Advances in Applied Economics and Finance
Vol. 1, No. 1, March 2012

www.worldsciencepublisher.org

Mapping the Accrual Anomaly in the Dutch Stock Market

[1]Paul Hoefsloot, [2]*Georgios Georgakopoulos, [3]Ioannis Sotiropoulos, [4]Aikaterini Galanou

(1 Amsterdam Business School, University of Amsterdam, the Netherlands)
(2 Amsterdam Business School - Accounting Group, University of Amsterdam, the Netherlands)
(3 Department of Finance and Auditing,Technological Educational Institute of Epirus, Greece)
(4 Department of Management and Marketing, Qatar University, Qatar)

Email: pauluspieterman@hotmail.com, g.georgakopoulos@uva.nl, sotiropoulosioan@yahoo.gr, Galanou.e@qu.edu.qa

Abstract: This paper investigates the existence of the accrual anomaly on the Dutch stock market. We find statistical evidence to accept that the cash flow component of current earnings is significantly more persistent than the accrual component of current earnings. When applying a trading strategy a significant abnormal return can be made by constructing a portfolio consisting of firms with relatively low accruals. However, contrary to U.S. findings, a hedge return consisting of a long position in low accruals firms and a short position in high accruals firms (hedge portfolio) generates neither substantial nor statistically significant returns.

Keywords*:* Accrual Anomaly; Dutch stock market; trading strategy; long position; short position; JEL: G00

1. Introduction

A large part of the accounting literature (Sloan, 1996; Khan, 2007; Xie, 2001; Defond and Park, 2001 to name but few studies) focuses on whether the stock market rationally values accounting figures such as earnings, accruals and cash flows. Prior research has found that accruals, in essence non-cash working capital less depreciation, are often not properly accounted for when estimating future earnings. Because the accrual component of earnings is easier to manipulate than the cash flow component of earnings (Leippold and Lohre, 2008) the persistence of accruals is considered as more uncertain. Moreover, although accruals are not bad per se they allow earnings to be managed.

In contrast to the traditional efficient market view, where stock prices fully reflect all publicly available information, Sloan (1996) indicates that the United States stock prices overweight the accrual persistence. Separating earnings in an accrual- and a cash flow component, Sloan shows that the accrual component of earnings is less persistent with respect to future earnings. Transforming this knowledge in a trading strategy on the U.S. stock market it can generate a significant abnormal return.

This paper investigates the existence of the accrual anomaly on the Dutch stock market. It documents under which conditions and under which limitations the accrual anomaly appears on this market. Do small firms drive the anomaly, are accounting standards of importance or is the use of certain other well-known accounting variables of importance? Because substantial prior research has broadly identified the accrual anomaly on the U.S stock market, our study can be viewed as an extension of the recent international evidence concerning the anomaly on other leading markets. Hence, central in our study is the search of abnormal returns on the Dutch market like previous literature documented on the United States market.

Our study is organized as follows: The next section introduces briefly the earlier work on the accrual anomaly by Sloan (1996). Subsequent published studies on the subject are presented in four streams[1]. This is followed by our research motivation and empirical research design. Our results are discussed then through the testing of five related hypotheses. In addition, a robustness test is undertaken to indicate if other financial variables withdraw the predictability of accrual components. A comparison is made between our results and the raw or "actual" stock returns obtained. Our paper concludes with a summary and a discussion of our findings.

2. Literature review

2.1 Introducing the accrual anomaly

Sloan (1996) is the instigator of the accrual anomaly. He investigated the naïve earnings expectation model, in which investors fixate on earnings and fail to distinguish between the accrual and cash flow components of earnings, by analyzing the accrual and cash components of current earnings. The main focus in his work is the nature of information integrated in the accrual and cash flow components of earnings and the extent of that same information integrated in stock prices. Sloan (1996) shows that the relative magnitudes of the cash and accrual components of current earning are determinative to the level to which current earnings will persist in future periods. His results indicate that the accrual component of earnings is less persistent in future period's earnings than the cash flow component of earnings. In other words, companies which produce more cash flow relative to accruals will perform better with respect to future earnings.

[1] As suggested by Khan (2007) the post-Sloan (1996) literature can be distinguished in four directions of research: stream one explores the underlying components of accruals; stream two explains various similarities with other known anomalies; stream three investigates whether market participants use information in accruals and stream four examines other international evidence concerning the anomaly.

Exploiting a trading strategy on the results of Sloan's (1996) findings, it would be profitable to take long positions in companies that experience relative high degree of cash flows and short positions in companies reporting a relatively high degree of accruals.
This profitability takes place because of the inability of investors to distinguish between the accrual and the cash flow components in earnings. Moreover, accruals are mean-reverting and for that reason high accrual firms are less persistent with respect to subsequent earnings. In his work Sloan, documents that investors can earn significant size-adjusted returns when exploiting this trading strategy on the United States stock market. His hedge strategy earns 10.4 percent size-adjusted return (without considering in his trading strategy any transaction and information assessing costs).

2.2 Stream one, underlying components

After Sloan (1996) presented his findings, numerous others investigated the accrual anomaly. Within the first stream of literature (Xie, 2001; Defond and Park, 2001; Richardson *et al.* 2005) scholars examine whether certain components of accruals are mispriced.
Xie (2001) indicates the existence of strong evidence that the market overprices abnormal accruals rather than 'normal' accruals. He extends the work of Sloan (1996) by separating total accruals in a normal part, driven by growth in operating activity, and an abnormal part, which mainly reflects the transitory accounting distortions. Xie (2001) shows that overpricing or under-pricing is mainly due to the abnormal part.
Similar results are found by Defond and Park (2001) who demonstrate that the market does not fully adjust for the reversing implications of abnormal accruals. However, since most of the variation in accruals is assigned to abnormal accruals, the returns to the trading strategy based on abnormal accruals are from about the same magnitude as the returns using Sloan's (1996) original accrual trading strategy.
Richardson *et al*. (2005) extend this stream of research by highlighting a different composition of the definition and categorisation of accruals. Their focus lies on the trade-off between relevance and reliability of accrual components and in this context they provide a more comprehensive setting of the accrual definition.

2.3 Stream two, similar anomalies

The second stream of research (Collins and Hribar, 2000; Barth and Hutton, 2004; Desai *et al*., 2004; Fairfield *et al.*, 2003) explores whether previous anomalies in finance and accounting are related to the accrual anomaly. This stream explores evidence about additional information on earnings persistence beyond what is embedded in the accrual strategy. Researchers also seek other anomalies that capture the accrual anomaly or are perhaps the accrual anomaly in disguise.
The post-earnings announcement literature indicates that markets under-react to earnings surprises (Collins and Hribar, 2000).
Barth and Hutton (2004) find that earning forecast revisions can be used to refine the accrual based hedge portfolios.
Searching for similarities of the accrual anomaly in the finance literature, Desai *et al* (2004) compare the Glamour-stock phenomenon with the accrual anomaly[2].
In their research Fairfield et al (2003) suggest that the accrual anomaly is similar to that of the more broadly negative relation of growth in net operating assets and one-year-ahead return on assets. They find that both accruals and growth in long term net operating assets have equivalent significance in forecasting future returns.

2.4 Stream three, use of accrual information

This third stream (Bradshaw *et al*., 2001; Ali *et al.* 2008) investigates whether managers, auditors, institutional investors and other professional financial intermediates accurate assess the implications of the accrual anomaly.
Bradshaw *et al*. (2001) examine whether analysts and auditors use the information in accruals for their professional opinion. Following the results of the well-documented accrual anomaly our paper suggests that auditors, analysts and even professional investment intermediates do not inform concerning parties about the negative future consequences due to high accruals. It appears that investors are still surprised when earnings revert because of the high accruals. Analysts do not anticipate the reduction of earnings in their forecast when accruals are high. Additionally, auditors do not observe the increasing likelihood of General Accepted Accounting Principles (GAAP) violations in their professional opinions. Considering whether mutual funds make profit from the knowledge of the accrual anomaly.
In this context Ali *et al*. (2008) investigate the trading strategy of large mutual funds. Comparing the portfolio weights between low-accrual stocks and high accrual stocks they examine whether these funds base their strategy on the information in accruals. Their results indicate that mutual funds overall do not trade on accrual based information. Nevertheless, the authors show that mutual funds that follow the "relatively low-accruals strategy" earn excess returns (ibid.: 3).

2.5 Stream four, the anomaly persistence and international evidence.

The fourth stream of research (Lev and Nissim, 2006; Pincus *et al*., 2007; LaFond, 2005; Kaserer and Klingler, 2008; Leippold and Lohre, 2008; Bie and Haan, 2007) is concentrated on the question why the anomaly is not arbitraged away. Several barriers that limit the implementation of a profitable accrual trading strategy are taken into account. Besides the various explanations given this stream of research also examines the international persistence of the accrual anomaly. Researchers here take the anomaly in a broader view and

[2] Glamour value stocks are characterised by high/low past sales growth, low/high book-to-market ratios, low/high earnings-to-price, low/high cash flow-to-price, and they are know to earn negative/positive future abnormal returns (Desai et al, 2004)

explore a set of other than the US stock markets. Since the accrual anomaly, and the associated abnormal returns from trading on it, is well documented in the last decades the question still remains; "why does it still exist?".

Assuming that sophisticated investors would vanish the accrual anomaly away, Lev and Nissim (2006) suggest that the anomaly still remains. Searching for explanations of these outcomes they find that trading on the anomaly is restricted by different characteristics and costs factors. By examining different qualities the authors show that extreme accrual portfolios often consist of high risk and/or low profitability stocks[3].

Investigating the stock markets in twenty countries, Pincus *et al.* (2007) found limited international evidence of the accrual mispricing phenomenon. They found four countries that overweight the accrual persistence, namely: Australia; Canada; the UK; and the US. Explaining their limited results the authors refer mainly to the earnings management phenomenon in these countries. Additionally they show that differences in the legal system, barriers of arbitrage, share ownership, and the extensive use of accrual accounting are of importance when confirming the anomaly.

LaFond (2005) examines the accrual anomaly by investigating 17 countries in relation to the return implication of accruals. He shows that 15 of these countries experience the accrual anomaly and concludes that the accrual anomaly is a global phenomenon. The Dutch stock market is included in Lafond's (2005) results. In addition he found that the accrual anomaly is not due to specific accounting rules that differ between various countries (e.g., laws, institutional characteristics, share ownerships) but is rather due to the general use of accrual accounting.

Investigating the German stock market, Kaserer and Klingler (2008) found evidence of existence of the accrual anomaly in this market too. Furthermore their findings suggest that the accrual anomaly especially occurs in companies reporting their financial information according to the International Financial Reporting Standards (IFRS). These results are quite surprising since IFRS is implemented for a higher quality of financial reporting. The above conflicting results may be explained by the different time periods, different accrual computations and different data sets used.

In contrast to Lafond (2005), Pincus *et al*. (2007) indicate that the accrual anomaly only exists in countries with a common law setting[4] and an accrual intensive accounting system. Furthermore Pincus *et al*. (2007) find that weaker shareholder protection and less concentrated ownership structures are in place when discovering the anomaly.

Leippold and Lohre (2008) indicate that when using multiple tests (risk factors and momentum factors) the accrual anomaly disappears in all the investigated countries except for the US.

3. Aim and Empirical design

Within the context of the fourth stream of literature and due to the various contradicting results of previous studies we examine here evidence from the Dutch stock market. Further interest is born in light of the recent results from Kaserer and Klingler (2008), who found the implementation of IFRS as a potential cause of the accrual anomaly in the (neighbouring) German stock market. In addition the Dutch stock market is very little examined on the subject matter. Only three other studies partially documented findings in this market as part of their international focus (Lafond, 2005; Leippold and Lohre, 2008; and Pincus *et al*., 2007).

Furthermore, prior studies have mainly documented the accrual anomaly in countries with high shareholder rights and common law systems whereas the Dutch stock market is based on code law disclosures with relatively low shareholder rights. Thus, if the accrual anomaly also exists in the Dutch stock market there is reason to assume that differences in the law systems and shareholder rights do not cause the anomaly.

The Dutch stock market is characterized by a prominent role of financial institutions. In financing their activities Dutch firms prefer bank loans over equity (Bie and Haan, 2007). The Dutch financial system is less market oriented than the U.S.

In this context we use the same database (DataStream) as Lafond (2005) and Leippold and Lohre (2008) with a broader time window, to search for statistical evidence of the existence of the accrual anomaly in the Dutch stock market.

3.1 Variable selection and definitions

Previous literature has shown that separating earnings into a cash flow and an accrual component will lead to additional information concerning the persistence of future earnings. The cash flow component of earnings is argued to be a better predictor of future earnings than the accrual component (Sloan 1996). The extent in which that additional information is embedded in stock prices is the main focus of our study. The financial variables used to explore the accrual anomaly in stock markets are earnings, accruals and cash flow from operations.

Similar to Sloan (1996) and most of the work cited earlier accruals are computed as:

Accruals = (ΔCA-Δcash-(ΔCL-ΔSTD-ΔTP)-Dep

Where: **ΔCA**= change in current assets; **ΔCash**= change in cash/cash equivalents; **ΔCL**= change in current liabilities; **ΔSTC**= change in debt included in current liabilities; **ΔTP**= change in income taxes payable; **Dep** = depreciation and amortization expense.

Debt included in current liabilities is not related to operating transactions but to financial transactions and it is subtracted from accruals. We did not choose to use cash flow metrics of accruals [5] because of lack of

[3] Small size, low price, low book-to-market ratio, low volume stocks (Lev and Nissim, 2006).

[4] A common law system is based more on public disclosures whereas a code law system relies more on inside oriented systems of governance.

[5] Collins and Hribar (2000) suggest that the cash flow method is more accurate than the balanced sheet method. The former uses the net cash flow from operating activities. More information can be found in Kaserer and Klinger (2008),

available observations. Furthermore, following Lafond (2005) and Leippold and Lohre (2008), income tax payable is not subtracted from the accrual formula above. Hence, accruals are non-cash working capital less depreciation.

$$Accruals = \underbrace{(\Delta CA - \Delta cash)}_{\text{Current Assets}} - \underbrace{(\Delta CL - \Delta STD)}_{\text{Current Liability}} - Depreciation$$

Following prior studies, earnings used in our testing represent total operating income; the difference between total sales and total operating expense. Once obtained the cash flow component of earnings we subtract the accrual component from these. The three variables of earnings, accruals and cash flows are standardized by the firm size with firm size being measured as the average of total assets. Analyses require comparisons by the magnitude of earnings and the relative magnitude of accruals and cash flow (Sloan, 1996). Hence, the following definitions are used in our empirical calculations:

$$Earnings\ component = \frac{operating\ income}{average\ total\ assets}$$

$$Accrual\ component = \frac{accruals}{average\ total\ assets}$$

$$Cash\ flow\ component = \frac{operating\ income - accruals}{average\ total\ assets}$$

3.2 Data collection

Datastream Advanced is used to gather data from the Dutch stock market. Due to limitations of the various existing lists in Datastream Advanced a sample list is put together by combining the four available standard lists[6].

Following Leippold and Lohre (2008) the Live and Dead merged lists were available on Datastream on July 22, 2009. Connecting the dead and live companies in the list serves the purpose of avoiding survivorship biases[7]. In our sample we chose firms that had the necessary balance figures to compute accruals. Furthermore, we required firms to have monthly return figures.

These requirements result in the elimination of most of the financial firms (lacking significant inventory levels). Only three financial firms are left in our sample: AM NV (dead company); De Vries Robbe Groep NV; and Nagron NV. Eliminating these does not significantly change our results. Our final sample consists of 250 Dutch companies over the 1987 – 2009 period. Because the hedge strategy requires one year-ahead return data starting from the fifth month of the next year, our evaluated time window ends in 2007. In addition calculation of accruals necessitates the change in various balance items and therefore requires balance items from one year back. Consequently, the considered time window starts in 1988 and ends in 2007.

Our sample is not adjusted for extreme observations (outliers). Kraft et al (2006) indicate that Winsorizing returns is not appropriate when the interest of the research is to test a trading strategy.

After cleaning our data from missing variables, non-December fiscal year ends, non-equity issues and double counting, our observations were reduced from 3882 firm years to 1807 firm year data points. The firm years considered here still exceed the amount of prior investigations on the Dutch market by Pincus *et al*. (2007) and Leippold and Lohre (2008).

Following prior research, future stock returns are measured four months after the fiscal year end till one year later (1 May till 30 April). By that time researchers assume that all information concerning the listed firms is publicly available (Sloan, 1996). Moreover, by that time investors may observe the different amounts of accruals and cash flows embedded in current earnings. Annual return data inclusive of dividends are used by requesting total return figures from Datastream Advanced.

In order to adjust the obtained returns for size effects to determine the abnormal return, the three broad Dutch market indexes are used. The return on these indexes, Amsterdam Exchange Index (AEX), Amsterdam Midcap Index (AMX) and the Small Cap Index (AScX), are subtracted from the obtained firm returns depending on their market value. Companies which have a market value of less than €100 million are adjusted with the (AScx); companies which have a market value between the €100 and €1000 million are adjusted with the return from the AMX and those companies which exceed the €1000 million value are corrected by the AEX[8] [8].

Other variables used in our study are the risk-free rate (Rft) estimated by the Dutch interbank three months offered rate, market return (Rmt), price-to-book value ratio (PTBV) measured by dividing the market capitalisation (share price times shares outstanding) by the book value, earnings per share (EPS), number of shares outstanding (NOSH), capital expenditure per share (CAP EXP), static stock price volatility (BETA), leverage (LEV) calculated by total liabilities divided by total assets, market value (MV), total sales (SALES) and stock volume traded (VOL). All these figures are obtained from Datastream Advanced. Our regressions are performed using EViews (5.0).

3.3 Development of hypotheses

In agreement with Sloan (1996), our first hypothesis documents the relation between future earnings performance and current accruals and cash flows:

H1: *The accrual component of current earnings is less persistent in estimating future earnings than the cash flow component of current earnings.*

Because of the relation between earnings and future stock prices, which is documented in other studies (see for example Ball and Brown, 1968), the extension of the above hypothesis is to investigate whether investors

[6] The available standard lists lack the total number of Dutch companies. Creating a new list by combining the missing companies in each of the existing list expands the total number of companies. The combined list included the Amsterdam all share list LNLALSHR 0302, LNLALSHR 0709, FHOL and DEADNL.

[7] Survivorship bias is the tendency for failed companies to be excluded from performance tests because they do no longer exist.

[8] The first few years small companies are adjusted by the AMX due to missing return data on the AScX.

fixate on earnings when analyzing stock prices. This "naïve fixation" (Sloan, 1996; Bernard and Thomas, 1990; Ou and Penman, 1989; Maines and Hand, 1996) would mean that investors do not fully understand the implications of the underlying components of earnings. In other words, do investors change their buying and selling behaviour because of the different implications of the accrual and cash flow component in current earnings?

H2: *Stock prices do not reflect the higher earnings expectation attributable to the relatively higher cash flow component of earnings, and the lower earnings expectations due to the relatively higher accrual component of earnings.*

Kaserer and Klinger (2008) found evidence that the accrual anomaly also occurs on the German stock market. By further exploring the German stock market they suggest that the occurrence of the anomaly especially holds for firms that document their financial statements using international reporting standards. Dutch firms are since 2005 required to disclose information on their reporting framework (i.e. IFRS regulation). Consequently, separating the time periods from 1987 to 2004 and from 2005 to 2008 will contextualise the above findings for the Dutch stock market. Due to the similarity of both markets an interesting extension of hypothesis two can be stated as:

H3 *The accrual anomaly is more pronounced after the committed adoption of international accounting standards (IFRS) in 2005.*

Fama and French (1993) document in their work that other key financial variables can be of importance when calculating stock returns. These variables, earnings per share (E/P), leverage, book-to-market (BV/MV) and size (MV), are found to be good proxies explaining the cross-section in stock returns. Other variables like trading volume, capital expenditure, number of shares, stock price volatility, leverage and sales are also considered to be of importance when regressing stock returns (Kraft, 2007). These variables are not recognised in the calculations concerning the above hypotheses (H1, H2, H3). Extending the accrual investigation with these key financial variables could provide robustness to the earlier hypotheses:

H4 *The accrual phenomenon still remains after controlling for other known risk factors.*

In accordance to previous research documenting the naïve earnings expectations in stocks prices (Sloan, 1996; Xie, 2001; Collins and Hribar, 2000; Bradshaw *et al*., 2001 to name but few), a trading strategy resulting in abnormal stock returns is a plausible next step. Assuming that the earlier mentioned hypotheses will not be rejected this leads to our fifth hypothesis:

H5: *A hedge strategy, purchasing stocks in the lowest accrual quintile (taking a long position) and selling stocks in the highest accrual quintile (taking a short position, Implications for short selling due to liquidity or other restrictions are not considered), will generate positive abnormal stock returns.*

3.4 Test of hypothesis one, persistence of accruals

There is a strong relation between current earnings and future earnings (Sloan, 1996). Furthermore, prior research indicates that important information can be obtained when separating earnings into a cash flow and an accrual component. Consequently, in order to test our first hypothesis, and verify the difference in the predictive power of the accrual and cash flow component with respect to future earnings, we compute:

$$\textbf{Earnings (t+1)= Yo+Y1 Accruals (t) +Y2 Cash flow (t) +e(t+1)} \quad (1)$$

Where **Earnings (t+1)** is one year-ahead earnings. Accruals (t) and **Cash flow (t)** are current years balance items calculated as described earlier and **e(t+1)** is a disturbance term with the property $E(e(t+1)/\theta(t))$ (where $\theta(t)$ is the set of available information in the market at the end of period t).

Since prior research has documented the anomaly to be more pronounced in smaller companies (Mashruwala *et al.* 2006), we separated our testing in four groups of companies that differ in their free floated market capital (MV). First our test is run for all available companies; then we distinguish four groups with market values above 0, 10, 100 and 1000 million Euro.

Results of the regression of the model on the different groups are provided in Table 1. When interpreting our results, the reader should note that the variables are scaled by total average assets. The groups vary from all market values up to market values above 1000 million Euro. Looking at the entire sample in Panel A (Table 1), it is apparent that current accruals (Y1= 0.856) are less persistent than current cash flows (Y2= 1.137) with respect to one-year ahead earnings. More specific, an increase of 1 percent in the scaled cash flow component will lead to an increase of 1,137 percent in one year ahead return on assets (scaled earnings). Similar, 1 percent increase in scaled accruals will lead to an increase of 0,856 percent in next years return on assets (Note that accruals are often negative due to the depreciation and amortization expense). Both coefficients are statistically significant (T-statistics are significant at 1 percent confidence interval when t values are smaller than -2 and larger than 2) and indicate that the cash flow component of current earnings is a better predictor of future earnings than the accrual component of current earnings. Furthermore in Panel A it is documented a Wald test to confirm that both coefficients are not equal (F= 241.18). The R squared variable documents the explanatory power of the model, meaning that 76 percent of the difference in return on assets can be explained by scaled cash flows and accruals.

Panel B provides the results of model (1) when omitting the companies which experience a market value (MV) below 10 million euro. This adjustment is often done in previous studies (for instance Leippold and Lohre, 2008; and Lafond, 2005) because these small firms

(market value below 10 million) experience non-liquidity issues and problems with short selling.

Obviously the coefficients in Panel B are smaller than the previous panel where all observations were allowed. The accrual component decreases from Y1= 0.856 to Y1= 0,746 and the cash flow component declines from Y2= 1.137 to Y2= 0,827. Still the persistence of the cash flow component exceeds the accrual component significantly (F= 41.85). The R squared declines from 76 percent for all observation to 65 percent, indicating that the explanatory power reduces. Also the observations included in the test falls from 1807 to 1669, meaning that 138 firm' years, concerning firms that experience a market value below 10 million euro, are deleted.

For Panel C and Panel D similar results are obtained. All tested coefficients are significant and the stronger persistence of the cash flow component of earnings remains. Again the coefficients slightly decline together with the R squared, except the R squared for the observations with market value exceeding 100 million euro. Furthermore the observations used in the regression fall from 1669 in Panel B to 1190 in Panel C and end with 372 observations in Panel D. The results above support our first hypothesis (H1) that there is evidence to accept that the cash flow component of current earnings is significantly more persistent than the accrual component of current earnings. The fact that accruals are considered as less persistent can be partly explained by opportunistic earnings management behaviour (Xie, 2001; Berneish and Vargus, 2002). Accruals are considered as the primarily application to change accounting figures. Hence managers opportunistically manipulate earnings to achieve goals concerning their executive bonus plans. For instance, to increase earnings, they could understate current liabilities or prematurely record sales. Because this earnings management process is often quite complex, investors fail to recognise these manipulations. The latter will be investigated when testing the second hypothesis.

Furthermore our reported findings also support that the cash flow persistence is more pronounced in companies with a smaller market value. Hence the significant difference between the cash flow component and the accrual component is declining when the market value grows. Not reported findings indicate that regressing only companies with market values beneath the 10 million euro give similar results as reported in Panel A. This indicates that small companies take a substantial part in the difference between the cash flow component and the accrual component.

TABLE 1
Results from Ordinary Least Squares Regression of One-Year Ahead Earnings on Current Accruals and Current Cash Flows.
Earnings (t+1)= Yo+Y1 Accruals (t) +Y2 Cash flow (t) +e(t+1)

Panel A: Regression using all actual values.
Included observations: 1807
Earnings (t+1)= Yo+Y1 Accruals (t) +Y2 Cash flow (t) +e(t+1)

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Y0	-0.030474	0.004943	-6.165225	0.0000
Y1	0.855614	0.012178	70.25997	0.0000
Y2	1.136764	0.019658	57.82802	0.0000
R-squared	0.764719			
Wald test:				
Testing =Y1=Y2^1				

Test Statistic	**Value**	**df**	**Probability**
F-statistic	241.1781	(1, 1804)	0.0000

Panel B: Regression using actual values where companies market values (MV) exceeds 10 million euro
Included observations: 1669
Earnings (t+1)= Yo+Y1 Accruals (t) +Y2 Cash flow (t) +e(t+1)

	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
Y0	0.007434	0.002058	3.611624	0.0003
Y1	0.745874	0.018176	41.03540	0.0000
Y2	0.827416	0.015041	55.01047	0.0000
R-squared	0.645106			
Wald Test:				
Testing Y1=Y2^1				

Test Statistic	**Value**	**df**	**Probability**
F-statistic	41.85140	(1, 1666)	0.0000

Panel C: Regression using actual values where companies market values (MV) exceeds 100 million euro.
Included observations: 1190
Earnings (t+1)= Yo+Y1 Accruals (t) +Y2 Cash flow (t) +e(t+1)

	Coefficient	**Std.Error**	**t-Statistic**	**Prob.**
Y0	0.006325	0.002414	2.620114	0.0089
Y1	0.732185	0.021160	34.60264	0.0000

Y2	0.827143	0.017059	48.48654	0.0000
R-squared	0.664637			
Wald Test:				
Testing Y1=Y2^1				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	42.71867	(1, 1187)	0.0000	

Panel D: Regression using actual values with companies market values (MV) exceeds 1000 million euro.
Included observations: 372

	Coefficient	**Std.Error**	**t-Statistic**	**Prob.**
Y0	0.013791	0.004808	2.868365	0.0044
Y1	0.650123	0.037735	17.22884	0.0000
Y2	0.732271	0.033534	21.83647	0.0000
R-squared	0.569382			
Wald Test:				
Testing Y1=Y2^1				
Test Statistic	**Value**	**df**	**Probability**	
F-statistic	8.075605	(1, 369)	0.0047	

Notes:
The variables are defined as follows: Earnings is the income from continues operations scaled by total average assets. Accruals are non-cash current assets, minus the change in current liabilities (exclusive of short term debt), less depreciation and amortization expense scaled by total average assets. Cash flows are defined as the difference between earnings and accruals.
Significant at the level of 0.01 using an F-test.

3.5 Test of hypothesis two, stocks returns

After showing that the cash flow component of the current earnings is more persistent than the accrual component when estimating future earnings, we examine if this difference is also reflected in future stock returns. The market efficiency hypothesis assumes that all past accounting data is already included in stock prices. In other words, the difference in the persistence of the accrual and cash flow components of earnings is already embedded in stock prices unless investors naively fixate on earnings. The rational expectation hypothesis in macro economics simply puts that expectations on the financial market (subjective expectations) are equal to the expectation of analysts based on all past accounting expectation (objective expectation).This knowledge indicates that abnormal stock returns have to be zero in expectation (Mishkin 1983). Consequently, with respect to earnings, abnormal stock returns should only change by unanticipated earnings changes. Assuming market efficiency, this leads to the following pricing equation (more details can be found in Mishkin, 1983; and Sloan, 1996):

AbnRet (t+1)=β (Earnings (t+1) – E(Earnings(t+1))+φ(t+1) (2)

Where AbnRet (t+1) is the one year ahead return subtracted by the assigned market return (AEX, AMX, AScX). Earnings (t+1) is the one year-ahead earnings and φ(t+1) is a disturbance term with property $E(\varepsilon_{t+1}|\theta_t)$ (with θ_t the set of available information to the market at the end of period t).By substituting equation (1) into equation (2) we acquire the following regression formula:

AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1) (3)

Sloan (1996) builds further on the rational expectation hypothesis and compares the weight applied on past information on accruals and cash flows (in forecasting equation (1), γ1 and γ2) with the weight on these variables placed by investors when setting stock prices (pricing equation (3), γ1* and γ2*). Like most prior research (e.g. Xie. 2001; Beneish and Vargus, 2002; Collins and Hribar, 2000; Pincus *et al.*, 2007; Kaserer and Klingler, 2008), he uses the Mishkin (1983) test to compare the weights from both regressions. The Mishkin test is an often used test of a nonlinear maximum likelihood estimation procedure. It jointly estimates a linear forecasting equation (equation (1)) together with a rational market pricing model (equation (2)). Following Sloan (1996) the two equations are tested here using iterative weighted nonlinear least squares (Sloan, 1996; Mishkin, 1993). Market efficiency, with respect to accruals and cash flows, is tested by the non linear conditions γj= γj* (дj= 0,1,2) using likelihood ratio statistics:

Likelihood ratio = 2N Log SSR^o/SSR^u ;
Distributed Chi square x^2 (q)

Where N is the number of firm years, SSR^o is the sum of residuals of the constrained system, SSR^u is the sum of squared residuals of the unconstrained system and *q* is the number of constraints. Calculating the SSR^o uses the weights (дj = 0,1,2) from forecasting equation (1) and inserts them in the pricing equation (2). EViews 5.0 (Convergence criteria 0.0001 and maximal iterations of 500) is used to estimate the coefficients of the models.
Table 2 reports the results by the regression of the above described system (equation (1) and equation (3)). Like in the previous test the sample is separated by making four groups based on their market value (MV). Note that the main purpose of estimating the system is to test the equality of the coefficients (Market efficiency) and

considering the estimated weights on the coefficients tested. In other words, it is evaluated if the differences in the coefficients are significant and if investors correctly price past information in accruals and cash flows. If both assertions are true, there is reason to believe that the market efficiency can be rejected and past accounting information is not rationally priced.

Starting with Panel A, observing the whole sample, coefficient equality, γj= γj* (дj= 0,1,2) , is rejected at a significance level of 1 percent (L=13.005). Consequently the test indicates that market efficiency is rejected. Demonstrated that the coefficients are significantly different, investors tend to slightly overprice the accrual persistency with respect to one-year ahead earnings (γ1*= 0.864 vs γ1= 0.856). Surprisingly the results indicate that investors substantially underestimate the earnings persistency due to cash flows (γ2* = 0.614 vs γ2= 1.137). Note that the coefficient of cash flows (γ2*= 0.614) shows a higher p-value (0.0134) than the other coefficients in the test but is still significant at a 5 percent confidence level. The p-value gives the probability of obtaining the corresponding t-statistic as a matter of change. Furthermore consistent with prior findings the obtained R squared is close to zero. In fact, explaining future returns generates marginal to none explanatory power by definition. Changes in the obtained R squared are more due to noise or (known) errors than to the explanatory power. For that reason we only evaluate the R squared when it differs significantly from the levels accepted in prior research.

Looking at Panel B where the required market value exceeds 10 million euro, our results are more consistent with prior international findings. Accruals are significantly overpriced (γ1*= 0.802 vs γ1= 0.746) and again the cash flows component is underpriced by the market (γ2*= 0.774 vs. γ2=0.827). The coefficients equality-test is significant at the level of 5 percent (L=8.109) and rejects market efficiency. Confirming the naïve expectation of investors these findings indicate that the market treats the cash flow component as less persistent than the accrual component.

In Panel C and Panel D the likelihood test indicates that the equality of the coefficients is no longer significant at a 5 percent level. This means that the difference between the coefficients subjective persistence (pricing equation) and the coefficients objective (forecasting equation) persistence are less pronounced. It should be noted that the iterative weighted least squares estimation procedure is sensitive with respect to small numbers (Kaserer and Klingler, 2008). This may be the reason why the value of the likelihood ratio statistic is decreasing together with the amount of observations added in the test. The coefficients in Panel C are similar with the findings in Panel B, overweighting accruals and underweighting cash flows. Panel D on the other hand shows a different setting concerning the accrual components. The market here appears to correctly underweight the accrual component (0.650 vs 0.486) and it overweights the cash flow component. Note that the coefficient on accruals (0.486) gives a higher p-value (0.0288) in comparison with the other coefficients in the test but is still significant at a 5 percent level. These findings indicate that the market correctly distinguishes the lower persistence of accruals and higher persistence of cash flows with respect to future earnings. The latter should be interpreted with care concerning the insignificance of the equality test.

The overall findings in Table 2 indicate that investors do not recognize the lower persistence of current accruals with respect to one year ahead earnings and support hypothesis two (H2). Additionally investors underestimate the persistence of cash flows. A reason may be the inability of investors to detect earnings management. mentioned earlier this earnings management process is often highly complex and investors fail to recognize it. Our results suggest that sophisticated market participants do not fully understand the persistence and valuation implications of accounting accruals. Although our results are not as strong as in prior studies based on the US they do indicate the existence of the accrual anomaly in the Dutch stock market.

If we examine the differences between large and small companies, it is plausible that the overweighting of accruals and underweighting of cash flows is more pronounced in the earlier Panels that include small firms. Although Panel A shows a slightly overweighting difference of the accrual component, Panel B obviously indicates the existence of the mispricing. The mispricing declines in Panel C and contradicts in Panel D. Consequently the mispricing of accruals and cash flows seems to be more pronounced in smaller firms. Note that Kraft *et al.* (2007) support the use of ordinary least squares (OLS) over the Mishkin (1983) because in their view the latter test leads to an omitted variable problem. In non-reported in our paper results we found no significant coefficients when regressing only the accrual and cash flows component with respect to future returns when applying the OLS method.

TABLE 2
Nonlinear Iterative Weighted Least Squares Estimation for the System of the
Forecasting Equation and the Rational Pricing Equation
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

Panel A: Regression using all actual values
Included observations: 1807
Convergence achieved after 6 iterations
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.855614	0.012178	70.25997	0.0000
γ2	1.136764	0.019658	57.82802	0.0000

γ1*	0.863684	0.130290	6.628964	0.0000
γ2*	0.613939	0.248117	2.474396	0.0134

R-squared 0.012885
Sum squared resid unconstrained 402.0565
Sum squared resid constrained 405.3959
Likelihood ratio 13.005
Test of market efficiency: L: γo=γ*o; γ1=γ*1; γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)
2N Log SSR^o
SSR^u

Panel B: Regression using actual values with company market values (MV) exceeding 10 million euro
Included observations: 1669
Convergence achieved after 6 iterations
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.745874	0.018176	41.03540	0.0000
γ2	0.827416	0.015041	55.01047	0.0000
γ1*	0.801643	0.071617	11.19355	0.0000
γ2*	0.774189	0.059318	13.05145	0.0000

R-squared 0.063614
Sum squared resid uncontrained 295.1524
Sum squared resid contrained 296.8079
Likelihood ratio 8.109
Test of market efficiency: L: γo=γ*o;γ1=γ*1;γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)
2N Log SSR^o
SSR^u

Panel C: Regression using actual values with company market values (MV) exceeding 100 million euro
Included observations: 1190
Convergence achieved after 7 iterations
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.732185	0.021160	34.60264	0.0000
γ2	0.827143	0.017059	48.48654	0.0000
γ1*	0.774195	0.104159	7.432837	0.0000
γ2*	0.778117	0.084126	9.249436	0.0000

R-squared 0.041210
Sum squared resid uncontrained 217.1028
Sum squared resid contrained 217.6584
Likelihood ratio 2.642
Test of market efficiency: L: γo=γ*o;γ1=γ*1;γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)
2N Log SSR^o
SSR^u

Panel D: Regression using actual values with company market values (MV) exceeding 1000 million euro
Sample: 1 372
Included observations: 372
Convergence achieved after 8 iterations
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.650123	0.037735	17.22884	0.0000
γ2	0.732271	0.033534	21.83647	0.0000
γ1*	0.486130	0.221534	2.194376	0.0288
γ2*	0.674846	0.192783	3.500544	0.0005

R-squared 0.031362
Sum squared resid uncontrained 41.33428
Sum squared resid contrained 41.43730
Likelihood ratio 0.804
Test of market efficiency: L: γo=γ*o;γ1=γ*1;γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)

$$\mathbf{2N \log \frac{SSR\hat{}o}{SSR\hat{}u}}$$

Notes:

q is the number of constrains, N is the number of observations (firm years), SSR^o **is the sum of squared residuals of the constrained system, SSR^u is the sum of squared residuals of the unconstrained system Earnings is the income from continues operations scaled by total average assets. Accruals are non-cash current assets, minus the change in current liabilities (exclusive of short term debt), less depreciation and amortization expense scaled by total average assets. Cash flows are defined as the difference between earnings and accruals. Abnormal return (AbnRet) is the stock return (inclusive of dividends) subtracted by the leading stock index dependent on the market value.**

3.6 Test of hypothesis three, accounting standards

As mentioned Kaserer and Klinger (2008) found evidence in the German stock market that the accrual anomaly especially holds for firms that document their financial statements using international accounting standards (IFRS/IAS and US-GAAP) instead of national GAAP. Furthermore Jeanjean and Stolowy (2008) found that the existence of earnings management did not decline after the implementation of IFRS. These results are interesting because they are not in accordance with the normal presumption that "fair value" accounting (under IFRS) provides a higher quality to the financial statements than conservative accounting regulations do (GAAP or other local standards with some EEC guidelines).

Dutch firms are ever since 2005 required to disclose information on their adopted reporting framework (i.e. IFRS regulation). Consequently, by separating our examination from 1988 to 2004 and from 2005 to 2007 we examine whether the findings of Kaserer and Klinger (2008) also hold for the Dutch stock market. Our results are reported in Table 3. Companies disclosing financial information post 2005 other than IFRS reporting are removed from our testing. Hence the observations used in our test slightly declines from 1669 to 1658. Note that these observations only concern companies with a market value above 10 million euro.

Panel A reports the results over the period 1988 to 2004 where almost all companies disclose their results conforming to the national GAAP. Our findings are similar with the results from Panel B in table 2 where all observations are included with the required market value of 10 million. The market overweights the accrual component (γ*1 = 0.791 vs γ1= 0,740) and underweights the cash flow component (γ*2= 0.777 vs. = γ2 0.822). Further notable is that the likelihood test exceeds the significance level of 5 percent (The likelihood test is sensitive for small samples. As earlier reported, the value of the Likelihood test decreases when more observation are omitted) so coefficient inequality is not accepted. Besides this our results do not add new aspects. Looking at the Panel B results on companies reporting their financials in accordance to IFRS (2005 to 2007) we see the market overweighting the accrual component more (γ*1= 0.855 vs. γ1= 0.705) than what we see in Panel A. Also the market slightly underweights the cash flow component (γ*2= 0.755 vs. γ2= 0.745). Again, like in Panel A the test of coefficient equality does not confirm that both coefficients are unequal at a significance level of 5 percent.

In summation there is not enough evidence to accept that the accrual anomaly expands after IFRS reporting became mandatory in the EU. Two main reasons to reject hypothesis (H3) can be considered. First, the difference between the forecasting coefficients and the pricing coefficients are not substantial in accordance with earlier findings. For instance, Kaserer and Klingler (2008) find a significant coefficient on accruals in the forecasting equation of 0.477 against 1.188 in the pricing equation. Also they indicate that the coefficients and the inequality of the coefficients are significant at a level of 5 percent. Furthermore their amount of observations used in the test is comparable with the amount of observations we used here, thus no presumptions can be made concerning the small number of observations.

Secondly, Panel A and Panel B indicate an insignificant level for accepting coefficients equality. Consequently market efficiency cannot be rejected.

TABLE 3
Nonlinear Iterative Weighted Least Squares Estimation for the System of the
Forecasting Equation and the Rational Pricing Equation when separating the time window between 1988-2004 and 2005-2007
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

Panel A: Estimating the system for the years 1988–2004 for companies exceeding a market value of 10 million euro.
Included observations: 1419
Convergence achieved after 6 iterations

Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.739729	0.019778	37.40072	0.0000
γ2	0.821970	0.016866	48.73610	0.0000
γ1*	0.791220	0.077081	10.26482	0.0000
γ2*	0.777409	0.065734	11.82660	0.0000

R-squared 0.064018
Sum squared resid uncontrained 278.8049
Sum squared resid contrained 280.4879
Likelihood ratio 7.418
Test of market efficiency: L: γo=γ*o;γ1=γ*1;γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)

$$2N \log \frac{SSR^{o}}{SSR^{u}}$$

Panel B: Estimating the system for the years 2005–2007 for companies exceeding a market value of 10 million euro.
Included observations: 239
Convergence achieved after 15 iterations
Earnings (t+1) = γo +γ1 Accruals (t) + γ2 Cash Flow (t) +e (t+1)
AbnRet (t+1)=β (Earnings (t+1)–(γo*+γ1* Accruals(t) + γ2*Cash Flow(t)))+φ(t+1)

	Coefficient	Std. Error	t-Statistic	Prob.
γ1	0.704799	0.032523	21.67100	0.0000
γ2	0.755621	0.024767	30.50971	0.0000
γ1*	0.855392	0.203063	4.212446	0.0000
γ2*	0.744662	0.148118	5.027492	0.0000

R-squared 0.034893
Sum squared resid uncontrained 14.88564
Sum squared resid contrained 15.08439
Likelihood ratio 2.753
Test of market efficiency: L: γo=γ*o;γ1=γ*1;γ2=γ*2
The following likelihood-ratio statistic is distributed asymptotically χ^2 (q)

$$2N \log \frac{SSR^{o}}{SSR^{u}}$$

Notes:
q is the number of constrains, N is the number of observations (firm years), SSR^o is the sum of squared residuals of the constrained system, SSR^u is the sum of squared residuals of the unconstrained system Earnings is the income from continues operations scaled by total average assets. Accruals are non-cash current assets, minus the change in current liabilities (exclusive of short term debt), less depreciation and amortization expense scaled by total average assets. Cash flows are defined as the difference between earnings and accruals. Abnormal return (AbnRet) is the stock return (inclusive of dividends) subtracted by the leading stock index dependent on the market value.

3.7 Test of hypothesis four, adding more variables

Our objective in this section is to point out that the predictability of accruals is not taken away if we introduce other variables in our testing. The additional variables included in our OLS regression models are considered to be important with respect to future returns (earnings to price, sales, capital expenditure, trading volume, market to book value, leverage, and number of shares). Note that if investors have rational expectations about future returns the coefficients on past accounting numbers are indifferent to zero or insignificant.

Panel A of Table 4 documents the results of the regression of abnormal stock returns on the accrual component of earnings and the various other variables introduced in our modelling. Note that due to missing observations, caused by the new implemented variables, our sample size decreases substantially. Consequently inferences concerning the results in this Panel have to be done with caution and are not comparable with earlier results. The only significant variables in Panel A are accruals, market value and the number of shares. In particular the interest is on the accrual component of earnings showing the predicted negative relation (γ1 = -0.336) with future abnormal returns. Furthermore, the significant coefficient on the market value shows a slightly negative relation with abnormal returns, indicating that firms with a higher market value will experience a lower abnormal return. The significant marginal positive contribution on the number of shares outstanding may be attributable to the positive effect of growing liquidity when more stocks are available.

Panel B takes a closer look at the significant variables in our model. In Panel B we gradually remove the most insignificant variables from Panel A. The amount of missing 39 observations declines to an acceptable level. Although the magnitude of the significant coefficients slightly decreases, similar inferences can be drawn as from Panel A. Following the findings of Fama and French (1993), common risk factors on future returns are determined as size (MV), earnings to price (E/P), leverage (liabilities/total assets) and book to market value (BV/MV). They indicate that when used in combination, book-to-market value and firm size seems to absorb the effect of earnings to price and leverage (Fama and French, 1993). For that reason Panel C documents the relation between abnormal returns and the accrual component of earnings, size and the price to book value. Panel C indicates that the only significant variable left is accruals. Additional evidence indicates that the coefficient on accruals is significantly different from zero at a five percent level using a Wald test.

In summation from our OLS regression in Table 4 there is evidence that variables, other than accruals, size and the number of stock available, do not have a significant impact on abnormal future return. Following the recommendations of Fama and French (1993) market value turns out to be insignificant and the only significant variable left is accruals.

TABLE 4
Ordinary Least Square Regression of One-Year Ahead Abnormal Returns on the current Years Component of Accruals and Various Other Variables
AbnRet(t+1)=γo+γ1Accruals(t)+γ2Beta+γ3CapExp(t)+γ4Eps(t)+γ5 Lev(t)+γ6Mv(t)+γ7Ptbv(t)+γ8Nosh(t)+γ9Sales(t)+γ10Vol(t)+e(t+1)

Panel A: Including all variables.
Sample (adjusted):1669
Included observations: 888 after adjustments
AbnRet(t+1)=γo+γ1Accruals(t)+γ2Beta+γ3CapExp(t)+γ4Eps(t)+γ5Lev(t)+γ6Mv(t)+γ7Ptbv(t)+γ8Nosh(t)+γ9Sales (t)+γ10Vol(t)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.065728	0.193474	0.339724	0.7341
γ1	-0.334688	0.137692	-2.430695	0.0153
γ2	0.060536	0.043286	1.398511	0.1623
γ3	-0.001610	0.005065	-0.317942	0.7506
γ4	0.001602	0.008621	0.185812	0.8526
γ5	0.043451	0.100254	0.433405	0.6648
γ6	-0.080104	0.020386	-3.929316	0.0001
γ7	-0.001996	0.004245	-0.470136	0.6384
γ8	0.085349	0.026662	3.201124	0.0014
γ9	0.000105	0.016070	0.006517	0.9948
γ10	-0.000228	0.012758	-0.017901	0.9857

R-squared 0.043748

Panel B: Including only the significant variables.
Sample (adjusted): 1669
Included observations: 1495 after adjustments
AbnRet(t+1)=γo+γ1Accruals(t)+γ6Mv(t)+γ8Nosh(t)+ε(t+1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.128933	0.110474	1.167087	0.2434
γ1	-0.212194	0.102752	-2.065109	0.0391
γ6	-0.066417	0.009663	-6.873554	0.0000
γ8	0.069594	0.009373	7.425085	0.0000

R-squared 0.041895
Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic (=0)	4.264674	(1, 1491)	0.0391
F-statistic (=0)	47.24574	(1, 1491)	0.0000
F-statistic (=0)	55.13189	(1, 1491)	0.0000

Panel C: Including important variables determined by Fama and French (1993).
Sample: 1669
Included observations: 1627 after adjustment
AbnRet(t+1)=γo+γ1Accruals(t)+γ6Mv(t)+γ7Ptbv(t)

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	0.131259	0.104928	1.250945	0.2111
γ1	-0.213247	0.093602	-2.278231	0.0228
γ6	-0.006082	0.005381	-1.130434	0.2585
γ7	-0.000187	0.000112	-1.661546	0.0968
R-squared 0.006050 Mean dependent var 0.019235				

Wald Test:			
Equation: Untitled			
Test Statistic	Value	df	Probability
F-statistic(γ1 =0)	5.190337	(1, 1623)	0.0228

Notes:

The variables are defined as follows: Earnings is the income from continues operations scaled by total average assets. Accruals are non-cash current assets, minus the change in current liabilities (exclusive of short term debt), less depreciation and amortization expense scaled by total average assets. Cash flows are defined as the difference between earnings and accruals. Abnormal return (AbnRet) is the stock return (inclusive of dividends) subtracted by the leading stock index dependent on the market value. The risk-free rate (Rft) estimated by the Dutch interbank three months offered rate,Rmt is the market return, (PTBV) is price-to-book value ratio measured by dividing the market capitalisation (share price times shares outstanding) by the book value, EPS are the earnings per share, NOSH is the number of shares outstanding, CAP EXP is the capital expenditure per share, BETA is the static stock price volatility, LEV is the leverage calculated by total liabilities divided by total assets, MV is the market value, SALES is the total sales and VOL is the stock volume traded.

3.8 Test hypothesis five, market returns

In this section we assess whether a trading strategy, with a long position in low accrual stocks and a short position in high accrual stocks, generates a significant excess return. On an annual basis, starting from 1988 and ending in 2007, two portfolios are formed; the first consists of the 20 percent most negative accrual firms (long position) and the other consists of the 20 percent highest accrual firms (short position). Subtracting the return of the short position (high accrual firms) from the return of the long position (low accrual firms) will generate a portfolio hedge return. Each portfolio is set up four months after the fiscal year ending. Hence, it is assumed that all accounting information is available to the market at that time. The holding period of each portfolio is fixed to 12 months. Recall from section 3.5 that it is required that firms should have a market value of above 10 million euro.

First we statistically estimate the hedge portfolio return using the capital asset pricing model (CAPM) enhanced with a size and price-to-book adjustment. Because prior research has found that price-to-book values and company size (MV) affect returns (Fama and French 1993) we control for these factors by incorporating them in our model. We examine separately the two portfolios and then we compare our results with the raw (actual) portfolio returns, with the broad market index (AEX) and with the risk-free rate. we apply the following formula:

$$\underline{Rlt - Rst} = \alpha + \beta\ \underline{(Rmt - Rft)} + \delta\ \underline{(R(mv)t)} + \mu\ \underline{(R(ptbv)t)} + \theta\ (t+1)$$

Long- Sort Market Size Value

Where, Rlt – Rst is the hedge return (the long position minus the short position). Rmt –Rft is the broad market return (from the AEX index) minus the risk free rate (Dutch three months interbank offered rate). The R(mv)t indicates the return on the small index rate (HSBC smaller Dutch equity) minus the risk free rate. R(ptbv)t is the return difference between high and low price to book firms. Furthermore, α exposes the average return per year. A significant and positive estimate of α indicates evidence of a systematic return based on an accrual based (hedge) portfolio. Again θ(t+1) is a disturbance term. The model is similar of that used in prior international research concerning the accrual anomaly (Pincus, 2007; Lafond, 2005; and Leipold and Lohre, 2008). Note that when comparing the results with prior studies we employ here the price to book value instead of book to market. The regression results of the CAPM together with the Fama and French (1993) size and price to book factors are documented in Table 5. The regression is done on a annual basis over the twenty years estimated. Because of the few observations caution is required when assessing the relation between the returns and the variables included in our model. Nevertheless our testing is an extension to check the robustness of our earlier findings concerning the accrual anomaly.

Starting with the hedge strategy in Panel A all coefficients estimated are insignificant and therefore not reliable or not related. The insignificant level suggests that the intensity of using accruals in a hedge strategy does not relate with the existence of the accrual anomaly. Furthermore the explanatory power (R squared) of the model (8.24 percent) deviates from prior findings where the explanatory power on average ranges between 0 and 5 percent. This indicates that the model is picking up some other (known) risk factors instead of representing pure alpha (hedge return). This is conflicting with our main purpose, in which considering a hedge strategy is to get rid of this systematic exposure. Considering the previous limitation, the annual average return (α) indicates that there is a 3.38 percent return concerning the hedge strategy over the twenty years estimated. Realising that the mean annual risk-free rate over the same period amounts to 4.72 percent[9], this figure is not supporting the accrual anomaly. Hence our statistical hedge test does not

[9] Similar to Leippold and Lohre (2008) we calculated the risk free rate using the three months Dutch interbank offered rate.

support Hypothesis five (H5) in that a trading strategy on the accrual anomaly is presumed to provide excess return.
In Panel B where the portfolio of the 20 percent lowest accrual companies (lowest quintile) is considered separately, the coefficients on α and on the included size factor are both statistically significant and positive. Hence, panel B indicates that a long position on this portfolio generates a statistically significant annual return of 6.5 percent. Furthermore the positive and significant weight on the size factor indicates that the firms evaluated behave like those of small firms (Machruwala *et al*., 2006). Also the R squared on the portfolio return is consistent with prior research.
Similar to Panel A, in Panel C, where the short position is evaluated, coefficient α again is insignificant. Moreover, similar to Panel A, the insignificance level suggests that the intensity of using high accrual firms to form a portfolio does not relate with the existence of the accrual anomaly.

Overall our results indicate that there is no reason to assume that the accrual anomaly does also exist on the Dutch stock market. This is consistent with the limited prior work on the Dutch market (Pincus, 2007; Leippold and Lohre, 2008), with the exception of Lafond (2005). Furthermore in contrast with our findings prior research suggests that the accrual anomaly is mostly driven by the highest accrual quintile (Leippold and Lohre, 2008).
Although the main accrual anomaly (hedge return) is not statistically documented in our study our results support the significant return concerning the low accrual portfolio. Therefore taking a long position in the lowest accrual quintile seems to be rewarding.

TABLE 5

Regression tests of portfolio returns from 1988 till 2007 enhanced with a size and

price to book effect

Rlt – Rst = α+ β (Rmt –Rft)+ δ (R(mv)t) + μ (R(ptbv)t) +θ (t+1)
Long- Sort Market Size Value

Panel A: Hedge portfolio
Sample: 1 20
Included observations: 20
Rlt – Rst = α+ β (Rmt –Rft)+ δ (R(mv)t) + μ (R(ptbv)t) +θ (t+1)
Long- Sort Market Size Value

Variable	Coefficient	Std. Error	t-Statistic	Prob.
A	0.033840	0.032324	1.046911	0.3107
Rmt –Rft	-0.275988	0.250470	-1.101878	0.2868
R(mv)t	0.245914	0.228727	1.075144	0.2983
R(ptbv)t	0.194560	0.258396	0.752954	0.4624
R-squared	0.082409			

Panel B: Low accrual portfolio
Sample: 1 20
Included observations: 20
Rlt = α+ β (Rmt –Rft)+ δ (R(mv)t) + μ (R(ptbv)t) +θ (t+1)
Long Market Size Value

Variable	Coefficient	Std. Error	t-Statistic	Prob.
A	0.065110	0.029420	2.213109	0.0418
Rmt –Rft	-0.130903	0.227967	-0.574220	0.5738
R(mv)t	1.037618	0.208177	4.984310	0.0001
R(ptbv)t	0.267830	0.235180	1.138828	0.2715
R-squared	0.858350			

Panel C: High accrual portfolio
Sample: 1 20
Included observations: 20
Rst = α+ β (Rmt –Rft)+ δ (R(mv)t) + μ (R(ptbv)t) +θ (t+1)
Sort Market Size Value

Variable	Coefficient	Std. Error	t-Statistic	Prob.
A	0.026615	0.023825	1.117121	0.2804
Rmt –Rft	0.107707	0.184610	0.583433	0.5677
R(mv)t	0.808126	0.168584	4.793618	0.0002
R(ptbv)t	0.184232	0.190451	0.967347	0.3478
R-squared	0.895192			

Notes:
The variables are defined as follows: Rlt – Rst is the hedge return, the long position minus the short position. Rmt –Rft is the broad market return (AEX index) minus the risk free rate (Dutch three months interbank offered rate). The R(mv)t indicates the return on the small index rate (HSBC smaller Dutch equity) minus the

risk free rate. R(ptbv)t is the return difference between high and low price to book firms. Alfa (α) exposes the average yearly return.

3.9 Raw or actual returns

In assessing our findings above the last part of our paper compares the statistical findings with the "actual" raw returns. Although the previously reported statistically measured hedge return is insignificant, the average raw (not statistical) hedge return is slightly larger (4.29 percent). The raw hedge portfolio returns over the years 1988 to 2007 are documented in figure 1. Hence, this figure represents the year by year hedge return by taking a long position in the lowest accrual quintile and a short position in the highest accrual quintile. The hedge portfolio returns are positive in 13 of the 20 years.

In the US stock market Sloan (1996) found a positive hedge return in 28 of the 30 years evaluated. He documents a significant 10.4 percent hedge return. On the Dutch market, considering the smaller amount of observations and a different time window, Leippold and Lohre (2008) found a yearly insignificant return of 7.2 percent. Lafond (2005) indicates a yearly 5 percent significant return of 7.1 percent. These higher figures can be explained perhaps by the dated respective works and the smaller year points evaluated.

Figure 2 illustrates the cumulative returns of the highest quintile (high accrual portfolio), lowest quintile (low accrual portfolio), hedge portfolio (difference between low and high), broad index returns (AEX) and the risk-free rate returns. These figures confirm the statistical finding that a hedge strategy on the accrual anomaly does not outperform the broad Dutch index (AEX). Moreover, the cumulative hedge return even underperforms the risk free rate over the 20 years evaluated. Further we can see that the cumulative return of the lowest quintile (low accrual firms) is substantial higher in comparison with the others. Hence, the only portfolio that outperforms the broad market index (AEX) is the low accrual portfolio.

Figure 3 shows the total cumulative returns on the different portfolio's over the 20 years obtained. This figure indicates that the highest cumulative total return of 264 percent is measured at the low accrual portfolio. This supports the earlier significant statistical finding in Panel B concerning the low accrual portfolio. Note that the return figures are exclusive of transaction and information assessing costs. Furthermore figure 3 indicates that the high accrual portfolio earns a 20 year return of 177 percent and ends slightly below the broad market index (AEX). Although the high accrual portfolio does not generate a negative return as in the US based studies it may be useful to detect overvalued companies since holding this portfolio is less rewarding than the AEX. Moreover, due to the short position in the hedge portfolio the portfolio risk is relatively low. For instance when we look at the accrual year 2007, the broad index falls 48 percent where the hedge portfolio returns 11 percent. Note that the accrual year 2007 evaluates stock prices from 1 May 2008 till 30 April 2009. Therefore, a hedge strategy avoids the risk of a stock market crash like recently experienced and taking a short position may make sense.

Overall, although our results do not support the accrual anomaly in the Dutch stock market, a strategy holding the lowest accrual quintile is more rewarding than investing in the broad Dutch index or the high accrual quintile. Also the high accrual portfolio may be used to detect overvalued firms or to reduce portfolio risk.

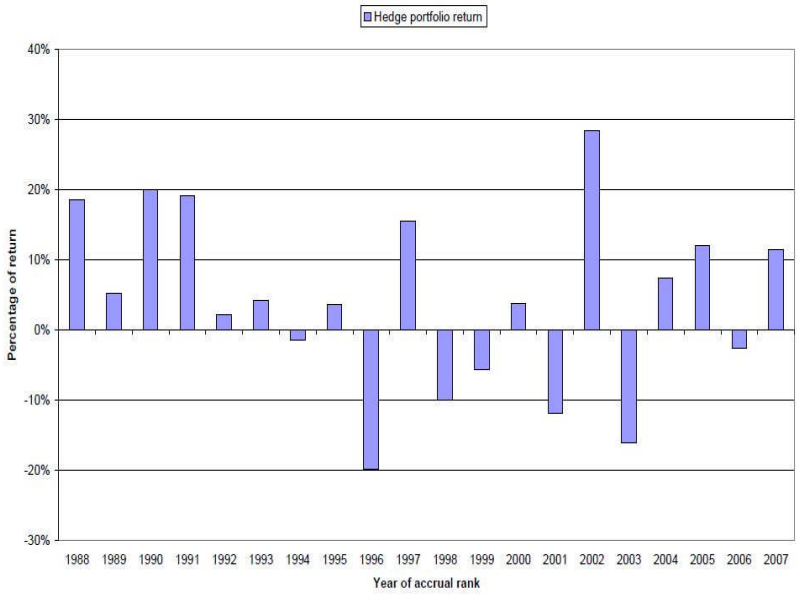

Figure 1: Annual returns from a hedge portfolio taking a long position in stocks representing the lowest accrual amounts and an equal short position in the stocks representing the highest accrual amounts.

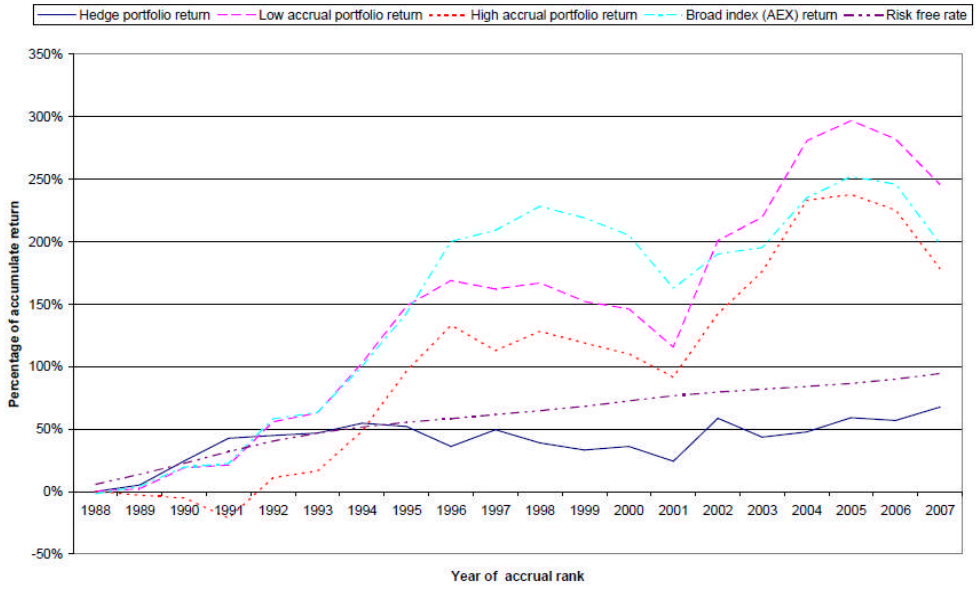

Figure 2: Cumulative returns from a hedge portfolio taking a long position in stocks representing the lowest accrual amounts and a equal short position in the stocks representing the highest accrual amounts.

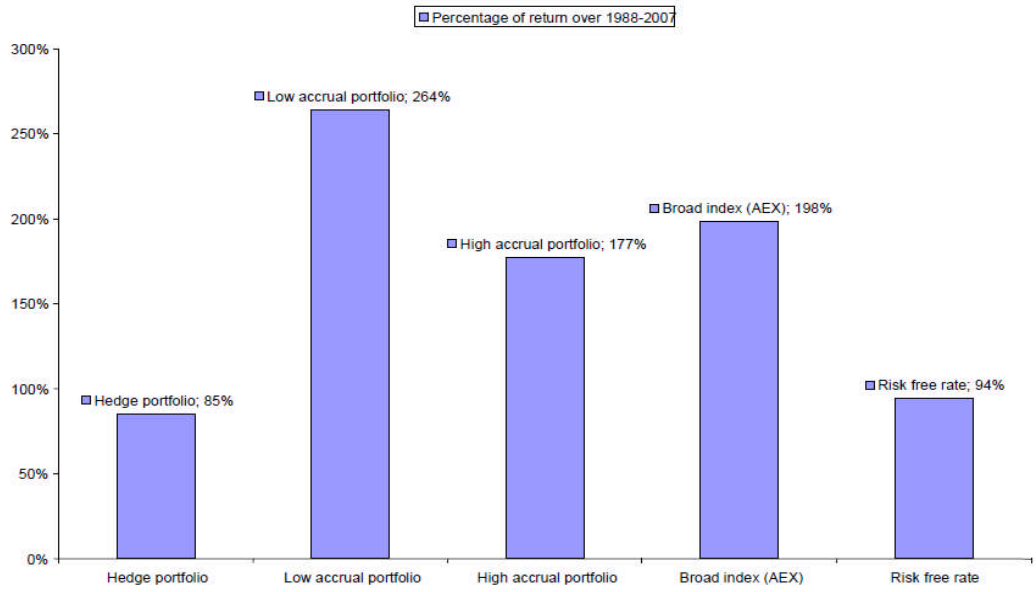

Figure 3: Total cumulative returns from a hedge portfolio taking a long position in stocks representing the lowest accrual amounts and an equal short position in the stocks representing the highest accrual amounts, the underlying low accrual and high accrual portfolio, the broad market index (AEX) and the risk free rate.

4. Summary and conclusions

In this study we investigated the existence and the conditions under which the accrual anomaly appears in the Dutch stock market. Because substantial prior research has broadly identified the accrual anomaly in the U.S capital market, our work can be viewed as an extension of the recent international evidence concerning the anomaly.

Following Sloan (1996) our study first documents statistical evidence to accept that the cash flow component of current earnings is significantly more persistent than the accrual component of current earnings with respect to future earnings. This difference in persistence can be partly explained by opportunistic earnings management behaviour (Xie, 2001; Berneish and Vargus, 2002). Furthermore our findings suggest that the stronger cash flow persistence and the weaker accrual persistence is more pronounced in companies with a smaller market value.

The Mishkin (1983) test is then employed to examine whether stock prices reflect these different characteristics in accruals and cash flows. Our results indicate that investors do not recognize the weaker persistence of current accruals and the stronger persistence of cash flows with respect to one year ahead earnings. Moreover our findings suggest that sophisticated market participants do not fully understand the persistence and valuation implications of accounting accruals. This means that stock prices do not reflect the stronger persistence of

the cash flow component and the weaker persistence of the accrual component of earnings. Furthermore our results suggest that the mispricing phenomenon is more pronounced in smaller firms. Note that our results are less convincing than what prior research has demonstrated in the US stock market.

Additionally, where Kraft *et al.* (2007) support the use of ordinary least squares (OLS) regression over the Mishkin (1983), we find no significant coefficients existing in the Dutch stock market when regressing the accrual and the cash flows components with respect to future returns (when employing OLS).

We conducted some additional work to obtain recent findings int he context of the Kaserer and Klingler (2008) study. After examining two different samples, (before and after 2005), our results indicate that the coefficients concerning this accounting feature are neither substantial nor statistically different. Consequently, there is no reason to assume that the change in accounting standards has a significant effect on the accrual anomaly in the Dutch stock market.

After extending earlier work (Kraft *et al*., 2007; Fama and French, 1993), by controlling for more variables in our modelling, and regressing them using OLS we find marginal indications that the predictive power of the accrual component is maintained.

The previous sections of our study point to statistical evidence that investors do not fully understand the implications of accruals and cash flows. We then examine this by testing if there is statistical evidence of a significant return when applying a hedge portfolio with a long position in a low accrual portfolio and a short position in a high accrual portfolio. We find no such evidence of a significant return. On the other hand, further testing documents a significant positive return on the low accrual portfolio. This suggests that taking a position in low accrual firms will generate a significant abnormal return.

The last section of our study paper compares the statistical findings with the raw or not statistically obtained return data. The raw data confirm our earlier statistical results that the low accrual portfolio outperforms the broad Dutch index (AEX). A return of 264 percent is earned by examining the low accrual portfolio over the 20 years evaluated. In the same period the broad Dutch index (AEX) earned 198 percentage points.

This last section also illustrates the poor performance of the hedge strategy when obtaining the returns on the broad Dutch index and the risk free rate return. Although there is statistical evidence that investors do not price accruals and cash flows correctly this is not similar to the U.S stock market results.

In conclusion, our paper indicates that the different implications of accruals and cash flows do not give reasons to assume that the Dutch market is not rationally priced. Besides the abnormal return considered in the low accrual portfolio we can conclude that there is no evidence that a hedge return in the accrual anomaly earns abnormal returns in the Dutch stock market. Consequently, there is no reason to assume that a trading strategy in the Dutch stock market based on the knowledge of the accrual anomaly generates excess returns.

References

Ali, A., Chen, X., Yao, T., Yu, T. Do Mutual Funds Profit from the Accrual Anomaly. Journal of Accounting Research, 46(1): 1 – 26. (2008)

Barth, M.E., Hutton, A.P. Analyst Earnings Forecast Revisions and the Pricing of Accruals. Review of Accounting Studies, 9: 59 - 96. (2004)

Beneish, M. D., Vargus, M. E. (2002). Insider Trading, Earnings Quality, and Accrual Mispricing. The Accounting Review, 77(4): 755 – 791. (2002)

Bie, de T, Haan, de L. Market Timing and Capital Structure Evidence for Dutch firms. De Economist 155 (2): 183 – 206. (2007)

Bradshaw, M. T., Richardson, S. A., Sloan, R. G. Do Analysts and Auditors Use Information in Accruals? Journal of Accounting Research, 39(1): 45 – 74. (2001)

Dechow, P. M. Accounting Earnings and Cash Flows as Measure of Firm Performance. The Role of Accounting Accruals. Journal of Accounting and Economics, 18: 3 – 42. (1994)

Desai, H., Rajgopal, S., Venkatachalam, M. Value-Glamour and Accruals Mispricing: One Anomaly or Two? The Accounting Review, 79(2): 355 – 385. (2004)

Defond, M. L., Park C. W. The Reversal of Abnormal Accruals and the Market Valuation of Earnings Surprises. The Accounting Review, 76(3): 375 – 404. (2001)

Fairfield, P. M., Whisenant, J. S., Yohn, T. L. Accrued Earnings and Growth: Implications for Future Profitability and Market Mispricing. The Accounting Review, 78(1): 353 – 371. (2003)

Fama E. F., French K. R. Common Risk Factors in the Returns on Stock and Bonds. Journal of Financial Economics, 33: 3 – 56. (1993)

Jeanjean, T., Stolowy, H. Do Accounting Standards Matter? An Exploratory Analysis of Earnings Management Before and After IFRS Adoption. Journal of Accounting and Public Policy, 27(6): 480 -494. (2008)

Kaserer, C., Klingler, C. The Accrual Anomaly Under Different Accounting Standards – Lessons Learned from the German Experiment. Journal of Business Finance & Accounting, 35: 837 – 859. (2008)

Khan, M.. Are Accruals Mispriced? Evidence from Tests of an Intertemporal Capital Asset Pricing Model. Journal of Accounting and Economics, 45(1): 55 – 77. (2007)

Kothari, S. P. (2001). Capital Markets Research in Accounting. Journal of Accounting and Economics, 31: 105 – 231. (2001)

Kothari, S. P., Zach, T., and Sabiono, J. S. Implications of Survival and Data Trimming for Test of Market Efficiency. Journal of Accounting and Economics, 39:.61 – 121. (2005)

Kraft, A., Leone, J., Wasley, C. Regression-Based Tests of the Market Pricing of Accounting Numbers: The Mishkin Test and Ordinary Least Squares. Journal of Accounting Research,. 45(5): 1081 - 1114. (2007)

Kraft, A., Leone, J., Wasley, C. An Analysis of the Theories and Explanations Offered for the Mispricing of Accruals and Accrual Components. Journal of Accounting Research, 44(2): 297 – 339. (2006)

LaFond, R. (2005). Is the Accrual Anomaly a Global Anomaly? MIT Sloan School of Management. Working Paper 4555-05. (2005)

Lev, B., Nissim, D. The Persistence of the Accrual Anomaly. Contemporary Accounting Research, 23(1): 193 – 226. (2006)

Leippold, M., Lohre, H (2008). Data Snooping and the Global Accrual Anomaly. Working paper, http://ssrn.com/abstract=962867.

Leippold, M., Lohre, H.. Data Snooping and the Global Accrual Anomaly. Working Paper. University of Zurich - Swiss Banking Institute (ISB); Swiss Finance Institute (2010).

Mishkin, F. A. A Rational Expectations Approach to Macroeconomics: Testing Policy Effectiveness and Efficient-markets Models. Chicago, IL: University of Chicago Press. (1983)

Pincus, M., Rajpogal, S., Venkataachalam, M. The Accrual Anomaly: International Evidence. The Accounting Review, 82(1): 169 – 203. (2007)

Richardson, S. A., Sloan, R. G., Soliman, M. T., Tuna, I. Accrual Reliability, Earnings Persistence and Stock Prices. Journal of Accounting and Economics, 39 (3): 437 – 485. (2005)

Sloan, R. G. Do Stock Prices Fully Reflect Information in Accruals and Cash Flows About Future Earnings? The Accounting Review, 71(3): 289 – 315. (1996)

Xie, Hong (2001). The Mispricing of Abnormal Accruals. The Accounting Revie w, 76(3): 357 - 373