

Investigating Stability of Cash Sector and Components of Accrual Sector of Operating Profit in Future Profits of Iranian Companies

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ABSTRACT

Information about cash flows along with information provided by accrual accounting can be useful in rational judgment and decision of users for financial information. This study investigated continuation of cash and accrual sector of operating profit in future. Statistical population included the companies listed in Tehran Stock Exchange from 2006 to 2010 and the statistical sample was selected from among them. In this study, first, profit was divided into cash and accrual sector and stability of each one was investigated. Then, the correlation between components of accrual profit sector and future profit was analyzed using Pearson correlation and regression panel data. The results indicated that cash sector and accrual sector had different correlations from future profits. As a result, the influence of these variables on future profits was different. In addition, component of accrual sector had more correlation and greater impact than cash sector on future profits of companies, which showed that components of accrual sector had more continuity than cash sector of operating profit in predicting future profit.

KEY WORDS: Accrual sector of operating profit, Cash sector of operating profit, Stability, Future profit.

1. INTRODUCTION

One of the most important needs of people is making decision on different subjects. Due to the variety of options and solutions on one subject, people are forced to make decisions and they make decisions with regard to desirability of better choices in order to maximize utility. Since future events and outcomes are uncertain, decisions are made under conditions of uncertainty and, accordingly, information, knowledge and awareness are necessary for making decisions in order to provide the goal of decision maker, achieve the desired results and ultimately reduce uncertainty. Clear and comparable financial information is the main part of accountability and conscious economic decision.

Owners, creditors and other users need related and comprehensible financial information to decide on purchase, sale, storage, stock lending, performance evaluation of managers and other key economic issues.

Profit and cash flows of a profit unit, the most essential component of information, are the foundation of many decisions and judgment of financial information users and profit prediction and future cash flows of profit unit are the interests of financial information users because proper prediction of these figures can play a significant role in making correct decisions.

One of the purposes of profit reporting is to predict future cash flows for investors. In this regard, people are seeking to achieve profit quality for future cash flows because, if they provide financial statements with profit quality, usage of investors will increase (Rahimian and Jafari, 2006).

The present study sought to answer these questions: whether cash and accrual sector of operating profit have continuity in future profits and how much continuity each of components of accrual sector of operating profit has in future profits.

2. LITERATURE REVIEW

2.1. Concepts of Operating Profit and Accrual Profit

Noorosh et al. (2006) defined operating profit as a profit which is the core productive activities of company. The figure is directly extracted from company's profits and losses. Fier-Field et al. (2003) defined accrual operating profit as growth of investment in operating working minus expense of tangible and intangible depreciation assets. According to this definition, accrual components of profit are a kind of investment and constitute parts of course assets.

2.2. Purposes of Profit Reporting:

Companies must prepare financial statements at the end of each period. One of these financial statements is profit and loss statement. The last digit is business profit. Considering the importance of profit, purposes of profit reporting are as follows:

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- 1- Profit as management efficiency
- 2- Helping predict future status of companies or distribution of profit in future by historical figures
- 3- Using profit investors (profit per share) to decide on buying shares
- 4- Profit reporting as a tool for managers to plan for future (Ghanai, 2005)

2.3. Profit as a Means of Prediction:

In the first statement of Board of Financial Accounting Standards, it is mentioned that investors, creditors and other users are interested in assessing net cash flow into profit unit in future periods; but, they mostly investigate profit for evaluating profitability, predicting future profits, assessing risk investment or lending and crediting to profit unit. Therefore, a relationship between reported profit and cash flow including distribution of cash to shareholders assumed (Shabahang, 2008).

3. RESEARCH BACKGROUND

Bolo *et al.* (2012) studied the information content of profit component to predict profit made by managers and investors. The results showed that stability of profit component was not similar and profit component explained future profit better than the total amount of profit; thus, this point was considered in decisions of managers and investors and they considered differences in stability of profit components. Also, managers and investors underestimated stability of cash profit.

Ghadiri (2011) conducted a research entitled *sustainability and information content of cash profit components of companies listed in Tehran Stock Exchange*. Result of this research showed that the kept cash component of company was more stable than other components of cash profit and it explained future profit better; but, shareholders overestimated stability of this component and estimated stability of other components of cash profit closer to the reality.

Kong *et al.* (2010) examined the relationship between total accruals and future market returns. Results of their research suggested that discretionary accruals were positively accompanied by future returns market; but, predictive power of total accruals had strong relationship with factors such as selection of time period, efficiency criteria, estimation methods, business status, risk premium indicators and models used for separate accruals.

Arthur *et al.* (2008) investigated stability of cash flow component in future earnings/profit. In this research, following Sloan model, operating profit was divided into cash and accrual components. Then, in the first model, accrual component of operating profit was divided to 6 components and accumulated cash flows were used. In the second model, accrual component of operating profit was divided to 6 components and cash component of operating profit was divided to 8 ones. In addition, explanatory and predictive power of both actions were compared and investigated.

Shleifer-Hare *et al.* (2007) reviewed the relationship between accrual component, cash flows and stock returns. Their study period was between 1965 and 2005 and their research results showed that, contrary to the previous research findings, accrual component was a strong and positive predictor for stock returns but cash flow was a negative predictor.

Ahsan Habib (2006) examined predictive ability of earning components in prediction future profits in Japan Stock and concluded that separation of profit into its components could lead increase in prediction of future profits. He also stated lack of difference between specific companies and various industries. The results indicated that model of cash flow component was superior to the model based on sum of cash flows according to explanatory and predictive power.

Dechav *et al.* (2004) investigated stability and pricing of cash profit components. They divided cash profit components to three components of cash remains, cash payments to creditors and cash payments to stockholders and found that more stable components of profit, payments to shareholders, had a significant relationship with stock prices.

Beaver *et al.* (2004) assessed relevance of cash and accrual components of profit for explaining value of the company. The results showed that separation of accrual component of profit into its components could lead to reduction of error prediction in company's market value.

Algers *et al.* (2003) investigated how investors weigh working capital accruals to predict future profit. The results showed that weight of working capital accruals on prediction of analysts of profit can be less than one-third of the weight of investors.

Charitu *et al.* (2000) investigated relevance of profits value and cash flows in Japan. The results showed that profit and cash flow were useful in predicting future earnings in Japan (like the results of previous research). Accordingly, Japanese investors used profit and cash flows to forecast future profits.

4. EXPLAINING THE MODEL AND RESEARCH VARIABLES

In this study, the Sloan model was extended through separation of accrual into its components and the continuity of these components was investigated. To do this research, information relating to accrual component of profit was collected from comparative operating profit based on explanatory notes of financial statements.

In this research, the dependent variable was accounting earnings and independent variables included (1) amortization expense of tangible and intangible assets, (2) change in employee termination benefits, (3) change in

inventories, (4) change in prepaid expenses, (5) change in receivable accounts, (6) changes in payable accounts, (7) change in income received in advance, (8) change in other accruals and (9) operating cash flow.

A Simple Prediction Model (Slovan):

Another model which is used to forecast future profits is Slovan linear model in which future profits are predicted by current profit forecast and is available as follows:

$$\text{Earnings}_{t+1} = \alpha_0 + \alpha_1 \text{Earnings}_t + \varepsilon_{i+1}$$

in which:

Earnings_{t+1} : Future operating profit Earnings_t : Current operating profit ε_{i+1} : Error of model

Coefficient of profit components is not shown in the above model; thus, it can be presented as follows by separating profit into cash and accrual components:

$$\text{Earnings}_{t+1} = \gamma_0 + \lambda_1 \text{Accruals}_t + \lambda_2 \text{Cashflows}_t + \varepsilon_{i+1}$$

The accrual sector of operating profit is composed of some components, which can be deducted from operating profit while preparing cash flow statements in an indirect form in order to determine cash sector of operating profit. These components are as follows:

$$\text{ACCRUALS} = \text{DEP} + \text{PR} + \text{INV} + \text{PPE} + \text{REC} + \text{AP} + \text{PPI} + \text{OTH}$$

By separating accrual sector of operating profit into its components, the following models can be presented:

$$\text{Earnings}_{t+1} = \gamma_0 + [\gamma_1 \Delta \text{DEP}_t + \gamma_2 \Delta \text{PR}_t + \gamma_3 \Delta \text{INV}_t + \gamma_4 \Delta \text{PPE}_t + \gamma_5 \Delta \text{REC}_t + \gamma_6 \Delta \text{AP}_t + \gamma_7 \Delta \text{PPI}_t + \gamma_8 \Delta \text{OTH}_t] + \gamma_9 \text{CFO}_t + \varepsilon_{t+1}$$

Cash sector of operating profit can be separated to its components, which are as follows:

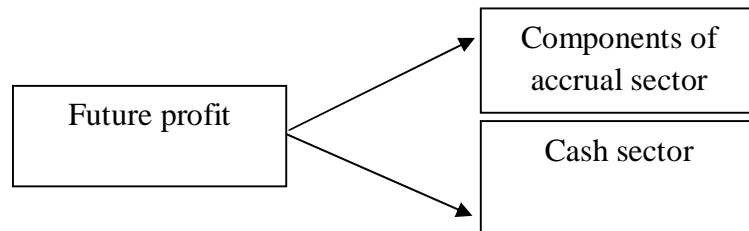
$$\text{CASHFLOWS} = \text{CORE_RECEIPTS} + \text{CORE_PAYMENTS} + \text{OTHER_RECEIPTS} + \text{OTHER_PAYMENTS}$$

Thus, cash profit of the previous model can be separated to its components to present the following models:

$$\text{Earnings}_{t+1} = \gamma_0 + [\gamma_1 \Delta \text{DEP}_t + \gamma_2 \Delta \text{PR}_t + \gamma_3 \Delta \text{INV}_t + \gamma_4 \Delta \text{PPE}_t + \gamma_5 \Delta \text{REC}_t + \gamma_6 \Delta \text{AP}_t + \gamma_7 \Delta \text{PPI}_t + \gamma_8 \Delta \text{OTH}_t] + \gamma_9 \Delta \text{CORE_RECEIPTS} + \gamma_{10} \text{CORE_PAYMENTS} + \gamma_{11} \text{OTHER_RECEIPTS} + \gamma_{11} \text{OTHER_PAYMENTS} + \varepsilon_{t+1}$$

In this research, Slovan model was used to test the hypotheses. First, stability of each cash and accrual components of operating profit was investigated using first model. Then, according to availability of information on accrual sector in the attached financial statements and in order to provide further evidence for stability of accrual sector, the second model was used to predict future profits.

The conceptual model of the research is given below:



(conceptual model)

5. Research Hypotheses

The hypothesis of this research can be stated as follows:

- 1) The accrual and cash sector of operating profit have different stability in predicting future profits.
- 2) The components of accrual sector of operating profit have different correlations with future profits.
- 3) The components of accrual sector of operating profit have more continuity to predict future profit than total accrual sector of operating profit.
- 4) The components of accrual sector of operating profit have more continuity to predict future profit than cash sector of operating profit.

6. RESEARCH METHODS, POPULATION AND STATISTICAL SAMPLE

This study was descriptive and experimental. It can be classified in the field of positive accounting theories. In this research, financial information was extracted from financial statements and notes relating to companies listed in Tehran Stock Exchange.

The statistical population of this research consisted of all listed companies in Tehran Stock Exchange from 2006 to 2010. In this research, a systematic elimination method was used. In other words, all statistical members of companies with the following characteristics were selected as the sample:

- 1- They have been listed before 2006.
- 2- Their financial year ends on March 20 (end of Iranian calendar).
- 3- They have productive activity.
- 4- Their stock is traded on the stock exchange at least every three months.
- 5- During the research period, they do not have any change in their financial year.

High quality of information and ease of access to data were the main reasons for limiting statistical population to the listed companies in the stock.

All companies listed in Tehran Stock Exchange consisted of 458 companies in 32 different industries by the end of 2010. After applying the mentioned limitations, 71 companies were remained from 458 companies in statistical population which were studied as the sample.

7. ANALYSIS OF THE DATA

7.1. Descriptive Statistics

First, the variables were investigated from 2006 to 2010 and the data summary table is provided below:

	Δ CFO	Δ AP	Δ DEP	Δ INV	Δ OTH	Δ PPE	Δ PPI	Δ PR	Δ REC
Mean	800359.2	28545.34	130922.2	-82871.22	128059.3	-20889.28	13621.95	16128.31	-283886.2
Median	61286.50	3614.500	13517.00	-5596.500	976.5000	-1352.000	0.000000	1724.500	-14633.50
Variance	2761760.	1124885.	461381.9	722130.3	1907147.	172812.5	578664.0	59395.89	1782037.
Max	2093254	9067873.	3566591.	3328795.	2640371	1088265.	4426034.	430159.0	7004898.
Min	-241651.0	-1209708	357.000	-6862687.	-1398587	-1653472.	-6060648.	-31084.00	-2508424

Table 1: Descriptive statistics of the variables

As shown in Table 1, there were 334 samples which included 71 companies during 2006 to 2010 and mean, median and other descriptive information were calculate for each variable.

7.2. Inferential Statistics

7.2.1. Spearman Correlation Analysis

Spearman test was used to examine correlation between the variables and its summary of the results are presented in the following table.

variables \ Characteristic	N	Sig.(2-tailed)	Pearson Correlation
Accrual sector – Future profit	355	0.000	-0.222
Cash sector – Future profit	355	0.000	0.756
Change in depreciation cost - Future profit	355	0.000	0.730
Change in employee termination benefits- Future profit	355	0.000	0.550
Change in inventories - Future profit	355	0.000	-0.265
Change in prepaid expenses - Future profit	355	0.000	-0.228
Change in receivable accounts - Future profit	355	0.000	-0.371
Change in payable accounts - Future profits	355	0.060	0.100
Changes in income received in advance- Future profit	355	0.199	0.730
Change in other accruals - Future profit	355	0.000	0.286

Table 2: Correlation among sector, cash flow and future profit

Based on Table 2, among components of accrual sector, there was no significant correlation between changes of payable accounts, pre-received income and future profit and their significance level was higher than 5% level; but, other components had significant correlation with future profit. It can be also seen that each of the components had a different relationship. There was a significant correlation between both cash and accrual sectors and future profit of the company.

7.3. Regression Models

To examine the hypotheses and relationship between independent and dependent variables, regression model was used. Method of panel data using Eviews was applied for 71 companies during 2006 to 2010.

7.3.1. First Hypothesis

H0: Accrual and cash sector of operating profit do not have different stability to predict future profit

H1: Accrual and cash sector of operating profit have different stability to predict future profit.

In this model, coefficient of profit components is not shown. Thus, the model can be presented as shown in Table 3 by separating profit into cash and accrual components

Dependent variable -Earning						Independent variables
F	AdjustedRsquared	R-squared	t	Sig	λ	
28.95671	0.143033	0.148149	5.318061	0.0000	830253	C
			-7.587717	0.0000	-0.779042	Accrualsector
			-0.442665	0.6583	-0.024112	cash sector

Table 3: Regression model for accrual sector, cash sector and future profit

As shown in Table 3, correlation coefficient was equal to 0.779 in the first column. R², or coefficient of determination, was equal to 0.143 in the fifth column; i.e. the sole linear regression between dependent variable (future profit) and independent variable (accrual and cash sector) could justify about 0.148 of total changes and the rest is related to other variables.

In Table 3, the hypothesis "H0 is not significant regression" is investigated against the hypothesis "H1 is significant regression". Since the significance level of test was equal to 0.000, "H0 is not significant regression" was rejected; in other words, regression was statistically significant. Accordingly, the regression model could be used.

In Table 4-6, the hypotheses (H0: $0 = \lambda_0 \lambda_1 \lambda_2$) were investigated against hypotheses (H1: $0 \neq \lambda_0 \lambda_1 \lambda_2$). Hypotheses (H0: $\lambda_0 + \lambda_1 = 0$) were rejected because the significance level was less than 0.05; but the hypotheses H0: $\lambda_2 = 0$ could not be rejected due to the significance level which was more than 0.05. So, the regression model was as follows:

$$\text{Earnings}_{t+1} = 830253 \lambda_0 + 0/779 \lambda_1 + \varepsilon_{t+1}$$

According to the presented model, it can be expressed that cash sector and accrual sector had different correlation with future profit in the first hypothesis in which coefficient of accrual sector was (-0.779042) and coefficient of cash sector was equal to (-0.024122). Thus, H0 was rejected and H1 was accepted.

7.3.2. Second Hypothesis

H0: Accrual components of operating profit do not have different correlation with future profit.

H1: Accrual components of operating profit have different correlation with future profit.

Dependent variable -Earning						Independent variables
F	AdjustedRsquared	R-squared	t	Sig	λ	
308.6792	0.875197	0.87804	0.80687	0.420	46592.43	C
			6.480607	0.0000	1.488969	ΔDEP_t
			16.38481	0.0000	29.6658	ΔPR_t
			-7.144905	0.0000	-0.63478	ΔINV_t
			-3.470245	0.0000	-1.33953	ΔPPE_t
			-7.980282	0.0000	-0.61913	ΔREC_t
			-7.089397	0.0000	-0.49668	ΔAP_t
			-4.316170	0.0000	-0.69463	ΔPPI_t
			-9.296621	0.0000	-0.75611	ΔOTH_t

Table 4: Regression model of accrual components and future profit

Table 4 examined the effect of independent variable (accrual components) and dependent variable (future profit). According to Table 4 and level of significance, intercept was higher than level of significance; λ is not presented in the model.

It can be also observed that coefficients of the independent variables were not equal and each accrual component had a different effect on future profit. As a result, H0 was rejected and H1 was accepted. The following model can be presented:

$$\text{Earnings}_{t+1} = 1/48896\gamma_1 + 29/66\gamma_2 - 0/6347\gamma_3 - 1/3395\gamma_4 - 0/6191\gamma_5 - 0/4966\gamma_6 + -0/6946\gamma_7 - 0/7561\gamma_8 + \varepsilon_{t+1}$$

7.3.3. Third Hypothesis

H0: Accrual components of operating profit do not have more stability than total accrual components of operating profit to predict future profit.

H1: Accrual components of operating profit have more stability than total accrual components of operating profit to predict future profit.

Dependent variable - Earning							Independent variables
F	AdjustedRsquared	R-squared	t	Sig	λ		
466.81	0.9227	0.9247	0.5203	0.6032	23655	C	
			1.3806	0.1683	0.2748	ΔDEP_t	
			1.4223	0.1558	3.2782	ΔPR_t	
			-16.2257	0.0000	-5.0713	ΔINV_t	
			-13.5522	0.0000	-5.9357	ΔPPE_t	
			-16.2261	0.0000	-5.2107	ΔREC_t	
			-15.9568	0.0000	-4.8478	ΔAP_t	
			-16.5618	0.0000	-5.7444	ΔPPI_t	
			-5.5295	0.0000	-5.6126	ΔOTH_t	
			14.5636	0.0000	4.8521	ACCRUALS	

Table 5: Regression of components of accrual sector, total accrual sector and future profit

To investigate this hypothesis by referring to Table 5, it can be seen that total accrual sector had more stability and relationship than its components in payable accounts and changes in employee termination benefits; but, it was not like that for other components. Coefficients of total accrual sector were different from those of accrual sector. Changes in depreciation expense as well as changes in employee termination benefits had less coefficients than total accrual components. As a result, H0 was accepted. According to Table 5, the following model can be presented:

$$\text{Earnings}_{t+1} = -5/0713\gamma_3 - 5/9357\gamma_4 - 5/2107\gamma_5 - 4/8478\gamma_6 - 5/7444\gamma_7 - 5/6126\gamma_8 + 4/8521\gamma_9 + \varepsilon_{t+1}$$

7.3.4. Fourth Hypothesis

H1 and H0 were:

H0: Accrual components of operating profit do not have more stability than cash sector of operating profit to predict future profit.

H1: Accrual components of operating profit have more stability than cash sector of operating profit to predict future profit.

To investigate this hypothesis, effect of components of accrual and cash sectors were examined using regression models, which could be summarized as shown in the table below:

Dependent variable - Earning							Independent variables
F	AdjustedRsquared	R-squared	t	Sig	λ		
260.844	0.8753	0.8787	0.77984	0.4361	49356	C	
			6.3052	0.0000	1.4871	ΔDEP_t	
			15.9835	0.0000	29.7107	ΔPR_t	
			-6.9709	0.0000	-0.6349	ΔINV_t	
			-3.3918	0.0000	-1.3437	ΔPPE_t	
			-7.7629	0.0000	-0.6182	ΔREC_t	
			-6.9066	0.0000	-0.4960	ΔAP_t	
			-4.2159	0.0000	-0.6957	ΔPPI_t	
			-9.0590	0.0000	-0.7561	ΔOTH_t	
			0.7052	0.4812	0.0147	CFO _t	

Table 6: Regression of components of accrual sector, cash sector and future profit

To examine this hypothesis by referring to Table 6, it can be seen that the components of accrual sector had a significant impact related to future profit but cash was not like this. Accordingly, H0 was rejected and H1 was accepted. In fact, components of accrual sector had more stability than cash sector of operating profit to predict future profit. Accordingly, the model can be presented as follows:

$$\text{Earnings}_{t+1} = 1/4871\gamma_1 + 29/7107\gamma_2 - 0/6349\gamma_3 - 1/3437\gamma_4 - 0/6182\gamma_5 - 0/4960\gamma_6 - 0/6957\gamma_7 - 0/7561\gamma_8 + \varepsilon_{t+1}$$

8. Conclusion

Results of this research indicated that accrual and cash sectors had different correlations with future profit. As a result, effect of these variables was different on future profits. Each component of accrual sector had different correlation with future profits. Considering the relevance and continuity of total accrual sector and components of accrual sector with future profits, it was observed that total cash sector had more continuity than changes in depreciation expense and changes in employee termination benefits; however, other components of accrual sector had more continuity than total accrual sector.

Also, components of accrual sector had more correlation and impact on future profit compared to cash sector, which showed that components of accrual sector of operating profit had more continuity than cash sector of operating profit for predicting future profit. Thus, in order for the reported profit to help users in evaluating performance and profitability of a company's ability and investors to rely on profit data in estimating their expected returns, only final figure of the reported profit should not be taken into account. Considering cash components (cash and accrual components) and different sectors of these components can also provide useful information.

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