RESEARCH PAPER

Investigating the relationship between cash from operations and discretionary accruals as an indicator of earnings management in companies listed on the Tehran Stock Exchange

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ABSTRACT

Financial statements of companies are an important source of information for investors, and accounting earnings and its components are an important part of financial statements that are of interest to users of financial statements. Therefore, this study examines earnings management in companies listed on the Tehran Stock Exchange through discretionary accruals. Two models, including the modified Jones model and the Kotari model, have been used to calculate discretionary accruals. In order to examine earnings management, the effect of operating cash flow on discretionary accruals has been tested. To test the model, panel data for a three-year period has been used. The findings showed that operating cash flow has a negative and significant effect on discretionary accruals using both models. So that managers of companies with weak operating cash flow manage earnings through discretionary accruals to hide the company's poor performance.

Keywords: earnings management, discretionary accruals, operating cash flow.

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INTRODUCTION

One of the most important measures in the field of investment is the optimal allocation of resources and obtaining maximum returns; therefore, every investor needs information about the factors affecting stock returns to maintain and increase his capital. The company's financial statements are the most important source of information for investors. Among them, the earnings extracted from the financial statements plays the most important role in providing information related to financial performance (jorjor Zadeh. et.al 2017). On the other hand, accounting earnings and its related components are among the information that is considered by individuals when making decisions. This figure is calculated and recognized based on accruals. Based on the accrual approach, earnings can be reported if revenues are realized and expenses occur. In the accrual basis, it is not necessary to recognize revenues and expenses along with the receipt and payment of cash (Mahmoudabadi. et.al 2011). Generally accepted accounting principles have strengthened performance measurement using accrual accounting by adjusting the timing of cash flow recognition in earnings based on the matching principle and the revenue recognition principle. Generally accepted accounting principles, through accrual accounting, provide a degree of flexibility that allows managers to exercise discretion in the financial reporting process. The use of this discretion by managers is called earnings management. Earnings management (with any incentive) is implemented by manipulating discretionary accruals. One might argue that managers could use broadsheets, management forecasts, meeting notices, and other direct communication methods to increase returns and attract investors instead of accruals. However, extensive research shows that managers are reluctant to make optimistic statements, especially long-term forecasts, because they will be held accountable if these statements fail to materialize; therefore, managers prefer to use indirect methods, including discretionary accruals. Manipulation of accruals does not have a direct impact on the company's cash, but only the results of the activities performed are presented incorrectly (jorjor Zadeh. et.al 2017).

Some personal judgments and judgments in reporting and the use of accruals enable managers to reliably convey private information about the company to shareholders. Such use of personal judgment indicates efficient earnings management. On the other hand, the problems with the use of personal judgments in financial performance reporting are that managers may use this ability to prevent the transmission of information about current or future poor performance. Such behavior in reporting reduces the informative aspect of earnings and indicates opportunistic earnings management. There are various tools for earnings management by managers that can be used in the form of efficient or opportunistic earnings management. One of these tools is accruals (Vadiee et.al 2019).

Accruals can be considered the difference between accrual and cash accounting earnings, which are affected by accounting methods and specific management decisions. From the perspective of some researchers, the goal of accrual accounting is to better evaluate the performance of the company, and accruals can be divided into two parts: discretionary accruals and non-discretionary accruals, with most research conducted on the discretionary part. Earnings management through discretionary accruals refers to managers' opportunistic use of the flexibility available in generally accepted accounting principles to change reported

earnings without changing the underlying cash flows of the company. Therefore, the flexibility of accrual earnings reporting provides management with the opportunity to use earnings management (Vadiee et al. 2019).

Given the importance of discretionary accruals in the accounting literature as an indicator of opportunistic earnings management, this study attempts to measure the relationship between earnings management through discretionary accruals and company performance. Since operating cash flow is less susceptible to management manipulation (Mashayekhi et al. 2006), it is considered as an indicator of performance.

Literature review

The process of measuring profit and its result plays an important role in the management of the company and usually the users of financial statements attach great importance to it. Since the calculation of the profit of the economic enterprise is affected by the accounting estimation methods and the preparation of financial statements is the responsibility of the management of the business unit, the management may take action to manage profit for various reasons (Hassas yeganeh. et.al 2010).

In fact, there is no single definition of profit management and different researchers have provided different definitions in this field according to their goals. Some researchers define profit management as: "the selection of accounting policies and procedures to achieve specific goals". These policies are divided into two categories: one is the choice of accounting methods, such as the straight-line depreciation method or the FIFO method for valuing inventories, etc., and the other is related to optional accruals, such as estimated product warranty costs, doubtful accounts, inventory impairment reserves, etc. (Hassas yeganeh. et.al 2010).

Most existing studies on accruals assume that company managers respond to economic events by adjusting accruals. Therefore, such studies typically focus on the level of accruals. Due to the reversible nature of accruals, a higher level of accruals should be associated with higher accrual variability (Arabsalehi. et.al 2015).

The variability of accruals can be caused by two factors. The first factor is fundamental uncertainty that arises as a result of economic shocks arising from the company's business model, organizational structure, and operating environment, which leads to fluctuations in operating cash flows. Given the role of accruals in smoothing cash flows and providing a better measure of performance, such economic shocks are inherent in accruals. The second factor is the discretionary component of accruals that reflects management's manipulation and choices in the accrual accounting process. Assuming capital market efficiency, if current period accruals reflect greater uncertainty or, in other words, have greater variability, it indicates increased uncertainty about future period returns and therefore future stock returns are expected to be more volatile (Arabsalehi et al. 2015).

Basically, accruals are the difference between a company's accounting profit and its underlying cash flow, meaning that large positive accruals indicate an excess of reported profit over the company's cash flow. Some researchers believe that accruals send signals to users of financial statements that are ignored in the cash system. On the one hand, these signals provide a correct picture of the current state of the business entity and, on the other hand, they allow users of financial reports to make more accurate predictions of the future state, especially future cash flows. Therefore, these signals have information content (jorjor Zadeh. et.al 2017).

Various models have been designed for discretionary accruals, one of the most famous of which is the Jones model. Jones identified the difference between earnings and cash from operations as accruals. Accruals can be divided into two components: discretionary and non-discretionary. Non-discretionary accruals are limited by regulations, organizations, and other external factors and cannot be manipulated by management; while discretionary accruals are subject to management's discretion and manipulation. Managers use discretionary accruals for different purposes depending on different environmental conditions; In some periods, according to the need, discretionary accruals are used to increase reported earnings (positive discretionary accruals) and in other periods, these items are used to reduce reported earnings (negative discretionary accruals). Some researchers also argue that companies that are not in a stable state (high-growth companies are suitable for this criterion) and have cash timing problems, discretionary accruals play a more prominent role in signaling company performance (jorjor Zadeh. et.al 2017).

According to some researchers, cash from operations is one of the factors that can be less manipulated by management in a business unit and therefore is a more realistic measure of the economic performance of the business unit. Therefore, it can be concluded that those business units that have faced poor performance are likely to have a stronger incentive to increase their reported earnings through the earnings management process. Conversely, for business units that have had good performance, the likelihood of adopting methods of artificially increasing earnings by management will be lower. In this case, business units that have reported lower cash from operations due to poor business performance will probably be poorly evaluated by investors, and therefore the managers of these units will have a strong incentive to avoid such a situation by reporting their earnings higher, increasing the stock price, presenting a favorable image of the business unit, increasing the managers' bonuses and ultimately reducing the political costs of the business unit (Mashayekhi. et.al 2006).

Research background

The literature related to discretionary accruals is very extensive and researchers have examined discretionary accruals from different perspectives. Some have analyzed the opportunistic use of discretionary accruals by managers to manipulate company earnings, while others have measured the relationship between performance measures and discretionary accruals and have used various measures such as operating cash flow, stock returns, profitability, company growth, etc. to measure company performance. This section will review these studies.

Ayers et al. (2006) examined the relationship between discretionary accruals and earnings management. Their results showed that the positive relationship between discretionary accruals and earnings is amplified around the actual earnings measure (i.e., where the incentives for earnings management may be greater). Barua et al. (2006) documented that the different propensity to achieve earnings measures by profitable and non-profit firms is due to different accrual management behavior. Baber et al. (2011) showed that the extent to which management’s ability to achieve earnings targets is constrained depends on the extent to which earnings management is based on past accruals and the speed at which past discretionary accruals are reversed. Hribar et al. (2007) examined the implications of using the absolute value of discretionary accruals when testing earnings management. They analytically developed the

mean and variance of the absolute discretionary accruals distribution and showed that the expected value is an increasing function of the variance in the fundamental error term of the first-stage discretionary accruals estimation model. Next, they highlight several firm characteristics that are related to the error variance in discretionary accruals estimation models. Using simulations, they show that the correlation between the earnings management segmentation variable and these firm characteristics leads to an over rejection of the null hypothesis of no earnings management. Kang et al. (2010) found evidence that the positive relationship between total accruals and one-year market returns is driven by discretionary accruals but not by ordinary accruals. The predictive power of total discretionary accruals is robust to the choice of sample periods, return measurements, estimation methods, business conditions, and risk premium measures and accrual models used to isolate discretionary accruals. Chung et al. (2005) argued that low-growth, high-free cash flow firms use income-enhancing discretionary accruals to compensate for the low or negative returns that inevitably accompany investments with negative net present values. Subramanyam (1996) addressed the issue of whether the stock market prices discretionary accruals. The evidence suggests that, on average, the market values discretionary accruals. This evidence is consistent with two alternative scenarios: (1) managerial discretion improves the ability of earnings to reflect economic value, and (2) discretionary accruals are opportunistic and irrelevant to value but are priced by an inefficient market. Li (2019) found that real earnings management through abnormal reductions in discretionary spending is associated with reduced earnings quality. Chen et al. (2012) developed a set of simultaneous equations that capture managers' behaviors to enhance (or suppress) earnings performance to examine whether real activities and discretionary accruals play mutually complementary roles in earnings reporting in Taiwan. The results showed that the comprehensive measure of real activity manipulation is positively related to discretionary accruals, supporting the complementarity hypothesis. Krishnan (2003) found that the relationship between stock returns and discretionary accruals is greater for firms audited by Big 6 auditors than for firms audited by non-Big 6 auditors. In addition, discretionary accruals of Big 6 audit firms are more strongly associated with future profitability than those of non-Big 6 audit firms. Sohn (2016) examined whether and how managers' opportunistic earnings management activities are affected by the degree of comparability of their firms' accounting with other firms. Using a large sample of US firms, he found that managers' actual earnings management increases while their discretionary earnings management decreases with the degree of comparability of their firms' accounting with other firms. Debnath (2017) examined the impact of discretionary accruals on earnings management practices among public sector firms in India. Also, it examined earnings management issues with respect to industry classification based on service and non-service sectors and observed that service sector industries engage in revenue-reducing earnings management while non-service sector industries do the opposite. Furthermore, it was found that there is a negative correlation between firm size and discretionary accruals as a proxy for earnings management during the study period. Cyril et al. (2019) examined the impact of accrual-based earnings management on stock prices and their results showed a positive and significant relationship. Baloch et al. (2023) showed that there is an inverse relationship between discretionary accruals and weighted average cost of capital. In other words, when discretionary accruals increase, weighted average cost of capital decreases. On the other hand, there is a positive relationship between discretionary accruals and weighted average cost of capital, indicating that managers may use discretionary accruals to increase the company's profit. Miko et al. (2018) examined the practice of earnings management and compared it among some selected non-financial industries in Nigeria. They used discretionary accruals as a proxy for earnings management. The results showed that all listed non-financial companies manipulate earnings. The natural resources sector is a sector with high earnings management, while healthcare is a sector with the lowest earnings management. Eze et al. (2022) studied the relationship between management performance and discretionary accruals in Nigeria. Profitability, liquidity and firm growth were the variables used to measure firm performance in relation to earnings management. Their findings showed that profitability and liquidity were positively related to discretionary accruals. However, firm growth and discretionary accruals were positively related but not statistically significant. Ibobo et al. (2023) examined the impact of earnings management on the financial performance of listed manufacturing companies in Nigeria. Specifically, they examined the impact of discretionary accruals on return on assets, return on equity, earnings per share and net earnings margin. The results showed that discretionary accruals have a positive and significant impact on return on assets, return on equity, earnings per share and net earnings margin. Consequently, their study showed that earnings management has a significant impact on the financial performance of listed manufacturing companies in Nigeria. Ukolobi et al. (2025) examined the impact of discretionary accruals and real earnings management on the return on equity of listed non-financial companies in Nigeria. Their evidence showed that discretionary accruals and real earnings management have no significant impact on the return on equity of listed non-financial companies in Nigeria.

Research hypotheses

Since cash from operations is less susceptible to management manipulation, it is considered as the main measure of business unit performance in this study. On the other hand, it is expected that those business units with poor performance that reported low cash from operations have the incentive to mislead the market by increasing their reported earnings by increasing discretionary accruals. Therefore, the inverse relationship between operating cash flow and discretionary accruals is the basis of the main hypothesis of this study, which is stated as follows (Mashayekhi. et.al 2006):

There is a significant negative relationship between operating cash flow and discretionary accruals.

Research Method

- Research population and statistical sample:

The statistical population of the study is all companies listed on the stock exchange, except for companies in the financial sector, which include insurance, investment, leasing, holding companies, and banks. Because their balance sheets have a different structure and some of the required information is not available, the elimination method was used to select the sample companies. For this purpose, members of the population who had the following characteristics were excluded from the sample:

1-The information required is not available from them.

2- They changed their fiscal year during the period under

review.
3- They were not active on the stock exchange and securities during the research period.
4- The company's fiscal year-end was not March 20.
According to the above conditions, the companies that met the necessary conditions included 135 companies that formed the statistical sample of the study. Data from 2012 to 2015 were used to estimate the models.

- Independent variable:

Cfo: Cash flow from operations is the company's

- Dependent variable:

The dependent variable in this study is discretionary accruals, which is a measure for estimating earnings management for which various models have been presented in the literature. In this study, according to Doustian (2019), two models have been used to estimate discretionary accruals, as follows:
Modified Jones Model: The Jones model assumes that all credit sales are non-discretionary items, but this model was later modified by Dechau et al. and based on their argument, the change in accounts receivable is related to discretionary accruals and they subtracted the change in sales to estimate normal accruals. Also, all model variables are divided by the total assets at the beginning of the period for standardization (Doustian, 2019).

$TACC_t = a + b_1\ 1/TA_{t-1} + b_2(\Delta REV_t - \Delta AR_t) + b_3 PPE_t + \varepsilon_t$ (1)

In this model, AR is accounts receivable, REV is sales revenue, PPE is gross property, plant and equipment, and TACC is total operating accruals, which are calculated as follows:
TACC = (Changes in current assets - Changes in cash) - (Changes in current liabilities - Changes in short-term financial facilities received) - Depreciation expense of tangible and intangible assets
This model is estimated cross-sectionally and at the industry level. Because in some industries the number of sample companies was too small and it was not possible to fit the model, therefore, classification at the sector level was used in this study. The residuals represent discretionary accruals (Doustian, 2019). Therefore:

$DA_1 = \varepsilon$ (2)

Kothari Model: The second model used in this study to estimate discretionary accruals is the Kothari model. They added the return on assets variable, which is obtained by dividing net income by total assets, to the modified Jones model. To standardize, all model variables were divided by total assets at the beginning of the period (Doustian, 2019).

$TACC_t = a + b_1\ 1/TA_{t-1} + b_2(\Delta REV_t - \Delta AR_t) + b_3 PPE_t + b_4 ROA_{t-1} + \varepsilon_t$ (3)

In this model, ROA is obtained by dividing net income by assets at the beginning of the period. The model is estimated cross-sectionally and at the industry level. The residuals of the model represent discretionary accruals (Doustian, 2019). Therefore:

$DA_2 = \varepsilon$ (4)

- Model estimation:

The research model according to Mashayekhi et al. (2006) is as follows:

$DA_{it} = a_0 + a_1 cfo_{it} + \varepsilon_{it}$ (5)

panel data was used to test the hypothesis. Eviews software was also used to test the model.

Research findings

- Descriptive statistics:

Descriptive statistics related to the research variables are presented in Table (1). According to Table (1), the minimum and maximum operating cash flow are -2499452 and 24566244 respectively, which shows that this variable has a significant deviation. Both measures of discretionary accruals, which are the dependent variables of the research, do not differ significantly in terms of mean, median, minimum and maximum.

Table 1: Descriptive Statistics

	DA2	DA1	CFO
Mean	0.005407	0.002233	590034.4
Median	-0.002472	-0.012814	91120.00
Maximum	0.706080	0.781077	24566244
Minimum	-0.698268	-0.528086	-2499452
Std. Dev.	0.151687	0.165328	2187594

- Hypothesis testing:

Given that the data is panel, we must use the Limier test to determine the type of model (pooled or panel). The results of the Limier test are presented in Table (2):

Table 2: Limier Test

Effects Test	Statistic	d.f.	Prob.
Period F	1.0238	(2,401)	0.360
Period Chi-square	2.0627	2	0.356

According to the results of the Limier test, since the test statistic has a significance level of not less than 5%, the null hypothesis is accepted and the model is of the pooled type. The results for the final model, which is the discretionary accruals related to the modified Jones model, are presented in Table (3).

Table 3: Model 5 test results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.00382	0.00845	0.45199	0.6515
CFO	-6.35E-09	3.69E-09	-1.72368	0.0855
R-squared	0.00731	Durbin-Watson		1.5834
Adjusted R-squared	0.00485			
F-statistic	2.97109			
Prob(F-statistic)	0.08553			

According to Table (3), the Durbin Watson statistic is between 1.5 and 2.5, thus indicating the absence of autocorrelation between model errors. Given that the significance level of F is less than ten percent, the model is significant at the 90 percent level. The adjusted coefficient of determination of the model is at a very low level, namely 0.04 percent, which indicates that the explanatory power of the independent variable of the model, namely operating cash flow, is low. Given that the coefficient of operating cash flow is negative and significant at the 90 percent level, the research hypothesis of an inverse relationship between operating cash flow and discretionary accruals according to the modified Jones model is confirmed.

To examine the heterogeneity of variance, the White test was used, the results of which are presented in Table (4):

Table 4: White test

F-statistic	1.0716	Prob. F(2,402)	0.3434
Obs*R-squared	2.1478	Prob. Chi-Square(2)	0.3417
Scaled explained SS	4.3439	Prob. Chi-Square(2)	0.1140

According to Table (4), since the test statistic is not significant, the null hypothesis is confirmed. Therefore, there is no heteroscedasticity of variance.

Hypothesis testing using the Kothari model for discretionary accruals:

Given that the data is panel, we use the Limier test to determine the type of model (pooled or panel). The results are presented in Table (5).

Table 5: Limier Test

Effects Test	Statistic	d.f.	Prob.
Period F	0.29457	(2,372)	0.7450
Period Chi-square	0.59501	2	0.7427

According to the results of the Limier test, since the test statistic has a significance level of not less than 5%, the null hypothesis is accepted and the model is of the pooled type. The results for the final model, which is the discretionary accruals related to the Cothari model, are presented in Table (6).

Table 6: Model 5 test results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0090	0.00808	1.11516	0.2655
CFO	-6.11E-09	3.57E-09	-1.7113	0.0878
R-squared	0.0077	Durbin-Watson		1.8307
Adjusted R-squared	0.0051			
F-statistic	2.9286			
Prob(F-statistic)	0.0878			

According to Table (6), the Durbin Watson statistic is between 1.5 and 2.5, thus indicating the absence of autocorrelation between model errors. Given that the significance level of F is less than ten percent, the model is significant at the 90 percent level. The adjusted coefficient of determination of the model is at a very low level, namely 0.05 percent, which indicates that the explanatory power of the independent variable of the model, namely operating cash flow, is low. Given that the coefficient of operating cash flow is negative and significant at the 90 percent level, the research hypothesis of an inverse relationship between operating cash flow and discretionary accruals according to the Cothari model is confirmed. Therefore, the research hypothesis was confirmed using both discretionary accruals models.

To examine the heterogeneity of variance, the White test was used, the results of which are presented in Table (7):

Table 7: White test

F-statistic	0.68623	Prob. F(2,373)	0.5041
Obs*R-squared	1.37843	Prob. Chi-Square(2)	0.5020
Scaled explained SS	3.26863	Prob. Chi-Square(2)	0.1951

According to Table (7), since the test statistic is not significant, the null hypothesis is confirmed. Therefore, there is no heteroscedasticity of variance.

Conclusion

One of the methods through which managers manage earnings is the use of discretionary accruals. Therefore, this study has examined earnings management in companies listed on the Tehran Stock Exchange for a three-year period. Two modified Jones and Kothari models have been used to calculate discretionary accruals. The results of testing the research hypotheses based on both models showed that operating cash flow has an inverse relationship with discretionary accruals, which is consistent with the results of Mashayekhi et al. (2006). According to the results obtained, managers of companies with weak operating cash flow try to increase earnings by increasing discretionary accruals to present a better image of the company.

It is suggested that in future research, the effects of discretionary accruals be examined from other dimensions, such as the effect of discretionary accruals on the company's financial performance, including: return on assets, return on equity, earnings per share, and net income margin. Also, other models proposed in the literature should be used to calculate discretionary accruals.

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