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LIFE-CYCLE THEORY, FREE CASH FLOW AND DIVIDEND POLICY IN FIRMS LISTED IN TEHRAN STOCK EXCHANGE

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Abstract *The purpose of this study is to investigate the relationship between Life-cycle Theory (LCT) and Free Cash Flow (FCF) hypothesis with dividend policy in listed firms in Tehran Stock Exchange (TSE). The sample of the research includes 90 firms listed in TSE which is studied during the period of 2006-2010. The results show that there is a significant positive relationship between profitability (return on assets), leverage and firm size with dividend policy. In addition, results indicate that there is a significant negative relationship between investment opportunities and firms life cycle with dividend policy. Finally, findings highlight that there is not a significant relationship between FCF and dividend policy. These findings support LCT but not FCF hypotheses.*

Keyword: *Dividend Policy, Life-cycle Theory, Free Cash Flow Hypothesis*

INTRODUCTION

Since Miller and Modigliani (1961), dividend policy has been the subject of considerable debate. They suppose that dividends are irrelevant and do not have impact on a firm's share price. However, many researchers have disagreed with them and have argued that their assumptions do not exist in the real world because it is based on a perfect market. They, who disagreed with them, proposed competing theories (Al-Kuwari, 2009:39). There exist many reasons why firms pay dividends. It may be used as an instrument to send a signal to investors that firm will return their investment, to reduce managerial opportunities to manipulate earnings, which in turn reduce agency costs. Only recently, researchers started to determine dividend policy in various countries with different cultural, institutional, legal, tax and asymmetric information environments, ownership structures (Aggarwal and Dow, 2012:2). Dividend is one of interesting issue for shareholders, potential investors, analysts and so on. There are so many researches conducted to show if dividend policy of a firm affects its wealth or not and or what are determinants of dividend policy. These researches have not come to the stable end and yet there are so many loose ends to tie due to proposed theories to explain dividend policy.

However, in this study life-cycle theory, free cash flow relationship with dividend policy in firms listed in TSE is investigated to unfold new aspects of why firms distribute divided.

LITERATURE REVIEW

Agency cost is the cost of the conflict of interest that exists between shareholders and management (Ross *et al.*, 2008). This arises when management acts in their own interest rather than on behalf of the shareholders who own the firm. It is contrary to the assumptions of Miller and Modigliani (1961), who argued that there is no conflict of interest between managers and owners and managers act for the best of shareholders (Nizar and Al-Malkawi, 2007). Ultimately, they are the shareholders who pay agency costs; therefore, it is predictable that shareholders of firms with excess free cash flow would require high dividend payments (Hussainey *et al.*, 2011). Hussainey *et al*. (2011) also asserts 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) also identified two agency costs: the cost of monitoring managers and the cost of risk aversion on the part of managers. Choy *et al.* (2011) in a study titled "Does political economy reduce agency costs? Some evidence from dividend policies around the world" indicate that a country's political system affects the severity of agency problems. Further, they show that the effect of legal origin on dividend policy reverses once they include the political economy variables in the regressions. They also document that the electoral system not only affects

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the amount of dividends paid by a firm but also the form of payment. Li and Zhao (2008) examined how informational asymmetries affect firms' 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. In addition, their results do not support the signaling theory of dividends. La Porta *et al*. (2000) test two agency models of dividends. According to their outcome model, "dividends are paid because minority shareholders pressure corporate insiders to disgorge cash" and according to the substitute model, "insiders interested in issuing equity in the future pay dividends to establish a reputation for decent treatment of minority shareholders". Their first model predicts that stronger minority shareholder rights should be associated with higher dividend payouts; the second model predicts the opposite. 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.

Kordestani *et al.* (2010) studied payout policy, signaling, and firms operating performance theories following changes in cash dividends. Their sample was formed of 89 firms listed in TSE during the period of 1998 to 2007. Their results indicate that decreasing of cash dividend has information content for reduction of firms' future profit but increasing of cash dividend has no information content for increasing of firms' future. This result does not provide evidence to support signaling theory in TSE.

Ezadinia and Aligolian (2011) conducted a research titled "Investigation of determinants of dividend policy using Logit model. They used a sample of 141 firms of TSE during the period of 2001 to 2008. Their results show that cash flow uncertainties, firm's life cycle, investment opportunities and profitability affect payout. Their further tests of marginal effect reveal that firm's life cycle and profitability have the most impact on these variables.

Fakhari and Yousef Ali Tabar (2010) investigated the relationship between dividend policy and corporate governance in firms listed in TSE. Their sample consisted 125 for the period of 2004-2007. They found that there is negative and significant relationship between dividend policy and corporate governance in firms listed in TSE.

Rezvani Raz *et al.* (2009) studied the relationship between free cash flow hypothesis and dividend policy in firms listed in TSE. Using 125 firms' data, they show that in both large firms and firms with low investment opportunity, there is a positive and significant relationship between free cash flow hypothesis and dividend policy.

HYPOTHESES DEVELOPMENT

1. There is a significant relationship between firm's life cycle and divided policy.
2. There is a significant relationship between free cash flow and divided policy.
3. There is a significant relationship between profitability and divided policy.
4. There is a significant relationship between firm's size and divided policy.
5. There is a significant relationship between investment opportunity and divided policy.
6. There is a significant relationship between firm's leverage and divided policy.

METHODOLOGY

Since this study tried to investigate the relationship between research variables, it can be classified as descriptive-correlation study. In addition, the study can be classified as applied research. Multivariate regression model is used to test the hypotheses.

The population of the study includes all firms listed in TSE. However, considering some non-uniformity among firms, following condition are considered:

1. Sample firms had been listed before 2006.
2. Sample firms must not be investment, brokerage and insurance firms or banks.
3. Sample firms that have reported income and distributed dividend during the years of 2006 to 2010.
4. Fiscal year must end at the end of year and have not changed in the studied period.

Considering above conditions, 90 firms are selected to be studied. The process of sample selection is presented in Table 1.

VARIABLES DEFINITION

DEPENDENT VARIABLE

Dividend policy: measured by dividing distributed earnings to income.

Independent Variable

Life cycle: measured by retained earnings to stockholders book value. Mature firms have more tendency to distribute dividend so it is expected that there is a positive significant relationship between firms life cycle and divided policy.

Table 1: Sampling process

Description	Number
Total sample	300
Investment, brokerage and insurance firms or banks	37
Firms whose fiscal year ended at the end of year	44
Firms whose financial information were not available	35
Sample firms that have not reported income	49
Firms that did not distribute dividend during the years of 2006 to 2010	45
Sample	90

Free cash flow: measured by capital expenditures to operating cash flow. Capital expenditures measured by subtracting firms fixed assets to lag fixed assets.

If mangers pay dividend to reduce agency costs of free cash flows, there would be a positive significant relationship between FCF and dividend policy. The negative relationship between FCF and dividend policy may be sign of agency costs.

Profitability: proxied by return on assets measured by dividing income to total assets.Firms with high profitability are able to generate free cash flows and consequently distribute dividends. However, it is expected that there is a significant relationship between free cash flow and divided policy.

Firm's size: natural logarithm of total assets.

Free cash flow and firm's life cycle hypotheses posit that bigger firms have more ability to generate free cash flows so distribute more dividends. However, it is hypothesized that according to free cash flow and firm's life cycle hypotheses there is a significant relationship between firm's size and divided policy.

Assets growth ratio: measured as the percentage of growth in total assets.

Market to book ratio: measured by stockholders market value to book value. According to free cash flow and firm's life cycle hypotheses, negative significant relationship between investment opportunity and divided policy is expected.

Firms leverage: measured by dividing total debts to assets book value.

Since firms with more leverage are expected to have more financial constraint, they may not be able to distribute dividend. However, negative significant relationship between firms leverage and divided policy is expected.

RESULTS

Descriptive Statistic

Descriptive statistic indicatesan image of data distribution, which is shown in the Table 2.

As it is indicated in Table 2, leverage has a mean value of 0.6 showing that 0.6 of assets is funded by debt. Mean of market to book value is 1.9 indicating that TSE firms have market value exceed book value. Mean of return on assets is 0.19 that means TSE firms obtain 0.19 out of assets utilization. Firm's life cycle is 0.4210 indicating that 0.42 of stockholders book value contributed to retained earnings.

Table 2:Descriptive Statistics

	N	Range	Minimum	Maximum	Mean
DP	450	1.13791	-.67263	.46528	-.1534068
RETE	450	.88	.00	.88	.4210
FCF	450	20552743	-9174185	11378558	338320
ROA	450	.92	.01	.93	.1942
SIZE	450	4.72	3.00	7.72	5.8338
AG	450	9.16	-.28	8.88	.2322
MTB	450	3.73	.24	3.97	1.9060
LEV	450	.88	.10	.99	.6008

Notes: DP is Dividend Policy, RETE is Retained Earnings to Total Equity, FCF is free cash flow, ROA is return on assets, SIZE is firm's size, AG is assets growth, MTB is market to book value, LEV is leverage.

Dependent Value Normality Test

The normality of dependent variable is our concern in regression models. However, Kolmogorov-Smirnov test is used to test the normality of dependent variable.

Table 3: Kolmogorov-Smirnov Test

	DPR
Kolmogorov-Smirnov Z	.829
Sig.	.498

The results of Kolmogorov-Smirnov Test show that the dependent variable have normal distribution since the significance of dividend policy is 0.498.

Hypotheses Test

First hypothesis test

H_1: There is a significant relationship between firm's life cycle and divided policy.

To test this hypothesis following regression model is used:

DP = RETE+e

The result of this hypothesis test is shown in Table 4.

Considering the results of Table 4, since significant level of retained earnings to total equity is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that firm's life cycle has a negative impact on dividend policy. Durbin Watson is 1.6 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.033 indicating that 0.033 of dependent variable is explained by independent variable.

Second hypothesis test

H_2: There is a significant relationship between free cash flow and divided policy.

To test this hypothesis following regression model is used:

DP = FCF+e

The result of this hypothesis test is shown in Table 5.

Considering the results of Table 5, since significant level of free cash flow to total equity is 0.52, this hypothesis is rejected. However, it can be concluded that free cash flow has not an impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is -0.002 indicating that -0.002 of dependent variable is explained by independent variable.

Third hypothesis test

H_3: There is a significant relationship between profitability and divided policy.

To test this hypothesis following regression model is used:

DP= ROA+e

The result of this hypothesis test is shown in Table 6.

Considering the results of Table 6, since significant level of return on assets to total equity is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that return on assets has a positive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.046 indicating that 0.046 of dependent variable is explained by independent variable.

Table 4: Summary of the first hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.066	.024		-2.739	.006
RETE	-.209	.052	-.187	-4.030	.000
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
16.241	.000	.187	.035	.033	1.681

Table 5: Summary of the second hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.154	.010		-15.012	.000
FCF	3.133E-009	.000	.025	.523	.601
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
0.273	.601	.025	.001	-.002	1.771

Table 6: Summary of the third hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.220	.017		-12.915	.000
ROA	.342	.072	.220	4.784	.000
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
22.884	.000	.220	.049	.046	1.702

Table 7: Summary of the fourth hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.601	.095		-6.359	.000
SIZE	.077	.016	.219	4.761	.000
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
22.671	.000	.219	.048	.046	1.783

Fourth hypothesis test

H_4: There is a significant relationship between firm's size and divided policy.

To test this hypothesis following regression model is used:

DP = SIZE+e

The result of this hypothesis test is shown in Table 7.

Considering the results of Table 7, since significant level of firms size is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that firm's size has apositive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.046 indicating that 0.046 of dependent variable is explained by independent variable.

Fifth hypothesis test

H_5: There is a significant relationship between investment opportunity and divided policy.

To test this hypothesis following regression model is used:

DP = AGR + MTB+e

The result of this hypothesis test is shown in Table 8.

Table 8: Summary of the fifth hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.031	.028		-1.102	.271
AG	-.077	.021	-.171	-3.722	.000
MTB	-.055	.014	-.180	-3.927	.000
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
15.644	.000	.256	.065	.061	1.735

Table 9: Summary of sixth hypothesis test

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.307	.036		-8.417	.000
LEV	.256	.058	.202	4.375	.000
F	Sig.	R	R Square	Adjusted R Square	Durbin-Watson
19.142	.000	.202	.041	.039	1.708

Considering the results of Table 8, since significant level of assets growth is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that assets growth has a negative impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.06 indicating that 0.06 of dependent variable is explained by independent variable.

Sixth hypothesis test

H_6: There is a significant relationship between firms leverage and divided policy.

To test this hypothesis following regression model is used:

DP = LEV+e

The result of this hypothesis test is shown in Table 9.

Considering the results of Table 9, since significant level of firms leverage is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that assets growth has a positive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.039 indicating that 0.039 of dependent variable is explained by independent variable.

CONCLUSION

The purpose of this study was to investigate the relationship between Life-cycle Theory (LCT) and Free Cash Flow (FCF) hypothesis with dividend policy in listed firms in Tehran Stock Exchange (TSE). The sample of the research includes 90 firms listed in TSE which is studied during the period of 2006-2010. To capture the aim of study, six hypotheses are developed.

First hypothesis posits that mature firms have more tendency to distribute dividend so it is expected that there is a positive significant relationship between firms life cycle and divided policy. Considering the results of Table 4, since significant level of retained earnings to total equity is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that firm's life cycle has a negative impact on dividend policy. Durbin Watson is 1.6 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.033 indicating that 0.033 of dependent variable is explained by independent variable. This contrary result may stem from the fact that most of TSE firms are young.

Second hypothesis argues there is a significant relationship between free cash flow and divided policy. If mangers pay dividend to reduce agency costs of free cash flows, there would be a positive significant relationship between FCF and dividend policy. The negative relationship between FCF and dividend policy may be sign of agency costs. Considering the results of Table 5, since significant level of free cash flow to total equity is 0.52, this hypothesis is rejected. However, it can be concluded that free cash flow has not an impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is -0.002 indicating that -0.002 of dependent variable is explained by independent variable.

Third hypothesis highlights that there is a significant relationship between profitability and divided policy. Firms with high profitability are able to generate free cash flows and consequently distribute dividends. However, it is expected that there is a significant relationship between free cash flow and divided policy. Considering the results of Table 6, since significant level of return on assets to total equity is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that return on assets has a positive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.046 indicating that 0.046 of dependent variable is explained by independent variable.

Fourth hypothesis supposes that there is a significant relationship between firm's size and divided policy. Free cash flow and firms life cycle hypotheses posit that bigger firms have more ability to generate free cash flows so distribute more dividends. However, it is hypothesized that according to free cash flow and firms life cycle hypotheses there is a significant relationship between firm's size and divided policy. Considering the results of Table 7, since significant level of firms size is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that firm's size has apositive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.046 indicating that 0.046 of dependent variable is explained by independent variable.

Fifth hypothesis argues that there is a significant relationship between investment opportunity and divided policy. According to free cash flow and firms life cycle hypotheses, negative significant relationship between investment opportunity and divided policy is expected. Considering the results of Table 8, since significant level of assets growth is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that assets growth has a negative impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.06 indicating that 0.06 of dependent variable is explained by independent variable.

Sixth hypothesis suppose that there is a significant relationship between firms leverage and divided policy.Since firms with more leverage expected to have more financial constraint, they may not able to distribute dividend. However, negative significant relationship between firms leverage and divided policy is expected. Considering the results of Table 9, since significant level of firms leverage is 0.00, this hypothesis is accepted at 99 percentage confidence level. However, it can be concluded that assets growth has a positive impact on dividend policy. Durbin Watson is 1.7 which is between 1.5 and 2.5 showing that there is no autocorrelation problem in models residual. Adjusted R Square is 0.039 indicating that 0.039 of dependent variable is explained by independent variable. The contrary result may stem from not controlling other interfering variables, which would be interest of future researches.

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