

## **THE RELATIONSHIP BETWEEN A MEASURE OF PROFITABILITY, THE RATIO OF RETAINED EARNINGS, CAPITAL EXPENDITURES AND CHANGES IN CORPORATE DIVIDEND POLICY**

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### **ABSTRACT**

This study examines the relationship between these factors: the criterion of profitability, the ratio of retained earnings, capital expenditures and Changes in the company's dividend policies, the applied principles for capital market players, including actual and potential investors etc. Obviously, for conducting any research the effort is placed to make the results applicable for who are interested in it in order to be helpful in making efficient decisions. Therefore, this research is not excluded from this norm, as well. Moreover, the research results will be significant for corporate managers to thrive on obtaining more positive results. The research results regarding confirmation of the first hypothesis of the study show that between the criterion of profitability and changes in dividend policies of companies, there is a direct and significant relationship. Furthermore, according to the analysis made in connection with confirmation of the research second hypothesis, we determined that between the ratio of retained earnings and changes in the company's dividend policies, there is a direct and significant relationship. Next, Results in relation to the third research hypothesis suggest that there is an indirect and significant relation between the ratio of capital expenditures and changes in the company's dividend policies.

**Keywords:** *The Criterion of Profitability, the Ratio of Retained Earnings, the Ratio of Capital Expenditures, Changes in Dividend Policies*

### **INTRODUCTION**

Companies may experience fluctuations in different years due to the economic conditions concerning the revenue (Beik *et al.*, 2011). Investment may be made in different ways and due to variety of reasons it could be maintained. The main purpose of studying the investment is that the volatility of capital investment can help to understand the business cycle (Brenan, 2003). Another reason is that the level of investment expenditures can be significantly influenced by financial policies. In the capital market, there is a tendency for evaluation of investment performance because the performance evaluation of investment companies, investment professionals as the performance evaluation of investment experts is one of the crucial issues concerning the field of investment (Abudi and Kusnick, 2000). Managers with making investment in different projects attempt to provide future profitability and cash flow of the company as well, so sometimes in companies' managers promote excessive investment, which causes problems such as reduction in the company's cash holdings and can lead to the agency problem, too (Aktas *et al.*, 2009). The statement of research problem can be formulated as follows:

Cash flow of a business unit is one of the basic events that accounting measurements performed based on it. And it is believed that the creditors and investors also take their decisions on this basis (Bidel and Hilary, 2006). Cash and cash flows are important because they illustrate the public purchasing power and in economic exchanges it may easily transferred to a variety of organizations or individuals to meet their specific needs and the acquisition of goods and services (Ahren, 2008). Effects of investment and financial decisions on the company's value are rooted in researches of Modigliani and Miller (1958). Theory of assets, regardless of the value of the company, has been in connection with the financial and productive assets in the complete capital market and it has been considered an appropriate base for investment. In fact, some authors, such as Brown *et al.*, (1994) supported this view. However, other authors in comparison with this theory pointed out a positive correlation between investments and financing profits (Bajianski *et al.*, 2002; Bidel *et al.*, 2009). The high level of cash flow in spite of

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financial leverage is an encouraging factor in managers having opportunistic manners (Cohen *et al.*, 2010). Johnson (2005) stated that free cash flow has a great impact on the opportunistic manners of managers. When a company has a large amount of cash flow, the manager may invest surplus of funds in various opportunities. Due to the limited number of safe and high-yield investment opportunities, and rapid technological progress, probably administrators make investments returns on which are less than the company's cost of capital or are very risky (Beik *et al.*, 2011). In these conditions the Costs technically named "agency costs resulted by free cash flow" are imposed on shareholders (Rehdes *et al.*, 2005). Managers always want to provide a forecast relating to companies' profits. And they put all their effort into their work in order to have the least deviation in relation to the forecast (Bajinaski *et al.*, 2002). When accompany is faced with a large amount of cash flow, the opportunistic manners of managers increase. With increasing financial leverage, gradually the amount of this cash flow and consequently managers' latitude available in using the company's cash flow they both decrease (Change *et al.*, 2007). With the advancement of technology related to the production of goods and providing services the need for new systems of investment is felt heavily (White, 2006). With a staggering increase and development in science and technology, transport and the level of cash flows and cash obtained by it are taken into consideration by managers and implementation of policies to achieve long-term goals of the company is dependent on the adequacy of this variable (Kickont *et al.*, 2012). According to the background mentioned there have been no empirical studies conducted in Iran that deal with relationship between flexibility of the company's size, volatility of the ratio of price to earnings per share and market return of companies based on non linear co-accumulation model of panel data for the companies, so conducting a study which deals with examining this relation, and evidence of its existence and the intensity of this relation as well, in case of its existence is proved, may expand the literature and empirical evidence related to the investment made by companies, and help investors and market participants, on the one hand, and principal people indecision-making concerning making investments by companies, on the other hand, to have greater understanding of the importance of investment decisions as a tool for achieving more return, so the main objective of this research is to answer this question that are there and significant relations between flexibility of company's size, volatility of the ratio of price to earnings per share and market return of companies?

One of the most important issues discussed by companies' managers is about investment decisions (Cohen *et al.*, 2010). The result of Investment decisions is an increase or a decrease in retained earnings of companies. An investor's interests in an institution include future profits, future ash flows and future cash dividend payment (Aboodi and Kusnick, 2000). Being aware of these interests is demanded by investors and awareness of future profits and cash flow gain more attention. Investors seek profit estimates and cash flows originating from the new technologies, an institution in which they have invested in order to be able to judge the reception of future dividends and their own share value with respect to other investment opportunities available (Bumber *et al.*, 2010). To achieve accurate estimate and forecast of fluctuations in profitability ratios they need information about future revenues because earnings are considered the main source of information about the company's ability to pay future profits (Bidel and Hilary, 2006). Moreover, to judge the value of their shares they need information on retained earnings because most stock assessment models are based on the current value of their retained earnings. In this regard the information about profit and capital expenditures, as the two investment interests in stocks, is requested by investors and because information on the expected cash flow is not available, the earnings forecasts used as a substitute for cash flow (Change *et al.*, 2007). The reason of paying attention to fluctuations in profitability ratios is that some try to relate the price of the securities to the future interests of investments. Prediction of fluctuations in financial ratios is of primary importance in applying stocks assessment models. In this regard, Olson believes that only the distribution of expected earnings can be used in the valid public position for making investment insecurities; He also believes that the value of securities is a function of expected cash dividend and volatility of financial ratios considering the adjusted risk (Beik *et al.*, 2011).

The research hypotheses are shown as below;

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There is a direct and significant relationship between the criterion of profitability and changes in dividend policies of companies.

There is a direct and significant relationship between the ratio of retained earnings and changes in dividend policies of companies.

There is an inverse and significant relationship between the ratio of capital expenditures and changes in dividend policies of companies.

Thematic, time, location scope of the research can be stated as follows;

**Thematic Scope:** Studying the relation between criterion of profitability, ratio of retained earnings, capital expenditures and Changes in the company's dividend policies

**Location Scope:** The study covers the years from 2008 to 2013.

**Location Scope:** Since, companies listed in Tehran Stock Exchange are subject to special regulations of the organization, it is expected that Information provided by these companies to have higher degree of consistency, reliability and quality. Therefore, the location scope or the statistical population of this study includes companies which are active in the Tehran Stock Exchange and during the study period, all their financial information is provided in Stock Exchange.

The statistical sample and population of the study can be stated as follows; in this study, all the companies listed in the Tehran Stock Exchange over a period of six years from 2008 to 2013 are the statistical population; the research sample is selected by elimination method after applying the assumptions.

#### **Research Keywords can be Stated as Follows:**

##### *Criterion of Profitability:*

It is the final returns resulted from the implementation of financial activities on the basis of the ratio of return on equity to enterprise assets and Tobin Qratio (Larsia *et al.*, 2009).

##### *Changes in the Dividend Policies*

It is the changes in paid dividends in this year compared to the previous year (Mensinly and Ozakan, 2006).

##### *The Ownership of Institutional Investors:*

In order to obtain this variable of the percentage of company's stocks which belongs to government, insurance companies, pension funds, investment companies, foundations and banks are taken into account (Namazi and Kermani, 2008).

Kevin and Wiki (2008) evaluated the relationship between the quality of earnings and investment of capital assets during the period of 1988-2005. The results show that companies that have lower degree of earnings quality allocate lower measure of their resources to capital assets and they have less rate of return on assets.

Broch *et al.*, (2008) dealt with the role of accruals in prediction of future cash flows and return on equity. This study revealed that the positive accruals are more effective in prediction of future cash flow prediction than prediction of current cash flow and accruals compared to the cash flows are more useful in anticipation of real return on stocks.

Garsia- Troel and Martinezo Solana (2008) by studying the factors affecting the amount of cash in small and medium companies concluded that Companies try to achieve target (desired) cash ratio and this ratio for the companies that have better growth opportunities and the ability to generate cash is higher than the other companies.

Tehrani and Hesar Zade (2009) studied the effect of free cash flow and financial constraints on and under capitalization and over capitalization in 120 companies listed in Tehran Stock Exchange during the period of 2000-2006, the results show that the relationship between free cash flows and direct investment is direct and statistically it is significant and between the financial constraints and low investment in the companies listed in the Tehran Stock Exchange, there is no significant relationship.

Sheikh and Safar Poor (2007), by a study evaluated the effect of investment period on the performance of investment companies listed in Tehran Stock Exchange during the period of 2002-2006 based on the average of short and long term investment and balance sheet, and dividing investment companies into two groups of investment companies with a long term investment period and investment companies a short-

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term investment period. The results showed that the performance of investment companies does not affect investment.

Shahriar and Ahmadi (2007) in order to determine the optimal level of investment in the stock market with the approach of value at risk for the companies listed in Tehran Stock Exchange for the period of time up to 1384 including 4 companies of Bahman group car manufacturing and Saipa and Bank Melli Investment Company and Ghadir Investment Company, applied the simple variance-covariance methods and based on parametric methods such as auto regressive conditional variance and generalized auto regressive conditional variance; Their results showed that investor is better to allocate more weight of their investment to the Bank Melli Investment Company and the less weight of their investment to the Ghadir Investment Company.

Fadaya and Saghafi (2007) investigated the models of predicting the Cash flow of investment companies listed in the Tehran Stock Exchange in the period from 1999 to 2005 and based on absolute error compared the models predictability with each other. Studying the spearman correlation showed that the variability of both sales and operating profit has affected absolute error models and with an increase in Variability the models predictability decreases, but the company's size does not have any effects on the absolute error of models.

Kashani Poor *et al.*, (2010) by their study evaluated the financial constraints and the sensitivity of investment to cash flow at the Tehran Stock Exchange. In this study, financial information of 96 companies listed in Tehran Stock Exchange during the period from 2002 to 2008 was studied. The results show that companies with financial constraints compared to companies without financial constraints have higher investment sensitivity to cash flow and at the time of making investment decisions highly stressed on internal cash flows.

Modares and Hesar Zadeh (2008) regarding the optimal level of investment have assessed the quality of financial reporting and the efficiency of investment. The findings suggest the effects of the quality of financial reporting on the inefficiency of investment.

The results showed that the quality of financial reporting through reducing over (under) capitalization, can improve the efficiency of investment.

#### ***The Statistical Population of the Study can be Indicated as Follows:***

In the Tehran Stock Exchange by March 20, 2013, all companies listed included 520 companies in 37 industry groups. Therefore, in this study all of the companies listed on Tehran Stock Exchange over a period of six years from 2008 to 2013 constitute the research statistical population.

#### ***The Main Objective of this Study can be Shown as Follows:***

Studying the relationship between the criteria of profitability, ratio of retained earnings, capital expenditures and Changes in the company's dividend policies

#### ***Secondary Objectives of the Study are Shown as Follows***

Studying the relationship between the criteria of profitability and Changes in the company's dividend policies

Studying the relationship between ratio of retained earnings and Changes in the company's dividend policies

Studying the relationship between capital expenditures and Changes in the company's dividend policies

#### ***The Research Questions have been Formulated as Follows:***

Is there a significant relation between the criteria of profitability and Changes in the company's dividend policies?

Is there a significant relation between ratio of retained earnings and Changes in the company's dividend policies?

Is there a significant relation between capital expenditures and Changes in the company's dividend policies?

#### ***Research Hypotheses have been Developed as Follows:***

There is a significant and direct relation between the criterion of profitability and Changes in the company's dividend policies.

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There is a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies

There is a significant and inverse relation between capital expenditures and Changes in the company's dividend policies.

### **The Research Method from Three Different Aspects is as Follows:**

Research methods from the aspect of essence and content: Research method in terms of essence and content is a correlation one that in order to explore the correlation between the variables, the method of Ex post facto research is applied.

#### *Research Method in Terms of its Target*

This research in terms of type of the research works and according to its target is an applied research that actual data and different statistical methods are used to reject or not to reject the hypotheses.

The research conduction method: this study is categorized as deductive- inductive reasoning.

#### *Methods and Tools for Data Collection can be Formulated as Follows:*

The needful data are extracted manually from the financial statements on the websites Research management, Islamic Development and Studies affiliated with the stock exchange organization at [www.rdis.ir](http://www.rdis.ir), codal network, comprehensive information systems of publishers at [www.codal.ir](http://www.codal.ir), financial data processing center at [www.fipiran.com](http://www.fipiran.com) and CDs of the Stock Exchange, which seems to be of higher validity compared to the other sources.

### **The Variables of this Study can be Classified into Three Groups:**

#### *Dependent Variable:*

DIVCHG: Changes in the dividend policy of i company in the year of t.

#### *Independent Variables:*

ERNCHG<sub>i,t</sub>: The criterion of profitability of i company in the year of t

RETACHG<sub>i,t</sub>: Ratio of retained earnings of i company in the year of t

CPXCHG<sub>i,t</sub>: Ratio of capital expenditures of i company in the year of t

#### *Control Variables:*

SIZE<sub>i,t</sub>: The size of i company in the year of t

AGR<sub>i,t</sub>: Asset growth rate of i company in the year of t

MTB<sub>i,t</sub>: Growth opportunities of i company in the year of t

CF<sub>i,t</sub>: Cash flow of i company in the year of t

LEV<sub>i,t</sub>: Financial Leverage of i company in the year of t

YLD<sub>i,t</sub>: The annual return on stocks of i company in the year of t

AGE<sub>i,t</sub>: Age of i company in the year of t

OWNERSHIP<sub>i,t</sub>: The ratio of institutional investors of i company in the year of t

The research models have been developed as follows;

To test this hypothesis, the model below is used.

In this model, if  $\beta_i$  coefficients (coefficients of independent variables) are significant at the 95% confidence interval, the hypothesis will be confirmed. Research models obtained from the study conducted by Lympafayvm and Poloiton (2004) and adjusted variables from study conducted by Frikard *et al.*, (2014) have been estimated as follows:

Model No 1:

$$\begin{aligned} DIVCHG_{i,t} = & \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} \\ & + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t} \end{aligned}$$

In these models we have:

i represents companies (sectional units) and t represents the year.

$\varepsilon_{i,t}$ : Random error of the company i in the year of t.



### **Descriptive Statistics of Data**

In the table below, Descriptive statistics show research variables during the period of study. Descriptive statistics of research variables measured using companies' data during the testing period from 2008-2013, are mean, median, standard deviation, minimum and maximum.

**Table: Descriptive Statistics of Research Variables**

Variable Description			Mean	Median	Standard Deviation	Minimum	Maximum
Changes in the company's dividend policies	DIVCHG		0.1023	0.0924	0.1956	-0.2308	0.4540
Positive changes in dividend	DPC		0.6443	1.0000	0.4791	0.0000	1.0000
Negative changes in dividend	DNC		0.3557	0.0000	0.4791	0.0000	1.0000
criterion of profitability	ERNCHG		0.2890	0.2884	0.0097	0.2732	0.3054
Ratio of retained earnings	RETACHG		0.2957	0.2995	0.0935	0.1334	0.4544
Ratio of capital expenditures	CPXCHG		0.0108	0.0016	0.1202	-0.9635	0.8514
Company's size	Size		27.0486	26.8857	1.2132	24.6004	32.4191
Asset growth rate	AGR		0.1690	0.0876	0.5547	-0.8785	8.6873
Growth opportunities	MTB		2.5877	1.7660	5.0000	-61.8958	56.1684
Financial leverage	LEV		0.6645	0.6554	0.2396	0.0622	0.9913
Operating cash flow	CF		0.0323	0.0934	2.0004	-52.1760	0.6897
The annual return on equity	YLD		0.0208	0.0158	0.1674	-0.2726	0.3054
Company's age	AGE		35.8673	39.0000	10.9369	6.0000	57.0000
Ratio of shareholders ownership	OWNERSHIP		0.6829	0.6749	0.1227	0.4734	0.9054

### **Inferential Statistics**

#### *The Test of Variables Reliability*

In this section we dealt with investigation of the stability or reliability of the variables. In order to evaluate the reliability of our research, the test of Im, Pesaran and Shin (1997) was used. The results of this test are shown in table. According to the results of IPS test (see table below) because the P-value for all variables is less than 0.05, these variables during the research period were at the level of reliability. IPS test results show that the mean and variance and covariance of variables have been constant between the different years. As a result, the applying of these variables in the model does not create false regression.

**Table: Im, Pesaran and Shin test (IPS)**

Variable		W-stat	p-value
Changes in the company's dividend policies	DIVCHG	56.711	0.0040
Positive changes in dividend	DPC	54.359	0.0038
Negative changes in dividend	DNC	0.321	0.0000
criterion of profitability	ERNCHG	83.233	0.0059
Ratio of retained earnings	RETACHG	80.921	0.0057
Ratio of capital expenditures	CPXCHG	53.480	0.0038
Company's size	Size	12.860	0.0009
Asset growth rate	AGR	73.214	0.0052
Growth opportunities	MTB	12.178	0.0009
Financial leverage	LEV	37.845	0.0027
Operating cash flow	CF	56.711	0.0040
The annual return on equity	YLD	9.874	0.039
Company's age	AGE	56.214	0.0225
Ratio of shareholders ownership	OWNERSHIP	9.350	0.039

**Determination of the Appropriate Model to Estimate the Regression Model**

Due to the research literature and the nature of hypotheses, combined data are used in this study. In order to determine the appropriate model (integrated or panel data with fixed or random effects), Chow and Hausman tests were used to test the hypotheses. In this study to test the hypotheses three regression models are used as the table below.

**Table: Regression Model for each Hypothesis**

Model's Number	Regression Model
1	$DIVCHG_{i,t} = \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t}$

**A) Chow Test**

**The Results of F Test of the Present Study Regression Model are Shown are in the Table Below**

Regression Model	F Statistic	Probability	Test Result
The First	84.909	0.0076	Hypothesis is rejected Panel model

As regards the first model, according to the significance level the Chow test results show that H0 assumption (integrated model) is not confirmed. In other words, there are individual or in group effects, and the panel data should be applied to estimate the regression model. In the following in order to determine the type of panel model (with random effects or fixed effects) Hausman test is used.

**B) Hausman Test**

After recognition that the y-intercept is not the same for different years, the method of using in the model should be determined (fixed or random effects) that so to this end Hausman test is used.

In Hausman test that hypothesis H0 hypothesis suggesting compatibility of random effect estimates is tested against the H1 hypothesis suggesting incompatibility of random effect estimates.

**Table: Hausman Test**

Regression Model	$\chi^2$ Statistic	Probability	Test Result
First	27.323	0.017	The null hypothesis is rejected

The results of the Hausman test for the first model are shown in the table above. The result showed that  $\chi^2$  statistic of Hausman test at the 95% confidence interval is significant statistic that suggests the H1 hypothesis is confirmed. Regarding the Hausman test, fitting the first regression model of this research using panel data model by fixed effects would be appropriate.

#### ***The Test of Classical Hypotheses of Regression***

As mentioned in Chapter 3, before fitting the regression models first we should test the assumption of linear regression.

##### ***Test of Normality***

Kolmogorov-Smirnov test has been applied to examine the normality of distribution of the dependent variable. This test has been conducted for the dependent variable. The table of K-S test output in SPSS software for this variable is as follows. According to the table below and z statistic of Kolmogorov-Smirnov since significance level is higher than 0.05, the H0 hypothesis is confirmed, so at 95% interval confidence we can say that afore mentioned variable has normal distribution in the regression model.

**Table: Kolmogorov-Smirnov Test**

Variable's Name	Kolmogorov-Smirnov Z	Significance Level	Result
Changes in the company's dividend policies	DIVCHG 0.8036	0.3913	Distribution is normal.

##### ***Multi Colinearity Test of Independent Variables***

According to the table below, the expected limit and variance factor for all the independent variables are more than 0.2, and Variance inflation factor is also very close to 1 (is much less than 5), so the hypothesis of non-existence of multi colinearity between independent variables is confirmed.

**Table: Multi Colinearity Test of Independent Variables**

Variable's Name		Tolerance	Variance Inflation Factor
Positive changes in dividend	DPC	0.661	1.512
Negative changes in dividend	DNC	0.586	1.707
criterion of profitability	ERNCHG	0.519	1.927
Ratio of retained earnings	RETACHG	0.460	2.176
Ratio of capital expenditures	CPXCHG	0.407	2.457
Company's size	Size	0.361	2.773
Asset growth rate	AGR	0.319	0.131
Growth opportunities	MTB	0.567	1.764
Financial leverage	LEV	0.501	1.994
Operating cash flow	CF	0.445	2.248
The annual return on equity	YLD	0.393	2.544
Company's age	AGE	0.698	1.432

After studying classical hypotheses in the next section the results of fitting the research regression models, and consequently the research hypotheses are tested.



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The purpose of the research first hypothesis testing is to examine the relationship between criterion of profitability and changes in the company's dividend policies and its statistical hypothesis is defined as follows:

H0: There is not a direct and significant relationship between the criterion of profitability and changes in dividend policies of companies.

H1: There is a direct and significant relationship between the criterion of profitability and changes in dividend policies of companies.

This hypothesis is determined by using of model (1) in the form of panel data and if the coefficient of  $\beta_1$  is statistically significant at 95% confidence interval, the hypothesis is confirmed.

$$DIVCHG_{i,t} = \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t}$$

$$\begin{cases} H_0 : \beta_1 = 0 \\ H_1 : \beta_1 \neq 0 \end{cases}$$

## Errors Independence Test

Durbin- Watson test examines the serial correlation between the remainders of (error) regression based on statistical null hypothesis of the following:

H0: There is no correlation between the errors.

H1: There is correlation between the errors.

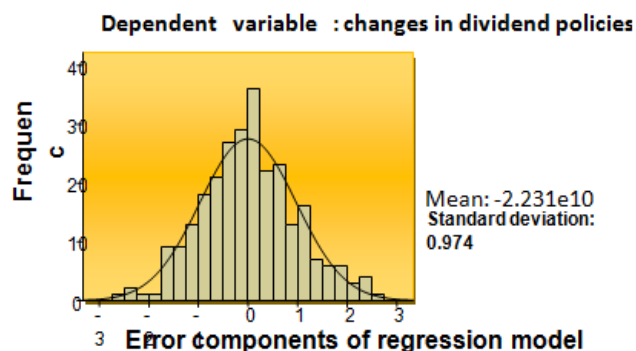
Durbin- Watson statistic and critical values at error level of 1% are shown in the following table. Since, the Durbin- Watson statistic calculated for this research regression is bigger than critical value at the error level of 0.01. So, non-existence of a consecutive or serial correlation of remainders in the first regression model at the significant level of 0.01 is confirmed.

**Table: Errors Independence Test**

Regression Model	Critical Values (Error Level of 1%)		Durbin-Statistic	Watson
	du	DI		
First	1.909	1.523	2.212	

## Checking the Normality of Distribution of Errors

One of the regression assumptions is that the errors of the equation have a normal distribution with zero mean. In order to investigate the normality of equation errors, error components curve is drawn in the regression model. As shown in the following chart, in the regression model (1) the average of distribution of errors is almost zero, and the standard deviation of it is roughly one (0.974), As a result, the errors distribution of the regression model is normal.



### Graph of Error Components Curve- Model 1

#### Heteroscedasticity of Variances:

One of the important issues that we encounter in econometrics is Heteroscedasticity variance. Heteroscedasticity variance means that in the estimation of regression model the error terms values have unequal variances. In order to determine the Heteroscedasticity variance in this study we have used White test. The results of this test can be stated as follows

**Table: The Results Obtained from Heteroscedasticity of Variances**

Regression Model	White Statistic	P-Value	Test Result
First	2.238	0.207	Non- existence of Heteroscedasticity

White test results (F statistic) are given in the table above. The results show that the F-statistic of the first model is not significant at the error level of 0.05. As a result, the null hypothesis suggesting there is a variance Heteroscedasticity between the models' data between at the error level of 0.05, is rejected. So, we can use OLS regression model.

The results of the regression models' fitting

$$DIVCHG_{i,t} = \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t}$$

**Table: The Results of the Fitting of Regression Equation**

Variable's Name		Variable's Coefficient	Variable's Value	T Statistic	Significance Level
Constant number		$\beta_0$	0.788	2.332	0.046
criterion of profitability	<b>ERNCHG</b>	$\beta_1$	1.034	3.073	0.013
Ratio of retained earnings	<b>RETACHG</b>	$\beta_2$	1.081	3.838	0.0017
Ratio of capital expenditures	<b>CPXCHG</b>	$\beta_3$	-0.631	-2.388	0.041
Company's size	<b>Size</b>	$\beta_4$	-0.753	-2.141	0.048
Asset growth rate	<b>AGR</b>	$\beta_5$	-1.894	-2.601	0.031
Growth opportunities	<b>MTB</b>	$\beta_6$	0.711	0.671	0.541
Financial leverage	<b>LEV</b>	$\beta_7$	0.967	0.576	0.121
Operating cash flow	<b>CF</b>	$\beta_8$	-0.764	-3.892	0.001
The annual return on equity	<b>YLD</b>	$\beta_9$	1.231	2.564	0.032
Company's age	<b>AGE</b>	$\beta_{10}$	-1.763	-2.711	0.028
Ratio of shareholders ownership	<b>OWNERSHIP</b>	$\beta_{11}$	0.923	2.534	0.031
coefficient of determination		0.526	F statistic		16.092
Adjusted coefficient of determination		0.479	(P- Value) significance		0.0003
			Durbin-Watson statistic		2.212

So, after doing the examination of regression hypotheses and making sure that they are true the results of the regression equation fitting is presented in the table below. The value of F statistic (10.323) also shows

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the significance of whole regression model. As it is specified in the table below, determination coefficient and adjusted coefficient of above models are 52.6% and 47.9% respectively. So, it can be concluded that in the aforementioned regression equation, only about 47.9% of changes in the dependent variable of studied companies are explained by the independent and control variables mentioned. In this table, the positive (negative) numbers in the coefficient's value column shows the direct impact (reverse) of each of the variables on changes in dividend policies of companies.

In the examination of coefficients significance regarding the results presented in the table above, since the probability oft-statistic for the coefficient of Profitability criterion variable is less than 0.05 (0.013) so the existence of significant relation between criterion of Profitability and Changes in the company's dividend policies is confirmed at the 95% confidence interval. So, the first hypothesis of research is confirmed and with 95% confidence we can say that there is a significant and direct relation between the criterion of profitability and Changes in the company's dividend policies. The coefficient of this variable being positive (1.034) illustrates the direct relation between criterion of Profitability and Changes in the company's dividend policies. So, that as one single unit increase in criterion of Profitability, changes in dividend policies of companies increases by 1.034 units.

The purpose of research second hypothesis is to see whether there is a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies and its statistical hypothesis is stated as below:

H0: there is not a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies.

H1: there is a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies.

This hypothesis is determined using model (2) as the panel data and if the  $\beta_2$  coefficient is significant at the 95% confidence interval, the hypothesis will be confirmed.

$$DIVCHG_{i,t} = \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t}$$

$$\begin{cases} H_0 : \beta_2 = 0 \\ H_1 : \beta_2 \neq 0 \end{cases}$$

By the evaluation of the significance of coefficients based on the results presented in table 4-7 since the probability oft-statistic for the coefficient of Profitability criterion variable is less than 0.05 (0.0017) so the existence of significant relation between ratio of retained earnings and Changes in the company's dividend policies is confirmed at the 95% confidence interval. So, the second hypothesis of research is confirmed and with 95% confidence we can say that there is a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies. The coefficient of this variable being positive (1.081) illustrates the direct relation between ratio of retained earnings and Changes in the company's dividend policies so that as one single unit increase in ratio of retained earnings, changes in dividend policies of companies increases by 1.081 units.

Thus, according to the analysis made regarding the research second hypothesis we can conclude that there is a significant and direct relation between ratio of retained earnings and Changes in the company's dividend policies.

By the research third hypothesis we examine the relation between the ratio of capital expenditures and changes in dividend policies of companies and its statistical hypothesis can be stated as below:

H0: There is not an indirect and significant relationship between the ratio of capital expenditures and changes in dividend policies of companies.

H1: There is an indirect and significant relationship between the ratio of capital expenditures and changes in dividend policies of companies.

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This hypothesis is determined using model (3) as the panel data and if the  $\beta_3$  coefficient is significant at the 95% confidence interval, the hypothesis will be confirmed.

$$DIVCHG_{i,t} = \alpha_0 + \beta_1 ERNCHG_{i,t} + \beta_2 RETACHG_{i,t} + \beta_3 CPXCHG_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 AGR_{i,t} + \beta_6 MTB_{i,t} + \beta_7 CF_{i,t} + \beta_8 LEV_{i,t} + \beta_9 YLD_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} OWNERSHIP_{i,t} + \varepsilon_{i,t}$$

$$\begin{cases} H_0 : \beta_3 = 0 \\ H_1 : \beta_3 \neq 0 \end{cases} \quad (3)$$

By the evaluation of the significance of coefficients based on the results presented in table 4-7 since the probability of t-statistic for the coefficient of Profitability criterion variable is less than 0.05 (0.041) so the existence of significant relation between ratio of capital expenditures and Changes in the company's dividend policies is confirmed at the 95% confidence interval.

So, the third hypothesis of research is confirmed and with 95% confidence we can say that there is a significant and direct relation between ratio of capital expenditures and Changes in the company's dividend policies. The coefficient of this variable being negative (-0.631) illustrates the direct relation between ratio capital expenditures and Changes in the company's dividend policies so that as one single unit increase in ratio of capital expenditures, changes in dividend policies of companies increases by 0.631 unit.

Thus, according to the analysis made regarding the research second hypothesis we can conclude that there is a significant and indirect relation between ratio of capital expenditures and Changes in the company's dividend policies.

#### **Test Results of the First Hypothesis have been Formulated as Follows:**

The research first hypothesis has been confirmed and with 95% confidence we can say that there is a significant and direct relation between the criterion of profitability and Changes in the company's dividend policies.

#### **Test Results of the Second Hypothesis have been Formulated as Follows:**

The research second hypothesis has been confirmed and with 95% confidence we can say that there is a significant and direct relation between the ratio of earnings and Changes in the company's dividend policies.

#### **Test Results of the Third Hypothesis have been Formulated as Follows:**

The research third hypothesis has been confirmed and with 95% confidence we can say that there is a significant and indirect relation between the ratio of capital expenditures and Changes in the company's dividend policies.

### Research Limitations

During every study, the researcher encounters some limitations and this study is not excluded from this. The main limitations of this study that should be considered in the interpretation of results are as follows:

- 1) The effects resulted by differences in accounting practices in measuring and reporting financial events may affect the study results, due to the lack of access to information, no adjustment has been made about these differences.
- 2) Double-digit inflation in Iran during recent years as one of the macroeconomic indicators, has affected the figures of financial statements of the companies. Due to the non-existence of accounting standard for adjustments to the financial statements, this inflation the lack of the necessary adjustments in this regard, it is probable that the results of this research obtained from financial statements based on historical prime costs are tainted.
- 3) In this study, as mentioned in Chapter III we have been also faced with some limitations on sampling such as unchanged fiscal year, the availability of the required information of variables etc. Certainly, applying more periods and numbers of companies will add to reliability and validity of the study.

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4) One of the limitations of this study has been not using the regression at the corporate level (time series regression) to company's time series being short. Therefore, it is suggested that in the coming years with having necessary information for conducting similar studies in longer time interval, this study be carried out using time series regression at the level of each company.

5) The collected data of this study include the companies listed in Tehran Stock Exchange during the period from 2008-2013, since with increasing the number of observations and information the test results and accordingly the research result has the higher validity. It is probable that with increasing the time period we experience different results.

6) Despite great care taken in collecting information considering the lack of information sources, especially in the case of changes in dividend policies of companies, a few companies were excluded from the test sample.

### **The Applicable Proposals of Research**

Considering the results of this study, the following recommendations for the use of these results are provided:

1) Regulatory bodies, including the Tehran Stock Exchange, Audit organization, Society of Certified Accountants of Iran should pay attention to the effective factors influencing the dividend policy of companies.

2) According to the findings of this study, we recommend the capital market participants, decision-makers, financial analysts and potential and actual stock investors of Stock Exchange. In the analysis of investment projects in financial assets and securities, devote special attention to the mentioned factors affecting dividend policy. This is because considering these major factors leads to the selection of the optimal portfolio investment having minimum risk and highest return, while the transparency of the decision-making and the obtained results will also be doubled.

3) The recommendation of Accounting Standards Codification Authorities advised to disclose the optional information on the level and amount of profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies.

4) Since profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies can have important effects on investors' decisions, releasing full information and having transparency as regards profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies would be helpful.

5) It would be better that financial analysts who are active in the capital market, investment advisers in Stock Exchange in addition to their conventional analysis and techniques that, perform specific analysis based on the conditions of changes in the company's dividend policies and the factors affecting them and profitability criterion, the ratio of retained earnings, the ratio of capital expenditures concerning accounting standards.

### **Recommendations for Future Studies**

In order to do future studies in relation to this project, the following topics are recommended:

1) Studying the effect of variables such as corporate governance mechanisms, institutional ownership, and the quality of financial reporting on the amount of corporate dividends.

2) The subject of this research can be studied in other industries and it is expected that due to the different nature of the companies' activities indifferent industries, distinct results will be obtained.

3) Comparative study of this research, in samples categorized by the size for the companies listed in the Tehran Stock Exchange to two groups of large and small.

4) Comparative study of this research, in samples categorized by the business cycle stages (recession and prosperity) and life cycle stages (growth, maturity and decline) in the companies listed in Tehran Stock Exchange

5) the use of other control variables such as the expected return on stocks and financial constraints in studying the relation between profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies



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- 6) Evaluation of the effect of macroeconomic variables, such as inflation, oil prices and exchange rates on the identification of relationship between profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies
- 7) Conducting a similar study with regard to profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and company's size and changes in the company's dividend policies resulted by political issues and its impact on the intrinsic value of companies.
- 8) Due to the fact that companies with financial reselling activities were eliminated from the sample it is recommended that a research be conducted regarding the relation between profitability criterion, the ratio of retained earnings, the ratio of capital expenditures and changes in the company's dividend policies in the aforementioned companies and its result be compared this research results.

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