Life-Cycle Theory and Free Cash Flow Hypothesis: Evidence from Dividend Policy in Thailand

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Abstract

This paper examines dividend policy of Thai listed companies over the period 2002-2008. The 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, the evidence indicates that firms with higher growth opportunities, proxied by market-to-book ratio, tend to pay lower dividend payout ratio but higher dividend yield. Collectively, the findings from this paper provide much support for the free cash flow and life-cycle hypotheses. Further, it is found that financial leverage is positively related to dividend payouts, a finding which casts doubt whether Thai firms rely on debt to pay dividends.

Keywords: Dividend Policy, Life Cycle, Free Cash Flow, Thailand

1. Introduction

Dividend policy is one of the most important areas in finance literature. Many researchers have studied why firms pay a substantial portion of their earnings as dividends if, according to Miller and Modigliani's (1961) dividend irrelevance proposition, dividend policy does not change shareholders' wealth. This is known as 'dividend puzzle' in finance literature (Black, 1976). One explanation is that dividends help address agency problems between managers and outside investors. In Easterbrook's (1984) analysis, the monitoring role of dividends mitigates agency conflicts between managers and shareholders. The agency problem in Jensen's (1986) analysis arises from managers' incentives to consume private benefits, e.g., building their empires by investing free cash flows in negative net present value projects or spending cash on perquisites. Thus, dividends alleviate this problem by reducing free cash flows available to managers.

The amount of free cash flows, however, depends on the capital requirements of the firm to finance its growth. Generally, firms in a growth stage with abundant investment opportunities tend to have low free cash flows and, in turn, pay lower dividends. On the other hand, firms in a maturity stage with scarce profitable projects to invest tend to have high free cash flows and be able to make high dividend payments. Therefore, the firm's dividend policy appears to be affected by its life cycle. This is known as the life-cycle theory dividends (see, e.g., DeAngelo et al., 2006; Fama and French, 2001; Grullon et al., 2002).

Since the existing research on dividend policy is replete with evidence from the U.S. and developed markets, the researchers have recently started looking at corporate dividend policy of firms in emerging markets and increasingly recognized that dividend policy may be affected by the international context in which it occurs (See, e.g., Aivazian et al., 2003; La Porta et al., 2000; Naceur et al., 2006). This paper examines dividend policy of Thai listed companies over the period 2002-2008 in an attempt to provide additional insight into dividend policies in emerging markets. In particular, this paper tests the free cash flow hypothesis by examining the relation between free cash flows and dividend payouts by Thai firms.

According to La Porta et al. (2000), Thailand is characterized as a country with low shareholder protection. Further, the ownership structure of Thai firms is highly concentrated (Claessens et al., 2000; Limpaphayom and Ngamwutikul, 2004; Wiwattanakantang, 2001). These characteristics can increase the agency costs of free cash flows and dividend payments are more likely to be used as a mechanism that helps mitigate this agency problem. The distinct institutional feature of Thai firms is a major reason why dividend policy in Thailand is of interest for examination in the context of agency costs of free cash flows.

This paper also tests the life-cycle theory of dividends proposed by DeAngelo et al. (2006), who document that the earned/contributed capital (measured by the ratio of retained earnings to equity), a proxy for firm' life cycle, is a key determinant of firm's dividend policy in the U.S. A recent study of Denis and Osobov (2008) also document the ratio of retained earnings to equity as a significant factor affecting dividend policies in six developed financial markets (the U.S., Canada, the U.K., Germany, France, and Japan). However, little is known about the impact of earned/contributed capital on dividend policies in emerging economies. Therefore, this paper aims to provide additional evidence of the effect of earned/contributed capital on dividend policy from an emerging market like Thailand.

The results reveal that larger firms with higher free cash flows and retained earnings to equity tend to pay higher dividends and firms with higher book-to-market ratio, a proxy for growth opportunities, tend to pay lower dividend payout ratio but higher dividend yield. Overall, the findings support the free cash flow hypothesis and the life-cycle theory of dividends.

The contributions of this paper to present understanding on dividend policy are twofold. First, it sheds additional light on 'dividend puzzle' by providing evidence from an emerging market like Thailand. Second, major theoretical explanations on corporate dividend policies, i.e., the free cash flow and the life-cycle hypotheses have been tested and corroborated in Thailand, a country in which the dividend policy has been unexplored.

The remainder of this paper proceeds as follows. Section 2 reviews relevant literature. Section 3 describes the methodology, sample selection, and variables used for analyses. Section 4 discusses the empirical results. Section 5 concludes the paper.

2. Literature Review

2.1 Free cash flow hypothesis

A major explanation why firms pay dividends is the free cash flow hypothesis (Jensen, 1986), which explains dividends as a means to mitigate agency cost of free cash flows. The free cash flow hypothesis is primarily based on the argument that there is a conflict of interest between managers and shareholders. That is, rather than act in shareholders' best interests, managers could allocate the firm's resources to benefit themselves (Jensen and Meckling, 1976). Managers' selfish behaviors can include lavish spending on luxurious office and unjustifiable mergers and acquisitions. Hence, excess cash can create overinvestment problem because they may be used to fund negative NPV projects. To mitigate the overinvestment problem, Easterbrook (1984) and Jensen (1986) suggest that firms return excess cash to shareholders by paying dividends or repurchasing shares. This paper also examines whether the dividend increases are used as a mechanism to alleviate the agency cost of free cash flows.

An implication of the free cash flow hypothesis is that cash-rich firms that are mature with scarce investment opportunities tend to have overinvestment problem. Thus, a dividend increase announcement by these firms should be accompanied with a positive stock market reaction since it is a signal to shareholders that management will not wastefully use corporate cash flows.   Lang and Litzenberger (1989) focus on testing this feature of the free cash flow hypothesis. Empirically, they use Tobin's Q ratio to determine the group of overinvesting firms. Particularly, the Tobin's Q less than one implies overinvestment problem while the Tobin's Q more than one indicate that a firm is undertaking the value-maximising level of investment. Examining a sample of 429 regular dividend changes between 1979 and 1984, Lang and Litzenberger find that the average announcement return of large dividend change is significantly higher for firms with low Tobin's Q than for firms with high Tobin's Q. This evidence is consistent with the free cash flow hypothesis that dividend increases by overinvesting firms signal management's intention to mitigate overinvestment problem, thereby causing larger stock market reaction.

In an examination of 55 self-tender offers and 60 special dividend announcements between 1979 and 1989, Howe, He, and Kao (1992) find no significant association between announcement returns and Tobin's Q, a finding in contrast with that of Lang and Litzenberger (1989). They further run regression between the announcement returns and the firm's cash flow before the event and an interaction term between Tobin's Q and cash flow. However, the results fail to capture a significant relation between announcement returns and the firm's overinvestment potential. Therefore, their findings offer no evidence supporting the free cash flow hypothesis.

Yoon and Stark (1995) examine a sample of 4,179 dividend changes between 1969 and 1988. They find that the average abnormal return of low-Q firms is significantly higher than that of high-Q firms for dividend increases. However, there is no difference in the magnitude of stock price reactions between these two groups after controlling for the size of dividend change, the dividend yield, and the market value of the firm. This result is in contrast with that of Lang and Litzenberger (1989) who find a significantly higher stock price reaction for low-Q firms than for high-Q firms. Their examination of the firms' capital expenditures after dividend changes indicates that there are significant increases

(decreases) in capital expenditures following dividend increases (decreases) for firms regardless of their investment opportunities, the results inconsistent with the free cash flow hypothesis.

Using a sample of 6,777 dividend changes between 1962 and 1988 to examine the relation between dividend change announcements and stock price reactions, Denis, Denis, and Sarin (1994) find that abnormal returns around dividend changes are positively related to the magnitude of dividend changes and to the level of dividend yield, but unrelated to Tobin's Q. In addition, their results indicate that analysts revise their forecasts of future earnings following dividend change announcements and that low-Q firms actually increase (decrease) capital expenditures following dividend increases (decreases). Collectively, their findings do not support the free cash flow hypothesis.

Investigating 570 special dividends, 7,417 regular dividend increases, and 207 self-tender offers, Lie (2000) find that firms tend to have excess funds before the payout announcements and that the stock price reaction to these announcements is significantly related to excess funds and the firm's investment opportunities, as measured by Tobin's Q, for self-tender offers and large special dividends but not for regular dividend increases and small special dividends. Overall, his results are consistent with the free cash flow hypothesis, i.e., cash payouts help curtail potential overinvestment by managers.

2.2 Life cycle hypothesis

Fama and French (2001) study the propensity to pay dividends of U.S. firms between 1926 and 1999. They find that the percentage of firms paying dividend declines substantially after 1978, i.e., the proportion of dividend payers reaches its peak of 66.5% in 1978 but falls to only 20.8% in 1999. Their evidence indicates that the lower proportion of dividend payers is, in part, due to a surge in new listings of small firms with low profitability but high investment opportunities that never pay dividends.

In a comprehensive investigation of a large sample of 7,642 dividend change announcements between 1967 and 1993, Grullon, Michaely, Swaminathan (2002) find that dividend-increasing firms do not increase their capital expenditures in the years after dividend increases. Moreover, the systematic risk of dividend-increasing firms significantly declines around dividend increase announcements, resulting in a significant decline in their cost of capital. Grullen et al. indicate that this decline in systematic risk is a significant determinant of the positive stock price reaction to dividend increases. Further, they find a permanent increase in the dividend payout ratios of dividend-increasing firms. The result that these firms can maintain higher dividends is consistent with Lintner's (1956) finding that managers attempt to smooth dividends. Following these findings, Grullon et al. propose the maturity hypothesis, positing that a firm tends to increase dividends as it move from a growth phase to a more mature phase. As a growth firm becomes mature, its investment opportunities decline, which, in turn, would lead to an increase in the firm free cash flows. A mature firm then pays out these free cash flows in the form of dividends or share repurchases. Therefore, a dividend increase may signal not only a change in the firm's fundamental but also a commitment of management not to overinvest.

DeAngelo, DeAngelo, and Stulz (2006) test the life-cycle theory by examining whether the probability to pay dividends is related to the earned/contributed capital mix, as measured by retained earnings to total equity (RE/TE) or retained earnings to total assets (RE/TA). Typically, firms with low RE/TE (RE/TA) tend to be in the growth stage and reliant on external capital while firms with high RE/TE (RE/TA) tend to be more mature with high accumulated profits, thus making them good candidates to pay dividends. Consistent with the life-cycle theory, their evidence indicates that the earned/contributed capital mix has a positively significant relation with the probability that a firm pays dividends, controlling for firm size, current and lagged profitability, growth, total equity, cash balances, and dividend history. This relation also holds for the probability that a firm initiates or omits dividends. In addition, DeAngelo et al. document a substantial increase in firms with negative retained earnings from 11.8% in 1978 to 50.2% in 2002, a finding that further explains why U.S. firms have lower propensity to pay dividends during such period as documented by Fama and French (2001).

Recently, Denis and Osobov (2008) examine cross-sectional and time-series evidence on the propensity to pay dividends in six developed financial markets (U.S., Canada, U.K., Germany, France, and Japan) over the period 1989-2002. Like Fama and French (2001), they find that the likelihood of paying dividends is associated with firm size, growth opportunities, and profitability. In all six countries, the likelihood of paying dividends is strongly associated with the ratio of retained earnings to total equity. The fraction of firms that pay dividend is high when this ratio is high and low when retained earnings are negative. Consistent with the U.S. evidence reported by DeAngelo et al. (2006), their evidence shows that aggregate dividends do not decline overtime but concentrated among the largest and most profitable firms, the finding consistent with the life-cycle theory's prediction that the distribution of free cash flow is the primary determinant of dividend policy.

3. Data and Methodology

3.1 Sample

The data is primarily drawn from the database of Euromoney Institutional Investor (Plc.) via www.securities.com. The initial sample consists of 411 non-financial firms listed on the SET between 2002 and 2008. To be included in the sample, the firms must pay dividends and report positive earnings in order to calculate the dividend payout ratio. One percent of dividend payout ratio was truncated as outliers. The final sample consists of 287 firms and 784 observations for analyses.

3.2 Research methodology

To test the free cash flow and life-cycle hypotheses, the following OLS model is estimated:

$$DIVPAY = \alpha + \beta_1 RE/TE + \beta_2 FCF + \beta_3 ROA + \beta_4 SIZE + \beta_5 AGR + \beta_6 MTB + \beta_7 LEV + \varepsilon \qquad (1)$$

where dividend payment (DIVPAY) is either dividend payout ratio (DPR) or dividend yield (YLD). All independent variables are lagged one year to minimize the endogeneity problem and they are described in section 3.3 below.

3.3 Variable definitions

Dependent variables

Dividend payout ratio (DPR), measured by dividends over net income, and dividend yield (YLD), measured by dividends over market value of equity, are two proxies of dividend policy.

Independent variables

Retained earnings to book value of equity (RE/TE).   The life-cycle hypothesis posits that firms in maturity stage with higher accumulated profits tend to pay higher dividends. Thus, RE/TE, a proxy for firm's life cycle, is predicted to have a positive relation with dividend payouts.

Free cash flow (FCF) is estimated by cash flows from operations following Baba (2009). If the managers pay dividends to mitigate agency cost of free cash flows, a positive relation between free cash flows and dividend payouts is predicted. On the other hand, a negative relation between free cash flows and dividend payouts might indicate the agency problem.

Return on assets (ROA) is the operating income divided by total assets. ROA is used to control for firm profitability. Firms with higher profitability should be more able to generate free cash flows and thus make higher dividend payments. Thus, free cash flow hypothesis predicts a positive relation between profitability and dividend payouts.

Firm size (SIZE) is measured by the natural logarithm of total assets. The free cash flow and life-cycle hypotheses posit that, compared with smaller firms, larger firms tends to be more mature and have higher free cash flows, so they are more likely to pay higher dividends. Thus, the free cash flow and life-cycle hypotheses predict a positive relation between firm size and dividend payouts.

Asset growth rate (AGR) is calculated as the percentage growth in total assets and market-to-book ratio (MTB) is calculated as market value of equity divided by book value of equity. Following Fama and French (2001), AGR and MTB are used as proxies for current and future investment opportunities respectively. The free cash flow and life cycle hypotheses predict a negative relation between investment opportunities and dividend payouts.

Leverage (LEV) is total debt divided by book value of total assets. Since firms with higher debt ratio are more likely to be financially constrained and should be less able to pay dividends, the free cash flow hypothesis predicts a negative relation between debt ratio and dividend payouts.

The predicted relationships between dividend payouts and explanatory variables according to the free cash flow and life-cycle hypotheses are summarized in Table 1.

<Table 1 about here>

4. Empirical Results

4.1 Descriptive statistics

Table 2 shows descriptive statistics of relevant variables used for analyses. It reveals that, on average, the dividend payout ratio of 63.91% and dividend yield of 9.16% in Thailand are relatively high compared to those in the U.S. about 33% and 5% respectively (Aviazian et al., 2003) despite Thailand is characterized as a country with low shareholder protection. The retained earnings to equity of 44.42% in Thailand, however, is relatively low compared to 74.8% reported by DeAngelo et al. (2006) and 68.5% reported by Denis and Osobov (2008) in the U.S. On average, the profitability (ROA) of Thai firms at about 12.04% appears to be higher than that of U.S. firms at around 8.6% as

documented in DeAngelo et al. (2006). In addition, the asset growth rate and market-to-book ratio of 10.67% and 1.5971 are relatively high compared to those in the U.S. of about 8.6% and 1.3, respectively, as documented by DeAngelo et al., (2006). The financial leverage (debt ratio) of 38.22% in Thailand is closed to 41% in the U.S. as reported by Aviazian et al. (2003). These descriptive statistics appear not to indicate strong agency problem of free cash flows in Thailand.

<Table 2 about here>

A clearer picture emerges as the sample is divided into two groups using the mean dividend payout ratio (DPR) and dividend yield (YLD). The comparative results in Table 3 reveal that firms with higher free cash flows make significantly higher dividend yield and firms with higher earned equity (RE/TE) provide higher dividend payout ratio and dividend yield. In addition, larger firms pay higher dividends both in terms of dividend payout ratio and dividend yield. These findings are consistent with the free cash flow and life-cycle hypotheses. In contrast, the results indicate that firms with higher asset growth rate and market-to-book ratio, proxies for growth opportunities, make higher dividend yield. Nevertheless, firms with higher market-to-book ratio make lower dividend payout ratio, a finding supporting the free cash flow and life-cycle hypotheses. Finally, the results indicate that firms with higher financial leverage pay higher dividends both in terms of dividend payout ratio and dividend yield. These findings contrast with the prediction of the free cash flow hypothesis and cast doubt whether Thai firms finance their dividend payments with debt.

<Table 3 about here>

4.2 Correlation Analysis

Table 4 provides the Pearson's correlation matrix for the variables used in the analysis. The results show that the signs of correlation coefficients between the dependent variable and most independent variables are generally consistent with the predicted sign by the free cash flow and life-cycle hypotheses. Specifically, there are significant positive correlations between dividend payout ratio and retained earnings to equity and firm size; a negative correlation between dividend payout ratio and market-to-book ratio; and significant positive correlations between dividend yield and ROA, retained earnings to equity, and firm size. In contrast with the free cash flow and life-cycle hypotheses, however, the results indicate positive correlations between dividend yield and asset growth rate and market-to-book ratio. Further, dividend payouts, both dividend payout ratio and dividend yield, and leverage are positively correlated at 1% significance level, an issue that might be distinct for Thai capital market.

<Table 4 about here>

4.3 Regression Analysis

In this section, I test the free cash flow and life-cycle hypotheses by examining OLS relationship between dividend payouts (dividend payout ratio and dividend yield) and independent variables following model (1) above. The regression results in Table 5 reveal that firms with higher free cash flows pay higher dividends, as measured by both dividend payout ratio and dividend yield, a finding consistent with the free cash flow hypothesis, and that firms with higher retained earnings to equity pay higher dividend payout ratio, a finding consistent with the life-cycle hypothesis.

<Table 5 about here>

In addition, the results indicate that firms with higher profitability (ROA) provide higher dividend yield and larger firms tend to pay higher dividend payout ratio and dividend yield. These findings support the free cash flow and the life-cycle hypotheses. Further, the results show that the coefficient of market-to-book ratio, a proxy for growth opportunities, on dividend payout ratio is significantly negative, which supports the free cash flow and life-cycle hypotheses. On the contrary, however, the coefficient between market-to-book ratio and dividend yield is significantly positive. Finally, the findings again show positive relationship between financial leverage and dividend payouts, both in terms of dividend payout ratio and dividend yield, a common finding in this research which might suggest that Thai firms use debt financing to pay dividends. This is in line with Aivazian et al. (2003) who document that firms in emerging markets appears to be reliant on bank debt for their dividend payments.

5. Conclusions

This paper examines dividend policy of Thai listed companies from 2002 to 2008 in order to test the free cash flow and life-cycle hypotheses. Based on the comparisons of firm characteristics between higher payout firms and lower payout firms, the correlation analysis, and the regression analysis, the evidence from this research provides much support for the free cash flow and life-cycle hypotheses. Specifically, the free cash flow and earned equity (RE/TE), the main variables in this paper, appear to have positive influences on dividend payouts of Thai firms. These findings consistent with those of DeAngelo et al. (2006) and Denis and Osobov (2008) who document the positive impact of retained earnings to equity, a proxy for firm's life cycle, on dividend policy.

Throughout this paper, it is interesting to observe a significantly positive relationship between financial leverage and dividend payouts, which casts doubt whether Thai firms finance their dividend payments with debt. This issue, however, beyond the scope of this study but provides an exciting area for future research regarding the link between capital structure and dividend policy in Thailand.

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Table 1. Expected Relationship between Independent Variables and Dividend Policy

Variables	Proxy	Expected Sign
FCF	Free cash flows	+
RE/TE	Life cycle	+
ROA	Profitability	+
SIZE	Firm size	+
AGR	Growth opportunities	-
MTB	Growth opportunities	-
LEV	Financial leverage	-
Dividend payout ratio (DPR), dividends over net income, and dividend yield (YLD), dividends over market value of equity, are used as proxies for dividend policy. FCF is the operating cash flows scaled by total assets. RE/TE is retained earnings over book value of equity. ROA is operating income over total assets. SIZE is the natural logarithm of total assets. AGR is the percentage change in total assets from year -1 to year 0. MTB is market-to-book value of assets. LEV is total debt to total assets.		

Table 2. Descriptive Statistics of Variables

Variables	Mean	Min	Max	Std. Dev.
DPR	0.6391	0.04	2.75	0.4420
YLD	0.0916	0.00	0.60	0.0759
FCF	0.1166	-0.37	0.78	0.1044
RE/TE	0.4442	0.01	5.02	0.3834
ROA	0.1204	0.00	1.53	0.1026
SIZE	15.2521	12.61	20.61	1.4574
AGR	0.1067	-0.24	1.74	0.1813
MTB	1.5971	0.16	9.34	1.2027
LEV	0.3822	0.00	0.92	0.1975
DPR is dividends over net income. YLD is dividends over market value of equity. FCF is the operating cash flows scaled by total assets. RE/TE is retained earnings over book value of equity. ROA is operating income over total assets. SIZE is the natural logarithm of total assets. AGR is the percentage change in total assets from year -1 to year 0. MTB is market-to-book value of assets. LEV is total debt to total assets. DPR is dividends over net income. YLD is dividends over market value of equity. FCF is the operating cash flows scaled by total assets. RE/TE is retained earnings over book value of equity. ROA is operating income over total assets. SIZE is the natural logarithm of total assets. AGR is the percentage change in total assets from year -1 to year 0. MTB is market-to-book value of assets. LEV is total debt to total assets.				

Table 3. Test of Differences in Firm Characteristics

Variables	HDPR (n=322)	LDPR (n=546)	Diff.	HYLD (n=318)	LYLD (n=550)	Diff.
FCF	0.1144	0.1203	-0.0059 (-0.802)	0.1577	0.0928	0.0650** (8.287)
RE/TE	0.4697	0.4011	0.0686* (2.554)	0.5146	0.4035	0.1111** (3.492)
ROA	0.1152	0.1290	-0.0138 (-1.917)	0.1623	0.0961	0.0661** (9.619)
SIZE	15.0455	14.9919	0.4136** (4.076)	15.4038	15.1643	0.2395* (2.217)
AGR	0.1156	0.0917	0.0239 (1.883)	0.1294	0.0937	0.0357** (2.697)
MTB	1.4895	1.7797	-0.2902** (-3.455)	2.4264	1.1177	1.3087** (15.281)
LEV	0.4075	0.3393	0.0682** (4.981)	0.4076	0.3675	0.0401** (2.891)

The sample is divided into two groups using the mean payout. HDPR and LDPR are high and low dividend payout ratio groups respectively. HYLD and LYLD are high and low dividend yield groups respectively. The figures in the parentheses are the t-statistics. **, * indicate statistical significance at 1% and 5% respectively.

Table 4. Pearson's Correlation Matrix

Variables	DPR	YLD	FCF	RE/TE	ROA	SIZE	AGR	MTB	LEV
DPR	1								
YLD	-0.335**	1							
FCF	0.003	0.443**	1						
RE/TE	0.081*	0.216*	0.065	1					
ROA	-0.009	0.353**	0.324**	0.084*	1				
SIZE	0.127**	0.080*	-0.008	0.008	-0.010	1			
AGR	0.036	0.140**	0.113**	-0.033	0.038	0.101**	1		
MTB	-0.124**	0.694**	0.363**	0.248**	0.319**	0.214**	0.155**	1	
LEV	0.113**	0.135**	-0.158**	0.141**	-0.163**	0.411**	0.246**	0.248**	1

DPR is dividends over net income. YLD is dividends over market value of equity. FCF is the operating cash flows scaled by total assets. RE/TE is retained earnings over book value of equity. ROA is operating income over total assets. SIZE is the natural logarithm of total assets. AGR is the percentage change in total assets from year -1 to year 0. MTB is market-to-book value of assets. LEV is total debt to total assets. **, * indicate statistical significance at 1% and 5% respectively.

Table 5. Determinants of Dividend Payouts

Variables	DPR	YLD
Intercept	-0.335*	0.046*
	(-2.092)	(2.388)
FCF	0.393*	0.149**
	(2.474)	(7.735)
RE/TE	0.137**	0.009
	(3.461)	(1.826)
ROA	0.246	0.082**
	(1.567)	(4.286)
SIZE	0.039**	0.003*
	(3.571)	(2.594)
AGR	0.058	0.008
	(0.693)	(0.745)
MTB	-0.099**	0.036**
	(-6.709)	(20.243)
LEV	0.286**	0.023*
	(3.182)	(2.146)
Adjusted R^2	6.7%	53.7%

Dependent variable is either dividend payout ratio (DPR), dividends over net income, or dividend yield (YLD), dividends over market value of equity. FCF is the operating cash flows scaled by total assets. RE/TE is retained earnings over book value of equity. ROA is operating income over total assets. SIZE is the natural logarithm of total assets. AGR is the percentage change in total assets from year -1 to year 0. MTB is market-to-book value of assets. LEV is total debt to total assets. The figures in the parentheses are the t-statistics for the coefficients. **, * indicate statistical significance at 1% and 5% respectively.