

## Comparison of cash flow and accounting profit components in predicting stock returns, evidence from Fama and French model

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### Abstract:

This research investigates the predictive power of cash flow and profit components of stock returns using data from companies listed on the Tehran Stock Exchange within the Fama and French models. The research is conducted based on the financial information of 122 companies admitted to the Tehran Stock Exchange from 2015 to 2022, employing a panel data regression modelling approach. The results indicate that various components of the cash flows have not had the power to explain future stock returns. The same results were obtained regarding the explanatory power of profit-related variables implying that this variable is insignificant. However, the findings obtained from the comparison of stock returns and future stock returns show that there is a significant difference between the average stock returns and future stock returns in different portfolios, in terms of profits and cash flows. In other words, the rate of return among portfolios that benefit from higher cash flows has been significantly higher.

*Keywords:* Cash Flows, Accounting Profit, Stock Returns, Fama and French Models.

*Classification:* G30, G18, G42, C56

## 1 Introduction

There is a general agreement that capital accumulation is required for economic growth and development. This means that the capital market plays a significant role in adjusting the resource flows according to the economic returns and long-term

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financing, to increase the volume of investments. Currently, the stock exchange is the core of the capital market in most countries in order to direct a huge amount of capital to the most efficient and profitable investment projects. In fact, according to the investors' preferences in terms of risk and return, investments towards industries that have more profit or less risk will gain more attraction, and this will ultimately lead to the optimal allocation of resources. Having considered the fact that developing countries are facing many challenges regarding access to financial resources, an efficient capital market would facilitate optimal investment decisions ([16]).

In order to evaluate different investment options, various factors are considered and weighted against each other by investors, the most important factor of which is the yield that can be acquired. On the other hand, the most reliable source of information for investors is those which is published by companies in order to predict stock returns, meaning that the financial statements published by companies are the most important source of information. For instance, [4] investigated the impact of investors' inclinations in asset valuation using Fama and French's five-factor model and the New York Stock Exchange dataset. Their findings confirm the validity of Fama and French's three-factor and five-factor models in predicting expected returns. Also, the five-factor model combined with the investors' inclination index proved to work better than the expected returns ([4]).

The supply of companies' shares in the stock market would increase the desire to invest, leading to a wealth maximization effect upon the increase of the investment yield and the increase of the stock price. Due to the importance of reducing investment risk, investors of securities have to take into account the evaluation of the information provided by the company very carefully. Therefore, any information that is effective in evaluating the company and its performance is taken into consideration. For this reason, the financial information of the companies and their financial statements are very crucial for both the investors and stakeholders. Among these published information, the company's net profit, the components of net profit, and cash flows are of particular importance and have always been the focus of potential and actual investors ([16]). In this regard, [17] investigated the Fama and French five-factor model, together with the six-factor model by adding the liquidity factor. The results of their research show that only the market factor can be used as a determining factor in the explanation of returns ([17]).

Furthermore, to predict the stock returns, commonly, investors use two criteria including stock risk and their expected return. Thus, the information published in the financial statements can play a significant role in both profit maximization and correct forecasting purposes. One of the most important issues that every investor faces in the stock market is predicting the expected returns of stocks. Generally, investors use this forecast to form their optimal portfolio, which is created based on the two factors of stock risk and their expected return. In the meantime, investors use various methods, including intuitive methods or the use of complex mathe-

mathematical models, to make this prediction. Meanwhile, the information published in the financial statements can play a significant role in creating a correct forecast. Furthermore, to predict the stock returns, commonly, investors use two criteria including stock risk and their expected return. Thus, the information published in the financial statements can play a significant role in both profit maximization and correct forecasting purposes. Therefore, the innovation of the current research is that for the first time; 1- seeks to compare the impact of these two variables, cash flows and accounting profit, in assessing their predictive and explanatory potential regarding stock returns and 2- using correct and new models, it examines the issue of which of these two variables cash flows and accounting profit, have the most predictive and explanatory power regarding stock returns using the Fama and French models in companies listed on the Tehran Stock Exchange, which issue is important from the point of view of optimal investment and attraction of scarce funds for efficient production.

For this purpose, in this research an attempt will be made to clarify the relationship between the research variables of the following items and its consistent results for the use of all internal and external stakeholder groups. 1- Examining and comparing the predictive power of cash flow components and profit components regarding stock returns using the Fama and French model, 2- Examining the explanatory power of cash flow components regarding stock returns compared to profit components, 3- Examining the amount of stock returns among portfolios that are different in terms of cash flows. In this regard in the first stage of descriptive statistics studies; The research variables including median, mean, standard deviation, stretching coefficient and minimum and maximum parameters are examined, then the correlation coefficient is used to examine the existence of the relationship between the independent variables and the dependent variables of the research. In the following, using the multivariable regression models of [7] and [9], research hypotheses will be examined and tested using Excel and Spss software during 2015-2022. In doing so, after this introduction, the theoretical foundations and literature review are provided. It is followed by introducing the research hypotheses and modelling issues. The research methodology and variables are discussed in the fourth part. The last section provides results and concludes the study.

## **2 Theoretical Foundations and Research Background**

### **2.1 Stock Returns**

Stock returns have informational content and most investors use this information for both the forecasts and financial analysis purposes to gain a higher return. Research findings indicate that accrual items have a limited ability to predict cash flows. In fact, accrual items are functional in predicting future cash flow compared to cash items, and the capability of accrual items in predicting future cash flow decreases

with the fluctuation of the inventory at the end of the period. Furthermore, the ability of accruals to predict future cash flow increases with the company's future sales fluctuations, and with changes in company size ([14]). Also, according to studies [15] the variables "profit quality," "profit stability," "profit predictability," "profit smoothing," "profit transparency," "close proximity to cash," "awareness," "conservatism," and "timeliness" have a significant relationship with economic and accounting profit. However, there is no meaningful relationship between economic profit and accounting profit and the variable "Profit relevance."

Analysts used either technical or fundamental analysis to predict stock returns. In technical analysis, it is tried to predict the future trend by studying the past trend. [19] believes that changes in supply and demand can be determined and predicted by changes in price charts ([19]). Therefore, on this basis, technical analysis is based on three issues, which include: 1) everything is included in the prices, 2) prices move according to the trend, and 3) history repeats itself. In fundamental analysis, stock returns are a function of macroeconomic conditions, industry conditions, and specific conditions of the company including performance and financial condition, which are presented in the financial statements. The value of securities is a function of fundamental variables that the combination of these variables creates the expected return along with the specific risk level. Thus, fundamental analysis is based on past and present information to forecast financial return ([13]).

Furthermore, investors use different models to predict returns, and each of these models pay attention to different factors that will lead to rational decisions about stock selection which can be categorized as follows ([23]). First, capital asset pricing model introduced by William Sharp in 1960, which explains the relationship between risk and the expected rate of asset return. The assumption of the capital asset pricing model is that the only market factor determines the risk and yield of securities and the effect of all fundamental economic factors is summarized solely in this factor. The arbitrage pricing model is the second model that was proposed by Stephen Ross in 1976 in response to the criticisms raised about the capital asset pricing model. Arbitrage pricing theory models the return as a linear relationship with several fundamental and macroeconomic factors. The assumptions of the arbitrage pricing theory are much less than the assumptions of the capital asset pricing model, and the existence of a risk-free asset that people can borrow and lend at its rate of return is not assumed. In multi-factor models, economic phenomena and different structural groups are considered that may affect stock returns. Finally, in the [7] model, the relationship between average returns and five risk factors, beta, size, leverage, P/E ratio, and the ratio of book value to market value has been tested. The research results show that there is a negative relationship between company size and average returns. Also, there is a positive relationship between the ratio of the book value to the market value of the company and the average returns, and more attention should be paid to the size factor. In addition, the ratio of book value to market value has a stronger role in average returns, and therefore they designed

a multivariable regression to investigate the factors affecting portfolio returns ( [7]).

## 2.2 Profit and Cash Flows

Making the right decisions and obtaining the expected return from financial investment requires access to accurate and timely information. For this purpose, investors and stakeholders of companies pay attention to various factors in order to evaluate different investment options, the most important factor of which is the yield that can be acquired. In order to predict stock returns, investors have always paid particular attention to the information published by companies, so it can be said that the financial statements published by companies are the most critical information source. Among this published information, the net profit of the company and its components, as well as cash flows, are of particular importance and have always been the focus of investors in decision-making and risk-return evaluation ( [20]).

Given that the ultimate goal of all commercial companies is to make a profit, the information related to the profit components could significantly help to predict future profit. The study of accounting profit is important for the following reasons. A) The importance of profit for predicting the value of the company: Statement No. 1 emphasizes that profit provides a better indicator than cash flows in evaluating the company's performance. The current value of the company and the value of each share depends on the expected future dividend flow that will be distributed to the shareholders; Therefore, people consider profit as a criterion for predicting the company's value and as a basis for their economic decisions. B) The importance of profit in investment decisions: Usually investors consider things like stock returns and price-to-earnings ratio in their forecasts, and most analysts use earnings forecasts about the value of securities. C) Importance of profit in predicting future profits and cash flows: Profit related information is used to predict future profits. Usually, these forecasts are made using the method of analysing profit periods ( [21]).

According to the issues raised, one of the main factors in estimating the cash flow resulting from investment is the profit forecast, which can be a good substitute for the future cash flow, so investors and credit providers with more accurate forecasting gain more stock returns. For instance, the report of the Trueblood Committee in the USA sought to disclose information that would help predict, compare and evaluate cash flows and assess the management's ability to allocate the company's resources. The results of this report indicate that financial forecasts should be provided to increase the reliability of users' forecasts. note that, in common practice, the evaluation models, such as Fisher's ( [10]) and the other capital pricing assets models, measure the price of the company's securities according to its future cash flows. Therefore, it is necessary to estimate the expected future cash flows in these models, and since these estimates are not available, alternative information is used. One of the most common substitutes is the accounting profit forecast. In fact, both accountants and economists believe that the accrual process of accounting makes

accounting profit a better indicator for future cash flows than current cash flows in their evaluation models ( [3]).

Finally, there is another strand within the literature regarding profit that doubts relying on accounting profit in decision-making. The opponents raise the issue of the relevance of accounting profit in decision-making. They argue that due to the application of the historical cost principle and the realization of income, the accounting profit cannot recognize the increase in the unrealized value of the assets that have been kept in a certain period of time. This feature makes it impossible to disclose useful information. Furthermore, they point out that according to the different methods for calculating the unit cost price, such as the different methods of determining the value, the cost price of inventories, etc., relying on accounting profit based on historical cost makes it very difficult to compare items. Also, relying on the accounting profit based on the principle of income realization, historical cost and conservatism makes the data misleading or irrelevant to the user. A notable example in this connection is the uselessness of ratios based on financial statements ( [5]).

### **2.3 Empirical Literature**

Research related to the two variables, cash flows and accounting profit, in assessing their predictive and explanatory potential regarding stock returns using Tehran Stock Exchange data are limited, though, this section attempts to review some of the most relevant studies.

[22], This article argues that low-growth firms with high free cash flow will opt for income-increasing earnings management in order to obscure the low profits derived from their investments in negative net present value (NPV) projects. On the other hand, we argue that the listed companies might be interested in being listed in the first market due to its privileges and to preserve the competitiveness, through managing their earnings upwardly, so that they can satisfy the condition of achieving a particular earnings limit. This article should advance the body of earnings management literature in the Jordanian context by examining the effect of the moderating role of an independent audit committee (IAC) in the association between surplus free cash flow (SFCF) and income-increasing discretionary accruals (DAC). Further, this is the initial empirical attempt to investigate the moderation effect of IAC between stock market segmentations (SMS) and positive DAC ( [22]).

[21] This research aims to test and analyze information from the cash flow statement on the share return. The cash flow intended is from operating, financing, and investing activities. Meanwhile, the shares utilized belong to the infrastructure, utility, and telecommunication companies listed on the Indonesian capital market between 2018 and 2021. Because this study uses the change in three cash flows, the secondary data from 2017 to 2021 based on the firm annual reports and the stock price at the end of these years are employed. Additionally, the t-statistics and their probability provided by a multiple regression model to statistically examine

the hypotheses proposed are applied. Finally, this study concludes that the higher the cash flow from investing activities, the higher the stock return. However, the positive change in the financing cash flow tends to reduce this return. Meanwhile, this return is not affected by the cash flow from operating activities ([21]).

[6] This paper investigates the impact of accounting information on the cash flow from operations in the international firms, for the purpose of expecting investors decisions to be biased based on this impact. I use two regression models to investigate this relation and to examine the papers hypothesis. The empirical results show that investors decisions can be biased by the impact of accounting information on cash flow from operations in the period of this study. Where results show positive association of accounting information of return on assets, return on sales, price to earnings, debt to equity, and book value of equity with the cash flow from operations, and negative association of value of earnings, account receivables turnover, financial crisis, coronavirus pandemic with cash flow from operations in the period of this stud ([6]).

[1] the purpose of this research is to compare the signaling of net income, gross profit and operating profit and compare the effect of profit on the excess returns in companies listed in the Tehran Stock Exchange. The research hypotheses are tested by regression analysis based on panel data, the five-factor model of [8] and using the sample data includes 135 companies Listed in Tehran Stock Exchange. The results revealed that the net income signals are higher than the operating profit. The research result also indicates the net income signals are higher than the gross profit. Another result shows that net income has a greater ability to generate excess stock returns than gross profit and operating profit. ([1]).

[2] The results show that in companies with high performance quality, the firms IV are directly related to stock returns, and in companies with low performance quality, the firms IV are inversely related to stock returns. The favorable quality increases the IV, and leads to positive returns, and the non-favorable quality increases the IV, and leads to negative returns. And there is a nonlinear relation between stock returns and IV. Increasing the level of IV to a certain level, initially, increases the firm's stock returns, but by increasing it more than before, cause a negative market reaction and a negative impact on stock returns. ([2]).

[11] The purpose of this study is to investigate the relationship between fundamental accounting variables and stock returns. In this study, the variables of earnings per share, dividend per share and book value per share have been used as the basic accounting variables. The results of this study showed that all three variables of earnings per share, dividend per share and book value per share have a positive and significant effect on stock returns of companies. Among the research variables, dividend per share with a coefficient of 0.338 has shown the greatest effect on stock return. Therefore, it is suggested that analysts and all market participants use the variables of dividend per share, earnings per share and book value per share in investment decisions to select high-yield stocks ([11]).

### 3 Methodology and Model Specification

As mentioned earlier, this research attempts to evaluate the impact of cash flows and accounting profit on their predictive and explanatory potential regarding stock returns. The research is conducted within the Fama and French model using the financial statements of the listed companies in the Tehran Stock Exchange, during 2015-2022. According to the theoretical foundations, the financial data from a number of sources including the Tehran Stock Exchange Organization, Tadbir Pardaz software, Rohvard Navin, and the selected companies stock exchange have been collected. Data processing was conducted in Excel, and SPSS software was used to test hypotheses. The systematic elimination method is used for sampling. In this way, among all existing companies, those companies that do not meet the conditions mentioned below will be removed and the rest will be selected as samples. First, the financial information of the company should be available for the time period of the research, i.e., the years 2015-2022. Second, their financial year should end at the end of March. Third, companies that have been admitted to the stock exchange no later than 2015/01/01 and the name of the company has not been removed from the companies admitted to the Tehran Stock Exchange during the period under review. Fourth, there should not be any changes in the financial year over the period under review. Fifth, financial institutions, banks, investment companies, etc. must be excluded due to the specific nature of their activity and the specific nature of their income and activity cycle. Sixth, there should not be any trading break of more than 6 months. After applying these restrictions, the number of 122 companies in the period from 2015-2022 had the above conditions. According to the six steps described procedure, instead of conducting a sampling method, a criteria-based filtering approach is applied which covers all the match companies for the investigation.

#### 3.1 Research Hypotheses

Based on the theoretical foundations, two research hypotheses have been developed and proposed as follows. First, stock returns in portfolios with higher cash flows are significantly higher. Second, the explanatory power of cash flow components is significantly higher compared to accounting profit components.

#### 3.2 Model Specification

As stated, this research aims to investigate both the predictive and explanatory power of profit and cash flow variables, while their different components will be investigated in relation to stock returns. Therefore, two general methods will be used to test the research hypothesis and examine the predictive power of profits and cash flows regarding stock returns. First, the sampled companies are divided into 10 portfolios based on their returns in each investigated period, from the lowest return



to the highest return, and then the research hypotheses are investigated using two methods. In the first method, which is based on the comparison between groups, using the variance analysis test, the yield obtained in each of the 10 portfolios has been compared with profit and cash flows. The goal at this stage is whether there is a significant difference in the profitability of companies in groups that differ in terms of the variables used to measure profit and cash flows. The second method, which takes advantage of regression models, research hypotheses will be examined using the regression model of [7] as described in model 1 ( [9]).

$$R_{pi,t+1} = \alpha_i + \beta_{1i}MRKRF_t + \beta_{2i}SMB_{i,t} + \beta_{3i}HML_{i,t} + \epsilon_{i,t+1} \quad (1)$$

Note that within the Fama and French modelling framework and according to model (1), all companies are divided into two groups based on their rating size. The first group includes shares whose market value is lower than the median, and the second group includes shares whose market value is greater than the median. After that, all the companies that are placed in one of the above two groups are ranked every year based on the ratio of book value to market value, then they are divided into three categories. In this division, 30% of the shares go to baskets with a high ratio (High), 30% to baskets with a low ratio of book value to market value, and 40% to a basket with a ratio of book value to market value. As a result, 6 different baskets are obtained from the combination of these two divisions, which are presented as follows. First, portfolios which include small-sized shares and have a ratio of book value to large, medium and small market value, respectively, and denoted as S/L, S/M, S/H. second, portfolios which include large-sized shares and have a ratio of book value to market value of large, medium and small, respectively, and denoted as B/L, B/M, B/H. The reason that stocks are divided into two categories based on their size and three categories based on their ratio of market to book value is based on the fact that the Fama and French studies show that the ratio of book to market value has a more solid role in justifying stock returns compared to stock size.

Note that in Model (1),  $R_{pi,t+1}$  represents the quarterly excess return of portfolio  $i$ , which means stock return after deducting the risk-free rate of return.  $\alpha_i$  also is the abnormal return of portfolio  $i$ , which is influenced by the internal factors of each company, such as profits and cash flows. In fact, in case  $\alpha_i$  is positive and significant in each of the 10 portfolios, it indicates that stock returns are influenced by other factors and investors can transfer their investment to portfolios to earn more returns with better profit conditions and higher cash flows. Then the values of abnormal returns  $\alpha_i$  obtained from each of the portfolios will be compared with the values of profits and cash flows of different groups in order to determine whether these abnormal returns are more influenced by variables related to companies' profits or it has been more affected by the components of cash flows.  $MRKRF_t$  denotes capital market risk, which is the difference between the market return in the period under review and the risk-free return for the same period. Note that in this study, the

risk-free return is the return rate of the central bank's bonds.  $SMB_{i,t}$  is related to size factor and represents the difference between the returns of portfolios consisting of stocks of large companies and portfolios consisting of stocks of small companies. This variable is actually proposed to determine and control the company size factor on its additional efficiency in the Fama and French model and is measured using equation (2) as follows ([7] and [8]).

$$SMB = \frac{(S/L + S/M + S/H)}{3} - \frac{(B/L + B/M + B/H)}{3} \quad (2)$$

Finally,  $HML_{i,t}$  is related to the book to market value ratio factor, which is difference between portfolios returns consisting of shares of highly capitalized and low capitalized companies. This variable is actually the difference between the average returns of companies with high and low value ratios and is calculated using equation (3) as follows ([7] and [8]).

$$HML = \frac{(S/H + B/H)}{2} - \frac{(S/L + B/L)}{2} \quad (3)$$

### 3.3 Variables and Data

Based on the theoretical foundation, stock returns is set as the dependant variable which is calculate using equation (4) ([18]).

$$R_{it} = \frac{(1 + \alpha_{it}) \times P_{it} - P_{i(t-1)} + D_{it} - M}{P_{i(t-1)}} \quad (4)$$

In equation (4)  $R_{it}$  denotes yield of stock  $i$  in period  $t$ ,  $P_{it}$  is price of stock  $i$  in period  $t$ ,  $D_{it}$  is dividend of stock  $i$  in period  $t$ ,  $M$  denotes cash income of shareholders,  $\alpha_{it}$  is the ratio of increase in capital by company  $i$  in period  $t$ .

The independent variables of the research include a set of cash flow measurement variables as well as the company's profit measurement variables, which are presented in Tables 1 and 2.

Table 1: Cash Flow Measurement Variables

| Symbol          | Measurement  |
|-----------------|--|
| <b>FCF/TA</b>   | Ratio of the company's free cash flows to total assets   |
| <b>CFAF/TA</b>  | Ratio of operating cash flows after deducting financing related cash flows to total assets               |
| <b>CFO/TA</b>   | Ratio of operating cash flows to total assets  |
| <b>FCF/MVE</b>  | Ratio of the company's free cash flows to the market value of equity                                     |
| <b>CFAF/MVE</b> | Ratio of operating cash flows after deducting financing related cash flows to the market value of equity |
| <b>CFO/MVE</b>  | Ratio of operating cash flows to the total market value of equity  |

Finally, Table 3 presents control variables ad their measurement method.

Table 2: Companies' Profit Measurement Variables

| Symbol        | Measurement  |
|---------------|--|
| <b>OP/TA</b>  | Ratio of operating profit to total assets                                      |
| <b>GP/TA</b>  | Ratio of gross profit (sales/cost of goods sold) to total assets               |
| <b>NI/TA</b>  | Ratio of gross profit to total assets  |
| <b>OP/MVE</b> | Ratio of operating profit to the market value of equity                        |
| <b>GP/MVE</b> | Ratio of gross profit (sales/cost of goods sold) to the market value of equity |
| <b>NI/MVE</b> | Ratio of gross profit to the market value of equity                            |

Table 3: Control Variables

| Symbol                   | Measurement  |
|--------------------------|--|
| <b>MRKRF<sub>t</sub></b> | Expenditure on capital market risk: difference between market return and risk-free return  |
| <b>SMB<sub>i,t</sub></b> | Size factor: difference between the returns of portfolios consisting of stocks of large companies and portfolios consisting of stocks of small companies |
| <b>HML</b>               | book to market value ratio factor: difference between the returns of portfolios consisting of shares of highly and low capitalized companies             |

## 4 Empirical Results and Discussion

### 4.1 Descriptive Statistics

Before proceeding to the results, Table 4 presents the descriptive statistics of the variables. According to Table 4, the average additional return of shares variable in the quarter after the financial year, which represents the future return of the company, equals about 12%. The skewness coefficient indicates relatively small values that indicate normal distribution properties. The average of the capital market risk, which is the difference between the market return in the period under review and the risk-free return for the same period, is equal to 0.185. Furthermore, the average of difference between the returns of the portfolios consisting of the shares of large companies and the portfolios consisting of the shares of small companies, which represents the size factor in the Fama and French model, is equal to 0.026. It can be observed that the average of the difference between the returns of portfolios consisting of shares of highly capitalized and low capitalized companies, which represents the ratio of book value to market value, is equal to 0.555. In addition, the average yield of companies is equal to 0.49, which indicates a significant amount. The highest and lowest values observed regarding the mentioned variable are equal to -13% and 253%. The average ratio of free cash flows to total assets is equal to

Table 4: Descriptive Statistics

| Research Variables | Sample | Average | Median | Standard Deviation | Skewness Coefficient | Slenderness Ratio | Min   | Max  |
|--------------------|--------|---------|--------|--------------------|----------------------|-------------------|-------|------|
| Rpt+1              | 952    | 0.1184  | 0.0018 | 0.044753           | 2.421                | 7.799             | -0.67 | 2.82 |
| MRKRF              | 952    | 0.1850  | 0.1900 | 0.022223           | -0.051               | 1.296             | 0.16  | 0.22 |
| SMB                | 952    | 0.0264  | 0.0531 | 0.12731            | 0.046                | -1.483            | -0.14 | 0.21 |
| HML                | 952    | 0.5551  | 0.5162 | 0.24728            | 0.490                | 1.209             | 0.28  | 0.96 |
| Return             | 952    | 0.4900  | 0.2583 | 0.59424            | 1.770                | 2.695             | -0.13 | 2.53 |
| FCF/TA             | 952    | 0.2016  | 0.1278 | 0.20077            | -14.756              | 368.541           | -4.74 | 1.17 |
| CEAF/TA            | 952    | 0.1187  | 0.1105 | 0.20934            | 0.304                | 3.487             | -0.78 | 1.37 |
| CFO/TA             | 952    | 0.1408  | 0.1264 | 0.14502            | 1.235                | 6.431             | -0.28 | 1.33 |
| FCF/MVE            | 952    | 0.1010  | 0.0951 | 0.10818            | 7.277                | 155.336           | -2.01 | 0.69 |
| CEAF/MVE           | 952    | 0.0853  | 0.0756 | 0.12288            | 0.791                | 12.070            | -0.76 | 1.71 |
| CFO/MVE            | 952    | 0.1007  | 0.0892 | 0.14613            | 1.106                | 7.547             | -0.27 | 1.01 |
| OP/TA              | 952    | 0.1498  | 0.1274 | 0.12288            | 1.008                | 1939              | -0.32 | 0.73 |
| GP/TA              | 952    | 0.2175  | 0.2064 | 0.14613            | 4.212                | 57.331            | -0.11 | 2.45 |
| NI/TA              | 952    | 0.1384  | 0.1237 | 0.11629            | 0.823                | 2.297             | -0.24 | 0.78 |
| OP/MVE             | 952    | 0.1046  | 0.1031 | 0.07353            | 0.644                | 2.310             | -0.17 | 0.56 |
| GP/MVE             | 952    | 0.1549  | 0.1542 | 0.9588             | 4.926                | 75.018            | -0.07 | 1.72 |
| NI/MVE             | 952    | 0.0954  | 0.0933 | 0.07717            | 2.301                | 26.186            | -0.16 | 1.04 |

Source: Research Findings

0.139, and the average ratio of operating cash flows after deducting financing flows to total assets is equal to 0.118, which means that net operating cash flows from financing flows were about 12% of the total assets of the investigated companies.

The next section presents the results of estimated models.

## 4.2 Research Model Estimation and Discussion

### Examining the Effect of Profit Components and Cash Flows on their Explanatory Abilities in Predicting Future Stock Returns

In this section, the Fama and French model is first examined in order to determine the total amount of abnormal stock returns. Then, to examine the effect of profit and cash flow variables and their different components on abnormal returns, the sample companies were divided into different portfolios (10 portfolios) based on each of the twelve profit and cash flow variables to determine the abnormal return values that were affected by the profit and cash flow variables.

**Results of Fama and French Model** Table 5 presents the results of the Fama and French models. Taking note of the results, the following stands out.

First, the results suggests that the value of the t statistic and the significance level of the capital market risk variable (MRKRF) are equal to 2.006 and 0.045, respectively, and therefore the null hypothesis that the coefficient of the market risk variable is equal to zero is rejected at the 95% confidence level. This result indicates that by simply increasing the capital market risk, the additional returns of stocks in the coming year have been increased and this effect has been significant.

Second, the value of the t statistic and the significance level of difference between the returns of portfolios consisting of stocks of large companies and portfolios consisting of stocks of small companies (SMB) which represents the size factor are equal to -0.724 and 0.470, respectively, which shows the negative but insignificant effect of the company size variable on the future excess returns of stocks.

Third, the value of the t statistic and the significance level of the difference between the returns of portfolios consisting of shares of highly capitalized and low capitalized companies (HML) which represents the size factor, are equal to -2.061 and 0.040, respectively, which shows the negative and significant effect of this variable on the additional return of stocks in the coming year. This result states that the higher the ratio of the book value to the market value, the lower the additional yield of the next year and vice versa.

Fourth, the value of the t statistic and the significance level of the constant variable (a) which indicates the abnormal returns of stocks influenced by the specific characteristics of the company such as profits and cash flows, are equal to -0.375 and 0.707, respectively, which shows the negative and insignificant effect of the specific characteristics of the company, such as profit and cash flows, on the future additional returns of the shares.

Table 5: Results of Fama and French Model

|   |                             | $R_{p,t+1} = \alpha_1 + \beta_1 \text{MRKR}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \epsilon_{t+1}$ |             |                   |                      |       |  |
|---|-----------------------------|---|-------------|-------------------|----------------------|-------|--|
| Coefficients  | Unstandardized Coefficients | Standardized Coefficients   | t Statistic | Significant Level | Collinear Statistics |       |  |
| Model   | Beta                        | Standard Error  | Beta        | t                 | Sig                  | VIF   |  |
| Constant  | -0.046                      | 0.123   | -           | -0.375            | 0.707                | -     |  |
| Capital Market Risk (MRKR)  | 1.463                       | 0.730   | 0.073       | 2.006             | 0.045                | 1.272 |  |
| difference between the returns of portfolios consisting of stocks of large companies and portfolios consisting of stocks of small companies (SMB) | 0.124                       | 0.172   | -0.035      | -0.724            | 0.470                | 2.312 |  |
| difference between the returns of portfolios consisting of shares of highly capitalized and low capitalized companies (HML)                       | -0.186                      | 0.090   | -0.103      | -2.061            | 0.040                | 2.399 |  |
| R-squared   | 0.019                       |   |             |                   |                      |       |  |
| Adjusted R-squared  | 0.016                       |   |             |                   |                      |       |  |
| Durbin-Watson Statistic   | 1.942                       |   |             |                   |                      |       |  |
| F Statistic & Significance Level  | 6.238                       |   |             |                   |                      |       |  |
| F Limer statistic & significance level  | 3.048                       |   |             |                   |                      |       |  |
| Hausman test & Significance Level   | 2.104                       |   |             |                   |                      |       |  |

Source: Research Findings

According to table 5; The statistic of the model in the first part is equal to 6.238 and its significance level is less than 5%, which means that the independent variables have an effect on the dependent variable, which indicates a good fit. The results obtained in other sections indicate the existence of a meaningful model. In addition, the coefficient of determination of the model shows the number of changes in the dependent variable that can be determined for the changes in the independent variables. Also, the coefficient of determination in the first part (based on the auditor's size criterion) is equal to 0.019 and therefore about 2% of the changes in the dependent variable can be defined by the changes in the independent variables of the research. Also, the value of the adjusted coefficient was equal to 0.016.

The results of the F test (Limer test) in the table show that the statistical value of this test is equal to 3.048 and its significance level is 0.000 and therefore the null hypothesis is rejected, and this means that the model has fixed effects and there is mixed data in the research model.

The obtained result, in addition to determining the type of model, indicates that the type of company's activity (as a cross-section) has had an impact on the company's stock returns. In order to check the randomness of the type of fixed effects, the Hausman test was used, and the findings indicate that the statistical value and significance level of the test respectively are equal to 2.104 and 0.000. Therefore, this result means rejecting the null hypothesis of this test. And the non-random fixed effects model has been accepted as the preferred model and based on this, the research model has been investigated.

#### Default regression tests

**Test for the normality of the distribution of the dependent variable** The assumption of the normality of the distribution of the company's tax avoidance variable as the dependent variable of the research has been tested using the Kolmogorov-Smirnov test. In the Kolmogorov-Smirnov test, if the value of the statistical significance level is less than 5%, the null hypothesis that the distribution of the variable is normal is rejected at the confidence level of 95% and in other words the distribution of the variable in that year is not normal. The findings indicate that the value of the significance level of the Kolmogorov-Smirnov statistic of the company's tax avoidance variable is less than 5% in all the years of the research, and this means that the null hypothesis of this test (based on the normality of the distribution of the dependent variable) in 95% confidence level is rejected and the distribution of this variable is not normal. In order to normalize the distribution of the variable, the logarithm method was used, and the results obtained after normalization indicate that the significance level of this variable is greater than 5% in most years of the research, which indicates the normality of the distribution of the variable. This result shows that by taking the logarithm of the mentioned variable, its distribution is normalized.

**The assumption of variance constancy (homogeneity of variance)** In this research, the assumption of homogeneity of variance of the residuals has been investigated through the Brush-Pagan test. In this test, the hypothesis H0 indicates homogeneity of variance and its opposite hypothesis (H1) indicates non-homogeneity of variance. If the significance level obtained from Brush-Pagan test is greater than 5%, it indicates homogeneity of variance, otherwise it indicates heterogeneity of variance. Also, the results obtained regarding the research model and the different criteria used to measure the state of the company's organizational environment show that the significance level of the models is less than 5%, and this result indicates the rejection of the H0 hypothesis based on the homogeneity of the variances, and this means that the remaining variances Research models are heterogeneous. In this study, to solve the problem of heterogeneity of variances, the generalized least squares method was used and weight coefficients proportional to the variance were given to the model.

**Fama and French Model Results Based on Different Portfolios** The findings regarding the constant variable of the model ( $\alpha$ ) indicate that the specific characteristics of the company, which are expressed in the form of constant variable in the Fama and French model, have an insignificant effect on the future stock returns and lacks to explain future returns. Considering the wide range of special characteristics of the company that affect future returns, in this section, the effect of profit variables and variables related to cash flows on the excess shares return has been examined. For this purpose, the sample companies are divided into ten portfolios based on each of the twelve research variables, and if the research hypothesis is correct and the cash flows or profits have a significant effect on the future returns, then the value of constant variable should take a positive and significant value among different portfolios. Therefore, Table 6 presents the results related to the constant variable under 120 different statuses of the model, which is obtained based on 12 variables multiplied by 10 different portfolios, as described below.

The results obtained from Table 6 are discussed as follows. First, the studies obtained from the abnormal return coefficients in ten portfolios based on the free cash flow ratio variable show that the abnormal return value in the first portfolio ( $P_1$ ) and in the tenth portfolio ( $P_{10}$ ) respectively are equal to -0.046 and 0.148. Therefore, by increasing the ratio of free cash flows the company's specific return is increased and this result is statistically meaningless.

Second, the results obtained from the abnormal return coefficients within the ten constructed portfolios based on the ratio of operating cash flows to total assets variable show that the amount of abnormal return in the first portfolio and in the tenth portfolio, ordered as the lowest and highest amount in terms of operating cash flow, are -0.182 and -0.316, respectively. Regarding other portfolios, the results suggest that with an increase or decrease in the ratio of operating cash flows to total assets, no significant effect on future stock returns has been observed.



Table 6: Fama and French Model Results Based on Different Portfolios

| Variable        | $P_{1\alpha}$     | $P_{2\alpha}$     | $P_{3\alpha}$     | $P_{4\alpha}$     | $P_{5\alpha}$     | $P_{6\alpha}$     | $P_{7\alpha}$     | $P_{8\alpha}$     | $P_{9\alpha}$     | $P_{10\alpha}$    |
|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>FCF/TA</b>   | -0.046<br>(0.893) | -0.118<br>(0.714) | -0.411<br>(0.367) | -0.197<br>(0.630) | -0.240<br>(0.567) | -0.019<br>(0.967) | -0.165<br>(0.670) | 0.417<br>(0.302)  | 0.174<br>(0.543)  | 0.148<br>(0.727)  |
| <b>CFAF/TA</b>  | -0.182<br>(0.680) | 0.266<br>(0.355)  | -0.035<br>(0.905) | 0.011<br>(0.980)  | -0.383<br>(0.248) | -0.158<br>(0.718) | 0.116<br>(0.801)  | -0.022<br>(0.957) | 0.232<br>(0.627)  | -0.316<br>(0.310) |
| <b>CFO/TA</b>   | -0.357<br>(0.348) | 0.132<br>(0.703)  | -0.153<br>(0.666) | -0.197<br>(0.607) | -0.011<br>(0.974) | -0.274<br>(0.614) | 0.230<br>(0.589)  | 0.014<br>(0.975)  | 0.491<br>(0.184)  | -0.356<br>(0.251) |
| <b>FCF/MVE</b>  | -0.009<br>(0.979) | 0.218<br>(0.363)  | -0.789<br>(0.101) | -0.056<br>(0.865) | -0.256<br>(0.529) | -0.163<br>(0.705) | 0.198<br>(0.583)  | -0.298<br>(0.480) | 0.208<br>(0.588)  | 0.477<br>(0.287)  |
| <b>CFAF/MVE</b> | -0.254<br>(0.560) | 0.253<br>(0.396)  | -0.012<br>(0.967) | 0.114<br>(0.784)  | 0.254<br>(0.384)  | -0.201<br>(0.546) | -0.550<br>(0.190) | -0.152<br>(0.725) | -0.095<br>(0.830) | 0.169<br>(0.722)  |
| <b>CFO/MVE</b>  | -0.339<br>(0.371) | -0.126<br>(0.679) | 0.121<br>(0.691)  | 0.298<br>(0.428)  | -0.062<br>(0.865) | -0.722<br>(0.099) | 0.338<br>(0.431)  | -0.368<br>(0.329) | 0.218<br>(0.606)  | 0.123<br>(0.796)  |
| <b>OP/TA</b>    | 0.161<br>(0.643)  | -0.134<br>(0.695) | 0.234<br>(0.580)  | -0.629<br>(0.081) | 0.142<br>(0.764)  | 0.100<br>(0.819)  | -0.103<br>(0.815) | 0.158<br>(0.692)  | -0.314<br>(0.373) | -0.065<br>(0.845) |
| <b>GP/TA</b>    | -0.068<br>(0.810) | -0.075<br>(0.803) | -0.084<br>(0.856) | -0.132<br>(0.773) | 0.224<br>(0.613)  | -0.024<br>(0.954) | 0.215<br>(0.596)  | -0.499<br>(0.221) | 0.323<br>(0.321)  | -0.340<br>(0.373) |
| <b>NI/TA</b>    | -0.091<br>(0.754) | 0.018<br>(0.967)  | -0.201<br>(0.634) | -0.255<br>(0.552) | -0.112<br>(0.801) | -0.032<br>(0.938) | -0.057<br>(0.876) | 0.135<br>(0.727)  | 0.339<br>(0.301)  | 0.067<br>(0.869)  |
| <b>OP/MVE</b>   | 0.045<br>(0.879)  | -0.002<br>(0.996) | -0.224<br>(0.507) | 0.456<br>(0.190)  | -0.072<br>(0.870) | -0.471<br>(0.318) | 0.033<br>(0.935)  | -0.413<br>(0.311) | 0.250<br>(0.507)  | -0.098<br>(0.812) |
| <b>GP/MVE</b>   | 0.023<br>(0.932)  | -0.099<br>(0.737) | 0.032<br>(0.922)  | 0.320<br>(0.419)  | 0.014<br>(0.973)  | -0.299<br>(0.473) | -0.032<br>(0.923) | -0.338<br>(0.481) | 0.068<br>(0.868)  | -0.172<br>(0.714) |
| <b>NI/MVE</b>   | -0.030<br>(0.920) | 0.176<br>(0.633)  | -0.470<br>(0.299) | -0.207<br>(0.565) | -0.034<br>(0.923) | -0.325<br>(0.578) | 0.213<br>(0.512)  | 0.141<br>(0.666)  | 0.128<br>(0.733)  | 0.204<br>(0.630)  |

Source: Research Findings

Third, the results obtained from the return coefficients for each company within all the ten portfolios constructed based on operating cash flows to total assets ratio shows that the amount of abnormal return in the first portfolio and in the tenth portfolio has the lowest and the highest amount, respectively, and is equal to -0.357 and -0.356. As regards the other portfolios, the results suggests that with an increase in the ratio of operating cash flows to total assets, an increase in the specific return of the company can be observed, which affects the abnormal return.

Forth, the findings obtained from the specific return coefficients of the company in the ten portfolios formed based on the cash flows to the market value of equity ratio show that the amount of abnormal return in the first and tenth portfolio have the lowest and highest values in terms of cash flows, respectively, and are equal to -0.009 and 0.477. In addition, in other portfolios, the company's specific return has been increased by increasing the cash flows ratio.

Fifth, the obtained results from the coefficients of the specific return of the company in ten portfolios formed based on the operating cash flows to the market value of equity ratio show that the specific return of the company in the first portfolio and in the tenth portfolio have the lowest and highest values in terms of operating cash flows and are equal to -0.254 and 0.169. Also, regarding other portfolios, with an increase in the ratio of operating cash flows to the total market value of equity, an increase in the specific return was observed, which affects the abnormal return.

Sixth, the results obtained from the specific return of the company in the ten portfolios formed based on the operating cash flows to total shareholders' equity ratio show that the value of the specific return in the first and tenth portfolio, respectively, has the lowest and highest amounts and are equal to -0.339 and 0.123. In addition, in other portfolios, with the increase in the ratio of operating cash flows to total equity, an increase in the specific return of the company has been observed, which affects the additional return on shares, however this result is not statistically significant.

Seventh, the obtained results from the abnormal return coefficients in ten portfolios constructed based on the operating profit to total assets shows that the specific return value of the companies in the first and tenth portfolios have the lowest and highest ratio, respectively, and is equal to 0.161 and -0.065. Also, regarding other portfolios, the variable of ratio of operating profit to total assets does not benefit from adequate explanatory abilities.

Eighth, the findings obtained from the abnormal return coefficients in ten portfolios formed based on the gross profit to total assets ratio variable show that the specific return of the company in the first and tenth portfolios respectively has lowest and highest ratios which equals -0.068 and -0.340. In addition, in other portfolios, the ratio of gross profit to total assets has not had a significant and positive effect on the specific return of the company and, by nature, on the additional return of shares in the coming year.

Nineth, the results obtained from the specific return coefficients of the company in ten portfolios formed based on the net profit to total assets ratio show that the amount of abnormal return in the first and tenth portfolios, which respectively have the lowest and the highest value, is -0.091 and -0.067. In addition, in other portfolios, with an increase in the ratio of net profit to total assets, an increase in the specific return of the company was observed, which affects the abnormal return, though the result was not statistically significant.

Tenth, the results obtained from the coefficients of the specific return in the ten portfolios formed based on the operating profit to the market value of equity ratio show that the value of the specific return in the first and tenth portfolios, which respectively have the lowest and highest value, is 0.045 and -0.098. Also, in other portfolios, increasing the operating profit ratio does not increase the amount of the company's specific return, although the obtained results indicate the lack of adequate explanatory power of this variable.

Eleventh, the obtained results from the coefficients of the specific return in the ten portfolios formed based on the gross profit to the market value of equity ratio shows that the value of the specific return of the company in the first and tenth portfolios, respectively as the lowest and the highest value, is equal to 0.023 and -0.172. In addition, in other portfolios, the ratio of gross profit to the market value of equity has not had a positive and significant effect on the excess return of shares.

Finally, the findings obtained from the specific return of the company in the ten portfolios formed based on the ratio of net profit to the total market value of the shareholders' equity show that the amount of the specific return in the first and tenth portfolios, as the lowest and highest ratios, equals to -0.030 and 0.204. Also, regarding other portfolios, the results show that by increasing the ratio of net profit to the market value of equity, an increase in the specific return has been obtained, which affects the additional return of shares, though this result is statistically insignificant.

Overall, according to the obtained results, it seems that the explanatory power of the cash flow components and also the profit components regarding the future return of shares, through influencing the specific return of the company, is not a statistically significant parameter. In other words, the explanatory power of the cash flow components has not been particularly superior to the explanatory power of the profit components regarding the future stock returns. Therefore, the first hypothesis of the research that the explanatory power of cash flow components regarding stock returns is significantly higher and more than profit components, is rejected at the 95% confidence level.

### **Examining the Amount of Stock Returns in Portfolios with Different Cash Flows and Profits**

So far, the explanatory ability of cash flows and profit components regarding the future stocks return was examined. This section is proceeded to investigate the

stock returns in different portfolios in terms of cash flow and profit components using variance analysis tests. For this purpose, as mentioned before, the sample companies are divided into 10 portfolios based on each of the variables related to cash flows and profits. Then the results are categorized within two groups: 1) stocks annual return, 2) additional stocks return in the next year ( $R_{pt} + 1$ ) as described in Tables 7 and 8.

**Examining Average Returns within Different Portfolios** Table 7 presents the results of average returns within different portfolios. As reported, the average amount of stock returns, which is separated based on the free cash flows to total assets ratio variable, the first and tenth portfolios have the lowest and the highest ratio, respectively, equal to 0.479 and 0.697. Observing the stocks returns in different portfolios, it can be concluded that an increase in the cash flows to the total assets in different portfolios would lead to a rise in stocks return.

As regards the distinguishing variable of the ratio of operating cash flows to total assets, the average stocks return in the first to eighth portfolios was almost equal, but it increased significantly in the ninth and tenth portfolios. In fact, this result shows that with the increase in the ratio of operating cash flows to total assets, the amount of stock returns has increased, although the increase is statistically insignificant.

In addition, the results related to the companies selected based on the variable of the ratio of operating cash flows to total assets show that with the increase in operating cash flows to total assets among different portfolios, the amount of its stock returns has been significantly increased. So that the average stock return in the first portfolio is equal to 0.462 and in the tenth portfolio is equal to 0.688.

Furthermore, the results obtained from the separation of companies based on the variables of cash flows to equity market value show that there is no significant difference between the stock returns among different portfolios and the significance level of the F test is greater than 5%, which shows the absence of significant difference between ten portfolios in terms of stock returns. Moreover, the results of the separation of companies based on the variable ratio of operating profit to total assets show that by increasing the ratio of operating profit to total assets among different portfolios, the amount of their stock returns has increased significantly. So that the average stock return in the first portfolio is equal to 0.466 and in the tenth portfolio is equal to 0.766.

Also, the findings obtained between the average stocks returns in different portfolios, which are separated based on the variable of the ratio of gross profit to total assets, show that the first and tenth portfolios have the lowest and highest ratio, respectively, equals 0.417 and 0.737. Therefore, with the increase in the ratio of gross profit to total assets, the yield of companies' shares has increased.

Table 7: Average Returns within Different Portfolios Results

| Variable | Return           |                  |                  |                  |                  |                  |                  |                  |                  |                   | F     | Sig.  |
|----------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|-------|-------|
|          | P <sub>1</sub> α | P <sub>2</sub> α | P <sub>3</sub> α | P <sub>4</sub> α | P <sub>5</sub> α | P <sub>6</sub> α | P <sub>7</sub> α | P <sub>8</sub> α | P <sub>9</sub> α | P <sub>10</sub> α |       |       |
| FCF/TA   | 0.479            | 0.403            | 0.362            | 0.446            | 0.460            | 0.472            | 0.477            | 0.510            | 0.594            | 0.697             | 2.495 | 0.008 |
| CFAF/TA  | 0.464            | 0.497            | 0.417            | 0.431            | 0.449            | 0.497            | 0.497            | 0.482            | 0.546            | 0.619             | 0.943 | 0.486 |
| CFO/TA   | 0.462            | 0.441            | 0.400            | 0.443            | 0.455            | 0.183            | 0.523            | 0.541            | 0.513            | 0.688             | 1.870 | 0.053 |
| FCF/MVE  | 0.506            | 0.492            | 0.527            | 0.487            | 0.515            | 0.486            | 0.474            | 0.446            | 0.476            | 0.490             | 0.140 | 0.999 |
| CFAF/MVE | 0.409            | 0.513            | 0.472            | 0.509            | 0.566            | 0.539            | 0.507            | 0.474            | 0.513            | 0.402             | 0.740 | 0.670 |
| CFO/MVE  | 0.457            | 0.485            | 0.520            | 0.495            | 0.539            | 0.536            | 0.458            | 0.490            | 0.489            | 0.435             | 0.314 | 0.971 |
| OP/TA    | 0.466            | 0.413            | 0.419            | 0.413            | 0.385            | 0.462            | 0.447            | 0.529            | 0.597            | 0.766             | 3.722 | 0.000 |
| GP/TA    | 0.417            | 0.409            | 0.379            | 0.391            | 0.421            | 0.453            | 0.474            | 0.566            | 0.652            | 0.737             | 4.143 | 0.000 |
| NI/TA    | 0.423            | 0.385            | 0.401            | 0.395            | 0.465            | 0.425            | 0.505            | 0.496            | 0.641            | 0.758             | 4.094 | 0.000 |
| OP/MVE   | 0.521            | 0.505            | 0.437            | 0.448            | 0.418            | 0.507            | 0.524            | 0.527            | 0.522            | 0.494             | 0.445 | 0.911 |
| GP/MVE   | 0.502            | 0.511            | 0.464            | 0.535            | 0.476            | 0.532            | 0.495            | 0.511            | 0.469            | 0.409             | 0.377 | 0.946 |
| NI/MVE   | 0.452            | 0.496            | 0.459            | 0.493            | 0.462            | 0.488            | 0.561            | 0.498            | 0.493            | 0.498             | 0.250 | 0.987 |

Source: Research Findings

Additionally, the obtained results from the separation of companies based on the variable of the ratio of net profit to total assets shows that with the increase of the ratio of net profit among different portfolios, the amount of return on their shares has increased and the average stock return in the first portfolio equals to 0.423, and in the tenth portfolio equals to 0.758. Therefore, by increasing the ratio of net profit to total assets, the amount of stock returns has increased significantly.

Finally, the results from the separation of companies based on profit variables to the market value of equity show that the significance level of the F test was greater than 5%, and therefore there is no significant difference between the stock returns among different portfolios.

**Examining the Average Additional Stocks Return** Table 8 presents the results of average additional returns within different portfolios. The provided results states that the average amount of additional shares return in the coming year, which is separated based on the variable of the ratio of free cash flows to total assets, in the first and tenth portfolio, respectively, having the lowest and the highest ratio which are equal to 0.018 and 0.148. In other words, with the increase in the ratio of free cash flows to total assets in different portfolios, the amount of additional return on stocks for the next year has increased, which is not statistically significant.

As regards the distinguishing variable of the ratio of operating cash flows to total assets, the average additional stocks return in the next year are almost equal in different portfolios and no significant difference is observed in different portfolios. In fact, the results show that with the increase in the ratio of operating cash flows to total assets, the amount of additional return in the coming year has increased slightly, although this increase is statistically insignificant.

Moreover, the results of the separation of companies based on the variable of the ratio of operating cash flows to total assets show that the average excess return in the first portfolio is equal to 0.045 and in the tenth portfolio is equal to 0.097. Therefore, with the increase in the ratio of operating cash flows to total assets among different portfolios, the amount of additional stocks return has increased in the coming year, while this increase is statistically insignificant.

Furthermore, the results of the separation of companies based on the variable of the ratio of free cash flows to the total market value of equity show that the average excess return of shares in the first portfolio equals 0.022 and in the tenth portfolio equals 0.233. Therefore, by increasing the ratio of free cash flows to the total market value of equity, the amount of additional return in the coming year has increased, and this increase is statistically significant.

Additionally, the results obtained from the separation of companies based on the variable of the ratio of operating cash flows to the total market value of equity show that the average excess return of shares in the first portfolio equals 0.113 and in the tenth portfolio equals 0.231. This finding indicates that with the increase in the ratio of operating cash flows to the total market value of equity, the additional

Table 8: Average Excess Stocks Returns Results in the Next Year within Different Portfolios

| Variable | Rpt+1           |                 |                 |                 |                 |                 |                 |                 |                 |                  | F     | Sig.  |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-------|-------|
|          | P <sub>1α</sub> | P <sub>2α</sub> | P <sub>3α</sub> | P <sub>4α</sub> | P <sub>5α</sub> | P <sub>6α</sub> | P <sub>7α</sub> | P <sub>8α</sub> | P <sub>9α</sub> | P <sub>10α</sub> |       |       |
| FCF/TA   | 0.018           | 0.066           | 0.149           | 0.152           | 0.112           | 0.150           | 0.127           | 0.1179          | 0.086           | 0.148            | 1.157 | 0.319 |
| CFAF/TA  | 0.123           | 0.027           | 0.049           | 0.105           | 0.095           | 0.141           | 0.158           | 0.179           | 0.210           | 0.098            | 1.520 | 0.136 |
| CFO/TA   | 0.045           | 0.058           | 0.074           | 0.120           | 0.084           | 0.183           | 0.174           | 0.178           | 0.176           | 0.097            | 1.416 | 0.176 |
| FCF/MVE  | 0.022           | -0.002          | 0.159           | 0.070           | 0.100           | 0.145           | 0.138           | 0.146           | 0.176           | 0.233            | 2.502 | 0.008 |
| CFAF/MVE | 0.113           | 0.050           | 0.019           | 0.103           | 0.060           | 0.063           | 0.160           | 0.168           | 0.212           | 0.231            | 2.523 | 0.007 |
| CFO/MVE  | 0.047           | -0.003          | 0.072           | 0.105           | 0.076           | 0.143           | 0.139           | 0.128           | 0.241           | 0.238            | 2.934 | 0.002 |
| OP/TA    | 0.060           | 0.049           | 0.068           | 0.089           | 0.157           | 0.152           | 0.217           | 0.217           | 0.125           | 0.128            | 1.317 | 0.223 |
| GP/TA    | 0.027           | -0.017          | 0.128           | 0.154           | 0.148           | 0.165           | 0.196           | 0.143           | 0.120           | 0.123            | 2.010 | 0.035 |
| NI/TA    | 0.014           | 0.141           | 0.075           | 0.100           | 0.142           | 0.143           | 0.144           | 0.152           | 0.138           | 0.138            | 0.917 | 0.510 |
| OP/MVE   | 0.016           | 0.095           | 0.026           | 0.036           | 0.107           | 0.188           | 0.138           | 0.120           | 0.227           | 0.238            | 3.113 | 0.001 |
| GP/MVE   | 0.016           | -0.033          | 0.048           | 0.061           | 0.140           | 0.138           | 0.112           | 0.232           | 0.201           | 0.271            | 4.700 | 0.000 |
| NI/MVE   | 0.015           | 0.058           | 0.109           | 0.048           | 0.095           | 0.227           | 0.100           | 0.118           | 0.187           | 0.237            | 2.686 | 0.004 |

Source: Research Findings

yield of shares in the coming year has been significantly increased.

Finally, the obtained results from the separation of companies based on the variable of the ratio of operating cash flows to the total market value of equity shows that the average excess return of shares in the first portfolio equals 0.047 and in the tenth portfolio equals It is 0.238. This result indicates that with the increase in the ratio of operating cash flows to the total market value of equity, the amount of additional return in the coming year has been significantly increased.

Overall, the presented results in tables 7 and 8 suggest that with the increase in the amount of cash flows of different portfolios, there has been a significant increase in the amount of stock returns and additional stock returns. Therefore, the second hypothesis of the research, that the amount of stock returns is significantly higher among portfolios that benefit from higher cash flows, is confirmed at the 95% confidence level.

## 5 Conclusion and Policy Recommendations

This research used the Fama and French models to investigate the explanatory and predictive abilities of profit and cash flow components on the future stock returns for listed companies in the Tehran Stock Exchange. In doing so, after extracting the financial information of 122 companies admitted to the Tehran Stock Exchange for the period 2015-2022, a multiple regression model was used using a composite data model. The overall results obtained from the Fama and French model show that the various components of cash flows such as free cash flows and operating cash flows, despite having a positive effect on the amount of additional future stock returns, have not had a significant explanatory power regarding future stock returns. Also, regarding the explanatory abilities of various variables related to profit, including operating profit, gross profit and net profit, the findings indicate that simultaneously with the increase in these variables, an increase in the future return of shares was observed, although this impact was statistically insignificant. These results are consistent with the research findings of ([17]) and ([4]).

Furthermore, two research hypotheses were developed and proposed to test. First, stock returns in portfolios with higher cash flows are significantly higher. Second, the explanatory power of cash flow components is significantly higher compared to accounting profit components. The results obtained from the research indicate that the explanatory abilities of cash flow components have no special advantage over the explanatory power of profit components regarding the future return of stocks, which is consistent with the research of [12] ([11]). In addition, the findings obtained from the comparison of stock returns and future stock returns show that there is a significant difference between the average stock returns and future stock returns in different portfolios, in terms of profit and cash flows. In other words, the rate of return among the portfolios that benefit from higher cash flows has been significantly higher, and with the increase in the amount of cash flows,



the rate of return on shares and the future return on shares have been significantly increased. This finding is consistent with the studies of ([7]), ([22]), and ([21]).

According to the results of the present research, the explanatory power of returns in portfolios based on cash flows is higher than portfolios based on accrued interest. Therefore, it is suggested to the users of the research results to pay special attention to the company's cash flows in order to make investment decisions along with other information and to consider this important issue of the company in their evaluations of the stocks in question. It is also recommended to company managers to pay special attention to their cash flows and their disclosure issues in order to increase the company's stock value. On the other hand, in order to increase the value of companies' shares, which causes investors to be optimistic about investing in the stock exchange, mechanisms that prevent the manipulation of cash flows by companies can be accepted by the authorities of the stock exchange in the financial department of companies. made necessary in the Tehran Stock Exchange. Finally, it should be noted that accounting profit has a long history in the evaluations of investors and financial analysts, so the lack of influence of this variable in Iran should be looked for in its calculation method.

Due to the influential importance of variables predicting returns for different groups of investors, analysts, stock exchange administrators and professional accounting associations, there are many fields such as the following for research in this field.

- Investigating cash flows based on predictive value indicators regarding stock returns
- Examining other models except the Fama and French models and re-implementing this research in order to strengthen the research results.
- Re-examination of this research in different industries separately in order to control the industry factor
- Using interim data and re-implementing the research in order to control premature disclosure that can reduce the effect of annual information.

In every research that is done, there are limitations, and these limitations are mainly obstacles related to the generalization of the results of the research. Therefore, this research has limitations that are mentioned below. 1- The effects of differences in the accounting methods of measuring and reporting financial events may affect the results, and no adjustment has been made for this. 2- The data related to the research variables were from the official reports related to the financial statements of the relevant financial periods available in the library software of Tehran Stock Exchange, which undoubtedly these financial statements in the months after being loaded on these softwares due to factors Because the audit report or... are subject to change, the effects related to these changes, due to reasons

such as lack of time and lack of coherent information related to these changes, have not been considered in the current research. 3- The limitation governing data modeling, regression method and related statistical analysis is another limitation that affects the statistical results of the research, which the researcher has tried to minimize such errors. 4- Removing banks, insurances and investment companies and companies before 2014 from the research sample can cause the sample to shrink. Since all listed companies were not included in this research, one should be cautious in generalizing the results to the entire society.

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## Data Availability

Datasets related to this article are available from the corresponding author upon request.

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## Conflict of Interest

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no conflict of interest.

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