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The association between accruals and stock return following FRS3

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Abstract

The purpose of this study is to investigate the correlation between accruals and stock return and further the quality of accounting accruals shown in financial statements for shareholders to predict their future returns. This study uses an inimitable location which is provided by FRS3 in the UK to highlight the well-documented accrual anomaly as an important components of financial performance to help the users to understand the archived performance of a firm. Specifically, this paper focuses on the accrual anomaly phenomenon in the United Kingdom on the adoption of FRS No.3 for a period from 2008 to 2017. Our result shows that stock returns can be predicted by accruals attributable to accounting misrepresentations. Generally, our findings support the information disclosure due to FRS No.3. Also, the results are consistent with increased accounting disclosure to help investors protect themselves from inefficiencies and to encourage them to be aware of accurate stock prices in the market.

Key Words: *Accruals, Stock Returns, FRS No.3*

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1. Introduction

Accrual anomaly has caused extensive concern since Sloan (1996) documented that accounting accruals were negatively related to future stock returns in the U.S. capital market. Not only market-based accounting researchers, e.g. Subramanyam (1996), Xie (2001) and Fairfield et al (2003), but also accounting regulators began to re-examine the reporting of accounting earnings in financial statements since misreporting could become another scandal as serious as tax avoidance. For example, Xie (2001) finds that the market overestimates the persistence of abnormal accruals leading to accruals being overpriced. He also shows that the accruals overpricing that is documented by Sloan (1996) is due to nondiscretionary accruals. Nevertheless, there is no such agreement about the reason for this anomaly in previous research. As, accruals are the non-cash component of the accounting earnings, they can signify adjustments made to cash flows to generate a profit measure. Recent research by Ball et al. (2016) shows that cash-based operating profitability incorporates accruals in predicting the cross section of average returns.

Management manipulation is generally regarded as the most likely factor causing abnormal stock returns since corporate executives may reduce negative accruals by overstating inventory then compensating for this by writing down inventory in the subsequent year (Chan et al. 2006) or by restructuring liabilities through reversal (Moerhle, 2002) thus ensuring that earnings do not disappoint investors. However, another explanation is that deviation of stock prices from their actual values is due to market under-reaction of the components of accruals that contain information about operating performance (Chan et al. 2006). In either case, accruals turn out to be overpriced by the market and consequently investors may have over optimistic expectations for stock returns. Therefore, an investigation of the extent to which management can manipulate accruals in order to achieve high accounting earnings becomes necessary.

A number of studies have examined the implications of accruals for subsequent stock returns. For example, Chan et.al (2006) show that following FRS3 there is a substantial decrease in the stock return predictability attributable to accruals. Dechow et al. (2008) and Richardson et al. (2006) consider accruals to be a measure of efficiency related to investment activity. They show that less reliable accruals can lead to lower accounting earnings persistence. For this reason, the investors would not be aware that the lower earnings persistence can lead to a significant mispricing of securities.

For the investigation of accrual anomaly, this paper examines the extent to which executive manipulation affects the quality of accounting accruals, as opposed to the accrual changes driven by investment growth. In other words, this paper investigates the accounting distortion component of accruals based on the accrual decomposition proposed by Richardson et al. (2006) since they point out that opportunistic managerial discretion causes accounting distortions and consequently accounting earnings are inflated transitorily. Moreover, this study will discuss the methods adopted by previous

researchers to investigate the relationship between accruals and stock returns. Subsequently, we will examine cross-sectional regressions between stock returns and both accruals and other independent variables on the basis of Papanastasopoulos's (2015) approach, since this method is superior in distinctly showing the coefficients between accruals and stock return and the level of accruals contributable to returns.

Researchers have investigated accrual anomaly on an international and regional basis (e.g. the European Union), however, this study specifically focuses on the accrual anomaly phenomenon in the United Kingdom and aims to examine the correlation between accounting accruals and future stock return. Firstly we shall review the literature of the association between accounting accruals and stock return and then discuss previous scholars' approaches to investigating accrual anomaly. Secondly, after comparing different methods used by other financial accounting researchers, the most appropriate model will be adapted to examine the quality of accruals for predicting stock returns using financial data from domestic listed corporations in the UK.

Previous studies show that there is a negative correlation between accruals and both future accounting earnings and stock returns, which is in accordance with the concept of accruals anomaly. Generally, accounting accruals are capable of anticipating future economic benefits and it is commonly agreed that accrual earnings reflect more accurately a firm's current performance than just cash flows. Compared with cash accounting, accrual accounting can provide more relevant information to both shareholders and investors; however it may also introduce bias and error therefore the quality of accruals remains a significantly important factor relative to stock returns. When a listed company announces its accounting earnings to the public, the reaction of investors to the news will usually cause changes in the share price. However, investors' overreactions, which happen most of the time, will lead to extraordinary fluctuations of share price and consequently influence shareholders' expectations of stock return. In addition, Healy and Wahlen (1999) point out that executive managers have the power to manipulate reported earnings opportunistically, and consequently shareholders' or potential investors' attempts to distinguish which component of accruals is abnormal become even harder. As a result, it is important for financial statement users to identify the true implications of corporate accounting earnings shown in the announcement. To further understand the relationship between abnormal accruals and future stock returns, it is necessary to identify and examine the potential factors that influence accounting earnings shown in the statement.

In this study, we argue that the accrual anomaly in large capital markets has experienced a definite change in accounting regulation. We focus on UK listed companies, where FRS No.3 was introduced by the local Accounting Standards Board in October 1992. FRS3 compels disclosure of accounting information which is associated with earnings performance. The main contribution of this study is to investigate of the quality of accruals in terms of predicting future returns via examining cross-sectional regressions for a period of 10 years from 2008-2017 in U.K. firms.

2. Literature Review

2.1 *Abnormal accruals and earnings quality*

There have been a number of papers that have researched the quality of accounting earnings and stock return over the last decade. However, the discussion has become intensive since the end of the 20th century. To examine the Jones (1991) model which appraises whether share prices rationally reflect the implications of one-year-ahead accounting earnings of abnormal accruals, Subramanyam (1996) provides proof that future profitability has a positive association with abnormal accruals. However, Sloan (1996) argues that the total accruals are actually overpriced by the market since the accrual component of accounting earnings includes a high level of subjectivity but the market fails to reflect it and, therefore, he proposed the concept of accrual anomaly. In order to investigate the longstanding view that investors overly focus their attentions on companies' earnings rather than cash generation, Sloan (1996) provides evidence that accruals is a negative cross-sectional forecaster of abnormal future return by ranking companies based on their accrual ratio (i.e. the size of non-cash earnings relative to total assets) for last year's results and then measuring the performance of their shares after announcing to the public. Further, he shows that managers may use hedge trading strategies to sell firms with high accruals through purchasing companies with low accruals and positive risk-adjusted returns. Furthermore, Rangan (1998) states that managers usually select positive abnormal accruals to raise corporate earnings opportunistically before initial public offerings or secondary equity offerings and, consequently, the market pricing of these abnormal accruals turns out to be over-valued.

Since existing studies fail to explain the substantial reason for market overpricing, Xie (2001) uses the hedge-portfolio test and the Mishkin (1983) test methods that Sloan (1996) employed, to further examine if market overpricing is due to normal accruals, abnormal accruals, or both. He finds that the results of the Mishkin (1983) test suggest that both the abnormal and normal accruals are overpriced by the market though the overweighting of abnormal ones appears stronger while the result of the hedge-portfolio test only shows that the abnormal component of accruals are overpriced. He further concludes that the market over-evaluates the sustainability of the abnormal portion of accruals, or its one-year-ahead earnings implications and, as a result, overprices these accruals. However, there is no strong evidence for the overpricing of the normal component and he points out that the reason for the abnormal portion of accruals being overpriced by the market stems from managerial discretion. Xie's (2001) findings extend Sloan's (1996) paper and provide further proof that the overpricing of total accruals is mostly owing to the abnormal component. Secondly, he provides further evidence for Subramanyam's (1996) conclusions and shows that the abnormal portion of accruals that are overestimated by the market are related to their correlation with one-year-ahead earnings. Furthermore, his paper extends Rangan's (1998) findings by proposing that the occurrence of overpricing of abnormal accruals is not restricted to seasoned equity offerings or IPOs. On the other hand, Moehle (2002) finds that companies which

previously recorded huge liabilities are restructured to account for them and later reverse these liabilities using strategies to achieve the corporate earnings goals by examining the reversal of restructuring liability accruals. Meanwhile, Thomas and Zhang (2002) provide proof that inventory accruals are strongly in negative correlation with future stock returns. Dechow and Ge (2006) shows evidence that the special items help to explain the mispricing of companies with low-accruals. On the other hand, Hung (2000) states that the application of accrual accounting has a bad influence on accounting values correlated to financial statements in countries with poor shareholder protection and shows that in countries where there is greater permission to use accrual accounting, firms' executives have higher motivation to manage accounting earnings; therefore, the extent of hedge abnormal stock returns owing to accruals is relative to the level of allowance to use accrual accounting.

To further investigate Sloan's (1996) proposal, Pincus et al. (2007) examine the accrual anomaly at the global level and show that the lower sustainability of working capital accruals were overestimated by the market in Britain, Canada and Australia, and there is a correlation between its incidence and particular institutional and accounting factors, for instance, protection of shareholders, legal tradition and ownership concentration, and in countries like Indonesia and Singapore, a significant positive number of size-adjusted returns can be acquired by using accruals' underweighting strategy. Further, they point out that in countries with poorer legal enforcement it is more likely that there will be accruals' overweighting while in those countries with stronger outside shareholder rights it is less probable. Moreover, they emphasize that accrual overweighting does significantly influence share returns and this phenomenon happens extensively throughout the world. They further draw the conclusion that the accrual anomaly may be caused by earnings manipulation and arbitrage barriers.

2.2 Abnormal accruals and stock returns

Rather than examining the company-level cash flow and accruals effects, Hirshleifer et al. (2009) extend the investigation to the aggregate stock market and, surprisingly, find that the result of the time series analysis between aggregate accruals and aggregate stock return is statistically and highly positive while the result of cash flows appears dramatically negative, which is sharply in contradiction to the previous company-level findings. To improve the performance of accrual-hedge portfolios, they use the modulus of earnings rather than the mean of total assets to scale total accruals or working capital accruals also they label their new measures as "percent accruals" and the previous measurement as "traditional accruals". Furthermore, they state that their improvements more accurately show that investors misunderstand the reverting characteristic of accruals by providing statistics showing that for total accruals, the scale-adjusted hedge stock return, using percent measure, is over 45% higher than the corresponding return with the traditional approach, and for working capital accruals, the scaled-adjusted hedge return with percent measure is approximately three-quarters higher than the corresponding return with the traditional approach. They further point out that there is a negative relation between innovations

in aggregate accruals and contemporaneous aggregate stock returns while the correlation between innovations in aggregate cash flows and aggregate returns appears positive. In addition, Zhang (2007) also states that the investors' overreaction to the past growth may cause accrual anomaly; therefore, investors' misunderstanding of reducing marginal returns to new investment is the reason for the accrual anomaly phenomenon. Moreover, recent research by Hope et al. (2017), indicates that accrual quality increases with the demand for monitoring by equity investors, suppliers and lenders in some U.S. privately-held firms. Their finding shows that overall, accrual quality of private U.S. firms varies predictably with certain firm characteristics.

Allen et al. (2013) provide convincing evidence at the firm-level that working capital accruals can be reversed. They point out that there are at least two specific potential procedures in accrual reversal: one is positively serially-correlated with returns and the other is negatively correlated. They suggest that good accruals reversals lead to higher earnings persistence while accruals estimation error has the lowest persistence within the component of earnings and the mispricing of accruals is the result of both firm growth and accrual evaluation errors. Consistent with this thinking, Izadi (2016) provides empirical evidence using British firms' financial data to highlight the importance of the role of accrual estimation errors. His findings indicate that the quality of accruals and earnings can reduce the magnitude of the accruals estimation error.

Research by Chan et al. (2009) was the first which contributes to the literature by using accrual anomaly in the context of FRS3. Regarding the adoption of FRS3 by UK firms, their finding shows that there is a negative association between working capital accruals and subsequent returns. However, their regression result demonstrates that it is not significant at conventional levels. Also, they use, working capital accruals as a part of total accruals which could not cover accounting misrepresentations for long-term accruals. Given that, only using working capital accruals could not also be considered investment in long-term capital.

However, Papanastasopoulos (2015) investigates accrual anomaly by considering total accruals and finds that total accruals are equal to the total of long-term accruals and working capital accruals; therefore, he points out that accounting distortion could also have significant influence on the component of long-term accruals, which are likely to include information about investment growth.

3. Data and Research Methods

Previous studies have proposed a number of models and methods for researching the relationship between accruals and stock returns. Thomas et al. (2012) estimate three typical accrual prediction models: the modified Jones (MJ) model and the modified Jones model which includes return on assets or operating cash flows and two estimation procedures that are firm-specific regression and industry-specific regression using mispricing tests. The study concludes that the industry-specific MJ model with return on assets is the better model for investigating earnings management as by including return on

assets measurement errors can be reduced resulting in better control of abnormal accruals while the MJ with operating cash flows model would be best for estimating the quality of earnings though it may comprise management estimation error. Xie (2001) also finds that using Jones model to estimate abnormal accruals will capture managerial discretion with error. In addition, Thomas et al. (2012) point out that the mispricing tests are advantageous to the identification of the abnormal component of accruals that attract the greatest attention of investors. Dechow and Dichev (2002) suggest that using the firm-specific regression procedure, which estimates abnormal accruals through observing a particular company for a continuous period of time, is superior while Kothari et al. (2005) argue that estimating accruals at the industry level, by observing all companies at a specific instant, is more appropriate. Richardson et al. (2006) build a model extending Sloan's (1996) work to test the relationship between accruals reliability and the persistence of earnings and they develop a method that comprehensively categorizes accruals by ranking every variety based on the underlying accruals' reliabilities. They directly link reliability with accounting numbers that are empirically observable and their empirical tests show that a lower reliability of accruals results in less earning persistence and, consequently, leads to significant security mispricing as investors fail to predict the lower earnings persistence.

There is another model that was proposed by Chan et al. (2006), which seems to be more specific and straight-forward than these models. Chan et al. (2006) develop a model that observes the performance of individual components of accruals to forecast future stock return and decomposes them into discretionary and nondiscretionary accruals, based on their natures, where the discretionary component reflects the manipulation behaviors and the nondiscretionary portion captures the influence on business conditions. They further sort stocks into decile portfolios according to whether they are discretionary or nondiscretionary, and later examine the ability of individual components of accruals to predict returns on the basis of their nondiscretionary and discretionary values. Unsurprisingly, their results also suggest that there is a reliable and negative relationship between accruals and future stock returns.

Initially, Jones (1991) calculates total accruals as the change in non-cash working capital before income taxes payable less total depreciation expense. The total accruals, $TA_{t,n}$, for corporation t in year n , is as follow:

$$TA_{t,n}/A_{t,n-1} = \alpha_0 [I/A_{t,n-1}] + \alpha_1 [\Delta REV_{t,n}/A_{t,n-1}] + \alpha_2 [PPE_{t,n}/A_{t,n-1}] + \varepsilon_{t,n} \quad (1)$$

where:

$\Delta REV_{t,n}$ is the sales revenues in year n minus sales revenues in year $n-1$;

$PPE_{t,n}$ is the gross property, plant and equipment;

$A_{t,n-1}$ is total assets in year $n-1$.

Further, Kothari et al. (2005) apply a modified variable of change of sales revenues calculated as $(\Delta REV_{t,n} - AR_{t,n})$; therefore total accruals can also be defined as follows:

$$TA_{it}/A_{it-1} = \beta_0 [1/A_{it-1}] + \beta_1 [(\Delta REV_{it} - AR_{it})/A_{it-1}] + \beta_2 [PPE_{it}/A_{it-1}] + \varepsilon_{it} \quad (2)$$

where AR_{it} is the change in accounts receivable.

However, Kothari et al. (2005) point out that firms, that are experiencing increases in account receivables, possibly may underestimate non- and over-estimate discretionary accruals. Therefore, they further include lagged ROA in Jones's (1991) model and calculate total accruals as:

$$TA_{it}/A_{it-1} = \delta_0 [1/A_{it-1}] + \delta_1 [\Delta REV_{it}/A_{it-1}] + \delta_2 [PPE_{it}/A_{it-1}] + ROA_{it-1} + \varepsilon_{it} \quad (3)$$

where ROA_{it-1} represents return on assets in period $t-1$.

The discretionary component of accruals is as follow:

$$DAC_{it} = \varepsilon_{it} \quad (4)$$

and the nondiscretionary part of accruals is calculated by:

$$NDAC_{it} = TA_{it} - DAC_{it} \quad (5)$$

Recently, Papanastasopoulos (2015) also investigated the accrual anomaly to test the impact of the adoption of Financial Reporting Standard No. 3 and follows Richardson et al. (2006) to define total accruals as a proportion of change in net operating assets, which is as follows:

$$ACC_t = \Delta NOA_t / NOA_{t-1} \quad (6)$$

Where NOA is net operating assets i.e., operating assets minus operating liabilities.

Operating asset = Total assets (DI#02999)-Cash and Short Term Investment (DI#02001)

Operating liabilities = Total assets - Ordinary and Preferred Shares (DI#03995) -Total debt (DI#03255)
- Minority Interest (DI#03426)

According to recent research by Gray et al. (2018), accruals and net operating Assets NOA express unique information for future returns. Their finding indicates that NOA have an important influence on the accrual effect. Also, they show a significant accrual effect on the stocks with high NOA .

Further, total accruals are decomposed into two components on the basis of Richardson et al. (2006), which are accruals due to investment growth, measured as the proportion change in sales (SG) (DI#01001) and accruals caused by accounting distortions (AD), calculated as change in NOA turnover ratio (AT , i.e. percentage of sales to NOA): $(Sales_t/NOA_t) - (Sales_{t-1}/NOA_{t-1}) / (Sales_t/NOA_t)$, and includes an interaction term between investment growth and accounting distortions (INT) in their decomposition, which is shown as follows:

$$ACC_t = \Delta Sales_t / Sales_{t-1} - \Delta AT_t / AT_t - (\Delta Sales_t / Sales_{t-1}) * (\Delta AT_t / AT_t) \quad (7)$$

$$= SG - AC - INT \quad (8)$$

The decomposition comes with a conjecture that companies with increased investment have a higher probability of experiencing higher sales; however, if accruals increase without a change in sales, the result would suggest that the accounting distortion component of accruals leads to a decrease in proportion of NOA turnover and consequently results in a rise in accruals. Also, it estimates cross-sectional regressions for the investigation of the relation between accruals and stock return for the

following models:

$$SBR_{t+1} = \beta_0 + \beta_1 RNOA_t + \beta_2 SG_t + \varepsilon_{t+1} \quad (9a)$$

$$SBR_{t+1} = \beta_0 + \beta_1 RNOA_t - \beta_2 AD_t + \varepsilon_{t+1} \quad (9b)$$

$$SBR_{t+1} = \beta_0 + \beta_1 RNOA_t + \beta_2 ACC_t + \varepsilon_{t+1} \quad (9c)$$

Where

SBR_{t+1} is the one-year-ahead size and book to market adjusted return;

$RNOA_t$ is current operating profitability, measured as operating income divided by lagged NOA (DI #01251), i.e., OI_t/NOA_{t-1} .

This study investigates the relationship between accruals and share return and aims to improve the quality of the information that accounting earnings provide to shareholders to predict future returns, under the hypothesis of earning manipulation. From this discussion, Papanastasopoulos's (2015) method appears to be the most appropriate for investigating the issue as the cross-sectional regressions he employed directly relate stock return with accruals and the relation between accruals and stock returns can be seen from the coefficients. Therefore, this study will further examine the cross-sectional regressions between stock return and both accrual and other variables on the basis of Papanastasopoulos's (2015) model. However, this study includes the lagged return in the model and measures returns as one-year-ahead annual raw return. The following models are examined:

$$RT_{t+1} = \beta_0 + \beta_1 RNOA_t + \varepsilon_{t+1} \quad (10.a)$$

$$RT_{t+1} = \beta_0 + \beta_1 RNOA_t + \beta_2 SG_t + \varepsilon_{t+1} \quad (10.b)$$

$$RT_{t+1} = \beta_0 + \beta_1 RNOA_t + \beta_2 AD_t + \varepsilon_{t+1} \quad (10.c)$$

Where

RT_{t+1} is the one-year-ahead annual raw return, measured as the annual buy-and-hold returns using information from Datastream (item RI).

RT_{t-1} is the lagged one-year-ahead annual raw return, and the other variables are the same as in Papanastasopoulos's (2015) model.

In this study we provide a new model and we include the regression model control variables book-to-market values and size of firm. Firm size is normally used for investor coverage. Since the larger firms have more shareholders more analysis is needed to follow them. According to Hong et al. (2000), small firms have more pronounced fluctuations than large firms. Therefore, this study expects to find that small firms use more discretionary accruals to manage the returns (see Louis, Robinson and Sbaraglia, 2005). Following the asset pricing literature, the book-to-market ratio is considered in research model regressions as a method for distress risk (Fama and French, 1992). They show that size and book-to-market equity are methods for providing sensitivity of risk factors in returns.

We follow Fama and French (1993) when computing the size and book-to-market values. The natural logarithm of the market value of equity (year-end market capital # WS # 8001) and the ratio of the book-to-market (BM) at the end of period are calculated by dividing common equity (WS#3501) by year-end

market capitalisation. Also, we added the following regression as follows:

$$RT_{t+1} = \beta_0 + \beta_1 RNOA_t + \beta_2 ACC_t + \varepsilon_{t+1} \quad (10.d)$$

Furthermore, book-to-market (BM) is the ratio of common equity to market capitalisation (Worldscope#09704). Size is the natural logarithm of the year-end market capitalisation (Worldscope#08001) that is determined by multiplying closing price by number of shares. To calculate RT_{t+1} , we consider one year ahead size and book to market adjusted return. Then we calculate the difference between the one year ahead annual raw return and the adjusted return of the 16 benchmark portfolios.

4. Analysis and Discussion

The sample includes all firms listed on the London Stock Exchange Market (excluding financial companies) that contain enough information to calculate variables and annual returns on Worldscope and Datastream documents over the period 2008-2017. The total number of observations before any deflation or truncation is 5,313 over the five years. The Table 1, provides provides a summary of our data selection procedures.

The descriptive statistics of financial variables is shown in Table 2. Later this section will focus on the cross-sectional regression results shown in Table 3 and provide a discussion about the regression results. This section will firstly present the information about the extraction of sampled firms and the descriptive statistics of financial variables, which are shown in Table 1 and Table 2. Later this section will focus on the cross-sectional regression results and provide a discussion about the main findings of the project.

This study presents the mean, standard deviation, 25th percentile, 50th percentile and 75th percentile for accounting variables and ignores those percentiles between these intervals. The sample includes all listed corporations on the London Stock Market (excluding financial companies) that contain enough information to calculate variables and annual returns (item RI) on Worldscope and Datastream documents during the period of 2008 to 2017.

From Table 2, the mean and 50th percentile values for ACC are respectively 0.065 and 0.037, which indicates that operating assets had experienced both downward and upward trends over the period. With a standard deviation of 0.346, net operating assets fluctuate significantly during the period and the level of deviation from the mean is very high. Moreover, the mean value for SG is 0.480 and for AD is 0.023, which indicates that both sales growth and accounting distortion made significant contributions to the generation of total accruals, especially the component of sales growth. Additionally, the standard deviation of both sales growth and accounting distortion are significantly high, with a respective value of 0.117 and 0.294, which suggests that both of them are essential cause of variation in total accruals. Also, the mean of RNOA results in 0.171, which indicates that on average the operating profitability of the sampled companies is high over the period 2008-2017.

The analysis for Table 3 is as follows. Equation.10.a reflects the regression between one-year-ahead raw return and current operating profitability (ratio of operating income to lagged NOA). The coefficients on RNOA is negative and significant (-0.418, t-statistic=-3.300, p-value=0.003, i.e., $0.01 < p < 0.05$), which shows that the current operating profitability can be regarded as a significant dependent variable in terms of stock return and should be taken into account when examining the regressions between stock return and other variables. The Adj R-squared of the model is 0.275, however it is acceptable as this is cross-sectional and the number of observation is considerable.

Equation.10.b reflects the regression between stock return and both lagged stock return and RNOA. In addition, consistent with the result of *Equation.10.a*, the coefficients on RNOA also appear negative and significant (-0.423, t-statistic= -3.480, p-value=0.002 i.e., $p < 0.1$), which further proves that it is necessary to consider current operating profitability when examining the potential factors that influence future returns. The Adj R-squared for the equation is 0.334, which indicates that the model fits the financial data well.

Model 3 focuses on the investigation of the regression between stock return and both RNOA and accounting distortion, which is the similar to the equation used by Papanastasopoulos (2015). As can be seen from the regression result, the coefficient value of RNOA is consistent with *Equation.10.a* and *Equation.10.b* and is significant and negative (-0.408, t-statistic= -3.150, p-value=0.004 i.e., $p < 0.01$). In terms of the coefficient of accounting distortion, the result is insignificant and positive (0.793, t-statistic=0.610, p-value=0.55 i.e., $p > 0.05$), which suggests that the independent variable of AD in the equation should be regarded as inefficient in predicting returns. The value of Adj R-squared for this equation is also optimistic (0.256). The regression results of accounting distortion are contrary to the findings of his study. There are two differences between the current study and his approach. First, he examines cross-sectional regression over the period 1980-2009 while the current study investigates the period 2002-2009, which shows the difference of magnitude and time period of observations. Second, the measurement of one-year-ahead stock return in the current study is also different from his study. Papanastasopoulos (2015) measures returns as the difference between compounded 12-monthly raw return and the matching return of the benchmark portfolio that the company belongs to while the current study uses the annual raw returns to measure the dependent variable. As a result, the difference of the measurement method may cause deviation and different results. However, regression results from the current study suggest that accounting distortion in this case cannot be concluded to be an important indicator of future stock return.

Model 4 shows the regression between stock return and the independent variables of RNOA, total accruals. It can be regarded as a further examination of the predictability of accounting distortion with a conjecture that if sales growth results are inefficient but the coefficients on total accruals are significant, it would suggest that the deviation is driven by the component of accounting distortion. The coefficient of RNOA is consistent with all models above (-3.810, t-statistic= -4.440, p-value=0.001 i.e., $p < 0.01$), which is again significant and negative. Also, regression outcomes of total

accruals are significant (-0.297, t-statistic=-5.460, p-value=0.002i.e., $p > 0.05$), which is also consistent with the result of Papanastasopoulos (2015). The Adj R-squared of this model is 0.244, which suggests that the model can be regarded as efficient. Also, we run the multicollinearity test, the result shows that multicollinearity is not a significant concern as most of the variables have a VIF ratio of less than 4 and a 1/VIF ratio of greater than 0.255

The above regression results suggest that within all independent variables that are used to examine the predictability of forecasting future returns in this study, only variables of current operating profitability and the lagged raw stock return can be regarded as material and significant while others like sales growth, accounting distortion and total accruals cannot be concluded to be efficient in predicting future returns. These findings suggest that decomposing accruals into investment growth and accounting distortion to examine the earnings quality for predicting future returns may result in distortion and may not be efficient. However, regression statistics show that, the other independent variable – lagged raw stock return - is significantly and statistically negative in correlation with future return, which proves the predictive power of individual stock in regards to its future return. In this case, it shows that the previous-year return still has great influence on expectations for the one-year-ahead return.

An important finding in the current study is that the current operating profitability is also a significant and negative predictor of the one-year-ahead stock return. RNOA represents the ratio of operating income deflated by lagged operating assets. In this case the operating income can be regarded as the dominant factor that causes the upward or downward trend of the independent variable of RNOA. In other words, operating income is the factor controlling RNOA and causes the change in the dependent variable of one-year-ahead raw returns. The factor that dominates operating income is sales, which suggests that the level of sales does influence future returns.

Accounting earnings in a financial statement are the total of cash flows and accruals. Robinson et al. (2015) point out that earnings will be more sustainable if cash flows dominate earnings while earnings reversion to the mean may be hastened if accruals are the significant component of earnings. The operating income involves a number of relevant accrual accounts that may be manipulated by management, for instance, inventory and accounts receivable, which are items related to the daily production activities of the company. Even though the outcome of the current study's regressions shows that the total accruals result in inefficiency in predicting future return, the regression result of RNOA suggests that accounting earnings shown in the financial statement do have important information regarding the prediction of future returns.

5. Conclusions

Accrual anomaly has attracted extensive attention since Sloan (1996) provided evidence that accruals are a negative predictor of future stock returns and he showed that the over-pricing of accruals is due to executive manipulation. Rangan (1998) points out that one of the incentives of management manipulation would be opportunistic declaration of corporate earnings before stock offerings. Further, Moehele (2002) shows that executives use strategies to restructure liabilities through reversal and Chan et al. (2006) also provide evidence that management overstates inventory through increasing write-downs of inventory in the subsequent year. Specifically, Allen et al. (2013) present the two potential procedures in working capital accrual reversal, one positively serially-correlated with returns and the other oppositely, and they point out that there should be more than two procedures. To investigate the component of total accruals, the existing literature has two typical decompositions which are working capital accruals and long-term accruals, discretionary accruals and non-discretionary accruals. The opinion of Izadi et al. (2015) is that working capital accruals is the component of accruals that includes earnings management information as the long-term accruals are not likely to contain information due to their visibility. However, Papanastasopoulos (2015) points out the view that the long-term component of accruals could also contain information about accounting distortion and investment growth is likely to reflect in the long-term accruals.

This study contributes to the investigation of the quality of accruals in terms of predicting future returns by examining cross-sectional regressions over the period 2008-2017 using U.K. financial data. The empirical work produced unexpected results: the regression results of total accruals, accruals attributable to accounting distortion and accruals due to sales growth are inefficient, with p -value > 0.05 . The potential reason for these results could be the different measurement of one-year-ahead returns or the diverse magnitude and time period of observations. In any case, the current study suggests that total accruals cannot be concluded to be efficient in predicting future returns. In addition, the empirical work shows that decomposing accruals into investment growth and accounting distortion to examine the earnings quality of predicting future returns may result in distortion and may not be efficient. Additionally, this study includes the lagged raw return, examines its predictability for forecasting future return and finds that the lagged raw return is a statistically and significantly negative predictor of future return. On the other hand, the regression result of current operating profitability is significantly negative. The regression result on RNOA suggests that the level of sales do influence future returns and accounting earnings shown in the financial statement do have important information in regard to the prediction of future return. In addition, regarding the FRS No.3, our findings are consistent with increased accounting disclosure to help investors to protect from inefficiencies and encourage them to be aware of accurate share prices in the market.

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Table 1. Sample selection

<i>Data selection procedures for the period (2008-2017)</i>	<i>Firm-year observations</i>
Firm year observations for all listed on the London Stock Exchange	24,299
Excluding firms with missing accounting data (total accruals, accrual components, operating profitability)	10,292
Excluding firms with missing market data (market capitalization, book-to-market ratio, one-year-ahead abnormal returns) and firms with negative book value of equity	7,352
Excluding financial firms	1,342
Final sample	5,313

Table 2. Descriptive statistics

<i>Variables</i>		<i>Mean</i>	<i>Std. Dev.</i>	<i>25th Percentile</i>	<i>50th Percentile</i>	<i>75th Percentile</i>
Sales growth	SG_t	0.480	0.117	-0.018	0.061	0.169
Change in net operating assets	AD_t	0.023	0.294	-0.106	0.018	0.145
Accruals	ACC_t	0.065	0.346	-0.064	0.037	0.149
Current operating profitability	$RNOA_t$	0.171	3.965	0.062	0.140	0.245
Book to Market value	BM	0.914	0.962	0.784	0.882	0.988
Size of firms	$Size$	0.052	0.025	0.034	0.051	0.069

Note: The sample consists of 5,313 firm-year observations. Sales growth (SG_t) is calculated as the percentage change in sales (Worldscope#01001). AD_t is the change in which is measured as: $(Sales_t/NOA_t) - (Sales_{t-1}/NOA_{t-1}) / ((Sales_t/NOA_t) - (Sales_{t-1}/NOA_{t-1}))$. NOA_t are net operating assets, (Worldscope#01001 – Worldscope#02001) and non-debt liabilities (Worldscope#02999 – Worldscope#03995 – Worldscope#03255 – Worldscope# 03426). ACC_t is total accruals, measured as the percentage change in NOA_t : $(NOA_t/NOA_{t-1}) - 1$. $RNOA_t$ is the operating profitability (income), measured as operating income (Worldscope#01250) deflated by lagged OI_t/NOA_{t-1} . $ROCE$ is the operating profitability (income) on the capital employed measured as operating income (Worldscope#01250) deflated by lagged total assets minus current liabilities. Book-to-market (BM) is the ratio of common equity to market capitalisation (Book value/year end capital market). Size is the natural logarithm of the year-end market capitalization.

Table 3. Cross-sectional regressions over the sample period

<i>Variables</i>	<i>Eq.10.a</i>		<i>Eq.10.b</i>		<i>Eq.10.c</i>		<i>Eq.10.d</i>	
	<u>Coeff.</u>	<u>t-Statistic</u>	<u>Coeff.</u>	<u>t-Statistic</u>	<u>Coeff.</u>	<u>t-Statistic</u>	<u>Coeff.</u>	<u>t-Statistic</u>
Intercept	-0.156	-0.24 <i>0.814</i>	-0.390	-0.610 <i>0.55</i>	-0.003	-0.610 <i>0.997</i>	-0.657	-1.030 <i>0.315</i>
RNOA	-0.418	-3.300 <i>0.003</i>	-0.423	-3.480 <i>0.002</i>	-0.408	-3.150 <i>0.004</i>	-3.810	-4.440 <i>0.001</i>
SG			0.237	1.800 <i>0.085</i>				
AD					0.793	0.610 <i>0.55</i>		
ACC							-0.297	-5.460 <i>0.002</i>
<i>Adj. R-squared</i>		<i>0.275</i>		<i>0.334</i>		<i>0.256</i>		<i>0.244</i>

Note: RT_{t+1} is the one-year-ahead size and book to market adjusted return. $RNOA_t$ is the operating profitability (income), measured as operating income deflated by lagged OI_t/NOA_{t-1} . the Sales growth (SG_t) is calculated as the percentage change in sales. AD_t is the change in which is measured as: $(Sales_t/NOA_t) - (Sales_{t-1}/NOA_{t-1}) / (Sales_t/NOA_t)$. NOA_t are net operating assets and non-debt liabilities. ACC_t is total accruals, measured as the percentage change in $NOA_t: (NOA_t/NOA_{t-1}) - 1$. This table presents the results of cross-sectional regressions of the one-year-ahead abnormal returns on current operating profitability, lagged stock returns, total accruals and accruals due to sales growth and accounting distortion over the period 2008-2017. It shows the time-series averages of the parameters coefficients and t-statistics in italics and p-value in italics with parentheses of all independent variables.

Dear Editors,

We are very excited to have been given the opportunity to revise our manuscript. A point-by-point response to the Editors' and Reviewers' comments is below. Also, we do apology for the late submission as we do major adjustments to meet the reviewer expectations. We believe that the revisions prompted by these comments have strengthened our manuscript.

We carefully considered your comments as well as those offered by the two reviewers. We explain how we revised the paper based on those comments and recommendations. We want to extend our appreciation for taking the time and effort necessary to provide such insightful guidance. The revision, based on the review team's collective input, includes a number of positive changes. Based on your guidance, we:

- Endeavored to improve the fit of the paper with the journal
- Provided a more interesting, yet balanced discussion of the study's results
- Clarified portions of the methodology
- Increased the journals and years considered in our study
- Collected last 10 years data from 2008-2017
- Updated tests to improve our understanding of the data
- Improved the paper's framing with management theory

On behalf of all co-authors,
With kind regards and Thanks

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Reply to Reviewers' Responses

Reviewer 1 comments	Authors' response
<p>Suggestions which would improve the quality of the paper but are not essential for publication: I have several concerns about the methodology adopted and the way of writing in this paper that I list them below:</p>	<p>Many thanks for your comments</p>
<p>(1) in the abstract they state " This paper investigates the relationship between accruals and share return and aims to improve the quality of the information that accounting earnings provide to shareholders to predict future returns, under the hypothesis of earning manipulation" what is this?</p>	<p>We have considered your points and we have reviewed the abstract and the related sentence has been adjusted in our Abstract section for your consideration as follows:</p> <p><i>“The purpose of this study is to investigate the correlation between accruals and stock return and further the quality of accounting accruals shown in financial statements for shareholders to predict their future returns.”</i></p> <p><i>Please see page 1</i></p>
<p>(2) the paper focuses on the association between accruals and stock return following FRS3. The authors state that FAS 3 is adopted in 1992 but their sample spans from 2002 to 2009. So why referring to FRS 3 in the title. In addition, they state in the data collection that Datastream documents over the period 2004-2009, so how do they manage to get information for 2002 and 2003.</p>	<p><i>The main reason there is a the direct relevance of FRS3 on reported accounting figures is because we believe it may use a unique setting for a deeper understanding of the underlying sources of the accrual anomaly within the UK stock market after FAS 3 was adopted in 1992 and subsequently amended in June 1993, June 1999 and July 2007 that we have considered all these updates. Also, in the first submitted version this paper covered certain information to calculate variables and annual returns on Worldscope and Datastream documents over the period 2002-2009. There is a typo mistake on Page 10 that indicates the period 2004-2009 which has been corrected to 2002-2009. However, with consideration of the reviewer's comments on question 3, we decided to collect new data and more recent data from 2008-2017 and test it.</i></p>

<p>(3) Authors test the effect of accruals on stock return but they do not include discretionary accruals in their models and total accruals the association is not significant. So, why estimating the discretionary component of accruals and if the association for accruals is not significant, what is the incremental contribution of the paper.</p>	<p><i>According to previous studies the accrual model was initially originated by Jones (1991) who calculate total accruals as the change in non-cash working capital before income taxes payable less total depreciation expense. Following this research, Kothari et al. (2005) shows that firms, that are experiencing increases in account receivables, may possibly underestimate non-discretionary accruals and over-estimate discretionary accruals. The discretionary component of accruals is as follows:</i></p> $DAC_{it} = \varepsilon_{it}$ <p><i>In this study we follow the model which is the most appropriate for investigating the issue as the cross-sectional regressions by Papanastasopoulos (2015) which employed directly related stock return with accruals and the relation between accruals and stock returns can be seen from the coefficients. We used the models (10.a), (10.b), (10.c) and (10.d).</i></p> <p><i>In the first version of the submitted paper, we thought the reason that the association for accruals is not significant was as follows: we double checked our analysis and understood that we did not included minority interest data to calculate Non-operating assets. We tried to add the above data to the equation but since last year some of the company's financial data has been removed from the database so we do not have access to the same data for whole companies. We decided to collect new data and repeat the analysis. So, fortunately in the new data set we considered Minority Interest (data item #03426) in our analysis as well and the most important thing is we changed the data period and considered more recent data for 10 years period from 2008 to 2017 instead of 2002 to 2009. Please see Table I, sample selection on page 11. As you can see in the regression analysis result in Table III the association for accruals is significant. For your information that was the reason it took a lot of time to collect and process</i></p>

	<i>data and analyse it again.</i>
(4) Although, there is no significant association between accruals and stock return, they state in the abstract that "Our result shows that stock returns can be predicted by accruals attributable to accounting misrepresentations"	Please see our comments on section 3 (above section)
(5) one sentence quite strange in the introduction "This paper examines the market pricing of Jones's (1991) model of estimated abnormal accruals" but I don't see discretionary accruals in the models tested.	<p><i>Noted. We removed these sentences. We tried to show that Jones (1991) calculates total accruals as the change in non-cash working capital before income taxes payable less total depreciation expense. Actually, we did not directly use Jones's (1991) model of estimated abnormal accruals</i></p> <p><i>Where this paper focuses on the market pricing of Jones's (1991) model of estimated abnormal accruals (often termed "discretionary accruals" in the prior literature) to test whether stock prices rationally reflect the one-year-ahead earnings implications of these accruals. So, we argue that the accrual anomaly in large capital markets has experienced a definite change in accounting regulation. As we consider the UK listed companies, where FRS No.3 was introduced by the local Accounting Standards Board in October 1992. FRS3 compels disclosure of accounting information which is associated with earnings performance (see page 2).</i></p>
(6) the way of writing in several places in the text should be reviewed to avoid repetition and give the text a logic flow of ideas.	<i>As advised by the reviewer we reviewed whole text and adjusted it in some places to give a logical flow for our ideas. See page 4,</i>
Changes which must be made before publication: I urge the authors to read more about value	<i>Regarding the sampling process, first we added a new table (please see Table 1) to show how our sampling process is scientific and also,</i>

<p>relevance literature (price and return models) concerning accruals and be more scientific in their sampling process to improve the content of the paper.</p>	<p><i>we used a larger sample of data to improve the content of our paper.</i></p>
<p>Reviewer 2 comments</p>	
<p>The paper examines the relationship between accruals and share return and aims to improve the quality of the information that accounting earnings provide to shareholders to predict future returns, under the hypothesis of earning manipulation. Notably, the authors focus on the accrual anomaly phenomenon in the UK on the adoption of FRS 3.</p>	<p><i>Many thanks for your comments</i></p>
<p>The findings reveal that stock returns can be predicted by accruals attributable to accounting misrepresentations. The authors also claim that their results were consistent with increased accounting disclosure to help investors protect themselves from inefficiencies and to encourage them to be aware of accurate stock prices in the market.</p>	<p><i>Many thanks for your comments. That is true.</i></p>
<p>The introduction should be very focused including the major contribution. Literature Review is very descriptive in nature, it should be more critical. The findings section should be connected with prior research The conclusion section should integrate limitations and further research. Overall, the paper should be proofread.</p>	<p><i>We considered all the comments and made some changes to the introduction section (please see pages 3 and 4). We presented the major contribution at the end of introduction section. Also, we added more critical discussion from prior studies (please see page 6). Moreover, we proofread whole paper again before submitting it as recommended by the reviewer.</i></p>