

File ID 96790
Filename Chapter 2 The role of accruals and cash flows in financial reporting

SOURCE (OR PART OF THE FOLLOWING SOURCE):

Type Dissertation
Title Earnings quality and earnings management : the role of accounting accruals
Author S.W. Bissessur
Faculty Faculty of Economics and Business
Year 2008
Pages 205
ISBN 9789051709872

FULL BIBLIOGRAPHIC DETAILS:

<http://dare.uva.nl/record/267374>

Copyright

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use.

Chapter 2 The role of accruals and cash flows in financial reporting

2.1 Introduction

In this chapter, I present the main theoretical arguments and empirical evidence on the role of accounting accruals in financial reporting. In the first part of the chapter, I discuss a model of the relation between earnings, cash flows and accruals. I then present the results of the empirical literature that evaluates the usefulness of accrual accounting. The aim of this chapter is to explain the effect business transactions have on financial reporting. More specifically, I demonstrate that cash flow as a performance measure is subject to fluctuations, and that accruals are introduced to accounting to mitigate those fluctuations in earnings. As a result of the accounting accruals, earnings are a better indicator of performance than cash flow.

2.2 The accrual process modeled

The primary product of financial reporting is net income or earnings as a measure of performance. Earnings are the summary measure of firm performance produced under the accrual basis of accounting. Earnings are important since they are used as a summary measure of firm performance by a wide range of users, for instance for executive compensation plans or in debt covenants. Another explanation for the prominence of accounting earnings is that earnings reflect cash flow forecasts and has a higher correlation with value than current cash flow (Dechow, 1994). Earnings' inclusion of those forecasts causes earnings to be a better forecast of (and so a better proxy for) future cash flows than current cash flows. Dechow, Kothari and Watts (1998) (hereafter DKW) therefore argue that this is one of the reasons why earnings are often used in valuation models and as performance measures instead of operating cash flows.

Information asymmetry between management and other contracting parties create a demand for an internally generated measure of firm performance over finite intervals. The success of a firm depends ultimately on its ability to generate cash receipts in excess of disbursements. Therefore, one performance measure that could be used is net cash receipts (realized cash flows). However, over finite intervals, reporting realized cash flows is not necessarily informative. This is because realized cash flows have timing and matching problems

that cause them to be a ‘noisy’ measure of firm performance. Accruals are used in financial reporting to overcome problems with measuring firm performance when firms are in continuous operation.

Generally accepted accounting principles have evolved to enhance performance measurement by using accruals to alter the timing of cash flows recognition in earnings. Two important accounting principles that guide the production of earnings are the revenue recognition principle and the matching principle. By having such principles, the accrual process is hypothesized to mitigate timing and matching problems inherent in cash flows so that earnings more closely reflects firm performance (Dechow, 1994).

DKW formally model the accrual accounting process. More specifically, they model operating cash flows and the accounting process by which operating cash flow forecasts are incorporated into accounting earnings. The study of DKW is based on a model by Bernard and Stober (1989), who described a model of the operating cycle of the firm, in order to identify the value-relevance of current accruals (i.e. accounts receivable and inventory).²

DKW model forecasted operating cash flows starting with the sales generating process, rather than the operating cash flow generating process.³

Sales for period t , S_t , are assumed to follow a random walk process:⁴

$$S_t = S_{(t-1)} + \varepsilon_t \quad (2.1)$$

² More specifically, Bernard and Stober (1989) model how current accruals could provide information about future period sales incremental to that in current period sales, thus conveying management’s expectations about future performance. They model an optimal balance of inventory, given management’s expectations of future sales, and a deviation from the optimal balance, e.g. from unplanned inventory buildup or liquidation. DKW build on the inventory model.

³ As DKW point out, the sales contract determines both the timing and amount of cash inflows (and often related cash outflows) and the recognition of earnings. The sales contract specifies when and under what conditions the customer has to pay. Those conditions determine the pattern of cash receipts and so the sales contract is more primitive than the cash receipts. The sales conditions also determine when a future cash inflow is verifiable and so included in earnings (along with associated cash outflows). Some financial textbooks mark sales as one of the key drivers in forecasting earnings, cash flows and the balance sheet. Palepu, Healy and Bernard (2000, p.10-2) for instance point out that when asset turnover is expected to be stable, as is often realistic, working capital accounts and investments in plant should track the growth in sales closely. Most major expenses also track sales, subject to expected shifts in profit margins.

⁴ The average serial correlation in sales changes for the DKW sample firms is 0.17, with a t-statistic of 21.1 assuming cross-sectional independence. The small degree of positive serial correlation in sales changes suggests that a random walk in sales is an approximate description of the data. Even if sales follow an autoregressive process in first differences, accruals still offset the negative serial correlation in operating cash flow changes induced by inventory and working capital financing policies. This produces earnings that are better forecasts of future operating cash flows than current operating cash flows and moves earnings changes closer to being serially uncorrelated (DKW, 1998, p. 139).

where ε_t is a random variable with variance σ^2 and $\text{cov}(\varepsilon_t, \varepsilon_{t-\tau}) = 0$ for $|\tau| > 0$.

Under the method of cash accounting, revenues are reported in the period in which cash is received, and expenses are reported in the period in which cash is paid. Taxable income, therefore, is calculated as the difference between cash receipts from revenues and cash payments for expenses. However, the relation between sales and cash flow from sales is not one-to-one because some sales are made on credit. To measure income adequately, revenues and expenses must be assigned to the appropriate accounting period. The accountants solve this problem by applying the matching principle. To apply the matching principle, accountants have developed accrual accounting. Accrual accounting is the basis under which the effects of transactions and other events are recognized when they occur (and not as cash or its equivalent is received or paid) and they are recorded in the accounting records and reported in the financial statements of the periods to which they relate. That is, accrual accounting consists of all the techniques developed by accountants to apply the matching rule. This process is formalized in the DKW model for working capital accruals.

Specifically, it is assumed that proportion α of the firm's sales remains uncollected at the end of the period so that accounts receivable for period t , AR_t , is:⁵

$$AR_t = \alpha S_t \tag{2.2}$$

The accounts receivable accrual incorporates future cash flow forecasts (collection of accounts receivable) into earnings.

In this model, it is assumed that all expenses vary with sales so the expense for period t is $(1 - \pi) S_t$ where π is the net profit margin on sales and earnings (E_t) are πS_t . Inventory policies introduce differences between expense and cash outflows and hence between earnings and cash flows. Inventory is a case where future cash proceeds are not verifiable and so are not included in earnings. Instead, if it is likely that cost will be recovered, the cost is capitalized and excluded from the expense. In essence, the inventory cost is a conservative forecast of the future cash flows from inventory. Inventory is assumed to be carried at full cost.

Following Bernard and Stober (1989), it is assumed that a firm's inventory at the end of period t consists of a target level and a deviation from that target. Target inventory is a constant fraction, γ_1 , of next period's forecasted cost of sales. Since it is assumed that sales follow a random walk, target inventory is $\gamma_1(1 - \pi)S_t$, where $\gamma_1 > 0$. Target inventory is maintained if a firm

⁵ Throughout this text, I will use the same symbols as DKW.

increases its inventory in response to sales changes by $\gamma_1 (1-\pi) \Delta S_t$, where $\Delta S_t = S_t - S_{t-1} = \varepsilon_t$. Actual inventory deviates from the target because actual sales differ from forecasts and there is an inventory build up or inventory liquidation. The deviation is given by $\gamma_2 \gamma_1 (1-\pi) [S_t - E_t - 1(S_t)] = \gamma_2 \gamma_1 (1-\pi) \varepsilon_t$, where γ_2 is a constant that captures the speed with which a firm adjusts its inventory to the target level. If γ_2 is 0 the firm does not deviate from the target, while if $\gamma_2 = 1$, the firm makes no inventory adjustment.⁶ Inventory for period t , INV_t , is then

$$INV_t = \gamma_1 (1-\pi) S_t - \gamma_1 \gamma_2 (1-\pi) \varepsilon_t \quad (2.3)$$

The credit terms for purchases are a third factor causing a difference between earnings and cash flows. Purchases for period t , P_t , are

$$P_t = (1-\pi) S_t + \gamma_1 (1-\pi) \varepsilon_t - \gamma_1 \gamma_2 (1-\pi) \Delta \varepsilon_t \quad (2.4)$$

Purchases of a firm thus consist of expenses and the inventory adjustment. If a firm purchases all its inputs just in time so inventory is zero ($\gamma_1 = 0$), purchases just equal expense for the period $(1-\pi)S_t$. The second term in Eq. (2.4) consists of the purchases necessary to adjust inventory for the change in target inventory, $\gamma_1 (1-\pi)\varepsilon_t$. The third term is the purchases that represent the deviation from target inventory, $-\gamma_2 \gamma_1 (1-\pi)\varepsilon_t$. Barth et al. (2001) rewrites equation (2.4) by noting that γ_2 is the fraction of the current sales shock, ε_t , not included in inventory in the current period because it is deferred to the next period. Therefore, current period purchases should equal current period cost of sales, plus the initial inventory adjustment for the current sales shock, plus lagged adjustments for the prior sales shock:

$$P_t = (1-\pi) S_t + \gamma_1 (1-\pi) [(1-\gamma_2)\varepsilon_t + \gamma_2 \varepsilon_{t-1}] \quad (2.4a)$$

Since purchases are on credit, like sales, the cash flow associated with purchases differs from P_t . Assuming proportion β of the firm's purchases remains unpaid at the end of the period, AP_t is

⁶ As Barth et al. (2001) point out: "although the inventory assumptions might not mirror precisely the policies of real firms, they capture the notion that not all accruals reverse in a single period and that, as explained below, accruals reflect more information than simply the one-period delayed payments or receipts associated with past purchases or sales. In particular, accruals can reflect information related to management's expected future activity (p. 31)".

$$AP_t = \beta P_t = \beta [(1 - \pi) S_t + \gamma_1 (1 - \pi) \varepsilon_t - \gamma_1 \gamma_2 (1 - \pi) \Delta \varepsilon_t] \quad (2.5)$$

The accounts payable accrual is a forecast of future cash outflow. Combining the cash inflows from sales and outflows for purchases, the (net operating) cash flow for period t (CF_t) is

$$CF_t = \pi_t S_t - [\alpha + (1 - \pi) \gamma_1 - \beta (1 - \pi)] \varepsilon_t + \gamma_1 (1 - \pi) [\beta + \gamma_2 (1 - \beta)] \Delta \varepsilon_t + \beta \gamma_1 \gamma_2 (1 - \pi) \Delta \varepsilon_t \quad (2.6)$$

The first term in expression (2.6), πS_t , is the firm's earnings for the period (E_t) and so the remaining terms are accruals. Rearranging Eq. (6) to show the earnings calculation is helpful:

$$E_t = CF_t + [\alpha + (1 - \pi) \gamma_1 - \beta (1 - \pi)] \varepsilon_t - \gamma_1 (1 - \pi) [\beta + \gamma_2 (1 - \beta)] \Delta \varepsilon_t - \beta \gamma_1 \gamma_2 (1 - \pi) \Delta \varepsilon_{t-1} \quad (2.7)$$

If there are no accruals (sales and purchases are cash so $\alpha = \beta = 0$, and no inventory (so $\gamma_1 = 0$), earnings and cash flows for the period are equal.

The second, third and fourth terms express the period's accruals as a function of the current shock to sales and differences in current and lagged sales shocks. The second term is the temporary cash flow due to the change in expected long-term working capital (i.e., the working capital once all the cash flows due to lagged adjustment of inventory and credit terms have occurred). It is the shock to sales for the period, ε_t , multiplied by a measure of the firm's expected long-term operating cash cycle expressed as a fraction of a year, $[\alpha + (1 - \pi) \gamma_1 - \beta (1 - \pi)]$, which is denoted by δ . The third and fourth terms are temporary cash flows due to the lagged adjustment of inventory and credit terms.

Empirically, the coefficients of the differences in sales shocks in the third and fourth terms in Eq. (2.7) are close to zero and do not affect relative predictive ability or the predicted signs of the correlations.⁷ Given that, ignoring these two terms allows for modeling cash flow and earnings parsimoniously by

$$CF_t = \pi S_t - \delta \varepsilon_t \quad (2.8)$$

⁷ In the dataset used for the empirical examinations in chapters 6, 7 and 8, the value of α is 0.174, π is -0.123, γ_1 is 0.089, γ_2 is 0.015, β is 0.086 and δ is 0.163.

and

$$E_t = CF_t + \delta \varepsilon_t. \quad (2.9)$$

Following equation (2.8), DKW states that the best one-period-ahead forecast of CF_{t+1} is πS_t , since accruals adjust cash flows for temporary shocks due to the outlay for the increase in long-term working capital and the difference in timing of cash outflows for purchases and inflows from sales. Barth, Nelson and Cram (2001) (hereafter BNC) extend DKW by showing that the parsimonious relation between cash flows and earnings in equation (2.8) leaves out the incremental role accruals can play in predicting future cash flows, causing earnings $EARN_t$ (i.e. πS_t) not to be an unbiased estimator of CF_{t+1} .

BNC models next period cash flow, CF_{t+1} , equal to cash inflows from sales, adjusted for uncollected amounts reflected in the change in accounts receivables, minus outflows from purchases, adjusted for unpaid amounts reflected in the change in accounts payable:

$$CF_{t+1} = (S_{t+1} - \Delta AR_{t+1}) - (P_{t+1} - \Delta AP_{t+1}) \quad (2.10)$$

Following equations (2.1) through (2.9), equation (2.10) can be rewritten as:

$$CF_{t+1} = \pi_t S_{t+1} - [\alpha + (1 - \pi) \gamma_1 - \beta (1 - \pi)] \varepsilon_{t+1} - \gamma_1 (1 - \pi) [\beta + \gamma_2 (1 - \beta)] \Delta \varepsilon_{t+1} + \beta \gamma_1 \gamma_2 (1 - \pi) \Delta \varepsilon_t \quad (2.11)$$

As stated above, DKW assumes the coefficients of the differences in sales shocks in the third and fourth terms in Eq. (11) are close to zero and do not affect relative predictive ability. However, BCN states that these coefficients do not equal 0 in expectations at time t. Specifically, $E_t[\Delta \varepsilon_{t+1}] = -\varepsilon_t$ and $E_t[\Delta \varepsilon_t] = \varepsilon_t - \varepsilon_{t-1}$, where ε_t and ε_{t-1} are the time t and t-1 realizations of the random variable ε , which only equal 0 by chance. By using equation (2.11) to express expected next period cash flows as a function current and two lags of earnings, BCN shows that including these terms reveal that expected next period cash flow does not equal current earnings:

$$E_t[CF_t] = \pi_t S_t - \gamma_1 (1 - \pi) [\beta + \gamma_2 (1 - \beta) - \beta \gamma_2] \varepsilon_t - \beta \gamma_1 \gamma_2 (1 - \pi) \varepsilon_{t-1} \quad (2.12)$$

Since $EARN_t = \pi S_t$ and $S_t = S_{(t-1)} + \varepsilon_t$, $\varepsilon_t = \pi^{-1} (EARN_t - EARN_{t-1})$ and $\varepsilon_{t-1} = \pi^{-1} (EARN_t - EARN_{t-1})$. Thus, equation (12) can be rewritten in terms of earnings:

$$\begin{aligned}
E_t [CF_t] &= (1 - \gamma_1 (1 - \pi) \pi^{-1} [\beta + \gamma_2 (1 - \beta) - \beta\gamma_2]) EARN_t \\
&+ \gamma_1 (1 - \pi) \pi^{-1} [\beta + \gamma_2 (1 - \beta) - \beta\gamma_2] EARN_{t-1} \\
&+ \gamma_1 (1 - \pi) \pi^{-1} \beta\gamma_2 EARN_{t-2}
\end{aligned} \tag{2.13}$$

As BNC point out, this equation shows that expected next period cash flow equals current earnings, adjusted for the one- and two-year effects of inventory changes and associated payments. For example, if the two prior years' sales changes, i.e. ε_t and ε_{t-1} are positive, then $EARN_t$ overstates expected cash flows in period $t + 1$ because EARN omits the future cash flow effects of payments related to delayed inventory increases. In this case, cash flow in period $t + 1$ will be less than earnings in period t because of payments related to (1) the period $t + 1$ inventory increase arising from the period t sales increase, (2) the period t accounts payable for the period t inventory increase arising from the period t sales increase, and (3) the period t accounts payable for the period t inventory increase arising from the period $t - 1$ sales increase.

An important observation from equation (14) is also that earnings (EARN) can overstate expected future cash flows as a result from business performance deviating from expectations, i.e. sales that are higher than expected, causing positive or negative ε_t . Since stock prices reflect expected future cash flows, this could mean that earnings can be a biased predictor of stock prices. When in $t + 1$ cash flows are indeed lower than expectations based on current earnings, this can also be interpreted as earnings management. Instead of explaining lower cash flows in $t+1$ as earnings being managed upward in period t , and subsequently lower cash flows in period $t+1$ when accruals reverse, the reversal of earnings can also be explained by business performance deviating from expectations.⁸

Next period cash flow can also be expressed in terms of components of current earnings, since next period cash flow is expected to differ from current period cash flow because of the transactions involving current period accruals:

$$E_t [CF_{t+1}] = CF_t + \Delta AR_t - \Delta AP_t - (1 - \beta)(E_t [\Delta INV_{t+1}] - \Delta INV_t) \tag{2.14}$$

⁸ See for instance Teoh et al. (1998).

Under the assumptions of the model, expected cash flows can be expressed as a function of either current and two lags of aggregate earnings, or as current earnings disaggregated into cash flow and components of accruals, which each having equal predictive ability (BNC). Thus, accruals not only reflect delayed cash flows effects of past transactions. Accruals also reflect information about expected future cash flows relating to management's expected future purchasing activity (i.e. inventory), as well as collections and payments associated with current period transactions (i.e. collecting accounts receivable and paying accounts payable).

2.3 The noise reducing role of accruals

Generally speaking, accruals perform two functions in financial accounting. The primary function of accruals is to reduce the noise in transitory cash flows to produce earnings. The other major function of accruals is the timely recognition of unrealized gains and losses (Ball and Shivakumar, 2006). Dechow (1994) examines the role of reducing noise in cash flows. She starts with investigating whether cash flows have time-series properties consistent with cash flows suffering from matching problems. The results indicate that changes in net cash flow per share exhibit on average a negative autocorrelation. Changes in operating cash flow per share exhibit a slightly smaller average negative autocorrelation, while changes in earnings per share has an even smaller negative autocorrelation than the cash measures. This suggest cash flows suffer from temporary mismatching of cash receipts and disbursements, therefore changes in cash flows exhibit negative autocorrelation, i.e., a large cash outflow this period is more likely to be followed by a large cash inflow next period. Accruals are employed to reduce the transitory nature of cash flow changes. Since changes in cash flows are likely to contain temporary components that are reversed over time, and accruals are used to match cash receipts and disbursements associated with the same economic event, changes in accruals will also exhibit negative autocorrelation. Since the change in cash flows is expected to be temporary, accruals will be negatively correlated with changes in cash flows. This negative correlation declines over longer intervals as matching problems in cash flows become less severe.

Dechow (1994) also reports the correlation between changes in cash from operations and changes in earnings. Over longer intervals, as the temporary components in cash flows 'cancel each other out', changes in earnings and changes in cash from operations will have a higher positive correlation with each other (if clean surplus holds). The average correlation between these measures increases from the quarterly interval to the four-year interval. These results are

consistent with the matching principle, since accruals ‘smooth’ the temporary components in cash flow. However, they are also consistent with the alternative view that management uses accruals to opportunistically ‘smooth’ earnings regardless of whether this improves earnings’ ability to measure firm performance. That is, for a reason other than reflecting firm performance, management desires to reduce the variability in earnings (e.g. to reduce borrowing costs).

DKW provide an explanation for the negative serial correlation of cash flow. Based on their model, they state that the serial correlation pattern is the net result of two effects. The first is the spreading of the collection of the net cash generated by the profit on the current period sales shock across adjacent periods which, absent any difference in the timing of cash outlays and inflows, leads to positive serial correlation in cash flow changes. The second effect is due to differences in the timing of the cash outlays and inflows generated by the shock which, absent the first effect, leads to negative serial correlation in cash flow changes. Their results show that in most firms the timing effect dominates the profit-spread effect. So, the negative serial correlation in operating cash flow changes is generated by most firms being long (having a positive net investment) in working capital.

DKW also provide an explanation for the negative correlation between cash flow and accruals. Increases (decreases) in sales generate contemporaneous outlays (inflows) for working capital increases (decreases) that are followed in the next period by cash inflows (outflows). The result is negative serial correlation in cash flow changes. They state that the correlation between working capital changes and cash flow changes is negative so long as the profit margin, (i.e. π in the model) is less than twice the operating cash cycle (i.e. δ in the model). Their results show that for most firms, the profit margin is considerably smaller than the operating cash cycle for the average firm. Accruals exclude the contemporaneous one-time outflows for working capital from the current period’s earnings and incorporate forecasts of future cash inflows. This causes earnings to be a relatively better predictor of future cash flows than is current cash flows. It also generates negative serial correlation in accrual changes that offsets the negative serial correlation in operating cash flow changes.

It is interesting to note that their results indicate a wide spread in the distribution of the correlation between earnings and cash flow in a cross-sectional investigation, while the cross-correlation’s of the first differences of accruals and cash flows do not display a wide variance. It seems that accruals are indeed used to reduce timing and matching problems in earnings, and therefore the correlations of cash flows and accruals do not display such a wide spread. The other major role of accruals, the use of accruals for the timely recognition of unrealized gains and losses, is discussed in-depth in chapter 3.

2.4 The information content of cash flows and accruals

Financial accounting provides a summary of the events that have affected the firm in the fiscal year of the financial report. The events that affect the firm are reflected in the value of the firm. One measure of the value of the firm is the book value of the equity of the firm. This measure reflects the value of the firm according to the accountants, and can be considered the accounting summary of events.

To evaluate the effectiveness of the accounting summary of events, empirical research requires a benchmark against which the financial report can be evaluated. Since the events that have affected the firm are reflected in firm value, an obvious benchmark is the market value of the firm, as reflected in the stock price (Easton, 1999).⁹ The stock price reflects all the future pay-outs to the holder of the stock, i.e. all future cash flows generated by the firm that will be distributed to shareholders. Therefore, changes in the stock price reflect changes in the expectations of future cash flows, or future pay-outs to the holders of the stock. Information is considered to be relevant if it is associated with (changes in) the value of the firm. This information perspective was initiated by the seminal paper by Ball and Brown (1968), who evaluate the information content of accounting income by showing the association between unexpected earnings and unexpected stock returns.

A major issue with accounting income as a summary measure of firm performance is that Generally Accepted Accounting Principles (GAAP) provides a variety of methods to calculate accounting earnings. In the previous paragraph, it is shown that accounting earnings are cash flows generated by the operations of the firm, adjusted by accruals. The accrual adjustment enables earnings to be a better predictor of future cash flows than current cash flows. Accruals reflect the expectations of future cash flows of the managers of the firm, where GAAP provides a variety of methods to managers to calculate accruals based on their expectations of future cash flows. However, the use of accruals introduces potential problems, since management typically has some discretion over the recognition of accruals. This discretion can be used by management to signal their private information or to opportunistically manipulate earnings. Signalling is

⁹ Easton et al. (1992) argue that there are two reasons why earnings will not be a perfect summary of events of the corresponding return interval: (1) value-relevant events observed by the market (and therefore captured in returns) in a prior period may affect accounting earnings of the current period, and (2) value-relevant events observed by the market in the current period may not be reported in accounting earnings of the current period. In short, accounting reports the effects of economic events with a lag.

expected to improve the ability of earnings to measure firm performance since management presumably have superior information about their firm's cash generating ability. However, if management uses their discretion to opportunistically manipulate accruals, earnings will become a less reliable measure of firm performance (Dechow, 1994). The accrual process is in those cases not beneficial in predicting future cash flows and current cash flows could be preferred over current earnings when forming expectations of future pay-offs to holders of a stock.

Capital market research has examined the empirical question as to whether the net effect of accruals is to improve or reduce the ability of earnings to measure firm performance. A major assumption in this type of research is that stock prices accurately reflect the economic performance of a firm. That is, the stock price reflects economic income. Early research focused on whether accruals have information content. In their seminal work, Ball and Brown (1968) find that the association between security returns and earnings is higher than the association between security returns and operating cash flows. Since the difference between earnings and cash flows equals accruals, this result suggest that accruals improve the ability of accounting income to reflect firm performance. Research by Wilson (1986), Rayburn (1986), Bowen et al. (1986), Wilson (1987), Bernard and Stober (1989) and Livnat and Zarowin (1990) showed that that the accrual and cash flow components of earnings have information content. Ali (1994) extends this previous research by allowing for nonlinear relations between returns and the performance variables earning, accruals and cash flows.¹⁰ Ali (1994) shows nonlinear relations between returns and earning, accruals and cash flows. Furthermore, consistent with previous research, when he uses a linear model, the results are not consistent with cash flows having incremental information content beyond earnings and accruals, suggesting that nonlinear relations may be found between returns and other non-earnings data as well. Cheng et al. (1996) focused on the incremental information content of cash flow from operations when earnings are transitory. They suggest that when the valuation implications of earnings are limited by the presence of transitory items, cash flows from operations may play a larger role as an additional value signal (p. 173). The explanation for these findings is according to Cheng et al. (1996) that earnings may contain

¹⁰ Freeman and Tse (1992) document a nonlinear relation between abnormal returns and unexpected earnings. They argue that as the absolute value of unexpected earnings increases, the persistence of earnings declines, and so does the marginal price response to unexpected earnings. They also note that the slope coefficient on unexpected earnings form a linear model would predominantly reflect the effects of transitory, rather than permanent, earnings, because a linear model heavily weights the coefficient on high-magnitude transitory earnings. They show that forcing a linear specification on an abnormal return-unexpected earnings model biases the slope coefficient on unexpected earnings toward zero. If other performance measures, such as unexpected accruals and unexpected cash flows, also have high concentrations of transitory components in high magnitude observations, regression coefficients from the multivariate linear models in prior studies would also be biased toward zero.

transitory items with limited valuation implications. Examples of transitory items in earnings include current and long-term accruals such as losses due to restructuring, current recognition (through asset sales) of previous period's (or current period's) increases in market value, one time impact on income from changes in accounting standards, and so on. Moreover, as compensation contracts and debt covenants are often based on accounting income, incentives exist for managers to introduce transitory elements in earnings.

The research discussed up till now examines whether unexpected cash flows and accruals are significant in a regression where abnormal stock returns are the dependent variable. Also, the focus of these studies is to test for incremental information content, they do not directly assess whether reported earnings is a superior summary measure relative to realized cash flows.

In her paper, Dechow (1994) uses stock price performance as the benchmark against which to compare realized cash flows and realized earnings. Stock prices are viewed as encompassing the information in realized cash flows and earnings concerning firm performance. Therefore, the focus of this paper is to assess the ability of each measure to reflect firm performance in their realized form, as opposed to their innovative or unexpected form. Specifically, the paper examines how accruals improve earnings' ability to reflect firm performance and the circumstances in which accruals are important in performing this role, and it aims to formally establishing that earnings is a superior summary measure of firm performance relative to cash flows.

Results show that earnings have a stronger association with stock returns than net cash flows or cash from operations over short measurement intervals (i.e. quarterly). The explanatory power of realized cash flows relative to earnings will increase as the measurement interval is increased from a quarterly interval, to an annually interval and a four year period, respectively. However, over each measurement interval, earnings are more strongly associated with stock returns than either cash flow measure. One of the premises of the paper is that neither earnings nor cash flows are a perfect measure of firm performance because both suffer to varying degrees from timing and matching problems. Since cash from operations is rejected in favor of earnings, this suggests that the accrual adjustments made to cash from operations to obtain earnings are relatively important for mitigating the timing and matching problems inherent in cash from operations.

Dechow's (1994) results demonstrate that cash flows are not a poor measure of firm performance per se. In steady-state firms, where the magnitude of accruals is small and cash flows and earnings are most similar, cash flows are a relatively useful measure of firm performance. However, when the magnitude of accruals increases, indicating that the firm has

large changes in its operating-, investment-, and financing activities, cash flows suffer more severely from timing and matching problems. Therefore, as accruals increase in magnitude net cash flows' association with stock returns declines. Overall, the results are consistent with the hypothesis that accountants accrue revenues and match expenditures to revenues so as to produce a performance measure (earnings) that better reflects firm performance than realized cash flows. Apparently, cash flows suffer from greater timing and matching problems than earnings. Thus, the negative correlation between cash flows and accruals is not due solely to management 'arbitrarily' smoothing earnings. This suggests that management manipulation of accruals is of second-order importance and the first-order effect of the accrual process is to produce a summary measure that more closely reflects firm performance.

Barth et al. (2001) extend the analysis by Dechow (1994) by showing that different accrual components reflects different information relating to future cash flows, and that aggregate earnings mask this information. As the stock price reflects the discounted value of future cash flows, they show that disaggregating accruals into major components, i.e. accounts receivables, accounts payables, inventory, depreciation, amortization and other accruals, enhances the predictive ability to predict cash flows, and therefore stock prices. Barth et al. (2001) show that earnings is still superior in predicting returns over cash flows, demonstrating the different roles individual accruals can play in enhancing the association of earnings with stock returns and therefore firms performance.

Dechow (1994) hypothesizes that if accruals correctly employ accountants' matching principle, then the cash flow and accrual components of earnings should have similar forecasting properties, such that no information should be lost in aggregating these two components of earnings. Sloan (1996) challenges this hypothesis, suggesting that accruals may be less informative than cash flows because they are less reliable and thus more susceptible to estimation error and managerial manipulation. In support of this hypothesis, Sloan shows that accruals are, on average, less informative than cash flows in forecasting future earnings. The results indicate that earnings performance attributable to the accrual component of earnings exhibits lower persistence than earnings performance attributable to the cash flow component of earnings. However, stock prices do not fully reflect information in accruals and cash flows about future earnings. The results indicate stock prices act as if investors fixate on earnings, failing to distinguish fully between the different properties of the accrual and cash flow components of earnings. Consequently, firms with relatively high (low) levels of accruals experience negative (positive) future abnormal returns that are concentrated around future earnings announcements. This negative association between accounting accruals and subsequent stock returns is known as

the accrual anomaly in the accounting literature. Given the relatively simple exploitation strategy of the accruals anomaly—acquiring long positions in low accruals companies and short positions in high accruals companies— some researchers expect that sophisticated and well endowed investors will cause the anomaly to quickly dissipate and ultimately vanish. Instead, the accruals anomaly persists to the present, and its magnitude has not diminished over time (Lev and Nissim, 2006).

Xie (2001) extends Sloan (1996) by suggesting that the lack of persistence and the overpricing of accruals are due to abnormal accruals. Abnormal accruals are accruals that are considered not to follow from the sales process of the company. Rather, abnormal accruals are considered to be booked by managers to reflect their discretion of the financial statements. Xie (2001) claims that abnormal accruals are less persistent than normal accruals, which in turn are less persistent than cash from operations. Moreover, the market overestimates the persistence of, and thus overprices, both abnormal and normal accruals, although the overpricing of abnormal accruals is more severe.¹¹

Defond and Park (2001) further investigates the mispricing of abnormal accruals by testing whether the market's pricing of earnings surprises anticipates the reversing implications of abnormal accruals. They show that investors anticipate in part the reversing implications of abnormal accruals. Thomas and Zhang (2002) find that the negative relation between accruals and future abnormal returns documented by Sloan (1996) is due mainly to one specific accrual, namely inventory. Beneish and Vargus (2002) show that the accrual mispricing phenomenon is primarily due to the mispricing of income-increasing accruals. Hanlon (2005) examines the difference between financial reporting earnings (book earnings) and taxable earnings (tax earnings), i.e. the book-tax difference, and earnings persistence and shows that the lower persistence of earnings is caused in part by the book-tax difference. More specifically, firms with large book-tax differences have earnings that are less persistent than firms with small book –tax differences.

¹¹ In prior research, abnormal accruals estimated by the Jones (1991) model were often termed as 'discretionary accruals', and were used as proxy to measure earnings management, or managerial discretion (e.g. Jones, 1991). In fact, in his review on capital market research, Kothari (2001) states that discretionary accruals are synonymous with earnings management. However, as pointed out by Healy (1996), Bernard and Skinner (1996) and Xie (2001), Jones model residuals capture not only managerial discretion, but also unusual nondiscretionary accruals and unintentional misstatements. Subramayam (1996) shows that discretionary accruals can also be the result of efficient contracting considerations. He shows that discretionary accruals improve earnings as a signal of performance, as discretionary accruals improve the contemporaneous returns-earnings relation, and concludes that discretionary accruals are on average informative, not opportunistic. Healy (1996) observes that 'abnormal' is more accurate because 'discretionary' connotes purposeful intervention by management.

Farfield, Whisenant and Yohn, hereafter FWY, (2003a) argue that the accrual anomaly of Sloan (1996) is a special case of a more general growth anomaly. They show that not only current accruals have a negative association with one-year-ahead profitability. Current accruals are a component of net operating assets (NOA), and the change in working capital is part of the growth in net operating assets. The other part of growth in net operating assets is growth in long term operating assets (i.e. long term accruals). FWY (2003a) show that both current accruals and long term accruals have equivalent negative associations with one-year-ahead profitability.

Hirshleifer et al. (2004) propose that the level of net operating assets —defined as the difference on the balance sheet between all operating assets and all operating liabilities— measures the accumulation over time of the difference between net operating income (i.e. accounting value added) and free cash flow (i.e. cash value added). An accumulation of accounting earnings without a commensurate accumulation of free cash flows raises doubts about future profitability. They document that high normalized net operating assets (indicating relative weakness of cumulative free cash flow relative to cumulative earnings) is associated with a rising trend in earnings that is not subsequently sustained. Thus, a high level of net operating assets, scaled to control for firm size, indicates a lack of sustainability of recent earnings performance. It appears that investors do not fully discount for this fact, implying that investors weight NOA much too positively in forecasting future earnings. Hirschleifer et al. (2004) show that this overoptimistic perception of NOA is significantly larger than the over-weighting of accruals.

The empirical evidence shows that accruals do not only have an income statement effect, i.e. to produce earnings. Accruals also have a balance sheet effect, as they increase the net operating assets of a firm. However, the rate of return of these assets is not constant. It appears that high levels of net operating assets have an adverse effect on future profitability. For instance, a firm that is growing may acquire higher inventory to meet sales. However, if the firm keeps on getting more inventory, at a certain point, it will have more inventory that it can sell. Those assets will have to be written down, causing a lower return on assets for the firm. As an effect, higher levels of net operating assets make it harder to predict future earnings. This is documented in the literature, as investors appear to overvalue firms with high levels of accruals, both current and long term.

2.6 Summary and implications for this study

This chapter provided an overview of the role of accounting accruals in financial accounting. In this chapter, it is established that accruals augment cash flow from operations to produce earnings, and it is shown how this improves the measurement of performance.

A model is presented, that shows how cash flow, accruals and earnings are related. In the model, accruals adjust cash flows for temporary shocks due to the outlay for the increase in long-term working capital and the difference in timing of cash outflows for purchases and inflows from sales. The accrual adjustments result in earnings being a better predictor of future cash flows than current cash flows.

One of the main points of the model is that earnings can overstate expected future cash flows as a result of business performance deviating from expectations, i.e. sales that are higher than expected. This has often been explained by the earnings management hypothesis, where the reversal of earnings can also be explained by business performance deviating from expectations. This raises the question how business activity influences the role of earnings in predicting future cash flows. The current literature does not provide a good understanding of the business activity on the role of accruals in predicting future cash flows. In chapter 6, an empirical analysis of the effect of a firm-specific measure of accrual quality on the prediction of future cash flows is performed. This measure reflects in part the firms-specific transitory nature of accounting, and should be related to future cash flows.

In the next chapter, the consequence of changes in expected future cash flows on the role of accruals is further developed as the theory of accounting conservatism is explained. In chapter 4, the concept of earnings quality in relation to the prediction of future cash flows is presented, and in chapter 5, the role of expectations and earnings management is further discussed.