 5*, 179–194.
Verrecchia, R. (1990). Information quality and discretionary disclosure. *Journal of Accounting and Economics, 12*, 365–380.
Verrecchia, R. (2001). Essays in disclosure. *Journal of Accounting and Economics, 32*, 97–180.
Waymire, G. (1985). Earning volatility and voluntary management forecast disclosures. *Journal of Accounting Research, 23*, 268–295.
Welker, M. (1995). Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary Accounting Research, 11*, 801–827.
Young, S. (1999). Systematic measurement error in the estimation of discretionary accruals: an evaluation of alternative modelling procedures. *Journal of Business, Finance and Accounting, 26*(7&8), 833–862.

Please cite this article in press as: Mouselli, S., et al., Accruals quality *vis-à-vis* disclosure quality: Substitutes or complements?, *The British Accounting Review* (2012), doi:10.1016/j.bar.2011.12.004