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A Study of The Impact of Cash and Earning Persistence on Stock Return in the Tehran Stock Exchange

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ARTICLE INFO	ABSTRACT
<p>Article History: Received 2 January 2020 Received in revised form 14 February 2021 Accepted 17 March 2021 Available online 19 March 2021</p>	<p>Cash flows from operating activities are one of the main indices used to assess how far a business entity's activities have resulted in sufficient cash flows to pay off loans, maintain throughput, and pay dividends, as well as how far they have facilitated new investments without using financial resources. Furthermore, given that the stock return is the primary criterion for shareholders when selecting stocks, and given that the factors influencing the stock return can be used to forecast the stock return for future investments, the purpose of this research is to survey the effects of cash and earning persistence components on the stock return in the Tehran Stock Exchange. From 2009 until the end of 2015, 129 non-financial companies were listed on the Tehran Stock Exchange. They were chosen through a screening process. The data was analyzed using the least squares approach. According to the findings, cash flows from operating activities, cash flows from returns and earnings, cash flows from income tax activities, cash flows from investing activities, cash flows from financing activities, and earning persistence all have a positive and significant effect on stock return. Furthermore, the results show that earning persistence has a positive and significant effect on the link between cash and stock return components.</p>
<p>Keywords: Tehran Stock Exchange, Operating Cash Flow, Components of Cash, Earning Persistence, Stock Return</p>	

1. INTRODUCTION

Today, the ever-increasing development of capital markets and the attraction of individual small investments to productive activities have caused these markets to play an important role in the allocation of financial resources of the society. Therefore, identifying the behavior of investors and the variables affecting the stock price and stock return in these markets has become important. Considering the fact that a portion of the variables influencing the stock market is the result of financial information of economic units recorded by their accounting systems, making

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surveys on the relationship between financial variables and capital market variables can help the investors to identify the financial variables which affect the stock cost and stock return and to make decisions.

On the one hand, investment development has caused people's capitals to be attracted and directed to the productive sectors of the economy, on the other hand, due to the orientations of investors (based on risk and profit), investments will be led towards industries which provide higher profits and lower risks. This case will finally lead to the optimal allocation of resources [1].

The most major factor which every investor considers carefully to make decisions is the return on capital. In other words, investors look for the most efficient chances to use their capital surpluses in capital markets [2].

The accounting profit and its components are among the information which is noticed by people to make decisions. This profit is identified and calculated based on accruals. Based on the accruals approach and realization of income and expenses, it is possible to report the profit [3].

Net profit is one of the most important of information which is provided in the income statement. It is a basis used to evaluate the performance and estimate the value of a company. Some facts such as estimations and different methods in accounting and the conflict of interest between managers and owners have caused the real profit of an economic entity to be different from its profit reported in the financial statements and arisen doubts about profit uses which are the basis of making decisions [1]. Thus, considering the sensitivity and broad dimensions of profit uses, it is necessary to be careful about the different aspects and surveys on various viewpoints while calculating and reporting the profit. One of the significant characteristics of earnings is earning persistence [4].

The earning persistence is a qualitative feature of accounting profit which, based on accounting information, helps investors to evaluate the future profits and cash flows of their companies. The figure of reported profit is important for investors and affects their decisions but the sustainability of profit is considered as a qualitative feature of profit by investors. They pay attention not only to the figure of accounting profit but also to the sustainability of profit more than its unsustainability to estimate their expected future profits and cash flows [3].

Additionally, because of some inherent and intentional orientations in accrual basis, there is a doubt about the sufficiency of customary accounting methods for reporting the complicated economic activities of our modern days. Placing emphasis on reporting cash flows is one of the ways to avoid these orientations. Therefore, those who use financial statements can make their predictions based on reporting cash flows [5].

The cash flows from operating activities are one of the main indices to survey the following cases: to what extent the activities of a business entity will lead to sufficient cash flows to pay off the loans, maintain the throughput of the entity, and pay the dividends; and to what extent they have facilitated new investments without using the resources out of the entity. This frequent and important flow in many for-profit organizations is achieved by selling products or providing services through collecting money from customers, the funds paid to the sellers of goods and providers of services, the funds paid as the salaries/wages of employees, and the other cash payments for expenses. In fact, the most important and usual cash flow is the one from operating activities to obtain net profit [6]. Considering that the stock return is the main criterion for shareholders to choose stocks and considering that the factors affecting it can be useful to predict the stock return for making investments and considering that the earning persistence and components of cash are among these factors, the main question is that if the components of cash and earning persistence can affect the stock return or not.

2. THEORETICAL LITERATURE AND BACKGROUND OF RESEARCH

Shahbazi and Vaseli [1] conducted a research titled “The relationship between the components of cash flow statement and abnormal stock return in the companies accepted in Tehran Stock Exchange”. A survey on the relationship between the components of cash flow statement and abnormal stock return in the companies accepted in Tehran Stock Exchange was the purpose of this study. The hypothesis testing was done using panel data for a time period from 1389 to 1393 and using the information of 127 companies which were selected from the companies accepted in Tehran Stock Exchange by the screening method. The results of hypothesis testing indicate that the variables of cash flows from operating activities, cash flows from the activities of stock returns and dividends

payable, and cash flows from investing activities have a direct and significant relationship with the abnormal stock return. Furthermore, rejecting a relationship between the cash flows from financing and income tax activities and the abnormal stock return in the companies accepted in Tehran Stock Exchange is another result of the hypothesis testing. The capital market inattention to the information about financing activities reported in financial statements and uncertainty about the optimal use of the funds provided by the management can be a reason for the uncertain reaction of market to the financing phenomenon.

Behruz and Moradi [2014] conducted a study titled “A survey on the sustainability of components of cash flow statement to predict the profit”. The purpose of this study is an answer to this question: what is the level of persistence of each component of cash flows to predict the future profits? In this research, every component of cash flows was extracted from the cash flow statement and the figure of profit was extracted from the income statements. The amount of correlation between each component of cash flows and the profit was investigated. Considering the existing limitations and necessary variables, the information of 69 companies accepted in Tehran Stock Exchange was used as the statistical population sample during the time period from 2006 to 2010. It is a correlational research using ex-post facto method. The results of this research show that the cash flows from operating activities and cash flows from financing activities have a significant and direct relationship with the accounting profit. Additionally, the cash from the returns on investments and dividends payable for financing, the cash related to income tax, and the cash from the net flow of investment activities are significantly related to the accounting profit. Considering the correlation coefficient of these variables, this relationship could be considered significant and inverse.

Artikis and Georgios [3] conducted a research titled “The relationship of the concepts of components of cash and earning persistence with the stock return”. UK Stock Exchange companies formed the statistical population of the research during the time period from 1981 to 2013. Regression analysis was used to examine and analyze the hypotheses. The results indicated that the components of cash and earning persistence had a strong relationship with stock return. Furthermore, the cash components of profit, in comparison with accrual components, had more effects on the cash return on stock.

Chen, J. [8] conducted a study titled “A survey on the relationship between free cash flows and the stock price of non-financial companies in the Nairobi Securities Exchange”. The statistical population of the research included forty-two companies in NSE between 2011 and 2015. Multiple linear regression was used to identify the existence of a relationship. The results showed that the free cash flow had a positive effect on the stock price.

Simlai P.E [9] conducted a study titled “Cash flow, profit, and expectation of changes in stock return”. The statistical population was the companies present in the S&P stock market between 1951 and 2008. The results indicate that the free cash flow increases the expectation of increased stock return in the short term and decreases the expectation of increased stock return in the long term among the shareholders.

3. RESEARCH METHOD

This research is an applied research by purpose and descriptive-correlational by method. The research data was analyzed by studying the documents arranged in a general information graphic. Then, all the information was sorted using the Excel software. Considering that the data was panel data, the Eviews software was employed to analyze it. Central-tendency and dispersion statistical indices were used in descriptive analysis. The Jarque-Bera test was employed to survey the normality of distribution of variables. The unit root test was used to survey the reliability of variables and the Pearson correlation coefficient was employed to test the collinearity between variables.

In inferential analysis to test the research hypotheses based on the econometric models, the combined and/or pooled regression model, considering all assumptions of classical regression, was used according to the circumstances. After fitting the regression models, the Fisher statistic was employed to survey the general significance level of the model. Student’s t-test was used to examine the significance level of the coefficients of the model explanatory variables. The Durbin-Watson statistic was employed to survey the independence level of model residuals. Investigating the explanatory power of model was done using the adjusted R-squared.

The information of the research theoretical and hypothetical foundations were employed through the library method and the necessary statistical data was collected using financial statements and explanatory notes of the

companies. Because of the reliability of the financial statements, they were employed as the most major information resource. The reports included the basic financial statements of the companies. The statistical population included all the non-financial companies accepted in Tehran Stock Exchange from 2009 to the end of 2015. The total number of sample companies in this study was 129 which were selected by screening (criteria filtering technique) and considering the following criteria:

Table 1. The method of selecting the number of companies of the statistical population

Explanation	Number	Number
The number of companies present in Tehran Stock Exchange until the end of 2015.	482	
The number of the companies whose complete information is not available during the research period.		9
The companies that have changed their fiscal years during the research period.		11
The type of company’s activity has been productive. Therefore, financial and investment institutions, banks, and multidisciplinary companies are not included in the sample (financial and investment and intermediary institutions).		29
Each company which is being studied has a background of membership in the Stock Exchange for two years before the start of the research period (the companies which entered the Stock Exchange in 2007 or later).		153
The companies with operating interruptions for more than 6 months during the research period.		32
The companies whose shareholders’ equity is negative during the period of research.		26
The number of companies whose fiscal year end is not the end of February 29th.		93
Total	(353)	
The number of companies of the statistical population	129	

4. RESEARCH METHOD

$$R_{it} = \alpha_1 + \beta_1 AC_{it} + \beta_2 PC_{it} + \beta_3 AC_{it} * PC_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \varepsilon_{it} \tag{1}$$

Table 2.

Variable name	Explanation	Variable role	Calculation method	
R	Return on stock	Dependent variable	$R_{i,t} = \frac{(P_{t+1} + P_t) + DPS}{P_t}$	Total return
AC	Components of cash	Independent variable		
PC	Earning persistence	Independent variable	$Earning_{t+1} = \alpha_0 + \alpha_0 Earning_t + v_t$	Friedman equation
Size	Size	Control variable	The natural logarithm of annual sales of companies	
LEV	Leverage	Control variable	Total liabilities to total assets	The funds provided by debts

5. RESEARCH VARIABLES AND THEIR OPERATING DEFINITIONS

5.1. Independent variables

-Components of cash flow: the components of cash flow include five elements and their measurement indices are presented. They are as follows:

- Cash flows from operating activities: basically, they include the cash inflows and cash outflows related to the aforementioned activities.

- Cash flow from returns and profits: they are resulted from the cash flow statement.

- Cash flows from income tax activities: they are extracted from cash flow statements.

- Cash flows from investing activities: the intended cash flows titled “investment activities” are presented in the cash flow statements.

- Cash flows from financing activities: they are extracted from the cash flow statements.

Earning persistence: in this study, the equation introduced by Friedman and his colleagues (1982) is used to measure the earning persistence. Earning t coefficient (α_1) is used in the following equation. The closer α_1 is to 1, the higher is the earning persistence.

$$Earning_{t+1} = \alpha_0 + \alpha_1 Earning_t + v_t \quad (2)$$

Earning t = the earnings before long term accruals in the year t

5.2 Dependent variable

5.2.1 Stock return

Cash dividends: this ratio shows the amount of stock return obtained from cash dividends during a period of time. In other words:

$$\text{Cash return on stock} = \frac{DPS}{P_t} \quad (3)$$

DPS: dividend per share

P t: the price of stocks at the beginning of t time period (purchase price)

Stock price return (return on capital): this ratio indicates the amount of return on each share from the change of stock price during a certain time period. In other words:

$$\text{Price return} = \frac{P_{t+1} - P_t}{P_t} \quad (4)$$

P t+1: the price of stock at the end of t time period

The total stock return: the information related to the price of stocks at the beginning and end of the year and the amount of cash dividends paid in each year were necessary to calculate the total stock return. The information was collected from Tehran Stock Exchange official site and formulated based on the following formula:

$$R_{i,t} = \frac{(P_{t+1} + P_t) + DPS}{P_t} \quad (5)$$

$R_{i,t}$: total return

5.3. Control variables

-Company size: the size of a company can be measured using its main indicators which are the value of its assets, the amount of its sales, its stock market value, andIn this research, the company size is measured using the natural logarithm of the company’s annual sales available in the audited financial statements.

-Leverage: dividing the total debts by the total assets calculates the total funds provided by debts. This ratio shows the amount of company’s assets provided by debts and borrowing and the amount of its assets obtained from capital.

6. DATA ANALYSIS

The descriptive statistics related to the research variables have been prepared using the Eviwes software and shown in table 1-4. As it is seen in table 1-1, the mean of stock return is 0.281. Considering the minimum and maximum amounts that are respectively -0.13 and 0.56 , we can say that the companies which were studied had a relatively good return during the time period of research. In relation to the cash flows from the operating activities and considering their mean (124910.9) and the minimum and maximum amounts which are respectively 53475 and 224098 , it is obvious that the volume of cash flows from the operating activities of the aforementioned companies have been relatively good during the time period of research.

Table 3. The descriptive statistics of the research variables

research variables		Average	Maximum	Minimum	Standard deviation	Skew coefficient	coefficient of elongation
Stock return	R	0.281	0.56	-0.13	0.055	-0.816	-1.616
Cash flows from operating activities	CFO	124910.9	224098	53475	53060.2	-0.719	0.937
Cash flow from returns and profits	CFR	77539	89000	-30155	100269	-0.619	-0.331
Cash flows from income tax activities	CFA	43333.14	62362	-21951	31629	-0.119	-0.816
Cash flows from investing activities	CFF	58183.14	65819	-41528	15502	-0.391	-0.671
Cash flows from financing activities	CFI	103839.1	68629	-73509	26068	-0.261	-0.662
Profit continuity	PC	0.1543	0.876	0.137	0.211	-0.691	-1.068
Company size	SIZE	12.69	13.79	11.966	0.642	-0.719	-0.807
Leverage	LEV	0.65	0.735	0.099	0.403	-0.677	-0.711

First, the Jarque-Bera test was used to survey the normality or abnormality of the data distribution. The results show that the dependent variable (the stock return) has a normal level of distribution. (t -Statistic= 0.3736 , Significance= 0.4756)

Then, the augmented Dickey-Fuller unit root test was employed to examine the stationarity of the research variables. The results show that the level of significance is lower than the error level (0.05) for all the variables. This means that the variables are stationary. Therefore, the aforesaid companies have not had structural changes and using them in the model cannot cause spurious regression.

Using the likelihood ratio to survey the heteroscedasticity was the next step. The result of this statistic was higher than 0.05 for all the hypotheses. Therefore, with 95 percent certainty, we can say that homoscedasticity is present in all of our models.

Another assumption of the linear multivariate regression is lack of significant collinearity between independent variables. The existence of collinearity between independent variables causes the results of the goodness of fit of regression model not to be reliable. The variance inflation factor (VIF) is a useful criterion to test the collinearity between independent variables. The VIF which is higher than 10 shows that the existence of collinearity between independent variables is probable. If it is higher than 200 , there is a serious problem with using the regression in the present situation. The results of collinearity test using VIF show that no collinearity exists between the variables.

Finally, the F-Limer test was used to select one of the panel data methods. In other words, the F-Limer statistic shows that if there are separate Y-intercepts for each company or not. In this test, the null hypothesis indicates that

the y-intercepts (pooled data) are the same and the alternative hypothesis means that the y-intercepts (panel data) are different. Considering the results of this test, P-value of the F statistic for all the hypotheses is less than the error level of 0.05 which rejects the null hypothesis and the panel data is considered adequate.

If after the F-Limer test the null hypothesis is rejected, this question can be asked: which method — the fixed effects method or the random effects method — can survey the relationship? The Hausman test explains it. The null hypothesis (the random effects method) in this test means that there is not a relationship between the error term related to the Y-intercept and explanatory variables and they are independent. The alternative hypothesis (the fixed effects method) means that the intended error term and explanatory variable are correlated. Thus, considering the results of the Hausman test, the null hypothesis (the random effects method) is rejected at the confidence level of 95 percent and the regression is estimated by the fixed effects method.

After determining the method to estimate the regression, all the research hypotheses were tested by the method of least squares. The results of testing the hypotheses are presented as follows:

The Durbin-Watson test is used to examine the autocorrelation between the residuals. The Durbin-Watson statistic is limited to the range of $0 \leq DW \leq 4$. If the amount of statistic is zero, the autocorrelation between the residuals is completely positive. If it is 4, the autocorrelation is completely negative. If it is approximately 2, there is no autocorrelation.

7. RESEARCH FINDINGS

Table 4.

		α_1	β_1	β_2	β_3	F-statistics	F significance	T-statistics	p-value	R-square	Durbin Watson
R_{it} $= \alpha_1 + \beta_1 CFO_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	CFO	-0.621	3.36	0.059	-0.147	441.216	0.00	10.119	0.00	0.59	2.351
R_{it} $= \alpha_1 + \beta_1 CFR_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	CFR	-1.042	2.98	0.089	0.016	819.829	0.00	24.026	0.00	0.73	1.85
R_{it} $= \alpha_1 + \beta_1 CFA_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	CFA	-1.042	4.86	0.093	-0.089	1211.770	0.00	33.821	0.00	0.80	1.98
R_{it} $= \alpha_1 + \beta_1 CFI_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	CFI	-1.108	1.87	0.107	-0.239	2260.748	0.00	50.613	0.00	0.88	1.94
R_{it} $= \alpha_1 + \beta_1 CFF_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	CFF	-1.469	2.63	0.109	0.275	2375.218	0.00	52.119	0.00	0.88	1.896
R_{it} $= \alpha_1 + \beta_1 PC_{it}$ $+ \beta_2 SIZE_{it} + \beta_3 LEV_{it}$ $+ \varepsilon_{it}$	PC	-1.699	2.330	0.098	0.252	671.432	0.00	20.336	0.00	0.69	2.170
R_{it} $= \alpha_1 + \beta_1 AC_{it} + \beta_2 PC_{it}$ $+ \beta_3 AC_{it} * PC_{it}$ $+ \beta_4 SIZE_{it} + \beta_5 LEV_{it}$ $+ \varepsilon_{it}$	AC*PC	-1.406	1.68	1.75	β_3 1.56 β_4 0.099 β_5 -0.085	756.197	0.00	21.449	0.00	0.87	1.77

The significance level of the F statistic is lower than the error level of 0.05. Therefore, with %95 certainty, the statistical significance of the aforementioned regression model is confirmed.

The amount of the Durbin-Watson statistic is in the range of 1.5 to 2.5 indicating the lack of correlation between the residuals.

-The cash flows from the operating activities with the other control variables explain %59 of the changes of dependent variable (stock return). The cash flows from operating activities have a positive and significant effect on the stock return.

-The cash flows from the returns and earnings with the other control variables explain %73 of the changes of dependent variable (stock return). The cash flows from the returns and dividends have a positive and significant effect on the stock return.

-The cash flows from the income tax with the other control variables explain %80 of the changes of the dependent variable (stock return). The cash flows from the income tax activities have a positive and significant effect on the stock return.

-The cash flows from the investing activities with the other control variables explain %88 of the changes of the dependent variable (stock return). The cash flows from the investing activities have a positive and significant effect on the stock return. In all cases listed above the significance level and the coefficient obtained for the company size variable mean that the company size variable has a positive and significant effect on the stock return. The significance level and the coefficient obtained for the leverage variable indicates that the leverage has a negative and significant effect on the stock return.

-The cash flows from the financing activities with the other control variables explain %88 of the changes of the dependent variable (stock return). The cash flows from the financing activities have a positive and significant effect on the stock return.

-The earning persistence with the other control variables explains %69 of the changes of the dependent variable (stock return). The earning persistence has a positive and significant effect on the stock return. The significance level and the coefficient obtained for the company size variable shows that the company size has a positive and significant effect on the stock return. The significance level and the coefficient obtained for the leverage variable means that the leverage has a positive and significant effect on the stock return.

-The earning persistence and components of cash with the other control variables explain %80 of the changes of the dependent variable (stock return). The components of cash and earning persistence have a positive and significant effect on the stock return. The significance level and the coefficient obtained for the moderator variable (AC*PC) shows the positive and significant effect of the profit persistence as the moderator variable on the relationship between the components of cash and the stock return.

8. CONCLUSION

The survey on the relationship between the components of cash and earning persistence and stock return is the purpose of this research. Therefore, the multiple regression tests using the method of least squares was employed. The results show that the cash flows from the operating activities, cash flows from the returns and dividends, cash flows from the income tax activities, cash flows from the investing activities and cash flows from the financing activities have positive and significant effects on the stock return. Furthermore, the results indicate that the earning persistence has a positive and significant effect on the stock return and on the relationship between the components of cash and the stock return.

There is a significant and weak relationship between the components of cash, earning persistence, and stock return. It is also obvious that there is a strong and positive relationship between the cash flows from the operating activities, the cash flows from the returns and earnings, the cash flows from the income tax activities, and the cash flows from the dividends and stock returns.

The earning persistence and stock returns are positively related. The earning persistence has a positive and significant effect on the relationship between the components of cash and stock return. A positive relationship is observed between the cash flows from the financing activities and stock return. The cash flows from the investing activities are positively related to the stock return.

Considering the results of this research and the positive and significant effect of the components of cash on the stock return, the investors are recommended to be more careful about the cash flows from the operating activities, the cash flows from the returns and profits, the cash flows from the income tax activities, the cash flows from the investing activities and the cash flows from the financing activities and analyze them in greater detail when they plan to construct their stock portfolio. One of the aspects affecting the stock return in the long term is the earning persistence which can positively and significantly moderate the relationship between the components of cash and the stock return. The investors are recommended to survey the profit of companies during the recent years if they want to buy stocks. If the earning persistence is obvious, they can analyze the situation of the cash flows and buy stocks.

Declaration

We acknowledge that we used ChatGPT to enhance the academic writing of our manuscript while ensuring the originality and integrity of our work.

Transparency Statement

The data supporting this study are available upon reasonable request to the corresponding author, subject to ethical and confidentiality considerations.

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Declaration of Interest

The authors declare that they have no competing interests.

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