

THE INVESTIGATION AND COMPARISON OF FREE CASH FLOWS IN THE FIRMS LISTED IN TEHRAN STOCK EXCHANGE (TSE) WITH AN EMPHASIS ON EARNINGS MANAGEMENT

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Abstract- This paper investigates and compares free cash flows (FCF) in firms listed in TSE with an emphasis on earning management (EM). Major purpose of this study is the investigation of difference among FCFs in TSE with an emphasis on EM. Annual financial statements are used for collecting research data. FCF and EM variables data are measured by Len and Poulsen (1989) model and modified Jones model, respectively. Data sample consists of financial statements during the period of 2004-2010. The results of the study show positive significant relationship between EM and FCF. In other words, firm's FCF can motivate EM. Moreover, findings from Levin test indicate that mentioned relationship is more significant for the firms with high FCF than ones with low FCF.

Key word- Earning Management (EM), Discretionary Accruals, Non-Discretionary Accruals, Free Cash Flows (FCF), Modified Jones model, Tehran Stock Exchange (TSE).

1. Introduction

Inherently, all individuals look for increasing their wealth in order to maximize their welfare, security and so on. This tendency leads them to search for suitable opportunities in order to maximize their wealth by investment. However, there are individuals who are unable to manage their own properties to make profit, so they have to employ others to do this task behalf of them. According to agency theory, the first groups are principals (owners) and the second groups are agents (managers). In fact, agents are representatives for principals to conduct principal's property accurately and finally increase their principal's wealth. It should be noticed that individuals have tendency to maximize their own self-interest and also agents do so. Agents are willing to show a good picture of the firm's financial position to shareholders and other stakeholder in order to maximize their self-interest and social welfare and or to keep their position. Agency problem arises when maximizing agent's wealth doesn't necessarily lead to maximize stockholder and stakeholder's wealth. This position refers to interest conflict between agents and principals. However, taking this interest conflict into account, agents may have an incentive to manipulate earnings to maximize their self-interest.

2. Literature Review Free Cash Flows (FCF)

Operating cash flows on the cash flow statement indicate firm's ability to produce cash flows. However, most of financial analysts argue that cash flows from operating activities are funds that not only should be invested in new fixed assets to enable firms to keep current level of operating activities, but also a proportion of that fund should be distributed as dividend or share-repurchase to satisfy stockholders. Therefore, cash flows from operating activities, on its own, cannot be considered as a firm ability to produce cash flows. Jensen (1989) was among the pioneers who introduced FCF theory and presented a definition for it. In his view, FCF is defined as cash from operating activities after deducting necessary cash to invest in positive net present value (NPV) projects. However, projects should be measured regarding to NPV through applying a reliable cost of capital; if the result is positive, necessary cash for investment will be deducted from firm's available cash, whatever remains will be considered as FCF.

According to Len and Poulsen (1989), FCF is operating income before depreciation expense after tax, interest expense and preferred and common stockholders' dividends. Also, Copeland (1995) defines FCF as operating income after tax plus non-cash expenses after deducting investments on working capital, property, plant, equipment and other assets. According to Dechow and Ge (2006), FCF is cash flows from operating activities plus cash flows from investment activities.

Earning Management (EM)

One of the aims of financial statements is to reflect the results of management stewardship or their accountability in the face of resources under their control. Since management of enterprise is responsible for preparing the financial statements, the managers in doing this important matter have enjoyed opportunities to exercise judgment in their reporting [18]. Accrual accounting will give significant right of selection to determine earning in the different time periods to managers. Indeed, under this accounting system, the managers have significant control on the time of distinction over some cost items such as advertisement, research and development expenditures. Significantly, on the other hand, in accrual accounting system, the manager will face different options about time of distinction of income. For example, the most rapid distinction of income is thorough credit sales. This kind of performance by managers is called "earnings management" [13].

On the one hand, increasingly economic activities development and its complexity and on the other hand, the requirement for exact accounting information and financial reports result in fundamental changes in the accounting theory and emerging new technical and managerial methods in accounting. One of the most important changes is to put more emphasis on income statement while previously this emphasis was on balance sheet. This position causes to emerge a case so-called earnings management (EM). EM is defined as intentionally taking steps under generally accepted accounting principles (GAAP) to achieve from the reported earnings to the desired earnings. The converging the reported earning to the desired earning is done through accounting manipulation [12]. Today, EM is one of the most debatable and interesting issues in accounting research since investors put lots of emphasis on the profit as one of the most important factors in the decision-making. Researchers suggest that low earnings variation and its persistency indicate the quality of earnings. However, investors can invest with more confidence in the firms with more persistent earnings trend. In this regard, EM would be one of the methods of the window dressing of financial position that is done by management manipulation in earnings determination [14].

On other hand, Jensen and Meckling (1976) define the agency relationship as a contract under which one or more principals engage the agent to perform some service on their behalf which involves delegating some decision-making authority to the agents. With establishing agency relationship, both sides try to maximize their self-interest. Because utility function of principal and agents is not equal, interest conflict arises between them and drives in agency costs. It should be noticed that individuals have tendency to maximize their self-interest and also agents do so. Agents are willing to show a good picture of firm's financial position to shareholders and other stakeholder in order to maximize their self-interest and social welfare and or to keep their

position. Agency problem arises when maximizing agent's wealth does not necessarily lead to maximize stockholder and stakeholder's wealth. However, with consideration of interest conflict between agents and principals, agent will have an incentive to manipulate earnings to maximize their self-interest. Because EM is done on various purposes by agents, empirical evidences of the research literature about agency relationship and EM, in some extent, are mixed and vague. If EM is done on an opportunistic purpose, firms will have more agency costs and agent will show more profit. In other words, there is positive relationship between EM and interest conflict momentum. But if EM is not in favor of agent's self-interest, it is expected that firms with high agency costs to have low EM because EM is not done in favor of agent's interest [17].

Jensen (1986) in his FCF theory expresses that instead of distributing FCF among principals, they have tendency to reinvest it in the firm, because cash distribution among stakeholders decreases manager's available resources, therefore, reduces their power. On the other hand, need for new capital resources increase the capital market monitoring over the manager's decisions. In fact, FCF accumulation reduces the market monitoring power on the manager's decisions. Agents are driven to excessive firm's growth which is more than suitable amount because firm's growth will be accompany with an augmentation in agent's available resources and of course power and bonus. Considering agents and principal's goal difference (not having goal congruency), cash flows produced internally more than necessary cash to finance new projects with positive NPV result in investing these surplus cash flows in the projects with negative NPV which wastes resources. In conclusion, firms with high FCF and growth opportunity and also low investment have high agency costs. In another research, Jaggi and Gul (2000) found a positive relationship between EM and high FCF in the firms with low growth. They argue that according to Jensen theory, in these firms, agents instead of distributing these FCF invest it in the projects with negative NPV which drops firms market value (market reacts). Therefore, these firms' managers try to adjust this situation by applying discretionary accrual items to step up income and achieve their self-interest. In addition, they showed that debt (financial leverage) adjusts the mentioned relationship.

Jones *et al.* (2001) studied the relationship between EM and FCF in the firms with new and old-structured economy in Australia. They observed that there is a positive relationship between discretionary accrual items and FCF in the firms with an old-structured economy (usually having low growth) because these firms' managers try to compensate their weak performance through discretionary accrual items, however, they didn't find significant relationship in the firms with a new-structured economy (with high growth).

Chung *et al.* (2005) investigated the relationship between EM and FCF in the firms with low growth during the period of 1966-1984. Their research sample consisted of 22576 American firms. Their results indicate a positive

significant relationship between EM and FCF. In other words, managers of the firms with FCF and low growth use discretionary accrual items that increase income to compensate low income and losses from investing in negative NPV. Additionally, after study on the relationships between institutional stakeholders, audit firms and high audit quality (American big-6) they discovered that the mentioned variables lead to a decrease in the relationship between EM and FCF and prevent managers from managing the earnings.

Opler and Titmen (1993) assert that firms with high growth opportunity are more likely to have low FCF, since available cash is invested on the projects with positive NPV. Tsui *et al.* (2000) investigated audit fee in high FCF and low growth firms in Hongkong. Their findings show, in this sort of firms, because of related agency problems of high cash flows, audit fee is high. Also, they explained that according to Jensen theory, debt factor can have important role in the audit fee reduction. According to Jensen theory, Jagi and Gul (2000) highlighted that debt factor adjusts the relationship between EM and FCF in low growth firms. In other words, more debt ratio in these firms makes managers not to invest in negative NPV projects. Richardson (2006) highlighted in the firms with high FCF, investment is more than optimal level. In his research sample, during 1998-2002, on average 20 percent of non-financial firms invested their FCF over optimal level. Bukit and Iskandar (2009) studied about surplus FCF, EM and audit committee and found that independent audit committee helps companies with high surplus FCF to reduce income-increasing EM practices.

Wang *et al.* (2010) studied the impact of compositions and characteristics of board of directors and EM on fraud and concluded that discretionary working capital accrual has not influence on fraud and the interaction of institutional director holding and the discretionary working capital accrual have negative influence on fraud before the act of the independent directors and auditor, but the discretionary working capital accrual has negative influence on fraud afterward.

3. Research Hypothesis

Our main question in this research is: what is the difference among FCFs in listed firms of TSE with an emphasis on EM?

Main hypothesis

There is a difference among FCFs in listed firms of TSE with an emphasis on EM.

Sub hypotheses

H₁: There is a difference among FCFs in listed firms of TSE with an emphasis on discretionary accrual items of EM.

H₂: There is a difference among FCFs in listed firms of TSE with an emphasis on non-discretionary accrual items of EM.

4. Research Method

4.1. Research methodology and data collection

Research methodology used in this study is the correlation study. Correlation method is used for FCF and EM variables since the research aimed to investigate and compare firm's FCF with an emphasis on EM. Statistical analyses are performed by Eviews 6 software. Documental and field methods are used in data collection. Field method for collecting data is from the financial statements of firms listed in TSE and documental method is for literature study and research background review. In field study, required data for research variables measurement were acquired by using databases of TSE.

4.2. Population and data sample

In this study, sample of all firms in TSE is used during the period of 2004-2010. Systematic-elimination random sampling is used for data sampling. Sample of firms must have following characteristics:

- 1- Fiscal year must be ended at the end of year.
- 2- Firms must not have changed their fiscal year during the period of 2004-2010.
- 3- Stock exchanges must not have stopped more than 1 month during the period of 2004-2010.

Taking these conditions into consideration, data sample reduced by 215 firms and from this number 91 firms selected, considering firms homogeneity and statistical guidance.

4.3. Research variables

Research variables are FCF as independent variable and EM as dependent variable. Len and Pulson model (1989) is applied for measuring FCF. According to this model FCF is calculated by deducting total of taxes, interest expense and dividend from operating income before depreciation and standardized by dividing it by assets as following:

$$FCF_{i,t} = (INC_{i,t} - TAX_{i,t} - INTEP_{i,t} - PSDIV_{i,t} - CSDIV_{i,t}) / A_{i,t-1}$$

Where:

FCF_{i,t} is FCF of firm (i) in year (t)

INC_{i,t} is operating income after depreciation of firm (i) in year (t)

TAX_{i,t} is total taxes of firm (i) in year (t)

INTEP_{i,t} is interest expense of firm (i) in year (t)

PSDIV_{i,t} is preferred stockholders dividends of firm (i) in year (t)

CSDIV_{i,t} is common stockholders dividends of firm (i) in year (t)

A_{i,t-1} is total assets carrying value of firm (i) in year (t-1)

Modified Jones model (introduced by Dechow *et al.* 1995) is used for EM measurement because of its ability to solve present research problem.

The model is as follow:

$$NDA_t = \alpha_1(1/A_{i,t-1}) + \alpha_2(\{\Delta REV_t - \Delta REC_t\}/A_{i,t-1}) + \alpha_3(PPE_t/A_{i,t-1})$$

Where:

NDA_t is discretionary accrual items in year (t)

A_{i,t-1} is total asset of firm (i) in year (t-1)

ΔREV_t is the difference between present year's sales and previous year

ΔREC_t is the difference between present net receivables and previous year

PPE_t is gross of plant, property and equipment in year (t)

$\alpha_1, \alpha_2, \alpha_3$ are firm's special parameters calculated by following equation:

$$TA_t / A_{it-1} = \alpha_1 (1/A_{it-1}) + \alpha_2 (\Delta REV_t / A_{it-1}) + \alpha_3 (PPE_t / A_{it-1}) + \varepsilon_t$$

TA_t is a proxy for total accrual items in year (t)

Total accrual items are calculated by following equation:

$$TA_{it} = NI - CFO$$

And discretionary accruals (DA_{it}) is calculated by the difference between total accruals and non-discretionary accruals as following:

$$DA_{it} = TA_{it} / A_{it-1} - NDA_{it}$$

$A_{i,t-1}$ is total assets carrying value of firm (i) in year (t-1)

5. Results and Discussion

Descriptive statistic of research variables are shown in Table 1. FCF as independent variable has the most coefficient of variation (standard deviation to mean) and dispersion (3.79) and vice versa, discretionary (DACC) and non-discretionary accruals (NDACC) as dependent variable have less coefficient of variation than FCF (1.52 and 1.51, respectively). The low persistence of FCF shows that, in some extent, level of FCF is independent from discretionary and non-discretionary accruals and cannot explain these variations.

Pool unit root test is used for investigation of variables persistency. Results from pool unit root test of Levin, lin and chu statistic and also Im, Pesaran and Shin-W statistic are shown in Table 2. All research variables including dependent and independent variables are persistent in studied period.

To analysis sub-hypotheses 1 and 2, FCF effects on discretionary and non-discretionary accruals of EM along with compare means test for discretionary and non-discretionary accruals in firms with low and high FCF are shown in Tables 3 and 6. It should be noticed that, since FCF data is not normal and has positive skewness, the median is used for dividing data into two groups- high and low FCF. Findings of FCF effect on discretionary accruals (DACC) in Table 3 demonstrate positive relationship between these two variables which means that increasing FCF in the firms increase DACC. Also, the relationship between FCF and DACC with taking regression coefficient of FCF (0.048) and t-statistic (0.7581) into consideration is not significant and shows that DACC is relatively independent from level of FCF.

Results of F-statistic indicate the model, on the whole, is significant and considering Durbin-Watson statistic, it has not auto-correlation problem. Results of coefficient of determination show that 0.288 of DACC variations is related to the firm's FCF.

Results of FCF effect on NDACC shown in Table 4 indicate negative relationship between two variables. The relationship between firm's FCF and non-discretionary accrual considering regression coefficient of FCF variable (-0.023) is very weak and t-statistic (0.8809) is not significant which indicates NDACC is independent from firm's FCF.

Results of F-statistic show that model is not significant on the whole and there is not auto-correlation problem considering Durbin-Watson statistic. Results of coefficient of determination show that 0.268 of NDACC variations is reversely related to firms FCF.

In order to complete research results, compare means test is also conducted for DACC and NDACC in the firms with high and low FCF which is shown in Tables 7 and 8.

Anova and t-statistic presented in Table 5 indicate that there is no significant difference among DACC means in the firms with high and low FCF.

Anova and t-statistic shown in Table 6 indicate that there is no significant difference among NDACC means in the firms with high and low FCF.

6. Conclusion

To test research hypotheses, two regression models with a constant effects are estimated which are explained as followings: 1. According to Len and pulson model, 0.288 variations of discretionary accruals (DACC) is related to firms FCF; 2. There is a weak and negative relation between non-discretionary accruals (NDACC) and the level of FCF according to Len and Pulson model and 0.268 of NDACC variations is related to FCF, reversely; 3. Results of Anova and t-statistic indicate that there is no significant difference among discretionary accrual means in the firms with high and low FCF; 4. Results of Anova and t-statistic indicate that there is no significant difference among non-discretionary accrual means in the firms with high and low FCF. Research results are consistent with Jaggi and Gul (2000), Jones (2001) and Chung *et al.* (2005). The findings have important implications for policy makers and practitioners. The results reveal an association, not a causal link, between surplus free cash flow condition and the level of earnings management. Also, inferences in this paper are limited by the selected sample and time period, and the sample size is relatively small. A larger sample size may be necessary in order to obtain a more statistical robustness for the data analyses and significance results of hypotheses testing. Thus, future research may employ a larger sample size in order to improve the generalizability of the results.

There are still various issues in this regard that would be important for future researches. Therefore, it is recommended that in order to determinate the relationships among discretionary and non-discretionary accruals and firms FCF and other effective factors, followings to be considered:

- 1- Study on firm characteristics effect on the relationships among discretionary and non-discretionary accruals and firm's FCF.
- 2- Study on other FCF assessment measures in analysis of the relationships among discretionary and non-discretionary accruals and firm's FCF.
- 3- Investigation on macro-economic variables effects on the relationships among discretionary and non-discretionary accruals and firm's FCF.

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Table 1- Descriptive Statistics

Variables Criteria	DACC	NDACC	FCF
Mean	-0.44	0.43	0.05
Medium	0.42	0.39	0.04
Maximum	4.63	8.96	1.94
Minimum	-7.32	-4.63	-1.13
Std. Dev.	0.67	0.66	0.20
coefficient of variation	1.52	1.51	3.79

Table 2- Summary of Variables Persistency Test

Method	DACC	NDACC	FCF
Levi, Lin & Chu t	(0/0000) -51/35	(0/0000) -28/76	(0/0000) -135/33
Breitung t-stat	(0/0000) -2/89	(0/0000) -3/25	(0/0001) -3/82
Im, Pesaran & Shin W-stat	(0/0000) -8/96	(0/0000) -9/34	(0/0000) -26/34
ADF-Fisher Chi-square	(0/0000) 233/31	(0/0000) 279/02	(0/0000) 309/53
PP-Fisher Chi-square	(0/0000) 289/37	(0/0000) 331/26	(0/0000) 351/58
Hadri Z-stat	(0/0000) 8/48	(0/0000) 11/99	(0/0000) 14/79

Table 3- Regression Model Relations between DACC and FCF

Dependent Variable: DACC		Method: Least Squares	
Variables	Coefficient	t-Statistic	Probability
C	-0.44	-17.27	0.000
FCF	0.048	0.31	0.7581
R-squared	Durbin-Watson Stat	F-statistic	Prop. (F-statistic)
0.288	2.13	2.43	0.000

Table 4-Regression Model Relations between NDACC and FCF

Dependent Variable: NDACC		Method: Least Squares	
Variables	Coefficient	t-Statistic	Probability
C	0.43	17.20	0.000
FCF	-0.023	-0.149	0.8809
R-squared	Durbin-Watson Stat	F-statistic	Prop. (F-statistic)
0.268	1.98	2.19	0.000

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Table 5- Compare Means Test of DACC in Firms with High and Low FCF

Method	df	Value	Probability
t-test	635	0.87	0.38
Anova F-statistic	(1, 635)	0.76	0.38

Table 6-Compare Means Test of NDACC in Firms with High and Low FCF

Method	df	Value	Probability
t-test	635	1.18	0.23
Anova F-statistic	(1, 635)	1.41	0.23