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Investigation of the Impact of Free Cash Flows on Financial Flexibility and Dividend Policy in Firms Listed in Tehran Stock Exchange (TSE)

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Abstract

The aim of this study is to investigate the impact of free cash flows on financial flexibility and dividend policy in firms listed in Tehran Stock Exchange (TSE). To measure free cash flow, Ang et al. (2000) is used and financial flexibility is captured by Marchica & Mura (2007) model. The population of the study is firms listed in TSE; however, the study sample consists of 100 firms listed in TSE which is studied during the period of 2007 to 2011. Logistic and pooled regressions are used to test hypotheses. The results show that free cash flows have a positive significant impact on financial flexibility and dividend policy in firms listed in TSE. The results also show that free cash flows are higher when there is a financial flexibility.

Keyword: Free Cash Flows, Financial Flexibility, Dividend Policy

Introduction

Financial flexibility is defined as"the ability of a firm to respond in a timely and value-maximising manner to unexpected changes in the firm's cash flows or investment opportunity set". Considering capital markets imperfection, firms can be expected to choose financial policies that preserve the flexibility to respond to unexpected periods of insufficient resources. However, the financial flexibility is the most important determinant of capital structure. Nevertheless, the sources and impact of financial flexibility on corporate financial policies are controversial. Under one view, costly external financing leads the firm to maintain high cash balances to satisfy financial need. Under this view, cash flow shortfalls may firstly satisfied by reductions in dividends. The other view is that cash holdings are costly because of potential agency problems which lead value-maximizing firms to maintain relatively low cash balances and to maintain unused debt capacity that can be used in times of financial need. In this position, dividends remain stable to allow the firm access to the capital market. Cash flow shortfalls are met by new borrowings not dividends (Daniel et al., 2010). Firms with a high financial flexibility are expected to limit or even avoid payouts because payouts reduce internal financing opportunities and raising external capital comes along with substantial costs (Rapp *et al*., 2012).

Firms with greater internal resources may make investment without borrowing. However, managers have a tendency to spend free cash flow through investing in negative net present value projects. Thus, the higher cash holdings is value-reducing in that managers are intended to overinvest in periods with poor growth opportunities rather than using the slack for productive purposes (Denis, 2011).

On the other hand, since Lintner (1954), a great number of studies have been conducted to model dividend policy all lacking strong empirical evidence.

On the word of Frankfurter & Wood (2002) three schools of thought have emerged as to dividend policy. "One considers dividends as a positive influence factor on stock price. A second school believes that stock prices are negatively correlated with dividend payout levels. The third group asserts that firm dividend policy is irrelevant in stock price valuation" (p:112).

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The cost of the conflict of interest between shareholders and management is called agency cost (Ross *et al.*, 2008) which arises when management acts in their own interest rather than on behalf of the shareholders who own the firm. It is against the assumptions of no conflict of interest between managers and owners Miller & Modigliani (1961) (Nizar & Al-Malkawi, 2007). It is shareholders that pay agency costs so it is expected that shareholders of firms with excess free cash flow would require high dividend payments (Hussainey *et al*., 2011). Hussainey *et al*. (2011) also assert that "agency cost may also arise between shareholders and bondholders: while shareholders require more dividends, bondholders require fewer dividends than shareholders by putting in place a debt covenant to ensure availability of cash for their debt repayment" (p:60). Easterbrook (1984) identified two agency costs namely the cost of monitoring managers and the cost of managers risk aversion. Choy *et al.* (2011) indicate that a country's political system have an impact on the magnitude of agency problems. They also document that the electoral system not only affects the amount of dividends paid by a firm but also the form of payment. Through reducing cash under control, dividends reduce the agency costs of free cash, but could result in under investment if the paid outcash is needed later for operations (Oded, 2008).

However, taking the above arguments into consideration, in this study the impact of free cash flows on financial flexibility and dividend policy in firms listed in Tehran Stock Exchange (TSE) is investigated.

Literature Review

Li & Zhao (2008) examined effects of informational asymmetries on dividend policies. They find that firms that are more subject to information asymmetry are less likely to pay, initiate, or increase dividends, and disburse smaller amounts. They show that there is a negative relation between asymmetric information and dividend policy while their results do not support the signaling theory of dividends. Using a sample from Hong Kong firms, Cheng *et al*. (2011) show that information asymmetry is stronger for bad news firms with insider sales than good news firms with insider purchases.

Dewenter & Warther (1998) compared dividend policies of U.S. and Japanese firms examining the correlation between dividend changes and stock returns, and the reluctance to change dividends. Their results show that keiretsu-member firms face less information asymmetry and fewer agency conflicts than U.S. firms, and that information asymmetries and agency conflicts affect dividend policy. They manifest that Japanese firms experience smaller stock price reactions to dividend omissions and initiations, they are less reluctant to omit and cut dividends, and their dividends are more responsive to earnings changes.

Choy *et al*. (2011) show that firms with free cash flow problem can minimise agency costs by increasing dividend payout to shareholders.They indicate that since reducing dividend payments could result in a drop in stock price, by increasing dividends, managers commit themselves to pay out the higher level of dividends to shareholders, which mitigate inefficiency of marginal investments and consequently the agency costs of free cash flow. Moreover, they highlight firms with more growth opportunities pay lower dividends because they have lower free cash flows (p. 18).

Al-Kuwari (2009) investigated the determinants of dividend policies for firms listed on Gulf Co-operation Council (GCC) country stock exchanges. His results suggest that government ownership, firm size and firm profitability have positive and leverage ratio has negative effect on dividend policy. His results indicate that firms pay dividends in order to reduce the agency problem and maintaining firm reputation. He further asserts that listed firms in GCC countries do not have smooth dividend policy.

Thanatawee (2011) examined dividend policy of Thai listed companies over the period 2002-2008. Their results show that larger and more profitable firms with higher free cash flows and retained earnings to equity tend to pay higher dividends. In addition, their evidence indicates there is a negative significant relationship between investment opportunity and dividend policy while financial leverage is positively related to dividend payouts. His results support the free cash flow and life cycle hypotheses.

Nizar & Al-Malkawi (2007) examined the determinants of corporate dividend policy in Jordan. Their results suggest that the proportion of stocks held by insiders and state ownership significantly affect the amount of dividends paid. Size, age, and profitability of the firm seem to be determinant factors of corporate dividend policy. Their

findings support for the agency costs and pecking order hypothesis while do not support the signaling hypothesis.

Ahmed & Javid (2009) find that the profitable firms with more stable net earnings have larger free cash flows and therefore pay larger dividends. They also indicate that the ownership concentration and market liquidity have the positive impact on dividend payout policy while the investment opportunities, leverage, market capitalization and size have the negative impact on dividend payout policy.

Chen & Dhiensiri (2009) analysed the determinants of the corporate dividend policy. Their findings support agency cost theory, transaction cost and residual dividend theory. They find that a dividend payout ratio is positively related to the degree of ownership dispersion and negatively related to the degree of insider ownership and firms that experience recent growth in revenues tend to pay lower dividends. They do not find evidence to support the dividend stability theory and the signaling theory.

Wu *et al*. (2008) show that free cash flow, firm profitability, level of debt, investment opportunities and firm size have a strong impact on payout decisions.

Dhanani (5005) using a survey approach, examined the importance and relevance of the various theories of dividend policy for UK companies. His results support dividend hypotheses relating to signaling and ownership structure, capital structure and investment decisions and agency issues. He also indicates important differences between managers' responses, based on company size, industry sector, growth opportunities, ownership structure, and information asymmetry.

Aggarwal & Dow (2012) document that the probability of dividend payment by firms in Japanese business groups declines as the affiliation to the business group strengthens. Further, they find the contractual claimant position of main banks seems important as the ratio of short-term debt to long-term debt is negatively related to dividend payment in Japanese firms. They also confirm that dividends in Japan are positively related to firm size, profitability, and investment opportunities, and negatively to firm risk.

Rapp *et al*. (2012) examined relationship between financial flexibility and payout policy and find that the financial flexibility is an important determinant of payout policy in that firms with a high value of financial flexibility tend to limit or even avoid payouts.

Karami *et al*. (2010) investigated signaling and agency theory of dividend in the firms listed in TSE. Their results indicate that there is a negative relationship between institutional ownership and payout policy. In addition, they found an evidence to support signaling theory. Finally, they show that there is a positive and significant relationship between institutional ownership and payout policy.

Hashemi & Akhlaghi (2009) investigated the impact of financial leverage, dividend policy and profitability on firm's future values. Using a sample of 90 firms listed in TSE during 2001 to 2008, they found that there is a positive and significant relationship between financial leverage, dividend policy and profitability.

Research Hypotheses

H_1: Free cash flows affect financial flexibility.

H_2: Free cash flows affect dividend policy.

Methodology and Data Collection

Since this study tries to find a significant relationship between research variables, the study can be classified as descriptive-correlation study.

The population of the study consists of all firms listed in TSE. However, to reach a uniform sample, following conditions are considered in sample selection.

1. Firms must not be investment, insurance and brokerage firms and or banks,
2. Sample firm's fiscal year must be ended at the end of Esfand and has not changed its fiscal year during this period,
3. Sample firms must not have transaction intervals more than three month.

After putting these conditions on sample selection, 100 firms are selected to be studied during the period between 2007-2011.

Variable Definition and Research Models

Considering that. this study tries to investigate the effect of free cash flows on firms financial flexibly and dividend

policy, free cash flow is considered as independent variable. In addition, financial flexibility and dividend policy are considered as dependent variable. Financial flexibility is captured by Marchica & Mura (2007) model. Variable of firm's size, stock market value to book value, firm's profitability and assets growth rate are considered as control variables.

First hypothesis is captured by following regression model:

$$\text{Financial flexibility Proxies}_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 MB_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PROF_{i,t} + \beta_5 AGR_{i,t} + \varepsilon$$

Second hypothesis is captured by following regression model:

$$\text{Dividend Policy}_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 MB_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PROF_{i,t} + \beta_5 AGR_{i,t} + \varepsilon$$

Where Financial flexibility Proxies= a proxy for financial flexibility in firm i in time t

Dividend Policy= a proxy for dividend policy in firm i in time t

FCF= a proxy for free cash flows of firm i in time t

MB= a proxy for firms market to book value of firm i in time t

Size= a proxy for firms size of firm i in time t

PROF= a proxy for firms profitability of firm i in time t

AGR= a proxy for Assets profitability of firm i in time t

ε= models error

Dependent Variable

To determine the firm's financial flexibility, firms that have financial leverage less than median for three consequent years are considered as firms with financial flexibility.

Financial Leverage: The amount of using debt for financing assets in a firm is financial leverage which is calculated by following formula:

Financial leverage= book value of debt/book value of total assets

Dividend Policy

To capture this variable cash dividend is divided by earning per share.

Independent Variable

According to Ang *et al*. following regression model is used to measure free cash flow.

$$FCF_{i,t} = (INC_{i,t} - TAX_{i,t} - INTEP_{i,t} - CSDIV_{i,t})$$

where $FCF_{i,t}$= free cash flow of firm i in time t

$INC_{i,t}$= operating income before tax of firm i in time t

$TAX_{i,t}$= paid tax of firm i in time t

$INTEP_{i,t}$= paid interest cost of firm i in time t

$CSDIV_{i,t}$= cash dividend of firm i in time t

Control Variables

Market to Book Value: It is measured by dividing current market value of stock at the end of financial year by book value of stock at the end of financial year.

Firm's Size: It is measured by natural logarithm of total assets

Assets Growth: It is calculated by following formula:

$$AGR = A_{it} - A_{it-1} / A_{it-1}$$

Where AGR = assets growth rate

A_{it} =total assets of current year

A_{it-1}=total assets of previous year

Profitability: It is measured by return on equity which shows the return obtained by shareholders.

Empirical Results

Descriptive Statistic

Descriptive statistic of research variables are shown in Table 1.

Normality Test

Normality of dependent variables is our concern before

Table 1: Descriptive Statistic

	DP	*FCF*	*MB*	*PROF*	*SIZE*	*AGR*	*FLEXIBILITY*
Mean	0.340277	-0.011963	1.411612	0.270749	27.11028	0.975493	0.356000
Median	0.262779	-0.004347	1.348176	0.164052	26.92915	0.069403	0.000000
Maximum	0.999108	0.502049	3.820206	1.902783	31.60215	11.48639	1.000000
Minimum	0.000000	-0.756488	0.344834	-1.472992	23.45757	-0.994523	0.000000
Std. Dev.	0.317140	0.103049	0.416282	0.420924	1.323336	2.322312	0.479295
Skewness	0.583351	-1.170709	1.355958	0.154419	0.664387	1.822688	0.601485
Kurtosis	2.055725	15.52051	7.816245	3.936328	3.715312	5.894455	1.361784
Observations	500	500	500	500	500	500	500

Notes: *DP is dividend policy, FCF free cash flow, MB is market to book value, PROF is profitability, SIZE is firm's size, AGR is assets growth rate, FLEXIBILITY is financial flexibility.*

Table 2: One-Sample Kolmogorov-Smirnov Test

	DP	*FCF*	*SIZE*	*MB*	*PROF*	*AGR*	*FLEXIBILITY*
Kolmogorov-Smirnov Z	1.167	1.591	1.257	2.216	1.450	4.454	1.091
Sig.	.102	.067	.091	.000	.075	.000	0.08

regressing the models of study. Kolmogorov-Smirnov Test is used to test the normality of research variable which is shown in Table 2.

According to Table 2, dependent variables (dividend policy and financial flexibility) are normal justifying the use of regression models.

Correlation Matrix

Correlation shows that how much of a variable is explained by the other variable and its value is between -1 and +1. Correlation matrix between research variables is shown in Table 3.

Table 3: Correlation Matrix

	FCF	*SIZE*	*DP*	*MB*	*PROF*	*AGR*
FCF	1					
SIZE	.131**	1				
DP	.172**	-.017	1			
MB	-.056	-.123**	.037	1		
PROF	.090*	-.244**	.125**	.026	1	
AGR	.067	.580**	.011	-.076	-.125**	1

**. Correlation is significant at the 0.01 level, Correlation is significant at the 0.05 level*

As it is shown in Table 3, the most correlation is between firm's assets growth and firm's size (0.58) and the least correlation is between firm's assets growth and dividend policy (0.011). The low correlation between research variable indicate that there is no collineary problem between research variables.

Hypotheses Test

First hypothesis

H_1: Free cash flows affect financial flexibility.

To test this hypothesis following logistic regression model is used.

$$\text{Financial flexibility Proxie}_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 MB_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PROF_{i,t} + \beta_5 AGR_{i,t} + \varepsilon$$

The results of the model regression are shown in Table 4.

The results of Table 4 show that since significance of LR is less than 5 percent confidence level (0.000), the model is significant. The results of goodness of fit (H-L Statistic and Andrews Statistic) indicate that the model is optimal in regression. Significance of free cash flows is less than 5 percent showing that our hypothesis is accepted at 99 percent level of confidence that means free cash flows affect financial flexibility. Among control variables, market to book ratio and firms size have a significant impact on financial flexibility while profitability and assets growth not. McFadden R-squared indicate that

Table 4: Summary Results of the Model Regression

Variable	*Coefficient*	*Std. Error*	*z-Statistic*	*Prob.*
FCF	7.105052	1.402187	5.067121	0.0000
MB	2.396203	0.331565	7.226942	0.0000
SIZE	0.209400	0.101963	2.053685	0.0400
PROF	-0.050281	0.269004	-0.186917	0.8517
AGR	-0.082419	0.058099	-1.418603	0.1560
C	-9.577591	2.876947	-3.329082	0.0009
McFadden R-squared	0.161329	Mean dependent var		0.356000
S.D. dependent var	0.479295	S.E. of regression		0.419815
Akaike info criterion	1.116087	Sum squared resid		87.06485
Schwarz criterion	1.166662	Log likelihood		-273.0218
Hannan-Quinn criter.	1.135933	Deviance		546.0435
Restr. deviance	651.0820	Restr. log likelihood		-325.5410
LR statistic	105.0385	Avg. log likelihood		-0.546044
Prob(LR statistic)	0.000000			
H-L Statistic	26.3696	Prob.		0.009
Andrews Statistic	34.5779	Prob.		0.001

Table 5: Summary Results of the Model Regression

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
FCF	0.510911	0.160088	3.191438	0.0015
MB	0.032987	0.037321	0.883855	0.3772
SIZE	-0.006115	0.012723	-0.480579	0.6310
PROF	0.080109	0.034151	2.345684	0.0194
AGR	0.004344	0.007175	0.605478	0.5451
C	0.439664	0.349844	1.256745	0.2094
R-squared	0.044218	Mean dependent var		0.340277
Adjusted R-squared	0.034544	S.D. dependent var		0.317140
S.E. of regression	0.311614	Akaike info criterion		0.517823
Sum squared resid	47.96895	Schwarz criterion		0.568398
Log likelihood	-123.4557	Hannan-Quinn criter.		0.537669
F-statistic	4.570830	Durbin-Watson stat		1.810287
Prob(F-statistic)	0.000438			
Breusch-Godfrey Serial Correlation LM Test				
F-statistic	2.334858	Prob.		0.0979
Obs*R-squared	4.701027	Prob.		0.0953
Redundant Fixed Effects Tests				
Effects Test		Statistic	d.f.	Prob.
Period F		1.267303	(4,490)	0.2819
		Heteroskedasticity Test: White		
	F-statistic	2.317112	Prob. F	0.0011

Table 6: Group Statistics

	Flexibility	*N*	*Mean*	*Std. Deviation*	*Std. Error Mean*
FCF	YES	178	.0291	.12154	.00484
	NO	322	.0190	.08682	.00911

Table 7: Independent Samples Test

		Levene's Test for Equality of Variances		*t-test for Equality of Means*						
		F	*Sig.*	*t*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
									Lower	Upper
FCF	Equal variances assumed	11.446	.001	5.116	498	.000	.01010	.00939	.02959	.06649
	Equal variances not assumed			4.658	278.700	.000	.01010	.01032	.02774	.06835

0.16 of dependent variable is explained by independent variable and control variables.

Second Hypothesis

H_2:Free cash flows affect dividend policy.

To test this hypothesis following regression model is used.

$$\text{Dividend Policy}_{i,t} = \beta_0 + \beta_1 FCF_{i,t} + \beta_2 MB_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 PROF_{i,t} + \beta_5 AGR_{i,t} + \varepsilon$$

The results of the model regression are shown in Table 5.

The results of second hypothesis test show that since significance of F-limer is more than 5 percent (0.281), pooled model is preferred to panel model. F-white statistics (0.001) shows that the regression has non-uniform variation. However, after solving this problem, the model is regressed. Since Breusch-Godfrey is (0.097), the model has not Serial Correlation problem. Durbin Watson is 1.8 indicating that the models residual has not autocorrelation problem since it is between 1.5 and 2.5.

The results of Table 5 show that since significance of F-statistic is less than 5 percent confidence level (0.000), the model is significant. Significance of free cash flows is less than 5 percent showing that our hypothesis is accepted at 99 percent level of confidence that means free cash flows affect dividend policy. Among control variables, profitability has a significant impact on dividend policy while market to book ratio, firms size and assets growth not. R-squared indicate that 0.034 of dependent variable is explained by independent variable and control variables.

Difference Examination

With respect to the positive effect free cash flows on financial flexibility, difference examination is performed. The results of independent samples test is shown in Table 6 and 7.

Considering that significance level is less than 5 percentage, variances equality is not accepted. However, independent samples test with adjusted degree of freedom is used. Considering the value of t is 4.658 and it significance is less than 5 percent, however, mean of two group is not equal showing that free cash flows is higher when there is financial flexibility than there is not.

Discussion and Conclusion

The aim of this study was to investigate the impact of free cash flows on financial flexibility and dividend policy in firms listed in Tehran Stock Exchange (TSE). To measure free cash flow, Ang *et al.* (2000) is used and financial flexibility is captured by Marchica & Mura (2007) model. The population of the study is firms listed in TSE; however, the study sample consists of 100 firms listed in TSE which is studied during the period of 2007 to 2011. Logistic and pooled regression is used to test hypotheses. Two hypotheses are developed to reach the purpose

of study. Along with main dependent and independent variables, four control variables are considered namely market to book ratio, firm's size, profitability and assets growth. First hypothesis posits free cash flows affect financial flexibility. The results of this hypothesis test show that since significance of LR is less than 5 percent confidence level (0.000), the model is significant. The results of goodness of fit (H-L Statistic and Andrews Statistic) indicate that the model is optimal in regression. Significance of free cash flows is less than 5 percent showing that our hypothesis is accepted at 99 percent level of confidence that means free cash flows affect financial flexibility. Among control variables, market to book ratio and firms size have a significant impact on financial flexibility while profitability and assets growth not. McFadden R-squared indicate that 0.16 of dependent variable is explained by independent variable and control variables.

Considering the inefficiency of information view, agency costs result in that managers use their power to report firm's value and leverage book value more than economic value and economic leverage. This increases debt capacity and firm's reputation and increase in firm's ability to collect capital and increase financial flexibility. However, one of the most critical issues in financial flexibly is investigation of free cash flow because free cash flows is amount available to investment, dividend and debt payment or liquidity increasing.

Second hypothesis posits that free cash flows affect dividend policy. The results of second hypothesis test show that since significance of F-limer is more than 5 percent (0.281), pooled model is preferred to panel model. F-white statistics (0.001) shows that the regression has non-uniform variation. However, after solving this problem, the model is regressed. Since Breusch-Godfrey is (0.097), the model has not Serial Correlation problem. Durbin Watson is 1.8 indicating that the models residual has not autocorrelation problem since it is between 1.5 and 2.5. The results also show that since significance of F-statistic is less than 5 percent confidence level (0.000), the model is significant. Significance of free cash flows is less than 5 percent showing that our hypothesis is accepted at 99 percent level of confidence, that means free cash flows affect dividend policy. Among control variables, profitability has a significant impact on dividend policy while market to book ratio, firms size and assets growth not. R-squared indicate that 0.034 of dependent variable is explained by independent variable and control variables.

Dividends mitigates the agency costs of free cash by reducing cash under control, but could result in under investment if the paid out cash is needed later for operations (Oded, 2008). In addition, Firms with high free cash flows are more under pressure to pay dividend.

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