

The effect of cash flow on investment level of Listed Companies in Tehran Stock Exchange

Godratollah Talebniya¹, Rooholah majlesara², Yousef Ghanbari³, Behnam Samadiyan^{4*}

¹Department of accounting, Science and Research Branch, Islamic Azad University, Tehran, Iran

²Sama technical and vocational training college, Islamic Azad University, Ardabil Branch, Ardabil, Iran

³Department of Accounting, Islamic Azad University, Azarshahr Branch, azarshahr, Iran

^{4*}Department of accounting, East Azarbaijan Science and Research Branch, Islamic Azad university, Tabriz, Iran

*behnam.samadian@yahoo.com

Abstract: The goal of the present research paper is to study the effect of cash flow on investment levels in companies. 75 firms accepted in Tehran Stock Exchange were investigated for their performances during the years between 2004 and 2010. The year 2008 was assumed to be the index year. In this paper the effects of four variables related to operational cash flow, financial supply and investment on investments' levels were studied. These variables are operational incomes, operational profit, debt ratio, and change in tangible fixed assets. The results of the regression test showed that cash flow, previous operational incomes, operational profit, and the ratio of debts and tangible fixed assets have a positive and meaningful effect on investment levels in companies but the future operational income does not affect companies' investments.

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1-Introduction

Investors are among the most important elements in capital market. The final goal of every investor to use the capital is to gain the maximum profit and return. To encourage the investors in order to invest in financial assets, the return of these assets should be more than other alternatives. The value of a company is a function of profitability in its investments; thus, managers should establish an adjustment between the stockholders' expectations and the desirable investment opportunities of the companies to maximize the wealth of the stockholders by recognizing the effective factors on investment levels both to avoid losing the profitable investment opportunities and to gain stockholders' satisfaction [5]. Cash flow is highly important in analyzing the value created for stockholders. The status of cash flows in a company is determined regarding input and output cash flows resulted from operational activities, financial supply and investment in those companies [6]. The goal of the present study is to investigate the effects of cash flows on investment levels in companies. In decisions related to investments, the prediction of cash flows of a company is considered to be an important index in revealing the capability of the companies for future periods.

2-The importance of research

Using profit as companies' performance criteria is accompanied with doubts although it is affected by estimations and different accounting

methods and in spite of the existence of the agency theory. While cash flows are considered to be reliable criteria in assessing firms' performances, due to the least role of management to manipulate them, managers can cause the increase of the wealth of stockholders through recognizing the appropriate growth opportunities and investing them in contemporary positive net valued projects. The shortage in the internal resources of the companies increases the need to external resources in order to administer investing projects and this can affect capital cost, profitability, firm's stock price and future return expected by stockholders. On the other hand, maintaining the internal resources to finance the investments can postpone stockholders' expected return. The ability of every company in paying the stock's profit, financing the investment projects and even satisfying the stockholders are resulted from its capability to create future cash flows; thus, the effect of cash flows is significant in determining stocks' price and the stockholders' expectations. Based on the fundamental principle of value, the economists and financial managers consider the value of an asset equal to the current value of cash flows resulted; so the importance of the present study lies in assessment of stocks' price and investment projects.

3-Research literature

Theories related to investment level describe the reasons of the effectiveness of cash flows over investment levels in companies, best. Analyzing investment and acknowledging investment theories

can improve management and increase the wealth of investors and also realize conscious decision-makings. Making decisions about investment deals with three important issues of expectations, delays and risks, namely and it is impossible for economists to consider all of them simultaneously; because there are several different factors which affect investment levels in a company [4] The managers of companies can recognize the effective factors on investment and use them to achieve the optimal investment level and create the most possible yield [17]. Cash flow is a criterion to measure the performance of companies and show the cash owned by a company after the needed expenditures to maintain or develop the assets. Based on the main presuppositions of cash flows, those companies which have high cash flows are more active in investment [11]. In decision makings related to investments, the prediction of cash flows of a company is considered to be an important index in revealing the capability of the company for the future periods' investments [6]. Inefficient markets have defects which can affect the optimal investment level in the company and finally result in the process of "over-investment" or "under-investment". The investment hypothesis states that: those companies which invest less than the optimal investment level are hurt by under-investment and those companies in which the optimal investment level is used suffer from over-investment. Thus, the knowledge about the important and effective factors on investment levels is highly important in measuring, and determining the most optimal investment levels in companies. Managers who have confirmed their positions are more opt to cash flow investment in order to enhance firm size; even when these projects encounter a negative yield [16]. Cash flows are important because they allow the company to search for opportunities which increase stockholders' value. Cash flows should be maintained in a level in which there is a balance between cash flow maintenance costs and costs of insufficient cash flows [3]. The information asymmetry creates some contradictions among the beneficiaries which end in the process of under- or over-investment [13]. According to under- or over-investment hypothesis, the existence of cash flows due to lack of information symmetry between managers and stockholders will result in over-investment from one hand, and it can be led into under-investment due to the limitations in financial supply [10]. According to free cash flows' hypothesis, the residual amounts of cashes gain net positive value (NPV) after financing for all valuable projects and it creates the contradictions of profits between the advantages of managers and stockholders and this contradiction forms "over-investment" in a company [8]. The theory of free cash flows forms a

special composition regarding agency cost theories and signaling [18]. Thus, the hypothesis of free cash flows' symbols states that the management uses dividends to transfer a firm's internal data about cash flows and it is adjusted with their knowledge about future. This hypothesis claims that there are asymmetrical data about the amount of current cash flows in a firm but there are similar and symmetrical data regarding the preprogrammed investment levels and the value of the firm's assets [2]. According to the useless investment hypothesis, one of the agency costs created as a result of ownership isolation from the firms' management, the managers are extraordinarily tended to invest which results in accepting the current negative valued profit projects [1]. It is important to know that the negative free cash flows do not solely show the undesirable situation. If free cash flow is negative, it is resulted from excessive investments of companies and this is deemed to be natural in newly established companies. When the invested amount has a high yield, the strategy mentioned has the potential to achieve a desirable result in long-term. There is a meaningful relationship between profit and cash flows in companies with high developments; but the relationship between profit and cash flows in firms with less growth [9]. According to accounting standards of different financial entities which result in cash flows are as follows: operational activities, financing and investment in which the operational activities present the amount of the cash flows created through the operation and other activities in a business entity; meanwhile, the investment activities' department reflects how the cash flows supplied in economical activities are consumed and finally, the financial supply financing activities' department show how the financial supply has been achieved. The operational income shows the status of cash flows in a firm instead of the net income because the net income is a combination of unusual incomes which are not related to the usual operations (such as profits resulted from business bonds); but the operational income of a company is not necessarily equal to the current cash flows in a company to pay the profit or investment [15]. The change in total liabilities instead of long-term liabilities is used to show the relatedness of cash flow with financing strategies. Firms which have a lot of incomes may be more related and opt to supply companies internally for operational activities and their own investments. Although the liabilities of this group of firms increased due to the increase in operational and investment activities, total assets of a company will also increase in such a group. Thus, a decrease will be seen in liability ratio of these companies [19].

The change in tangible fixed assets is one of the activities which result in creating cash flow in companies through investment activities. The assessment of investment in fixed assets, the decision makings regarding different types of investments and the selection of the most appropriate project which comprise the capital budgeting process are among the most important issues discussed in financial management. Long-term investment requires the appropriation of a limited amount of cash [14]. The study of the research carried out showed that there are several different perspectives about cash flows and investment. Kato's research (2002) showed that cash flow has a meaningful effect on investment level. Also it showed that past and future earnings, operational profit, debt ratio and tangible fixed assets have a meaningful effect on investment level. Morgado (2000) and Roka (2004) found out that firms with main cash flow levels and more investment opportunities have an appropriate and almost optimal investment levels[13]. Harvey (2003) states that: firms with main cash flow levels and more assets and more limited growth opportunities are most probably encountering over-investment. Also Richardson (2006) studied the relationship between free cash flows and over-investment and showed that there is a positive and meaningful relationship between free cash flows and over-investment. Lyandres & Zhdanov (2005) showed that firms with high amounts of liabilities which finance through ownership bonds tend to decrease their investments more than those which finance through debt securities[12]. Erdson (2002) studied the relationship between cash flows and investment and showed that there is a positive and meaningful relationship between cash flows and investment and found out that for every free cash flow dollar, an average amount of 0.44 dollar over-investment is created in firms. Houshi (1991) showed that in firms with lower debt ratio and higher dividends, the investment is upward. Additionally, there is a reverse and meaningful relationship between debt ratios and investment opportunities[7]. Reza Tehrani & et al. (2009) studied the effect of cash flows and the limitations of financing on over-investment and under-investment. The results of their research showed that the relationship between cash flows and over-investment is positive and meaningful statistically and there isn't any relationship between limitations in financing and under-investment.

4-Main hypothesis

Cash flow affects investment level.

4-1-Subsidiary hypothesis

1-Past and future revenue affects investment level.

2-Operating income affects investment level.

3-Liability ratio affects investment level.

4-tangible fix assets affect investment level.

5-Sample selection

Our statistic society was firms listed in Tehran Stock Exchange. First archiving method was utilized to collect data about theoretical literature and then data collection was done through financial statements of firms and other authentic sources in Tehran Stock Exchange (CDs and rdis.ir & irbourse.com sites). To analyze the data we used EXCEL and to test the hypotheses we used EVIEWS and SPSS.

Our sampling method was systematic deletion (filtering). Thus, selection requirements included:

1-Firms have the same financial periods and ended to esfand.

2-The firm's financial information for research period was gettable.

3-There is not any dealing stoppage more than 3 months.

4-The sample is not among investing industry or brokerage or monetary and banking institutions.

5- The research period includes the years between 2004 and 2010.

6-Research method

The independent variable in the present research is investment level and the dependent variables are cash flow, operational income, operational profit, liabilities and tangible fixed assets, and change in capital. In this paper, operational profit and operational income are considered as an element of cash flows resulted from operational activities. Debt ratio represents the cash flow resulted from financing activities. And tangible fixed assets are thought as the cash flows resulted from investment activities. The year 2008 is considered as an index. Thus, the operational income was divided into previous operational income including the years 2005, 2006, and 2007 and future operational income including the years 2009 and 2010. To achieve the homogeneity and make the variables comparable, all variables were balanced and standardized after being divided by the total assets (TA). Equations 1 and 2 were used to test the research hypotheses.

The coefficient of the model variables:

$$1. (INV_{i,t}) = \alpha_{i,t} + \beta_1(CF / TA_{i,-1}) + \beta_2(E_{i,-} / TA_{i,-1}) + \beta_3(E_{i,+} / TA_{i,-1}) + \beta_4(OI / TA_{i,-1}) + \beta_5(LR / TA_{i,-1}) + \beta_5(\Delta TFA)$$

$$2. INV_t = TFA_t - TFA_{t-1} \Delta INV_t = INV_t - INV_{t-1}$$

Table 1-Prerequisite for regression test validity

Variable name	beta	t-value	sig
alfa	33.7	0.005	2.73
cash flow	0.652	0.015	2.14
past revanue	0.350	0.011	2.01
future revenue	8.2	0.203	1.56
operating income	0.524	0.024	2.2
liability ratio	0.520	0.042	2.01
tangible fix asset	0.512	0.019	2.33
Durbin-Watson	1.994		
F	4.203		
R Square	0.41		
Adjusted R Square	0.544		

- 1

Cash flow= (operating income+Depreciation)-
(interest expense+ Income tax)

Operating income= (income year- Previous year's
income)/ Previous year's income

Operating earnings= Annual Operating profit/ Annual
Sales

Liability ratio= total liabilities/ total assets

Tangible fixed assets= (Tangible fixed assets of this
year- Tangible fixed assets of the previous year)/
Tangible fixed assets of the previous year

Investment level= Tangible fixed assets of this year-
Tangible fixed assets of the previous year

Tangible fixed assets: TFA

Investment level: INV

Cash flow: CF

Past revenue: Ei,-

Future revenue: Ei, +

Operating incomes: OI

Liability ratio: LR

7-Research findings

Table 2-OLS Regression Results

sig	Kolmogorov-Smirnov Z	variable
0.238	0.713	investment
0.608	0.235	cash flow
0.865	0.876	past revanue
0.123	0.098	future revenue
0.086	1.453	operating income
0.341	0.246	liability ratio
0.235	0.165	tangible fix asset

The normality of variables is one of the presuppositions of regression validity. To test the data normality, Kolmogorov-Smirnov (K-S) test was used. According to the results of table1,the significant level of variables is more than %5 and %95 assurance with a normal distribution. Then Durbin-Watson test was used to study the lack of convergence problem between the variances of the values stated (leftover sentences) which is approximately 2 and there is no convergence problem. The results of hypothesis test in figure 2 show that based on the investment level the probable amount of t test (meaningfulness level) equals 0.015 for the adjusted cash flow and coefficient β equals 0.652 and it is positive. Thus, cash flow has a positive and meaningful effect on investment level. It equals 0.011 for past operational income and coefficient β equals 0.350 and it is positive. Thus, past operational income has a positive and meaningful effect on investment level. It equals 0.203 for future operational income and coefficient β equals 8.2 and it is positive. Thus, past operational income does not have a positive and meaningful effect on investment level. It equals 0.024 for operational profit and coefficient β equals 0.524 and it is positive. Thus, operational profit has a positive and meaningful effect on investment level. It equals 0.512 for the adjusted ratio and coefficient β equals 0.520 and it is positive. Thus, liability ratio has a positive and meaningful effect on investment level. It equals 0.019 for tangible fixed assets and coefficient β equals 0.432 and it is positive. Thus, tangible fixed assets have a positive and meaningful effect on investment level.

8-Summary of results

Regarding the probability of F statistics, the regression equation is not rejected totally. The adjustment determination coefficient of the equation is %41 and this shows that the independent variables determine %41 of the total investment level variance. The test of our main hypothesis in this research showed that cash flow has a meaningful effect on investment level. Testing the first minor hypothesis showed that past earnings have meaningful effects on investment level, but the future earnings do not have meaningful effects. Testing the second minor hypothesis showed that operational income has a meaningful effect on investment level. Testing the third minor hypothesis showed that liability ratio has a meaningful effect on investment level. Testing the fourth minor hypothesis showed that tangible fixed assets have a meaningful effect on investment level. Investigating cash flows and investments in firms showed that the investment level is high in those firms with characteristics such as high profit, high

income, low liability and high tangible fixed assets. Based on the results of testing the hypotheses in the present research, we can conclude that criteria such as profit and assets' return can not be used solely to assess the investment level today. Thus, we suggest that: firstly, companies should consider the administration of investment projects and assessment of investment levels regarding cash flows, income and operational profit, liability ratio, tangible fixed assets and investment opportunities in financing. Additionally, the amount of the past years' incomes of a firm can be more effective in investment decision makings than future incomes. Secondly, the managers should recognize the effective factors on investment level and create a balance between the different expectations of the stockholders and the desirable investment opportunities of the firm with the aim of maximizing the wealth of stockholders in order to both avoid losing profitable investment opportunities and deserve the satisfaction of the stockholders.

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