

# **The Relationship between Quality of Earnings and Market-Based Variables in Tehran Stock Exchange (TSE): The Role of Accrual Accounting**

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This paper investigates the role of accrual accounting in the "quality of earnings" for the firms accepted in Tehran Stock Exchange (TSE). First 96 firms were selected between 1998-2003. Then, the method of " mesa comparisons" was used in the context of cross-sectional analysis used to cross-sectional analysis. The results indicate that accrual accounting (the difference between earnings and cash flows) does not affect the average stock returns. In addition, there is no significant difference between average returns of the firms with high and low accrual accounting. Components of accruals were also examined and similar results were found. However, there are changes in inventory, accounts receivable, other non-cash current assets, accounts payable, other current liabilities, discretionary and non-discretionary accruals.

Key words: Quality of Earning, Accrual Accounting, Stock returns, Discretionary and non-discretionary accruals.

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## **Introduction**

Accounting earnings and its components that are calculated on the basis of accrual method) are considered when managers and creditors want to make decisions. Accrual approach requires that revenues and expense items should be realized. Realization doesn't mean necessarily that cash should receive or pay via transaction so, when earnings are calculated estimations and predictions implemented. But how much do we accept such accrual earnings for decision making?

Managers often have some discretion when they use realization and matching principles and this discretion effects "earnings quality". Although we expect that managers are more informed about their own entities and they can provide more information about economic transactions and events, but personal welfare and self interest intention (like compensations and rewards and retention in the firm) may persuade that managers to manipulate earnings. In other hand earnings quality is the function of managers incentives.

In this paper we select one aspect of earnings quality. Then we measure that for performance evaluation. Measurement is based on cash and accrual components of earnings. So, our objective in this paper is to determine the role of accruals on earnings quality.

In the next section we describe the literature, then we discuss about research Hypothesis and methodology next we analyze data and hypothesis. The last section is the conclusion.

## **Literature Review**

According to SFAC1 of Financial Accounting Standards Board (FASB) users of financial statements can do different decisions when they have information about earnings. These are: 1- evaluation of management performance 2- assessment of earnings power in a long-term horizon 3- prediction of earnings for the future and 4- estimation the risk of investing or financing the firm [21].

It is important to consider the quality of earnings when we decide to use accounting numbers. "Earnings quality" has different definition and researchers have not unique definition about earnings quality. We can divide earnings quality (EQ) subject in to 3 categories: earnings persistence, level of accruals and earnings that are reflection of economic transactions [32]. Earnings persistence means the continuation (or recurrability) of current earnings. The more earnings persistence the more proposed EQ, because it is assumed that the power for maintenance of current earnings increases [1].

Schipper and Vincent (2003) argue that EQ depends on the type and amount of Accounting Information based on contracts. They define earnings quality in terms of economic income and according to usefulness for decision making [35].

We argue as much as reported earnings help us to decide better, those numbers have more qualities. However because individuals have different ideas and decisions, then we can not present a comprehensive definition of EQ. the usefulness of Earnings numbers is related to other factors. For example abilities of users to analyze non-financial information numbers should be considered [32, 35].

In Exhibit (1) we demonstrate the framework for evaluation of EQ [36].

**Exhibit 1- the framework and criteria for assessment of EQ**

<u>Assessment Criteria</u>	<u>Components of Criteria</u>	<u>Studied done in the past</u>
1- time series of earnings characteristics	1- earnings persistence 2- predictability 3- variability	[14], [20], [27], [22], [29], [30], [24]
2- the relation between Earnings, Accruals and cash Flows	1- the ratio of operating cash flows to earnings 2- change in total accruals 3- predicting abnormal accruals by accounting variables	[16], [34], [23], [33], [17], [25], [18], [10]
3- Qualitative characteristics based on FASB framework	Relevance, reliable	[28], [9], [19]
4- affecting decisions	Adverse relation between prediction and judgment in one hand and EQ in the other hand Adverse relation between EQ and changes in implementing accounting standards.	[36]

Cornell and Landsman (2003) also represent another framework for assessment of EQ. we can also different methods for evaluation. Some of there are:

- 1- *Value relevance method.* In this method we examine the relation between stock price (as a dependent variable) and accounting earnings (as an independent variable). As much as R adjusted coefficient would be higher, we expect that EQ would be higher.
- 2- *Information content method.* In this method we examine the relationship between return changes or price changes and unexpected level of earning changes. To the extent that R adjusted would be closer to one, information content of earnings would be higher (and EQ increases) [11], [31].
- 3- *Predictability method.* In this method it is important that post earnings can predict future earnings. As much as absolute average of prediction errors would be less, then that number has more predicting power.
- 4- *Economic Income method.* In this method cost of capital is used as a criterion. Economic value added number is also based on economic income.

Chan et al. (2006) examine the relation of accruals and future stock returns. They show that firms with high current accruals have low returns in future periods. This means that low EQ's have low stock returns in subsequent periods. They divide accruals into discretionary and nondiscretionary and show similar results [22].

Dechow and Dechow (2002) have also examined the role of accruals in performance measurement. They conclude that specific characteristics of firms such as absolute magnitude of accruals, length of operating cycle, standard deviation of sales, cash flows and size can be used as EQ evolution [18].

Zariffard (1978) also presents a framework for EQ that is based on Manger's argument [3]. Saghafi and Kordestani show that: 1- reaction of market to increasing dividend is positive and reaction of market to decreasing dividend is negative. They also show that abnormal return increases (decreases) when dividend and abnormal earnings increase (decrease) [1].

### **Hypothesis:**

H<sub>1</sub>: there is a significant relationship between average return and accruals items of the level of accruals.

H<sub>2</sub>: there is a significant relationship between average abnormal return and level of accruals.

H<sub>3</sub>: there is a significant relationship between average returns and level of components of accruals.

H<sub>4</sub>: there is a significant relationship between average returns and level of discretionary accruals.

H<sub>5</sub>: there is a significant relationship between average returns and level of nondiscretionary accruals.

### **Research methodology**

For collecting data from firms accepted in Tehran Stock Exchange (TSE) we put the following conditions:

- 1- Firms should have been accepted in TSE since 1998.
- 2- End of periods of these firms should have been at 31 December per years.
- 3- Firms should not have changed their year-ends.
- 4- Frequency of transactions per year should not be less than 40. [4]
- 5- Firms should not be in a financial or investing industry.
- 6- There is a need for availability of data.

Upon above conditions, we select 96 firms and collect their information between 1998-2003.

We collect data from database of Tehran Stock Exchange. Then we analyze these data by SPSS software.

### **Definition of Variables:**

- 1- Operating Income. We derive it from Income Statement of firms. We scale all variables by dividing to average assets.
- 2- Operating cash flow. We derive it from cash flow statement of firms. In according to national accounting standards in Iran, statement of cash flows categorizes to five divisions: Operating cash flows, Income tax, return on investment and interest paid for financing, financing and investing. So we select the first category.
- 3- Accruals. We measure this variable by differentiating operating Income and Operating cash flows.
- 4- Components of accruals. These variables include non-cash current assets, Inventory, accounts receivable, accounts payable, other current assets and other current liabilities.
- 5- Stock return. We measure stock return in this following method:

$$R_{it} = \frac{L_n \left[ \frac{p_{it} (1 + k + m) p_{it-1}}{p_{it-1} + mb} \right] - L_n p_{it-1}}{L_n p_{it-1}}$$

In this formula the variables are:

R<sub>it</sub>: Stock return of firm i in period t

k: percent of stock dividend.

m: percent of new stock issued.

b: the market value of new stock.

$P_{it-1}$ : stock prices of firm i in period t-1.

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6- Abnormal return. we divide firms into 5 portfolios in according to natural logarithm of market values and P/E ratio independently. Then we have 10 portfolios. We put them in a matrix. So, we have 25 ( $5 \times 5$ ) portfolios. (Chan et.al 2006). Finally we calculate abnormal return by differentiating return of each firm and average return of each portfolio.

7- Discretionary and non-discretionary accruals. We derive in according to average of 3 years of sales. Thus we had: [12]

$$E(\text{Accit}) = \frac{\sum_{k=1}^3 \text{Acc}_{it-k}}{\sum_{k=1}^3 \text{Sales}_{it-k}} \cdot \text{Sales}_{it}$$

That:

$E(\text{Accit})$ : estimation of accruals of firm I in period t.

We calculate discretionary accruals in this following manner:

$$D_{Ait} = \text{Acc}_{it} - E_t(\text{Acc}_{it})$$

That  $D_{Ait}$  is discretionary accruals and non-discretionary accruals calculated in following formula:

$$ND_{Ait} = E(\text{Acc}_{it}) - \text{Acc}_{it-1}$$

That  $\text{Acc}_{it-1}$  is the beginning amount of accruals.

## Findings

We present descriptive statistics of variables in table 2. Non-cash current assets are 69 percent of average of total assets. Current liabilities are 67 percent of average of total assets. The average of earnings is greater than cash flows. Standard deviation of accruals is 0.241 that are greater than standard deviation of earnings and cash flows the variation of accruals indicate that there is possible to manipulate or smooth earning.

**Table 2: descriptive statistics**

Statistic	Non-cash non-current assets	Current liabilities	Accounts receivable	Accounts payable	Inventory	Other current assets
Average	0.696	0.674	0.177	0.065	0.340	0.179
Median	0.718	0.674	0.164	0.036	0.337	0.142
S.D	0.204	0.226	0.130	0.085	0.147	0.141
First Quartiles	0.573	0.539	0.062	0.006	0.237	0.075
Last Quartiles	0.839	0.793	0.261	0.094	0.425	0.231

Statistic	Other current liabilities	Operating profit	Operating cash flow	Accruals
Average	0.609	0.208	0.161	0.046
Median	0.602	0.195	0.151	0.046
S.D	0.211	0.208	0.204	0.241
First Quartiles	0.480	0.110	0.045	0.037
Last Quartiles	0.720	0.281	0.245	0.124

We present descriptive statistics for changes in accruals and components of accruals.

**Table3- descriptive statistics for changes in component of accruals**

Descriptive	Change in non cash current assets	Change in current liabilities	Change in account receivable	Change in inventory
Average	0.122	0.113	0.016	0.032
Median	0.103	0.111	0.018	0.030
S.D	0.484	0.264	0.126	0.127
First Quartiles	0.020	0.005	-0.020	-0.012
Last Quartiles	0.210	0.219	0.079	0.091

Descriptive	Changes in accounts payable	Changes in other current assets	Changes in other current liabilities
Average	-0.022	0.019	0.085
Median	0.001	0.019	0.098
S.D	0.139	0.090	0.212
First Quartiles	-0.025	-0.020	0
Last Quartiles	0.026	0.047	0.189

Standard deviation of changes in non cash current assets is greater than standard deviation of change in current liabilities (0.484 versus 0.264). it maybe because accruals are more affected by changes in current assets. Standard deviation of changes in accounts receivable and changes in inventory have not significant difference (0.126 and 0.127 respectively). But average of changes in inventory (0.032) is greater than average of changes in accounts receivable (0.016). The average of changes in accounts payable is -0.022 it means that firms have intended to decrease accounts payable in these periods. Also standard deviation of accounts payable is more than standard deviation of components of current assets (0.139). Therefore variations of changes in accounts payable are more than the others.

### Tests of hypothesis

In the first hypothesis we test average of stock return and abnormal stock return separately. We divide the firms into five groups in according to a mount of accruals. Then we compare the average of stock return in the first

and fifth portfolios. In the other hand, we measure stock return in firms that have the highest and lowest accruals. We predict that firms with highest accruals have more return than firms with lowest accruals. On the other hand, it seems that these firms have more earning quality. Then we predict that stock return of these firms were higher.

For testing this subject, we choose the base year (2001) and in that year we sort firms in according to amount of accruals. Then we compare the average of stock return in each group. Table 4 shows the results:

**Table 4. Average of stock return in according to accruals**

quartiles return	1	2	3	4	5	T statistics	Significant test
1998	0.0021	0.179	0.209	0.0028	0.278	-1.167	0.251
1999	0.602	0.901	0.268	0.329	0.420	0.856	0.398
2000	0.0078	0.559	0.316	0.0037	0.225	-0.454	0.653
2001	0.192	0.392	0.528	0.436	0.446	-1.232	0.226
2002	0.111	0.0069	0.534	0.404	0.691	-1.264	0.220
2003	0.100	0.0071	0.586	0.310	0.0049	0.323	0.749

All observations are sorted in according to 2001 period. Then for 3 years before and 2 years after that average of stock return are reported. T statistics shows the differences between average of first and fifth quartiles. Significant tests are 95 percent. We analyze the equalities of variances and non-equalities have been attended in all levels.

As shown, there is no significant differences between average of stock return. On the other hand, the average of stock return have been shown, in the fifth quartile the average of stock return in the year 2001 is 0.446, two years after that is 0.0049 in the second quartiles we see that these amount are 0.392 and 0.0071 respectively. We can conclude that stock return of high-accrual firms' increase or maintain in the current year and one year ahead. But we see that these amount decrease two years after. We can conclude that the market reacts with a time-lag to accrual quality. Therefore we cannot reject the null hypothesis.

We present the results in tables.

**Table 5. Comparing of average of abnormal stock return in according to accruals**

Quartiles of stock return	1	2	3	4	5	T statistics	Significant test
1998	-0.224	0.0056	0.0079	-0.133	0.141	-1.336	0.19
1999	0.0082	0.414	-0.204	-0.00014	0.0045	0.182	0.857
2000	-0.0058	0.439	0.188	-0.0082	0.109	-0.967	0.340
2001	-0.253	0.00099	0.0056	0.117	0.0075	-2.102	0.052
2002	-0.248	-0.261	0.0053	0.0069	0.348	-1.447	0.163
2003	-0.149	0.0092	0.244	0.149	-0.118	-1.197	0.845

All observations are sorted in according to 2001 period. Then for 3 years before and 2 years after that average of stock return are reported. T statistics shows the differences between average of first and fifth quartiles. Significant tests are 95 percent. We analyze the equalities of variances and non-equalities have been attended in all levels.

We see that the average of abnormal stock return has not significant differences. Therefore we can not reject the second hypothesis except for 2001 year. Note that abnormal return in the fifth quartile of base year (0.0075) increase to 0.348 for the next year and then decrease significantly to -0.118 for two years after. We can interpret this as delaying in reaction to accruals reporting. Abnormal returns of the first quartile are negative except for 1999. This maybe indication of under valuation of lower accrual firms. In this study we change the base year (from 2001 to 2000 and 1999) and retest the hypothesis. We present the results in appendix. The results are similar to table 4 and 5.

For testing the hypothesis about accrual component we divide them in according to 5 categories: changes in accounts receivable, inventory, other current assets accounts payable, other current liabilities. Then we measure and sort firms in according to these amounts. Then we compare the average return for each quartile in each group. We show the results in table 6.

**Table 6- testing the differences between accrual components**

Accrual components	Quartiles Stock return	1	2	3	4	5	T statistics	Significant test
		Changes in accounts receivable	2001	0.866	0.313	0.297		
	2002	0.834	0.509	0.425	0.171	-0.123	2.194	0.035
	2003	0.305	0.488	0.0074	0.296	-0.0018	1.561	0.127
Changes in inventory	2001	0.566	0.256	0.684	0.100	0.380	0.444	0.66
	2002	0.734	0.0037	0.826	0.132	0.0065	1.393	0.172
	2003	0.248	0.00027	0.393	0.399	0.0085	0.814	0.421
Changes in other current assets	2001	0.0019	0.539	0.599	0.604	0.229	-1.046	0.302
	2002	0.405	0.176	0.0061	0.354	0.838	-0.744	0.461
	2003	0.253	0.0074	0.200	0.100	0.511	-1	0.324
Changes in account payable	2001	0.576	0.174	0.343	0.593	0.317	0.676	0.504
	2002	0.424	0.726	0.386	0.435	-0.153	1.671	0.103
	2003	0.465	0.327	0.245	0.0078	0.0020	2.050	0.048
Changes in other current liabilities	2001	0.658	0.371	0.0049	0.252	0.689	-0.062	0.951
	2002	0.0082	0.949	0.0036	0.0050	0.718	-1.760	0.087
	2003	0.259	0.304	0.0015	0.324	0.215	0.053	0.958

We can't reject the null hypothesis about components of accruals. The average return in fifth quartiles of changes in accounts receivable and inventory has decreased in the years after portfolio formation. This indicates that investors have more sensitive actions in the following years. Also, changes in stock return related to accounts payable and other current liabilities have decreased. But two years after we see that these amounts have decreased. This is indication of under-reaction of decision makers and investors to changes in these components.

We divide accruals into discretionary and non-discretionary accruals. Non-discretionary accruals are components that management can not manipulate them. In other hand they incur as the natural transaction consequences. But, discretionary accruals are affected based on selection of accounting procedures. As much as discretionary for manager's increases, the probability of using them for manipulation of earning increases. We present the test of the remaining hypothesis in table 7.

**Table 7. The effects of discretionary and non discretionary accruals on average of stock return**

Accrual component	Quartiles	1	2	3	4	5	T statistics	Significant test
	Stock return							
Part A discretionary accruals	1998	0.0061	0.0041	0.209	0.0072	0.270	-0.0959	0.344
	1999	0.401	0.308	0.568	0.797	0.429	-0.117	0.908
	2000	0.563	0.261	0.140	0.180	-0.0038	2.444	0.020
	2001	0.440	0.413	0.516	0.247	0.379	0.153	0.879
	2002	0.478	0.194	0.428	0.250	0.464	0.030	0.976
	2003	0.285	0.2008	0.205	0.363		1.304	0.201
Part B non discretionary accruals	1998	0.0055	0.0052	0.357	0.0099	0.0083	0.269	0.792
	1999	0.674	0.509	0.632	0.275	0.413	1.051	0.301
	2000	0.238	0.171	0.284	0.284	0.121	0.435	0.664
	2001	0.329	0.0024	0.466	0.886	0.282	0.177	0.861
	2002	0.176	0.198	0.131	0.123	1.2	-1.827	0.083
	2003	0.125	0.103	0.299	0.135	0.470	-1.363	0.186

We see that except 2000, the null hypothesis can't be rejected in part A, we see that average return in 5th quartile is 0.379 and this amount has increased to 0.464 in the next year. But in 2 years after this amount is 0.0084. In part B non-discretionary accruals are examined. We see that stock return in the based year is 0.282 in the second year we see that the return has increased (1.2), but in the year after that, stock return has decreased to 0.470. We can interpret that lower discretionary accruals, leads to lower variation in non-discretionary accruals. We conclude that there is no difference between average stock return of first and fifth quartiles. So we can not reject the null hypothesis.

## **Conclusion**

We analyzed the role of accruals in earnings quality. Accruals can be manipulated and thus accruals affect EQ. we expect that increasing in accruals leads to decreasing EQ and market participants react them. We show that there is no significant difference between firms with highest and lowest accruals. In other hand, average return is equal in these groups. We show that two years after the portfolio formation year (2001). This means that earnings management occurs with a time lag by market participants.

Also we show that components of accruals including changes in accounts receivable, inventory, other current assets, current liabilities and other current liabilities have not significant effect on stock return. We separate the accruals into discretionary and non-discretionary components. We show that for discretionary accruals, decreasing of stock return is greater than the decreasing of stock return for non-discretionary accruals.

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**Appendix:**

Normal and abnormal stock return based on quartiles of accruals based on 1999 and 2000 year based

Part A	Quartiles of accruals		1	2	3	4	5
	Normal Stock return						
2000 year based	2000		0.125	0.278	0.249	0.179	0.395
	2001		0.346	0.506	0.373	0.393	0.421
	2002		0.849	0.167	0.227	0.535	0.047
1999 year based	2000		0.391	0.696	0.499	0.467	0.454
	2001		0.259	0.352	0.451	0.098	0.056
	2002		0.433	0.560	0.458	0.297	0.249

Part B	Quartiles of accruals		1	2	3	4	5
	abnormal Stock return						
2000 year based	2000		-0.0055	0.149	0.129	0.057	0.275
	2001		-0.013	0.097	-0.074	0.019	-0.015
	2002		0.436	-0.185	-0.178	0.198	-0.0298
1999 year based	2000		-0.0358	0.329	0.031	0.019	-0.032
	2001		0.120	0.220	0.335	-0.017	0.062
	2002		0.017	0.108	0.016	-0.035	-0.098