

## A study on relationship between earnings before tax, interest and operational cash flows with stockholders' equity

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### ABSTRACT

One of the primary economic issues is associated with optimum resource allocation in profitable investments with reasonable risk. For this purpose, performance measurement's criteria are needed some of which emphasize cash flow variables and some others focus on information content of accounting profit. On this basis, this study examines the relationship between earnings before tax and interest and operational cash flows with stockholders' return in Tehran Stock Exchange (TSE). In this regard, information asymmetry was also examined. To test hypotheses, multivariable regression and combined data method were used. The results showed that based on the information of 102 companies in stock market from 2004 to 2009, there was a positive and significant correlation between earnings before interest and tax and stock return in the companies. While, operational cash flow has no significant impact on stock return. Increasing information asymmetry, earnings before interest and tax has a positive and significant correlation with stockholders' return; but operational cash flow has no significant effect on stockholders' return. In other words, earnings before interest and tax have higher information content than operational cash flow.

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## 1. Introduction

Optimal resource allocation for high return investments with low or reasonable risk is one of primary economic issues. For information asymmetry, investors need some criteria for evaluating companies' performance to make correct economic decisions. For this purpose, performance evaluation criteria are needed, which deal with variables of cash flow and information content of accounting earnings. Accordingly, this study examines the relationship between earnings before tax and interest and operational cash flows with stockholders' return in Stock Exchange of Tehran. Accounting earnings using accruals are devices for measuring companies' return for the users of financial statements to measure companies' performance evaluating financial status and operations' results for making rational decisions. For example, accounting earnings can be a basis for crediting banks to the

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companies or condition of entrance to Tehran Stock Exchange. In Statement 6 of FASB (1985) about financial accounting concepts, using accruals in accounting has been declared obligatory.

Thus, reflecting effects of companies' transactions and events does not mean cash input or output. In other words, in accruals' method, principals such as accomplishment and adoption are used for reflecting incomes, costs, and accounting earnings. Finally, accomplishments of a company depend on its ability in creating cash flows (FASB, 1985). Moreover, operational cash flows are important criteria of performance evaluation for insiders as well as outsiders (e.g. investors and creditors) in the organization. In theoretical framework, financial accounting, which determines the goals of financial reporting pays special attention to cash flows and their predictions. According to Statement 1 of FASB: "one goal of financial reporting is providing information for investors, creditors, and other potential users to assist them at estimations, timing and risk evaluation of future incomes". The perspective of these cash receipts is influencing by the ability of the institute in producing enough cash for fulfilling its obligations in due time and other cash operations such as paying cash stocks' earnings and investors' attitudes toward its abilities that impress stock market (FASB, 1978: Par.37).

In International Accounting Standard, No .7, IASC mentions: "The information of cash flows of a business unit is useful for the users of financial statements in providing cash and the needs of that unit in using them". Economic decisions made by users necessitate evaluating the ability of business unit in creating cash, timing and gaining certainty about them (IASB, 1993). In theoretical concepts of financial reporting, Accounting Standard Board of Iran states: "Making economic decisions by the users of financial statements needs evaluating the ability of business unit for creating cash and certainty about it". Evaluation ability of cash provision is facilitated via focusing on financial status, financial performance, and cash flows of business unit and using them in predicting expected cash flows and measuring financial flexibility (Technical Commite of Accounting, 2012; Par.7). There are differences between accounting earnings and operational cash flows for the effects of the following factors:

Non-cash costs (e.g. depreciation costs) that decrease net profit but not cash amount,

Time difference of income fulfillment and cost tolerance and paying its expenses,

Non-operational profit/loss come from selling fixed assets, bonds, or other investments, considered in profit/loss statements that change net profits. However, in operational activities, cash flows' statements have no effect.

This paper probes the relationship between earnings and operational cash flows with stockholders' return. Then, this relationship is examined in the conditions of information asymmetry to see which one has stronger correlation with stockholders' return.

Gombola and Ketz (1983) studied the relationship between earnings of accruals and operational cash flows. They concluded that cash flows had not had important information compared with accounting earnings. Rayburn (1986) studied the relationship between unexpected components of accruals and cash flows with stock return. The results confirmed that both sections of accounting earnings and cash flows have information content. Wilson (1987) examined the role of information content of earning components towards the values of earning itself through dividing cash and accrual components of earning. The results indicate that earning's accrual components contain incremental information content compared with cash components. Differentiating cash and accruals' components, Wilson (1987) examined the role of information content of earning components compared with the values of earning itself. The results showed that earning's accrual components contained higher information content than its cash components.

Bowen et al. (1987) studied increasing information content of accruals and cash components. The results showed that information about earnings and cash flows had increasing content towards each other. In addition, the information of cash flows has higher information content than earnings.

In his research, Easton et al. (1992) examined relative information content of earning and cash flows. He found that earning has higher information content compared with cash flows. Considering accounting earnings and cash flows as an index of performance evaluation in his paper, Dechow (1994) indicated that in a firm with less volatility in supplying its required funds, cash flows have better conditions for measuring performance. In his opinion, in short term (e.g. 3 months or a year), firm's earning is more correlated with return and cash flows.

In their research, Hodgson and Stevenson (2000) studied the relationship between earnings and cash flows with stock return affected by firm's size. The results of this study indicated that cash flows provided more additional information for firms with large size than small firms. In addition, smaller firms contain more unstable earning components than large ones. Moreover, non-linear relationship between earnings and cash flows has higher descriptive strength compared with its linear form. Probing the relationship between earning and operational cash flows with stock return in Japan from 1985 to 1993, Charitou et al. (2000) found that when earning has more unstable state, cash flows have more significant role for determining return of the company. Bartov et al. (2001) studied information content of earning and cash flows for evaluating stockholders equity in USA, England, Canada, Germany, and Japan. The results indicated that in USA, England, and Canada, but not in Germany, earning has more significance than cash flows. In other words, national reporting method affects information content of earning and cash flows.

Haw et al. (2001) examined information content of operational cash flows, earning, and accruals in Stock Exchange of China. The results showed that earning contained more information content than operational cash flows; also, incremental information content of discretionary accruals versus non-discretionary accruals was conformed. Chan et al. (2006) examined the relationship between accruals, difference between earnings and cash flows, and stock return. The results indicated that stock return of firms with high accruals was reduced during next period of financial information reporting.

Probing the relative significance of earning and cash flows in equity evaluation, Subramanyam and Venkatachalam (2007) showed that earning could have better performance in explaining intrinsic realized value compared with cash flows. Rapp (2010) studied the relationship between accounting earnings and cash flows with shareholders' equity in asymmetric conditions of information. He showed that in asymmetric information conditions, accounting earning contains more information content than cash flows. However, through increasing information asymmetry cash flow indices are more relevant in explaining performance of stock market.

## 2. Methodology

This study is correlation. It uses descriptive statistics, Pearson correlation, and regression to analyze data. To test hypotheses, multivariable regression pattern is used with combined data method. Used data in this study are the information of audited financial statements. For this purpose, a main part of information was gathered from Rahavardnovin and Tadbirpardaz software. Other information was gathered from Research Management and Islamic Studies Center of Stock Exchange of Tehran. For statistical tests, E-views software, version 7 was used. Statistical population of this study includes all accepted companies in Tehran Stock Exchange (TSE). Statistical population was selected using removing method. Companies with the following conditions were selected as the sample:

1. They were accepted in TSE until before 2004.
2. Their financial statements were accessible for 2004-2009.
3. They did not have transaction interruption from 2004-2009.
4. Financial period of companies ended at last month of winter.

For the blurredness of border between operational activities and financial provision of investment, insurance, and holding companies they were removed from the sample. Due to the small sample size, 102 companies and 162 observations for each variable were selected.

### 2.1 Hypotheses

H<sub>1</sub>. Accounting variables have better performance than variables of cash flows in explaining the performance of companies' stock return (capital market)

H<sub>2</sub>. Increasing information asymmetry, accounting variables play more significant role in describing companies' stock return performance (capital market) compared with variable of cash flows.

**Table 1**  
Definitions of variables

Variables	Definitions of variables	Variables	Definitions of variables
R <sub>it</sub>	Percentage of stockholders' return	BETA <sub>it</sub>	Systematic risk resulting from dividing stock return's covariance & market return to variance of market return
EAR <sub>it</sub>	Earnings before tax and interest	SIZE <sub>it</sub>	Company size calculated by log of total assets
CF <sub>it</sub>	Operational cash flow	MTB <sub>it</sub>	Market value/book value of stakeholders
LEV <sub>it</sub>	Total debts of company/total assets	ETP <sub>it</sub>	Earnings per share/ stock market price

To measure information asymmetry, three dummy variables are used:

*MACP<sub>it</sub>*: If market value of the company becomes larger than the average market value of annual portfolio, greater than value of market capital, it will take the value of 1, otherwise 0.

*INTANG<sub>it</sub>*: If tangible fixed asset/total assets of the company per year ratio exceed the average of that ratio in annual portfolio, it will take the value of 1, otherwise 0.

*DOMINATED<sub>it</sub>*: If floating shares of the company become less than 50%, it will take the value of 1, otherwise 0.

### 3. Results

#### *Limer and Hasman tests*

To increase the number of observations and degree of freedom and decrease heterogeneity and collinearity of variables, combined data method was used. First, the likelihood of combining data was used. Next, *F* test of Limer was utilized whose structure is as follows:

H<sub>0</sub>: Intercept parameters are equal in all places (intervals).

H<sub>1</sub>: Intercept parameters are not equal in all places (intervals).

Using RRSS from estimations of combined model of OLS and URSS estimations from intergroup regression, *F* statistics is introduced as follows:

Equal intercepts in H<sub>0</sub> are versus unequal intercepts in H<sub>1</sub> (in panel data). Thus if H<sub>0</sub> is rejected, panel data method will be accepted. The results of Limer *F* test for research variables are shown in Table 2.

**Table 2**  
The results of Limer *F* test for research variables

Pattern	F-value	Critical value
1	7.76	F <sub>101,506</sub> = .076569
2	7.31	F <sub>101,500</sub> = .076552
3	7.28	F <sub>101,500</sub> = .076552
4	7.15	F <sub>101,500</sub> = .076552

In Table 2, the null hypothesis is to assume intercepts of all periods are equal and based on the critical values stated on Table 2, the null hypothesis for all patterns are rejected. Therefore, we need to use

Panel data method. To determine fixed and stochastic effects, Hasman Test was utilized. In this test, if accepted, a stochastic pattern is used. The summary of Hasman test results is depicted in Table 3. Due to the significance of all patterns,  $H_0$  is rejected. So the pattern of effects is fixed.

**Table 3**

Hasman test results: selection between fixed and stochastic effects

Research patterns	$\chi^2$	df	sig	Test result
Pattern1	6.186	2	.045	In all patterns, $H_0$ is rejected. $H_0$ : Coefficient difference is not systematic
Pattern2	70.373	8	.000	
Pattern3	70.225	8	.000	
Pattern4	77.209	8	.000	

The analysis of results show that the relationship between dependent and independent variables using panel data can be better represented than using time series data. In other words, in estimating models, intercepts are unequal and there is a significant correlation between error components and explanatory variables. In other words, intercepts are unequal and there is significant difference between intercepts of all explanatory variables. Before hypotheses test, descriptive statistics and Pearson correlation coefficient of variables are shown in Table 4 and 5.

**Table 4**

Description of descriptive statistics

indices	R	CF	EAR	BETA	SIZE	MTB	ETP	LEV	MACP	INTANG	DOMINATED
Mean	102.997	207773.6	238352.8	.473	11.691	2.963	.146	.638	.499	.500	.786
Median	72.910	39486.00	48080.00	.540	11.657	1.843	.150	.646	.000	1.000	1.000
Max	919.590	10513626	8040108	3.160	13.684	115.845	2.213	1.414	1.000	1.000	1.000
Min	-289.260	-2413332	-717929	-2.310	10.588	-8.304	-1.660	.168	.000	.000	.000
sd	125.460	882276.6	819674.5	1.629	.592	6.027	.240	.188	.500	.500	.410
No.	612	612	612	612	612	612	612	612	612	612	612

R: stockholders return percentage; CF: operational cash flow; EAR: earning before tax & interest; BETA: systematic risk; SIZE: company size; MTB: market value/book value; ETP: earning per share/market price; LEV: Leverage; MACP, INTANG and DOMINATED: dummy variables for measuring information asymmetry.

**Table 5**

Pearson correlation for variables

variables	CF	BETA	SIZE	MTB	ETP	LEV	DOMINATED	MACP	INTANG
CF	1	-.016	.456	-.024	.098	-.086	.065	.067	.061
BETA	-.016	1	-.039	-.019	-.024	-.054	.087	.007	-.023
SIZE	.456	-.039	1	-.006	.097	.067	.112	.083	-.088
MTB	-.024	-.019	-.006	1	-.005	.114	.038	.0817	-.029
ETP	.098	-.024	.097	-.005	1	-.348	.007	.040	.016
LEV	-.086	-.054	.067	.114	-.348	1	.061	.057	-.018
DOMINATED	.065	-.087	.112	.038	.007	.061	1	.051	.004
MACP	.067	.007	.083	.081	.040	.057	.051	1	-.203
INTANG	.061	-.023	-.088	-.029	.016	-.018	.004	-.203	1

As seen in Table 5, there is not any significant correlation between independent variables and they can be put together in statistical model. The results of testing  $H_1$ , using panel data with fixed effects are shown in Table 6.

**Table 6**The results of analysis for  $H_1 (R_{it} = \alpha_0 + \beta_1 x EAR_{it} + \beta_2 x CF_{it} + \varepsilon_0)$ 

variables	Coefficient	Statistics	sig
constant	84.7739	14.9720	0.0000
earning before tax and interests	0.05583	4.8844	0.0000
operational cash flow	-0.01694	-0.8413	0.4016

Determination coefficient = 61.37% modified determination coefficient = 53.02% Durbin-Watson = 1.74 F statistics = 7.3539 Sig. = 0.000

As seen in Table 6, 61.37% of changes of stock return are explained by two independent variables of earning before tax and interests and operational cash flows. Modified determination coefficient is 53.2%. The effect of earning before tax and interests on stock return is 0.558, positive, and significant. However, operational cash flow's effect on stock return is insignificant. The value of Durbin-Watson is 1.74. It shows that error components in this model do not have any significant correlation with each other and act independently. Thus, there is no self-correlation between error components of observations. Thus, calculated F statistics' value in measured regression model is 7.353. Thus, at 0.000 level, regression is significant and  $H_0$  is rejected.

H<sub>2</sub>. Increasing information asymmetry, accruals explain stock return of the companies better than operational cash flows.

- a. At this state, information asymmetry is measured using dummy variable of MACP. After model estimation, coefficients of earnings before tax and interest and operational cash flow are compared. The results of testing H<sub>2</sub> are shown in Table 7.

**Table 7**  
Results of H<sub>2</sub> analysis

$$R_{it} = \alpha_0 + \beta_1 x EAR_{it} + \beta_2 x CF_{it} + \lambda_1 x BETA_{it} + \lambda_2 x SIZE_{it} + \lambda_3 x MTB_{it} + \lambda_4 x ETP_{it} + \lambda_5 x LEV_{it} + \lambda_6 \text{dummy MACP} + \varepsilon_0$$

Variables	coefficients	statistics	sig
Intercept	28.4702	0.0643	0.9488
Earnings before tax and interest	0.05213	4.5114	0.0000
Operational cash flow	-0.002630	-0.0087	0.9930
Systematic risk	-1.6062	-0.7324	0.4643
Company size	3.7163	0.09784	0.9221
Market value/stock holder equity	1.2752	1.9474	0.0521
Earnings per share /stock market price	140.7555	7.9132	0.0000
Total debt/total assets of the company	-5.1340	-0.1500	0.8808
MACP	-15.0367	-1.8412	0.0662

Determination coefficient = 61.09% modified determination coefficient = 68.46% Durbin-Watson = 1.87 F statistics = 9.2895 Sig. = 0.000

As seen in Table 7, 68.46% of stock returns' changes in companies is explained by independent variables. The value of modified determination coefficient is 61.09. The effect of independent variable of earnings before tax and interest on stock return is 0.052, significant and positive. The effect of market value/ book value of stockholders' equity on stock return is equal to 1.275, which is positive and significant at 5% significance level. The effect of earning per share to stock market price of the companies is 140.755, positive, and significant. Other independent variables have insignificant effect on stock return of the companies Durbin-Watson statistics has a value of 1.87, implying that error components of this model have insignificant correlation with an independent behavior from each other. In other words, there is no self-correlation between error components. Calculated F statistics in regression model is 9.289 that regarding significance level of 0.000, it is observed that the regression is significant and  $H_0$  is rejected.

- b. In that case, information asymmetry is measured using dummy variable of INTANG. Estimating the model, the coefficients of earning before tax and interest and operational cash flow are compared. The results of H<sub>2</sub> analysis are shown in Table 8.

As seen in Table 8, 68.24% of the changes in stock return of the companies are explained by independent variable in the above model. The value of modified determination coefficient is 60.28%. The effect of earnings before tax and interest on stock return of the companies is 0.0513, which is positive, and significant. The effect of the ratio of earning per share to stock market value is 138.850, positive, and significant. Other independent variables don't have significant effect on stock return of the companies.

**Table 8**

The results of testing the second hypothesis

$$R_{it} = \alpha_0 + \beta_1 xEAR_{it} + \beta_2 xCF_{it} + \lambda_1 xBETA_{it} + \lambda_2 xSIZE_{it} + \lambda_3 xMTB_{it} + \lambda_4 xETP_{it} + \lambda_5 xLEV_{it} + \lambda_6 \text{dummy INTANG} + e_0$$

Variables	coefficients	statistics	sig
Intercept	104.9595	0.2370	0.8127
Earnings before tax and interest	0.05138	4.4124	0.0000
Operational cash flow	0.00107	0.0130	0.9896
Systematic risk	-1.4837	-0.6745	0.5003
Company size	-3.2296	-0.0851	0.9322
Market value/stock holder equity	1.2077	1.8408	0.0663
Earnings per share /stock market price	138.8507	7.7774	0.0000
Total debt/total assets of the company	-8.4030	-0.2450	0.8066
INTANG	-0.1187	-0.0153	0.9878

Determination coefficient = 60.82% modified determination coefficient = 68.24% Durbin-Watson = 1.83 F statistics = 9.1959 Sig. = 0.000

Durbin-Watson value of 1.83 reveals that error components of this model have insignificant correlation together with an independent behavior from each other. In other words, there is no self-correlation between error components. Calculated F statistics in regression model is 9.195. Regarding significance level of 0.000, it is observed that the regression is significant and H<sub>0</sub> is rejected.

- c. In this state, information asymmetry is measured using dummy variable of DOMINATED. Estimating model, the coefficients of earning before tax and interest and operational cash flow are compared. The results of H<sub>3</sub> analysis are shown in Table 9.

**Table 9**

The results of testing the thirds hypothesis

$$R_{it} = \alpha_0 + \beta_1 xEAR_{it} + \beta_2 xCF_{it} + \lambda_1 xBETA_{it} + \lambda_2 xSIZE_{it} + \lambda_3 xMTB_{it} + \lambda_4 xETP_{it} + \lambda_5 xLEV_{it} + \lambda_6 \text{dummy DOMINATED}_{it} + e_0$$

Intercept	Coefficients	Statistics	Sig.
Earnings before tax and interest	126.4134	0.2838	0.7766
Operational cash flow	0.05138	4.4354	0.0000
Systematic risk	-0.001844	-0.0061	0.9951
Company size	-1.4200	-0.6441	0.5198
Market value/stock holder equity	-4.5982	-0.1208	0.9039
Earnings per share /stock market price	1.2132	1.8491	0.0650
Total debt/total assets of the company	139.2538	7.8042	0.0000
Intercept	-8.4808	-0.2474	0.8047
DOMINATED	-7.0416	-0.4173	0.6766

Determination coefficient = 68.25% modified determination coefficient = 60.83% Durbin-Watson = 1.91 F statistics = 9.2007 Sig. = 0.000

As seen in Table 9, 68.25% of stock return's changes in the companies are explained by independent variables of the model. The value of modified determination coefficient regarding sample size is 60.83%. The effect of earning before tax and interest on stock return of the companies is equal to 0.0513, which is positive, and significant. The effect of the ratio of earning per share to stock return of the companies is 139.253, positive, and significant. Other independent variables don't have significant effect on stock return of the companies. Durbin-Watson statistics has a value of 1.91, implying that error components of this model have insignificant correlation with an independent behavior from each other. In other words, there is no self-correlation between error components. Calculated F statistics in regression model is 9.2007 that regarding significance level of 0.000 it is observed that the regression is significant and H<sub>0</sub> is rejected.

#### 4. Conclusion

The results of the study have shown that earning before tax and interest had positive and significant correlation with stock return of the companies. While, this correlation is insignificant between operational cash flows and stock return of the companies. According to the findings, increasing

information asymmetry, earning before tax and interest had positive and significant correlation with stock return of the companies. However, the effect of cash flows on stock return was insignificant. In other words, earning before tax and interest had higher information content compared with operational cash flows. The results are consistent with findings of Gombola and Ketz (1983), Easton et al. (1992), Haw et al. (2001) who confirmed that accounting earning had higher information content than cash flows. The study of Rapp (2010) shows that accounting earning contained higher information content than cash flows. Increasing information asymmetry, the measure of cash flow had a better performance in explaining capital market. This study also proved that earning before tax and interest has higher information content than cash flow.

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