

# The Association between Stock Return, Earnings Quality (Earning Persistence) and Magnitude of Accruals with Accruals Quality

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## Abstract

In this paper association between stock return and earning quality with Quality of Accruals are studied. Our sample is obtained from the Tehran Stock Exchange. The sample is restricted to firms with complete data for assets, earnings, cash flow from operations, changes in accounts receivable, and changes in inventory. Hence these restrictions reduce our sample to 95 firms over the period 2001 - 2009. Our approach to Measureing accrual quality that developed by Dechow and Dichev is based on the residuals from regressions of changes in working capital on past, present, and future operating cash flows (2002). The standard deviation of these residuals is the measure of accruals quality where a higher standard deviation signifies lower quality. We show that the measure of accrual quality is positively related to the earnings persistence (earnings quality) and negatively to the stock return. Also We also illustrate that the magnitude of the accruals is negatively related to the earnings persistence (earnings quality) and accrual quality and positively related to the stock return.

**Keywords:** 1. accruals quality 2. estimation errors of accruals 3. stock return 4. earning quality 5. magnitude of accruals

**JEL Classification Code:** *G11*

## 1. Introduction

This study investigates the relation between accruals quality with stock return, magnitude of accruals and earning quality for a sample of firms over the period 2001 – 2009. Our study is motivated by recent theoretical research that shows the beneficial role of accruals is reduced by various limitations, including estimation errors (e.g., Dechow, P. M, and I. D. Dichev, 2002; Jennifer Francis, Ryan LaFond, Olsson, Katherine Schipper, 2005).

Accounting provides information for participants in the market to make decisions. Companies, by publishing financial reports, help investors in accessing financial position and evaluating performance of the company. The main objective of investors is to maximize their expected return due to reducing its related risks. Therefore, financial researchers and analysts are seeking a performance measurement which can predict a company's stock return more proportionally. One of the major efforts of accounting and financial researchers is to investigate factors and criteria which can predict stock returns approximately and determine their relative and incremental information content.

Earnings are the summary measure of firm performance produced under the accrual basis of accounting. Earnings are important due to their use as a summary measure of firm performance by a wide range of users. Some example instances of their use is in executive compensation plans, debt covenants, the prospectuses of firms seeking to go public, and by investors and creditors (Dechow, 1994).

The importance of earning for financial statements the management to attempt at improving profits. One of the methods to achieve this is through accruals. Accruals shift or adjust the recognition of cash flows over time so that the earnings measure the firm performance more accurately. Accruals are frequently based on assumptions and estimates that if wrong must be corrected in future accruals and earnings (Dechow & Dichev, 2002 hereafter DD). Management typically have some discretion over the recognition of accruals that This tool can be used opportunistically by the management manipulate earnings in which case the earnings will become a less reliable measure of firm performance (Dechow, 1994). This will affect the incidence and magnitude of accrual estimation errors. The estimation errors and their subsequent corrections are noise that reduce the beneficial role of accruals. Therefore, the quality of accruals and earnings is decreasing in the magnitude of accrual estimation errors. In this paper empirical measure of accrual quality is the extent to which working capital accruals map into operating cash flow realizations that were developed by DD, where a poor match signifies low accrual quality.

## 2. Previous Research

Sloan (1996) finds that stocks with high accruals, signifying that earnings are highly relative to the cash flows, subsequently have lower returns and underperform stocks with low accruals. One popular interpretation of this evidence, which serves as the explanation by default, equates accruals with managerial bookkeeping mischief (see, e.g., Abarbanell and Lehavy 2003). Academic evidence supporting the existence of managerial manipulation of earnings is provided in DeGeorge, Patel, and Zeckhauser (1999). As the managers inflate earnings above cash flows, accruals rise.

Chan and et.al, 2005 show that accruals are reliably, negatively related to future stock returns, as first documented by Sloan (1996). The high accrual years mark a turning point in the fortunes of these firms. Firms with large accruals exhibit high levels of past earnings and sales growth. They continue to report growing of the earnings even as accruals are high, and only in the subsequent year do earnings show signs of deterioration. Accordingly, the time-series behavior of accruals and operating performance for firms with the largest accruals give strong evidence that managers are manipulating earnings, and the market is initially misled. Furthermore, in subsequent years, the amount of income-decreasing special items relative to total assets is larger for the firms with high accruals. Chan et.al (2005) also show that when an increase in earnings is accompanied by high accruals, suggesting low-quality earnings, subsequent stock returns are subpar.

Francis, LaFond, Olsson and Schipper (2005) state that accrual quality is inversely related to the cost of equity capital. They show that on average, the return on the *AQ factor* is positively correlated with the realized returns on individual stocks.

Core, Guay and Verdi (2007) show that the loadings on the accrual quality factor do not explain the cross-sectional variation in returns the premium on the accrual quality factor is neither

economically nor statistically significant. They also document that the DD Measure, as a characteristic, does not predict future monthly realized returns.

Chen et al. (2007) document increases (decreases) in accrual quality factor loadings for firms initiating or increasing (decreasing) dividend payments.

### **3. Hypotheses**

For studying the association between stock return, earnings quality (Earning persistence) and magnitude of accruals with Accruals Quality we test the following hypotheses:

- H<sub>1</sub>:** There is a negative correlation between the average stock return and the measure of accrual quality.
- H<sub>2</sub>:** There is a positive correlation between the average stock return and the magnitude of accruals
- H<sub>3</sub>:** There is a positive correlation between the earning quality (earning persistence) and the measure of accrual quality.
- H<sub>4</sub>:** there is a negative correlation between magnitude of accruals and measure of accrual quality.
- H<sub>5</sub>:** Tere is a negative correlation between the earning quality and the magnitude of accruals.

## **4. Research Method**

### **4.1. Sample Selection**

The population of this study consists of all companies listed on Tehran's stock Exchange (TSE) during the period of 2001- 2009. The sample firms of this research were those still listed on T.S.E in 2001. Since banks and investment companies are different from the other firms in the sample due to their capital structure and their operations, they are excluded from this study. The sample is restricted to firms with complete data for assets, earnings, cash flow from operations, changes in accounts receivable and changes in inventory. As a result our sample was reduced to 95 firms.

The following conditions were also placed on the inclusion firms in the study:

1. Firms should have been accepted in TSE since 2001.
2. End of periods of these firms should have been 31 December per years.
3. Firms should not have changed their year-ends.
4. Firms should not be in a financial or investing industry.
5. Availability of data was a requirement.

Upon all of the above conditions, we selected 95 firms and collected the relevant information from them in the above-stated period.

### **4.2. Source of Data**

Required data is collected from Tadbirpardaz® software. The main advantage of this source of data is the fact that it provides a true picture of the original financial statements of the firms under study, Therefore, data is from the reported in financial reports. In some cases of insufficient data we use the manual archive that existed in the TSE's library. Microsoft Excel®, Eviews® and SPSS® statistical software were used for the data analysis in this study.

### **4.3. Variables and Hypotheses**

#### **4.3.1. Accruals Quality Metrics**

Uncertainty in accruals is best captured by the measure of accruals quality developed by Dechow and Dichev (2002). In the DD model, accruals quality is measured by the extent to which working capital accruals map into operating cash flow realizations. This model is predicated on the idea that, regardless

of management intent, accruals quality is affected by the measurement error in accruals. Intentional estimation error arises from incentives to manage earnings, and unintentional error arises from management lapses and environmental uncertainty; however, the source of the error is irrelevant in this approach. DD’s approach regresses working capital accruals on cash from operations in the current period, prior period and future period. The unexplained portion of the variation in working capital accruals is an inverse measure of accruals quality (a greater unexplained portion implies poorer quality). As a practical matter, the DD approach is limited to current accruals.

We use DD model to derive practical measures of working capital accrual quality, This model uses the following firm-level time-series regression:

$$\Delta WC_t = b_0 + (b_1 \times CFO_{t-1}) + (b_2 \times CFO_t) + (b_3 \times CFO_{t+1}) + \varepsilon_t \tag{1}$$

The change in working capital from year t-1 to t, is computed as:

$$\Delta WC = \Delta AR + \Delta Inventory - \Delta AP - \Delta TP + \Delta OtherAssets(net)$$

where  $\Delta R$  is accounts receivable,  $\Delta P$  is accounts payable, and  $TP$  is taxes payable. We use CFO as given in the Statement of Cash Flows reported under the Statement of Financial Accounting.

DD’s measure of accruals is changes in working capital, and their proxies for cash flows related to accruals is cash flow from operations (CFO). The residuals from the regression reflect the accruals that are unrelated to cash flow realizations. The standard deviation of these residuals is a measure of accrual quality where higher standard deviation denotes lower quality. Theoretical values of the coefficients from Equation (1). if independent variables are measured without error. are  $b_1 = 1$ ,  $b_2 = -1$  and  $b_3 = 1$ , DD expect  $0 < b_1 < 1$ ,  $-1 < b_2 < 0$ , and  $0 < b_3 < 1$  because the independent variables in Equation (1) are measured with error, therefore the regression coefficients are likely to be biased toward 0,  $R^2$  will also be reduced.

Results of regressions of working capital accruals on past, present, and future cash flows from operations are presented in tables 1&2. First, we present firm-level regressions (table\_1) and then we present pooled regressions (table2). All variables are scaled by average total assets.

**Table 1:** Regressions of the Change in Working Capital on Past, Current, and Future Cash Flow from Operations for Firm-Years between 2001 to 2009 (Firm-Specific Regressions)

$$\Delta WC_t = b_0 + b_1CFO_{t-1} + b_2CFO_t + b_3CFO_{t+1} + \varepsilon_t$$

	$b_0$	$b_1$	$b_2$	$b_3$	$F - statistic$
<i>mean</i>	0.096	0.380	0.829-	0.172	0.64
<i>(t - statistics)</i>	5.33	9.32	17.85-	7.53	

Results for the firm-specific regressions in Table 1 are consistent with the theory and the univariate results in Table 2. As predicted, current changes in working capital are correlated negative to the current cash flow from operations and positively to the past and future cash flows from operations. The mean coefficient is -0/829 on current cash as opposed to 0.380 and 0.172 on past and future cash flows, respectively The bias for  $b_1$  and  $b_3$  is greater to that of  $b_2$ . This is because the error component in past and future cash flows is greater than the component in current cash flows. As discussed earlier, the absolute magnitudes of the coefficients are less than the theoretical value of 1 due to the measurement error in the independent variables. The downward bias is also greater for the coefficients on past and future cash flows. Results for pooled regressions In Table 2 are consistent with the firm-specific results.

**Table 2:** Regressions of the Change in Working Capital on Past, Current, and Future Cash Flow from Operations for Firm-Years between 2001 to 2009 (Pooled Regression)

$$\Delta WC_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + \varepsilon_t$$

	$b_0$	$b_1$	$b_2$	$b_3$	$R^2$ Adjusted
<i>coefficient</i>	*0.08	*0.36	*0.53-	*0.16	0.54
<i>t - Statistic</i>	9.38	14.01	26.28-	9.56	

The coefficients on current CFO are -0.53 for pooled regression compared with -0.829 for the firm-specific mean. The coefficients on past and future cash flows are comparable in magnitude with the firm-specific results on the magnitude of 0.36 & 0.16 and are reliably positive. The adjusted  $R^2$  (0.54) is lower for the pooled regression. general, results for firm-specific and pooled specifications are similar. As a result of firm-specific specifications demanding long time-series of data based on better empirical fit, we proceed with the pooled specification.

#### 4.3.2. Earnings Quality

The academic and professional literature has not reached a consensus on the definition of quality of earnings. Therefore, a number of various definitions of earnings quality exist. Some researchers focus on decision usefulness and economic income to allege a definition of quality of earning (e.g. Schipper and Vincent, 2003); they define earnings quality as the extent to which reported earnings faithfully represent Hicksian income<sup>1</sup>. They also focus on decision usefulness as the FASB's Conceptual Framework states that the purpose of financial reporting is to provide information that is useful for business decisions (Concepts Statement No. 1, FASB 1978, para. 34).

In some definitions of earning quality, the lower ratio in Equation (2) indicates more smoothing of the earnings stream relative to cash flows.

$$\sigma(\text{Earning})/\sigma(\text{Cashflow}) \quad (2)$$

Managers have a tendency to smooth earnings in an opportunistic Manner. Therefore, greater smoothness is artificial relative to the fundamental process; or smoothness reduces noisy variation in cash flows as a measure of the process (Dechow & et.al 2009).

In another definition of earning quality, Extreme accruals imply low earning quality as they represent a less persistent component of earnings (Dechow & et.al 2009).

Earnings persistence is frequently discussed as a measure of earnings quality (e.g., Penman 2001, 623; Revsine et al. 2002, 245).

Freeman and et al (1982) regress future earnings on current earnings to measure earning persistence, and report the slope coefficient ( $\alpha_1$ ) as Persistence.

$$\text{Earning}_{t+1} = \alpha_0 + \alpha_1 \text{Earning}_t + v_t \quad (3)$$

Dechow and dichev (2002) show that firms with low accrual quality have low earnings persistence.

In this paper we use equation (3) to measure the earnings persistence (earnings quality)

#### 4.3.3. Magnitude of Accruals

Accruals shift or adjust the recognition of cash flows over time so that earnings ability to measure firm performance is improved (e.g., see Statement of Accounting Concepts No. 1, FASB 1978, para. 44).

Researchers have devised various measures to accruals, Such as:

$$\text{Accruals} = \text{Earning}_{st} - \text{CF}_t \quad (4)$$

$$\text{Accruals} = \Delta(\text{noncash working capital}) \quad (5)$$

$$\text{Accruals} = \Delta(\text{net operating assets}) \quad (6)$$

1. Hicksian income corresponds to the amount that can be consumed during a period, while leaving the firm equally well off at the beginning and the end of the period (Hicks, 1939).

Some researchers use the above models as a proxy for earning quality (Dechow & et.al 2009). In this paper we use equation (5) to calculate the measure of accrual.

## 5. Test of Hypothesis and Findings

The results on the empirical relation between accrual quality, earnings quality (earning persistence), stock return and magnitude of accruals are presented in Tables 3&4. For test of hypotheses, all firm observations are ranked on the basis of the standard deviation of the regression residuals (sresid) from estimating Equation (1) and separate regressions of future earnings on current earnings to measure earning persistence for each quintile and report the slope coefficient ( $\alpha_1$ ) that called Persistence.

$$Earning_{t+1} = \alpha_0 + \alpha_1 Earning_t + v_t$$

We use the model of Freeman and et al (1982), Equation (2), to measure earning persistence. Quintile 1 contains firm observations for which the magnitude of standard deviation of the residuals in equation (1) is small. Quintile 5 however, contains firm observations for which the magnitude standard deviation is large. Within each portfolio we regress future earnings on current earnings and report the slope coefficient (persistence measure) and adjusted  $R^2$ . Table (3) also presents the mean stock return, standard deviation of the residuals in equation (1) (Std. Dev. Resid) and  $|\Delta WC_t|$  for each quintile. For firms in each portfolio relevant to this table between quintiles 1 and 5, the following observations were made:

1. Slope coefficient declines from 0.79 to 0.23,
2. The mean of stock return increases from 0.29 to 0.39,
3. The mean of the level of working capital accruals increase from 0.07 to 0.15,
4. The standard deviation of the residuals increase from 0.03 to 0.13.

Based on the information in the table (3) we find a negative correlation between the standard deviation of the residuals and persistence. These results confirm the hypothesized positive relation between accrual quality and earnings persistence ( $H_3$ ).

We also reports the mean level of working capital accruals for each sresid portfolio. Results reveal a positive correlation between the standard deviation of the residuals and the level of accruals. Therefore, these results confirm the hypothesized negative relation between accrual quality and magnitude of accruals ( $H_4$ ). This relation is important because Sloan (1996) shows that level of accruals is less persistent than cash flows.

We also report the mean stock return for firms in each portfolio. The results show a positive correlation between the standard deviation of the residuals and the stock return; these results confirm the hypothesized negative correlation between the stock return and the accrual quality ( $H_1$ ). This result also confirms the hypothesized positive correlation between average the stock return and the mean magnitude of accruals ( $H_2$ ). As Dopuch & et al (2005) have shown firms with high levels of accruals obtain Sudden stock return.

The information that is presented in Table 3 also reveals a negative correlation between level of accruals and earnings persistence. This result confirms the hypothesized negative correlation between magnitude of accruals and earning quality ( $H_5$ ). This is in agreement with the finding of Myers & et.al (2003) that high levels of accruals is demonstrator of lower earning quality.

We continued our study via another approach with result shown in Table 4. This time, we formed quintiles based on the absolute magnitude of accruals and present persistence, the mean stock return, standard deviation of the residuals (Std. Dev. Resid) and  $|\Delta WC_t|$  for each quintile. The slope coefficient declines from 0.62 to 0.33, and the adjusted  $R^2$  from 0.47 to 0.09 between quintiles 1 and 5, mean of stock return increase from 0.20 to 0.39 between quintiles 1 and 5, standard deviation of the residuals increase from 0.04 to 0.12 between quintiles 1 and 5 and mean level of working capital accruals increase from 0.04 to 0.16 between quintiles 1 and 5.

Obtained Results from table (4) confirm all of the findings that we show from table (3). Examples are negative correlation between the average stock return and the measure of accrual quality ( $H_1$ ), positive correlation between the average stock return and the magnitude of accruals ( $H_2$ ), positive correlation between the earning quality (earning persistence) and the measure of accrual quality ( $H_3$ ), negative correlation between the magnitude of accruals and the measure of accrual quality ( $H_4$ ) and negative correlation between the earning quality and the magnitude of accruals ( $H_5$ ).

**Table 3:** The Relative Information Content of Accrual Quality and Level of Accruals for Earnings Persistence and stock return for Firm-Years between 2001 to 2009 (sorted based on the standard deviation)

Portfolio	Std. Dev. Resid (sresid)	$ \Delta WC_t $	Stock return	Persistence( $\delta_1$ )	Earning Persistence Regression Adj.R <sup>2</sup>
1	0.034	0.071	0.299	0.795	0.707
2	0.051	0.067	0.282	0.458	0.840
3	0.072	0.106	0.355	0.572	0.650
4	0.106	0.120	0.376	0.164	0.613
5	0.139	0.153	0.396	0.237	0.503

**Table 4:** The Relative Information Content of Accrual Quality and Level of Accruals for Earnings Persistence and stock return for Firm-Years between 2001 to 2009 (sorted based on level of accrual)

Portfolio	$ \Delta WC_t $	Std. Dev. Resid (sresid)	Stock return	Persistence( $\delta_1$ )	Earning Persistence Regression Adj.R <sup>2</sup>
1	0.045	0.043	0.201	0.627	0.474
2	0.074	0.058	0.312	0.538	0.312
3	0.104	0.084	0.340	0.504	0.290
4	0.129	0.089	0.390	0.324	0.098
5	0.165	0.128	0.390	0.333	0.0987

## 6. Summary and Concluding Remarks

In This research we used new approach to assess the accrual quality that is presented via DD. In the DD model, accruals quality is measured by the extent to which working capital accruals map into operating cash flow realizations. In their approach accrual quality definition is the standard deviation of the residuals from regressions of working capital accruals on last-year, current, and one-year-ahead cash flow from operations. They show that accruals quality is affected by the estimation error and the notion of estimation errors includes both intentional and unintentional errors. We also used the Freeman model to measure the earning persistence that regresses the future earnings on current earnings to measure earning persistence. Then, we investigated the relationship between accrual quality and earning persistence, stock return and magnitude of accruals. We showed that there is a positive relation between accrual quality with earning quality (earning persistence) and negative relation between accrual quality with stock return and magnitude of accruals, we also show negative relationship between earning quality and magnitude of accruals and positive relationship between average stock return and magnitude of accruals.

Our investigation of the interrelations between the accrual quality, level of accruals, earnings persistence and stock return also suggests a reconciliation of the findings of Dechow (1994), Sloan (1996), Dechow and Dichev (2002) and Myers & et.al (2003). Dechow (1994) finds that accruals improve earnings' ability to measure performance relative to cash flows. Sloan (1996) finds that the

accrual portion is less persistent than the cash flow portion of earnings, which suggests that firms with high levels of accruals have low quality of earnings Dechow and Dichev (2002) show that that that accrual quality is positively related to earnings persistence. Myers & et.al (2003) find that high levels of accruals is demonstrator of lower earning quality. Dopuch & et al (2005) document that firms with high levels of accruals obtain sudden stock return.

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