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The Impact of Dividend Policy on a Firm's Real Earnings Management: An Empirical Investigation in Tehran Stock Exchange Listed Companies

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ABSTRACT

Given the importance of dividend policy to companies, the issue of real earnings management was examined among dividend payer companies that smooth dividends levels and payout ratios. In this study, the Modified Roychowdhury model was used to estimate real earnings management and Regression model to test hypotheses. In order to estimate, data was obtained for 472 firms and then among of these, 135 firms were selected. The final sample had complete data for the entire sample period of eight years, 2004-2011. The results reveal that the relation between dividend policy and real earnings management is significant and show that dividend policy impacts on real earnings management.

Key words: Real earnings management, dividend policy, missing earnings

INTRODUCTION

It is obvious that companies' managers try to maintain levels and dividend payout ratios. Dividend level is an important net earnings benchmark. Managers are reluctant to cut dividends and target long term pay-out ratios when making dividend decisions. Current earnings influence current dividend decisions through the target payout ratio (Lintner, 1956). Two important factors affecting dividend policy in a firm are the projected level of future earnings and the pattern of past dividends. Capital markets reaction to unexpected dividend decreases is negative So, firms are likely to smooth dividend levels and dividend payout ratios (Liu, 2011). The Dividend policies of a firm refers to the determination of the existing dividend as the core benchmark, setting a nearly fixed payout ratio as a target, evaluating the degree of relationship between changes in dividend payments and changes in earnings and finally making partial adjustment in response to these changes in earnings (Lintner, 1956). These changes in earnings can be perceived as an earnings manipulation.

There are at least two reasons for executives' greater willingness to manage earnings through real activities than through accruals. First, accrual-based earnings management is more likely to draw auditor or regulatory scrutiny than real decisions, such as those related to product pricing, production and expenditures on research and development or advertising. Second, relying on accrual manipulation alone is risky. The realized shortfall between unmanaged earnings and the desired threshold can exceed the amount by which it is possible to manipulate accruals after the

end of the fiscal period. If reported income falls below the threshold and all accrual-based strategies to meet it are exhausted, managers are left with no options because real activities cannot be adjusted at or after the end of the fiscal reporting period (Cohen and Zarowin, 2010). Brown and Caylor (2005) have documented an adverse valuation consequence of missing earnings levels and analysts' forecasts benchmarks, since earnings are one of many signals used to make certain decisions. Roychowdhury (2006) found that firms conduct real earnings management to meet or just beat the zero earnings and analyst forecast benchmarks.

Recent, studies show an increasing use of real earnings management among firms. Graham *et al.* (2005) have documented that firms are more likely to manage real activities than accruals. Cohen and Zarowin (2010) have shown that in the seasoned equity offerings context, the negative effects of real earnings management on future financial performance, i.e., return on assets, are greater than the effects of accruals management.

There is a lot of empirical evidence of dividend policy. Brav *et al.* (2005) indicated that about 90% of dividend-payers have a strong desire to avoid dividend reductions and to smooth dividend streams from year to year. Brav *et al.* (2005) has shown that dividend-payers try to smooth yearly dividend streams and maintain consistency with their past dividend policies, e.g., dividend levels and payout ratios. Daniel *et al.* (2008) found that firms manage accruals upwards to attain dividend targets when pre-managed earnings are below last year's dividends which help firms avoid negative stock market reactions if they miss their targets. Grullon *et al.* (2002) illustrate that for dividend changes announced during 1967-1996, firms with dividend reductions experience increases in systematic risk and the announcement-day negative market reaction is significantly related to the increase in systematic risk. Baker and Powell (1999) found that managers believe firms should avoid changing their regular dividends, have target dividend payout ratios and periodically adjust payouts toward the target ratio. Liu (2011) examined the role of dividend policy in real earnings management and documented that dividend policy has an incremental effect on both upward and downward real earnings management.

In this study, the role of smoothing dividend levels and dividend payout ratios in real earnings management is examined. According to theoretical background and literature review, it's expected that dividend payer companies manage earnings upward when pre-managed earnings fall below last year's dividends. On the other hand, managing earnings downward (upward) helps payers mitigate the decrease in payout ratios and smooth dividends. So it's reasonable to expect that:

- When pre-managed earnings fall below last year's dividends, Dividend payers manage earnings upward through real activities to meet dividend level targets
- When pre-managed earnings equals or greater than last year's dividend:
  - And Last year's earnings, dividend payers manage earnings downward through real activities
  - But fall below last year's earnings, dividend payers manage earnings upward through real activities

MATERIALS AND METHODS

Study sample: The sample period is from 2004 through 2011, the following criteria are applied in selecting firms for the sample:

- Firms have a March 19 fiscal year-end
- The data on the variable used in the models are available on database for each year in the sample period

Table 1: The sample selection procedure

	No. of firms
Total firms in TSE	472
Less: Firms have not a march 19 fiscal end-year	194
Firms with a march 19 fiscal end-year	278
Less: Regulated, service and financial firms	56
Firms with no data for the variables used in models	87
Selected firms	135

- Firms are unregulated, financial and service companies are excluded
- The sample selection procedure is summarized in Table 1

Data for 135 firms listed on the TSE from TadbirPardaz database was obtained and data analysis software used in this study was SPSS software (18th edition).

Research model: Abnormal cash flows were estimated by a modified version of the Roychowdhury (2006) CFO model used by Liu (2011). Abnormal cash flows from the cash flow model are calculated as below:

$$\frac{CFO_t}{A_{t-1}} = \alpha_0 + \beta_0\frac{1}{A_{t-1}} + \beta_1\frac{SALES_t}{A_{t-1}} + \beta_2\frac{SC_t}{A_{t-1}} + \beta_3\frac{IBEI_{t-1}}{A_{t-1}} + \beta_4 ROS_{t-1} + \beta_5 SIZE_{t-1} + \varepsilon_t$$

Where:

CFO_t = Cash flow from operations of firm i in year t
A_{t-1} = Total assets of firm i in year t-1
$Sales_t$ = Sales of firm i in year t
Sc_t = Sales change of firm i in year t from year t-1; = $Sales_t$-$Sales_{t-1}$
$IBEI_{t-1}$ = Income before extraordinary items of firm i in year t-1
ROS_{t-1} = Operating income before depreciation of firm i in year t-1/$sales_{t-1}$
$SIZE_{t-1}$ = Natural log of market value of common equity of firm i in year t-1

Where market value equals common shares outstanding H year-end-price.

Abnormal SGA (selling, general and administrative expenses), abnormal RD (research and development expenses) and abnormal GAIN (Gain or loss from sale of property, plant and equipment and investment) are estimated using Gunny (2009) model:

$$\frac{SGA_t}{A_{t-1}} = \alpha_0 + \beta_0\frac{1}{A_{t-1}} + \beta_1 SIZE_{t-1} + \beta_2 TQ_t + \beta_3\frac{FUND_t}{A_{t-1}} + \beta_4\frac{SC_t}{A_{t-1}} + \beta_5(SD_t \times \frac{SC_t}{A_{t-1}}) + \varepsilon_t$$

$$\frac{RD_t}{A_{t-1}} = \alpha_0 + \beta_0\frac{1}{A_{t-1}} + \beta_1 SIZE_{t-1} + \beta_2 TQ_t + \beta_3\frac{FUND_t}{A_{t-1}} + \beta_4\frac{RD_{t-1}}{A_{t-1}} + \varepsilon_t$$

$$\frac{GAIN_t}{A_{t-1}} = \alpha_0 + \beta_0\frac{1}{A_{t-1}} + \beta_1 SIZE_{t-1} + \beta_2 TQ_t + \beta_3\frac{FUND_t}{A_{t-1}} + \beta_4\frac{PPES_t}{A_{t-1}} + \beta_5(\frac{INVS_t}{A_{t-1}}) + \varepsilon_t$$

Where:

SGA_t	=	Selling, general and administrative expense of firm i in year t, excluding RD_t
TQ_t	=	(MV+Book value of preferred stock+Long-term debt +Short-term debt)$_t$/assets$_t$
$FUND_t$	=	(Income before extraordinary items+RD+Depreciation expense) firm i in year t
Sd_t	=	A dummy variable for sales decreases of firm i in year t=1 if $Sales_t<Sales_{t-1}$, 0 otherwise
Rd_t	=	Research and development expense (R and D expense) of firm i in year t
$GAIN_t$	=	Gain or loss from sale of property, plant and equipment and investment of firm i in year t
$PPES_t$	=	Sale of property, plant and equipment of firm i in year t
$INVS_t$	=	Sale of investment of firm i in year t

The residual from model is called RCFO, RSGA, RRD and RGAIN of firm i in year t, respectively. By multiplying these residuals by Total assets of firm i in year t-1, Iran Rial values of RCFO, RSGA, RRD and RGAIN are obtained. These Rial values are called ACFO, ASGA, ARD and AGAIN of firm i in year t.

The selected firms are partitioned into several sub-samples: if a firm have a $PME_t<DIV_{t-1}$, this firm is included in the sample selected for H1. If a firm have a $PME_t = DIV_{t-1}$ and a $PME_t = E_{t-1}$, this firm is included in the sample selected for H2a. If a firm have a $PME_t = DIV_{t-1}$ and $PME_t<E_{t-1}$, this firm is included in the sample selected for H2b. in these criteria:

- PME_t = pre-managed earnings = E_t B $ACFO_t$, Et+$ASGA_t$, E_t + ARD_t, or E_t B $AGAIN_t$, depending on the proxy for real earnings management
- DIV_{t-1} = total common dividends of firm i in year t-1
- E_{t-1} = income before extraordinary items minus preferred dividends of firm i in year t-1

The regression model used to test hypothesis H1 is described below:

$$REM = \beta_0 + \beta_1 D + \beta_2 NOND \times DEFICIT + \beta_3 D \times DEFICIT + \beta_4 BTM + \beta_5 LEV + \beta_6 RE + \beta_7 LAGE + \varepsilon$$

Where:

REM	=	Iran Rial values of real earnings management, i.e., ACFO, ASGA, ARD and AGAIN
D	=	Dividend payer dummy$_t$, =1 if $DIV_{t-1}>0$, 0 otherwise
NOND	=	Non-payer dummy = 1-D
DEFICIT	=	Shortfall of PME relative to lagged dividends$_t$ = DIV_{t-1} B PME_t
BTM	=	Book value of common equity divided by MV of firm i in year t-1
LEV	=	Total debt divided by total assets of firm i in year t-1
RE	=	Retained earnings divided by total assets of firm i in year t-1
LAGE	=	E of firm i in year t-1

If the sign of coefficients on β_3 is positive (negative) for ACFO and AGAIN (ASGA and ARD) models, the result indicates a strong evidence in support of the first hypothesis.

The regression model used to test hypothesis H2a is described below:

$$REM = \beta_0 + \beta_1 D + \beta_2 PMEC + \beta_3 D \times PMEC + \beta_4 BTM + \beta_5 LEV + \beta_6 RE + \beta_7 LAGE + \varepsilon$$

Where:
PMEC = Changes in pre-managed earnings, i.e., PME $_t$ B E_{t-1}
LAGE = E of firm i in year t-1.

If the sign of coefficients on β_3 is negative (positive) for ACFO and AGAIN (ASGA and ARD) models, the result indicates a strong evidence in support of hypothesis H2a. Positive (negative) sign of coefficients on β_3 for ACFO and AGAIN (ASGA and ARD) models indicates a strong evidence in support of hypothesis H2b.

Statistical analysis and results: According to modified version of the Roychowdhury (2006) CFO model used by Liu (2011), analyses are conducted to calculate real earnings management. In Table 2, at first, CFO, SGA, RD and GAIN models are estimated using the explanatory variables. According to, the results for CFO model, we found that $SALES_t/A_{t-1}$ variable, $IBEI_{t-1}/A_{t-1}$ variable and $SIZE_{t-1}$ variable are positive and statistically significant at the 5% level and ROS_{t-1} variable are negative and statistically significant at the 10% level. Other variables are not significant. In SGA model, we have found that $SIZE_{t-1}$ variable and SC_t/A_{t-1} variable are positive and statistically significant at 5% level while $1/A_{t-1}$ variable and Sd_t*SC_t/A_{t-1} variable are negative and statistically significant at the 5% level. Other variables are not significant. In RD model, $SIZE_{t-1}$ variable, $FUND_t/A_{t-1}$ variable and RD_{t-1}/A_{t-1} variable are positive and statistically significant at the 5% level. In GAIN model, there is a significant positive relationship among $FUND_t/A_{t-1}$ variable, $PPES_t/A_{t-1}$ variable, $INVS_t/A_{t-1}$ variable and dependent variable. Also, an inverse significant relationship exists between TQ_t variable and dependent variable of interest in GAIN model.

Then, in order to calculate the Rial value of abnormal CFO (SGA, RD and GAIN), the value of RCFO, RSGA, RRD and RGAIN are multiplied by A_{t-1} variable for each firm-year. Table 3 reports the distribution pattern of these calculations.

These values are used as dependent variable in first hypothesis. Four models are used to calculate real earnings management, so the regression equation is estimated separately for these models. The result of these estimations summarized in Table 4.

Table 2: Correlation matrix of variables used in CFO, SGA, RD and GAIN models

GAIN model		RD model		SGA model		CFO model	
Variables	B	Variables	B	Variables	B	Variables	B
Intercept	*0.065	Intercept	0	Intercept	*0.10-	Intercept	0.053-
1/At-1	0.027-	1/At-1	**0.024	1/At-1	*0.223-	1/At-1	0.11
SIZEt-1	0.036-	SIZEt-1	*0.019	SIZEt-1	*0.074	SALESt/At-1	*0.037
TQt	*0.132-	TQt	0.021-	TQt	0.05	SCt /At-1	0.005
FUNDt/At-1	*0.245	FUNDt/At-1	*0.053	FUNDt/At-1	0.013	IBEIt-1/At-1	*0.235
PPESt/At-1	*0.499	RDt-1/At-1	*0.67	SCt/At-1	*0.109	ROSt-1	**0.481
INVSt/At-1	*0.125			SDt*SCt/At-1	*0.389-	SIZEt-1	*0.027
	0.419		0.454		0.203	Adj. R2	0.462

*,**Values are significant at 5 and 10% level

Table 3: Distribution pattern of abnormal CFO, SGA, RD and GAIN models and Related Rial values

Model	Firm (year)	Mean	Median	SD
RCFO	840	0	-0.037	0.888
ACFO	840	37226.2	-9256.0	558442.5
RSGA	840	0.001	0.01	0.04
ASGA	840	11666.48	3816.28	186192.4
RRD	840	0	0	0.001
ARD	840	-633.943	-142.468	2249.003
RGAIN	840	-0.001	-0.0062	0.271
AGAIN	840	-104163.5	-15233.5	614762.9

RCFO, RSGA, RRD and RGAIN are the residuals from CFO, SGA, RD and GAIN models, respectively. ACFO, ASGA, ARD and AGAIN: Iran Rial values of RCFO, RSGA, RRD and RGAIN are obtained by multiplying RCFO, RSGA, RRD and RGAIN residuals by total assets of firm i in year t-1

Table 4: Multiple-regression results for hypothesis H1

	AGAIN		ARD		SGA		ACFO	
Dependent variable	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Intercept	95760.39	0.341	150.626	0.754	-39255.7	0.345	54434.92	0.703
D	-0.072	0.303	0.57	0.148	0.02	0.506	0.22	0.414
NOND*DEFICIT	0.941	0.84	-0.332	0	0.094	0.824	0.108	0.148
D*DEFICIT	0.207	0.01	-0.561	0	-0.160	0.001	0.347	0
LAGE	0.65	0.37	-0.389	0	-0.846	0	0.828	0
BTM	0.11	0.857	0.14	0.705	0.26	0.37	0.12-	0.647
LEV	-0.236	0.167	-0.53	0.544	0.87	0.279	0.37-	0.596
RE	-0.247	0.134	-0.65	0.446	0.121	0.121	0.38-	0.56

ACFO, ASGA, ARD and AGAIN are obtained by multiplying RCFO, RSGA, RRD and RGAIN residuals by total assets of firm i in year t-1, D: Dividend payer dummy t =1 if DIVt-1 > 0, 0 otherwise; NOND: Non-payer dummy = 1-D; DEFICIT = Shortfall of PME relative to lagged dividends t = DIVt-1 – PME t, BTM: Book value of common equity divided by MV of firm i in year t-1, LEV: Total debt divided by total assets of firm i in year t-1, RE: Retained earnings divided by total assets of firm i in year t-1, LAGE: E of firm i in year t-1, *Values are significant at 5% level

The value of coefficients on β_3 in ACFO model (β_3 = 0.347 and p = 0.000) indicates that When pre-managed earnings fall below last year's dividends, Dividend payers manage earnings upward through real activities to meet dividend level targets. Also, these firms have incentives to cut research and development and selling, general and administrative expenses to meet earnings goals. The sign of Coefficients on D*DEFICIT in ASGA model (β_3 = -0.160 and p = 0.001) and in ARD model (β_3 = -0.561 and p = 0.000) indicates this issue. On the other hand, the positive sign of coefficients on β_3 in AGAIN (β_3 = 0.207 and p = 0.01), indicates the presence of upward real earnings management among dividend payer companies while we didn't find any significant relationship between these variables among non-payer companies.

As described the regression equation used in testing hypothesis H1, the regression equation is estimated separately for four models mentioned above. The result of these estimations for hypothesis H2a summarized in Table 5.

The sign of coefficients on β_3 in CFO model (p = 0.000, β_3 = -0.397), indicates that compared to non-dividend payers, dividend payer companies do more income-decreasing real earnings management when pre-managed earnings equal or exceed both last year's dividends and last year's earnings. Because regardless of the their negative sign, the value of 0.397 for dividend payers is

greater than the value of 0.239 for non-dividend payers. The positive sign of coefficients on β_3 in RSGA model (p = 0.001, β_3 = 0.380) and in RRD model (p = 0.013, β_3 = 0.290), indicates that these firms have cut their selling, general and administrative and research and development expenses in order to decrease their earnings. On the other hand, the negative coefficient of D*DEFICIT variable in GAIN model, indicates that the presence of income-decreasing real earnings management among dividend payers. This coefficient in real earning management models for non-dividend payers, are not significant or it's less significant than dividend payers. In general, the study concludes that dividend payer companies do more income-decreasing real earnings management when pre-managed earnings equal or exceed both last year's dividends and last year's earnings.

The result of these estimations for hypothesis H2b summarized in Table 6. The sign and value of coefficient β_3 in RCFO model (p = 0.785, β_3 = 0.61), in RRD model (p = 0.596, β_3 = -0.112) and in RGAIN model (p = 0.978, β_3 = -0.16) indicates that dividend payer companies didn't use income-increasing real earnings management related tools. This is because of no evidence of significant relationship. But significance of coefficient β_3 in RSGA model (p = 0.035, β_3 = -0.313), indicates that dividend payer companies engage in income-increasing real earnings management

Table 5: Multiple-regression results for hypothesis H2a

	RGAIN		RRD		RSGA		RCFO	
Dependent variable	Sig.	B	Sig.	B	Sig.	B	Sig.	B
Intercept	0.81	0.1	0.308	0	0	0.68	0.32	-0.149
D	0.001	0.252	0.968	-0.006	0	-0.638	0.001	0.478
PMEC	0	-0.317	0.683	0.45	0.69	-0.181	0.034	-0.239
DPMEC	0	-0.714	0.013	0.29	0.001	0.38	0	-0.397
BTM	0.26	-0.104	0.455	-0.74	0.584	-0.48	0.27	-0.91
LEV	0.12	-0.156	0.98	0.03	0.23	-0.280	0.407	0.87
RE	0.194	-0.89	0.796	-0.37	0.729	-0.43	0.71	-0.189

RCFO, RSGA, RRD and RGAIN are the residuals from CFO, SGA, RD and GAIN models, respectively, D: Dividend payer dummy t =1 if DIVt-1 > 0, 0 otherwise, BTM: Book value of common equity divided by MV of firm i in year t-1, LEV: Total debt divided by total assets of firm i in year t-1, RE: Retained earnings divided by total assets of firm i in year t-1, PMEC: changes in pre-managed earnings, i.e., PME t – Et-1, *Values are significant at the 5% level

Table 6: Multiple-regression results for hypothesis H2b

	RGAIN		RRD		RSGA		RCFO	
Dependent variable	Sig.	B	Sig.	B	Sig.	B	Sig.	B
Intercept	0.762	-0.47	0.701	0	0.001	0.082	0.768	0.22
D	0.45	0.779	0.022	-0.706	0.012	-0.690	0.016	0.819
PMEC	0.605	-0.442	0.047	0.384	0.231	0.218	0.795	0.072
DPMEC	0.978	-0.16	0.596	-0.112	0.035	-0.313	0.785	0.61
BTM	0.625	-0.227	0.081	-0.274	0.038	-0.347	0.281	-0.230
LEV	0.843	0.16	0.506	0.116	0.031	-0.455	0.701	-0.101
RE	0.303	-0.755	0.048	0.535	0.693	-0.103	0.046	-0.577

RCFO, RSGA, RRD and RGAIN are the residuals from CFO, SGA, RD and GAIN models, respectively, D: Dividend payer dummy t =1 if DIVt-1 > 0, 0 otherwise, BTM: Book value of common equity divided by MV of firm i in year t-1, LEV: Total debt divided by total assets of firm i in year t-1, RE: Retained earnings divided by total assets of firm i in year t-1, PMEC: Changes in pre-managed earnings, i.e., PME t – Et-1, *Values are significant at the 5% level

through a reduction in R and D spending. This coefficient in REM models for non-payers is not significant. In general, the results conclude that When pre-managed earnings equals or greater than last year's dividend but fall below last year's earnings, dividend payers manage earnings upward through real activities.

The results in hypotheses H1, H2a and H2b indicate that when pre-managed earnings are different from dividend, there is an incentive to managers to use real earnings management. Income-increasing and income-decreasing aspect of real earnings management in this study revealed an aggressive and conservative accounting within Iranian generally accepted accounting principles. So, the results of this study contribute to the existing literature of earnings management. These activities are consistent with dividend policy literature and conducted to smooth yearly dividend streams and maintain consistency with their past dividend policies. Accounting under ideal conditions suggests that trying to smooth dividend policy does not matter but under uncertainty conditions, firm's dividend policy will affect the firm's value and real earnings management is a commonly used tool at the hands of managers to achieve their goals.

DISCUSSION

The result of this study indicated that income-increasing and income-decreasing real earnings management can be attributed to dividend policy of dividend payer companies. This use of real earnings management among firms is consistent with the result of studies done by Cohen and Zarowin (2010) and Graham *et al.* (2005). This study shows that dividend payers use four real-activity tools, i.e., cash flows, selling, general and administrative, research and development and gain or loss from sale of property, plant and equipment and investment, in implementing real earnings management. Dividend payers manipulate pre-managed earnings upward using these tools when fall below last year's dividends. This situation was not found for non-dividend payers. These results are consistent with that of the study done by Roychowdhury (2006), Daniel *et al.* (2008), Liu (2011), Grullon *et al.* (2002), Brown and Caylor (2005), Baker and Powell (1999) and Lintner (1956). The result of hypothesis H2a indicates that dividend payer companies manipulate pre-managed earnings downward to the greater extent. This result is consistent with that of the study done by Brav *et al.* (2005) and Liu (2011). In hypothesis H2b, The predicted income-increasing real earnings management is a result of the shortfall of pre-managed earnings relative to last year's earnings but equal or exceed last year's dividends. This income-increasing real earnings management is conducted by means of cutting selling, administrative and general expenses. This result is consistent with the prior studies (Brav *et al.*, 2005; Liu, 2011).

CONCLUSION

The focus of this study was the contribution to previous literature about earnings management and dividend policy by increasing the knowledge as to how dividend policy affect on real earnings management. It's suggested that researchers examine the effect of dividend policy on accrual earnings management and then compare their results with those of obtained in real earnings management model.

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