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A MECHANISM AND DETERMINANTS OF AN AGENCY-COST EXPLANATION FOR DIVIDEND PAYMENTS

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This study explains the dividend puzzle using the agency-cost framework suggested by Easterbrook (1984). Easterbrook hypothesized that shareholders in firms, who increase cash dividend payout and 'simultaneously' raise debts to finance their investments are likely to be wealthier than those in firms who only increase their cash dividend payout. He provided the mechanism that shareholders use the dividend payments to force managers to go to the capital markets to raise funds. Therefore, he argued that dividend policy influences the financing policy.

A system of simultaneous equation using three-stage generalized least square method is used to test the hypotheses. Among the variables to proxy the investment opportunity set, market-to-book ratio, market-to-book assets ratio and accounting earnings-per-share-to-price ratio are the best proxies. Attempt is made to obtain better proxies for the investment opportunity set using an instrument variable method. The system is robust to alternate investment opportunity variables as well as to the instrumental variables.

The findings are as follows. For the firms that increase cash dividend payout and raise debt simultaneously, (a) dividend policy is not a shareholders' mechanism, but a manager's accounting-based decision with accounting earnings and retained earnings as the major determinants, (b) dividend policy influences financing policy, but not the other way around, (c) increasing dividend payment decreases shareholders' wealth, but increasing debt subsequently increases shareholders' wealth with a net effect positive to shareholders' wealth, and (d) dividend policy is independent from investment policy.

Keywords: agency-cost; agency theory; dividend puzzle; dividend mechanism; instrumental variable; investment opportunity set; shareholders; wealth

Introduction

General Issue

Ratnaningsih and Hartono (2002) tested the Easterbrook's hypothesis that firms increase their cash dividend payout and 'simultaneously' raise debt to finance their investments can increase their shareholders' wealth. Firms finance their projects either internally using retained earnings or externally by raising new capital. Miller and Rock (1985) claimed that simultaneously paying dividends and raising debt is uneconomic and pointless. Easterbrook (1984), however, argued that this joint policy reduces agency costs of equity, thereby increasing shareholders' wealth. Easterbrook's argument is built on the agency cost of monitoring managers. This cost is expensive, and shareholders are not able to recapture the full gains from this monitoring cost. They receive benefits only in proportion to their holdings, since some of the benefits would go to other principals such as bondholders. A mechanism to increase shareholders' wealth is to induce bondholders to share monitoring costs. Shareholders who are able to put managers in the capital markets thus have an incentive to reduce the agency costs of monitoring. Shareholders demand dividend payments to increase managers' reliance on capital markets. Therefore, Easterbrook argued that dividends exist because they influence the firms' financing policy.

Ratnaningsih and Hartono found support for the Easterbrook's hypothesis. Further, they separated the net total effect on the shareholders' wealth into two individual effects. They found that increasing cash dividend payout is only a mechanism that is the dividend increase itself does not effect directly to the shareholders' wealth, but through the increase of debt.

This study extents the work of Ratnaningsih and Hartono. While their result suggested that dividend policy influences financing policy, they never really tested this mechanism. So, this study addresses the *issue* that dividend payment is a mechanism to increase shareholders' wealth. This study will investigate in detail about this issue. If dividend payment is really the mechanism, dividend policy will influence financing policy but not the reverse. Also, if it is a mechanism, dividend payment is a shareholder dividend policy not a manager's accounting-based dividend decision.

The *motivations* of this study are as follows. *First*, some studies tested the Easterbrook's hypothesis but never tested the mechanism in detail. This study investigates this mechanism. *Second*, this study will test the Easterbrook's hypothesis and its dividend payment mechanism in the context of other corporate policies simultaneously. This study follows the suggestion of Smith and Watts (1992) that corporate policies cannot be examined separately.

This study has three *objectives*. First, this study reexamines the Easterbrook hypothesis. Easterbrook hypothesized that shareholders in firms which increase their cash dividend payout and simultaneously raise debt to finance their investments are more likely to be wealthier than those in firms which increase their cash dividend payout only without increasing debt.

Second, this study tests the dividend payment mechanism. Easterbrook argued that the dividend policy influences the financing policy. The second objective is to test whether dividend policy influences financing policy or financing policy influences dividend policy.

Third, the most important objective

of this study is to test whether dividend policy is a shareholders' vehicle or a manager's accounting-based decision. Generally, prior studies found that dividend policy is determined by accounting variables. But, Easterbrook suggests that for the unique situation where firms increase cash dividend payout and debt simultaneously, dividend policy is determined by shareholders' power to force managers go to capital market.

The organization of this paper is as follows. Section II articulates the hypotheses. Section III discusses the empirical model specification, variable definition and sample selection. Section IV presents the results and discussion. Section V closes with conclusions and limitations of this study.

Hypotheses Development

The Shareholders' Wealth Hypothesis

This study reexamines the Easterbrook's hypothesis in Ratnaningsih and Hartono's (2002) study. Easterbrook (1984) suggested that increasing cash dividend payout makes firms to go to the capital markets more frequently to raise funds to carry out their projects. The markets will assess, evaluate and monitor firms' performance. Shareholders find it less costly to have lenders (such as commercial banks, investment brokers, credit analysts etc.) monitor the firms than to monitor by themselves. Shareholders are hypothesized to be wealthier for firms increasing cash dividend payout and debts simultaneously than for firms increasing cash dividend payout only. Therefore, the hypothesis (stated in alternative forms) to be tested is as follows:

H_1 : *Shareholders of firms that increase cash dividend payout and debt simultaneously are more likely to be wealthier than those of firms that only increase cash dividend payout without increasing debt.*

The Mechanism Hypothesis

Born and Rimbey (1993) argued that previous financing causes shareholders to expect a change in dividend policy. They suggested, therefore, that financing policy influences dividend policy. Easterbrook (1984), on the contrary, argued that dividend policy causes managers to go to capital markets. This leads to the hypothesis (stated in alternative forms) as follows.

H_2 : *For firms that increase debt and cash dividend payout simultaneously, dividend policy influences financing policy.*

The Determinant Hypothesis

The Easterbrook's dividend mechanism is a shareholders' vehicle to force managers to raise capital. This mechanism implies that shareholders' power is the determinant of dividend policy. Other determinant of dividend policy could be accounting earnings[1] or tax penalty avoid-

[1] Profitability variable (PROFIT) is found significant to determine dividend policy in Jensen et al. (1992). Mande (1994) also found a relationship between current earnings and future dividends. Partington (1989) reported a result from a survey of 93 large companies in Australia that earnings is the most important variable in determining dividend payments. Campbell and Shiller (1988) also reported that accounting earnings when averaged over many years can predict the future dividends. Banker et al. (1993) found that previous accounting information is useful in explaining cross-sectional variations in the market response for stock dividend announcements. Easton and Sinclair (1989) found a significant interaction between earnings and dividend announcements.

ance decision (Haist Barce 1992).[2] Therefore it is hypothesized as follows.

H_{3a} : *For firms that increase debt and cash dividend payout simultaneously, cash dividend payout is determined by shareholders' power.*

H_{3b} : *For firms that increase debt and cash dividend payout simultaneously, cash dividend payout is determined by manager's accounting decision.*

Empirical Methodology

This section presents the empirical methodology used in this study. The first subsection discusses the sample, and fol-

Table 1. **Sample Selection Procedure**

	Treatment Firms		Control Firms	
	Firm-years	Number of Firms	Firm-years	Number of Firms
Requirements:				
- Firms identified as to increase cash dividend payout ratio and debt simultaneously	1254	514	-	-
- Firms identified as not to increase cash dividend payout ratio and debt simultaneously	-	-	1760	622
Screened for at least three years in row	(752)	(374)	(885)	(402)
	502	140	875	220
Screened for missing values	(202)	(52)	(558)	(118)
Final sample	300	88	317	102

[2] The level of retained earning (RE) is used as a proxy for tax penalty avoidance on improperly accumulated earnings. The main defense for not accumulating earnings improperly is to show that this accumulation does not exceed the reasonable needs of the business. One of the permissible accumulation for the reasonable needs of the business is to provide working capital for the firms' operation cycle. The *Bardahl* formula can be used to determine the reasonable working capital needs as follows (see Haist and Barce 1992).

A decimal % = inventory cycle + A/R cycle - A/P cycle

$$= \frac{\text{average inventory}}{\text{cost of goods sold}} + \frac{\text{average A/R}}{\text{net sales}} - \frac{\text{average A/P}}{\text{purchases}}$$

The reasonable working capital needs equal to the decimal percentage times cost of goods sold plus general, administrative and selling expenses. This formula is not used in this study as a proxy for tax penalty avoidance for improper earnings accumulation because this formula cannot be applied perfectly to service firms that do not maintain inventories.

lowed by specification of the models and how the hypotheses are tested. After the models are specified, the definitions of the variables are given.

The Data

Data for this study are taken from Ratnaningsih and Hartono's (2002) study that were collected from COMPUSTAT annual tape from period 1974-1993. The procedure to select the sample is conducted as follows. *First*, firms which increase debt and cash dividend payout simultaneously for at least three years in row are identified from COMPUSTAT tapes. The three years condition appears to be a long enough time period to ensure firms have steady dividend and financing policies. The longer period is desired but will drop the sample size drastically. *Second*, firms which have missing data in those files are excluded from the sample.

The control group consists of firms which did not increase cash dividend payout debt simultaneously. The procedure to select the control group is the same with that of treatment group. Table 1 shows this sample selection procedure.

Following Rozeff (1982), Smith and Watts (1992), and Dempsey and Laber (1992) the annual arithmetic average of data for each firm are used as final samples. This method is quite similar with that of Fama and MacBeth (1973). The Fama and MacBeth's method averages the results of year by year regressions, while this method averages the data first before they are used in the model. Both the methods are effective to reduce serial-correlations.[3]

Model Specification

This study follows the suggestion from Smith and Watts (1992) that corporate policies should be examined simultaneously. Therefore this study uses a system of equations as follows.

$$\Delta SW = \beta_{10} + \beta_{11}\,\Delta DIVPR + \beta_{12}\,\Delta DEBT + \beta_{13}\,LEV + \beta_{14}\,\{IOV\} + \varepsilon 1 \quad \ldots\ldots(1)$$

$$\Delta DEBT = \beta_{20} + \beta_{21}\,\Delta DIVPR + \beta_{22}\,FASSET + \beta_{23}\,TIE + \beta_{24}\,LEV + \beta_{25}\,\{IOV\} + \varepsilon 2 \quad \ldots\ldots(2)$$

$$\Delta DIVPR = \beta_{30} + \beta_{31}\,\Delta DEBT + \beta_{32}\,LHOLDER + \beta_{33}\,RE + \beta_{34}\,PROFIT + \beta_{35}\,\{IOV\} + \varepsilon 3 \quad \ldots\ldots(3)$$

where

ΔSW = the change in shareholders' wealth,
$\Delta DIVPR$ = the change of cash dividend payout,
$\Delta DEBT$ = the change of long-term debt,
$\{IOV\}$ = investment opportunity variable,
$LHOLDER$ = the natural log of the number of shareholders,
RE = retained earnings and PROFIT is net profit.

To address the question of missing variables, some control variables are used in the model. The choice of these control variables are based on relevant variables from previous research. The control variable included for the effect on shareholders' wealth is financial leverage (LEV). Financial leverage (debt equity ratio) is a negatively significant variable to explain stock price change (see Watts and

[3] Another econometric problem, i.e. heteroscedasticity is also not a serious problem in this study. The use of Generalized Least Square (GLS) method to solve the model automatically overcome this problem.

Zimmerman, 1986). The effect of financial leverage on stockholders' wealth is expected to be negative.

The control variables used for financing policy are LEV, FASSET and TIE. Debt policy is affected not only by firm's demand of debt, but also the supply of debt from lenders. The dividend payout in this study is considered as a variable that affects the demand of debt. As control variables, some variables which affect the supply of debt are included. These variable are leverage (LEV), firm's level of fixed asset (FASSET) and time-interest-earned ratio (TIE). Ross (1977) in his *secured debt hypothesis* suggested a positive relationship between debt and fixed asset. Lenders often used coverage ratios such as TIE ratio to measure the risk of financial distress (Brigham and Gapenski 1993).

Since the variables used are interrelated in one equation into another equation, the coefficients of the models are estimated using a system of equations. Three-stage generalized least squares (3SLS) technique is used to solve this problem.[4]

The model is run twice. *First*, the model is run using a sample group, consisting of firms that increase cash dividend payout and increase debts. *Second*, the model is run using a control group, consisting of firms that increase cash dividend payout only. The two results are compared.

The *first hypothesis* is supported if the value of ΔSW is greater for the treatment sample than that of the group sample and coefficient $ß_{11}$ from ΔDIVPR or coefficient $ß_{12}$ from ΔDEBT is positively significant from the treatment sample.

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[4] The use of two-stage least square (2SLS) or reduced form method will produce biased results, because the system is overidentified. Therefore, three-stage generalized least square (3SLS) is used. The endogenous variables in the system are ΔSW, ΔDEBT and ΔDIVPR. The exogenous variables are LEV, FASSET, TIE, LHOLDER, PROFIT and {IOV}. The system can be written in a matrix form as follows.

$$\Delta SW\ \Delta DEBT\ \Delta DIVPR \begin{bmatrix} 1 & 0 & 0 \\ -\beta_{12} & 1 & -\beta_{31} \\ -\beta_{11} & -\beta_{21} & 1 \end{bmatrix} +$$

$$1\ LEV\ FASSET\ TIE\ LHOLDER\ RE\ PROFIT\ \{IOV\} \begin{bmatrix} -\beta_{10} & -\beta_{20} & -\beta_{30} \\ -\beta_{13} & -\beta_{24} & 0 \\ 0 & -\beta_{22} & 0 \\ 0 & -\beta_{23} & 0 \\ 0 & 0 & -\beta_{32} \\ 0 & 0 & -\beta_{33} \\ 0 & 0 & -\beta_{34} \\ -\beta_{14} & -\beta_{25} & -\beta_{35} \end{bmatrix} = \varepsilon 1\ \varepsilon 2\ \varepsilon 3$$

A necessary condition is satisfied for all the three equations, because the numbers of excluded exogenous are greater than numbers of included endogenous. For the first equation, the number of excluded exogenous is 5, the number of included endogenous is 2, and the rank of augmented matrix for excluded endogenous and excluded exogenous variables is 2. The first equation is exactly identified, since the rank of matrix is the same with the number of included endogenous. For the second and third equations, the number of excluded exogenous is 3, the number of included endogenous is 1, and the rank of augmented matrix for excluded endogenous and excluded exogenous variables is 2. The second and third equations are overidentified, since the rank of matrix is greater than the number of included endogenous. Therefore the system is overidentified.

Hypothesis two which states that dividend policy influences financing policy is tested by comparing coefficients $ß_{21}$ and $ß_{31}$. The hypothesis is supported if coefficient $ß_{21}$ is significantly positive and coefficient $ß_{31}$ is insignificant from the treatment sample.

Hypothesis three is tested based on the significance of coefficients $ß_{32}$, $ß_{33}$ and $ß_{34}$ in equation 3. Three variables are used as determinants of dividend policy. The dispersion of ownership (LHOLDER) is used to proxy the shareholders' power to influence the dividend policy. The less numbers of shareholders, the more concentrate is the ownership. The more concentrate the ownership, the more power shareholders can assert. The dividend payout is positively related to the dispersion of ownership (Rozeff 1982). The natural log of the number of shareholders (LHOLDER) is used to measure the dispersion. If natural log is not used, an increase from 500 to 1,000 shareholders, for instance, is expected to have equal impact as an increase from 4,500 to 5,000 shareholders. Actually, the former has greater increase in dispersion than the latter. The natural log is used to correct this scale effects. The other two variables are retained earnings (RE) and net profit (PROFIT) as determinants of manager's accounting decision. Hypothesis 3a is supported if coefficient $ß_{32}$ from variable LHOLDER is positively significant. Hypothesis 3b is supported if coefficient $ß_{33}$ from variable RE or coefficient $ß_{34}$ from variable PROFIT is positively significant.

Investment Opportunity Set Variables

Six investment opportunity set variables are used. These are market-to-book assets (MKTASS), market-to-book-equity (MKTEQ), earnings-per-share-to-price ratio (EP), R&D-to-assets ratio (RDASS), investment-to-sales ratio (IOS), and investment-to-earnings ratio (IOE). The reason for using these variables is because investment opportunity set is unobservable and a proxy is needed to represent it. These variables have been used in previous studies as proxies for firms' future investment opportunities.

Smith and Watts (1992) measured investment opportunity set as the ratio of the book value of total assets to total market firm value (A/V). The book value of total assets is a proxy for assets in place. They predicted that the higher the ratio (A/V), the higher the ratio of assets in place to firm value, and the lower the ratio of investment opportunities set to firm value. This paper, following Gaver and Gaver (1993), uses the reverse ratio that is market-to-book assets (MKTASS). This proxy is positively related to firm's investment opportunity set. Smith and Watts (1992) reminded that this proxy contains measurement errors. Since total assets are measured at historical cost less depreciation, the proxy tends to produce measurement error for firms with long-lived assets. The proxy also contains measurement error for firms with high leverage, because the firm value is measured as the market value of equity plus the book value of debt.

The second proxy used for investment opportunity is market-to-book-equity (MKTEQ). This ratio represents the firm's return on its expected future investment over its required rate of return on its equity. Collins and Kothari (1989) also suggested that the difference between market value and book value of equity indicates firm's value of investment opportunity.

The third proxy is earnings-per-share-to-price ratio (EP). Chung and Charoenwong (1991) showed that the

greater this ratio, the greater the earnings generated from assets in place. This proxy is positively related to firm's investment opportunity set.

The above three proxies represent growth (investment opportunity set) based on the difference between assets in place and firm market value. Therefore, these proxies depend very much on the stock prices. Gaver and Gaver (1993) also pointed out that because the inverse relation between leverage and stock price, make these proxies sensitive to the firm's leverage. To anticipate this problem, three other proxies which do not depend very much on stock price are included. These are R&D-to-assets ratio (RDASS), investment-to-sales ratio (IOS), and investment-to-earnings ratio (IOE). The ratio of R&D expenditure to total assets (RDASS) to proxy investment opportunity set is also used in Jensen et al. (1992) and Gaver and Gaver (1993) studies. The investment-to-sales ratio (IOS) and investment-to-earnings ratio (IOE) utilize real capital investment as a measure to the book value of gross property, plant, and equipment (PP&E). The PP&E represents firm's assets in place (see Larcker 1983; Skinner 1993).

Smith and Watts (1992) and Gaver and Gaver (1993) recognized that any single empirical proxy imperfectly measured the investment opportunity set. Sensitivity analysis and instrumental variable approach are used to find the best proxy. Sensitivity analysis is conducted by substituting each proxy one by one into the model. The fittest one is considered the best. Instrumental variable is derived from the predicted values by regressing the best proxy determined from the sensitivity analysis on the other investment opportunity variables.

Definition of Variables

The definition of the variables are as follows.

Main variables:

ΔSW = change of stockholder wealth measured as change in common stockholder returns and is calculated as $(P_t \times S_t + DPS_t - P_{t-1} \times S_{t-1})$, where P_t, S_t and DPS_t are closing stock price, number of shares outstanding and dividend-per-share at year t.
= Compustat items $(24_t * 25_t + 21_t)-(24_{t-1} * 25_{t-1})$

ΔDIVPS = change of cash dividend per-share.
= Compustat item $(127_t / 25_t) -(127_{t-1} / 25_{t-1})$.

ΔDIVPR = change of cash dividend payout ratio.
= Compustat item $(127_t / 18_t) -(127_{t-1} / 18_{t-1})$.

ΔDEBT = change of long-term debt.
= Compustat item $9_t - 9_{t-1}$.

LHOLDER = natural log of number of shareholders.
= log (Compustat item 100).

RE = ratio of retained earnings to total assets.
= Compustat items 36 / 6.

PROFIT = ratio of operating income to total assets.
= Compustat items 18 / 6.

Investment Opportunity Set variable or proxy:

MKTASS = market-to-book assets ratio.
= Compustat items [6 - 60 + (24 * 25)] / 6.

MKTEQ = market-to-book-equity ratio.
= Compustat items (24 * 25) / 60.

EP = earnings-per-share/price ratio.
= Compustat items 58 / 24.

RDASS = R&D-to-assets ratio.
= Compustat items 46 / 6.

IOS = ratio of investment to net sales.
= Compustat items 30 / 12.

IOE = ratio of investment to net income.
= Compustat items 30 / 18.

IVIOS1 = the first instrumental variable to proxy investment opportunity set (see section "Instrumental Variables" to create this instrumental variable).

IVIOS2 = the second instrumental variable to proxy investment opportunity set. (see section "Instrumental Variables" to create this instrumental variable)

Control variables:

LEV = ratio of long-term debt to equity.
= Compustat items 9 / 60.

FASSET = fixed assets.
= Compustat items (6 - 4).

TIE = ratio of earnings to interest expense.
= Compustat items 18 / 15.

Descriptive Statistics

Table 2 presents descriptive statistics for both the sample group and control group. The last column of the table shows the significant level (based on t-test) for the hypothesis that the two groups have equal means for each variable.

The values of fixed assets (FASSET), total assets (TASSET), net sales (SALES) and earnings (EARNING) for the two groups statistically are not different. If size is measured with these variables, it can be said that statistically the two groups in average have firms with equal size.

The means of variable DEBT are statistically the same. This suggests that the two groups also have the same average debt levels. But, the two groups statistically have different equity and retained earnings. The sample group have greater mean of equity value ($694.8085 millions compared to $55.7824 millions) and greater mean value of retained earnings ($554.8718 millions compared to $35.4377 millions). The sample group also on average has greater financial leverage.

In term of firm's market values, the sample group statistically outperforms the control group. The average value of stock price for sample group is greater ($19.83) than that of control group ($17.59). On average, the sample group also has higher share outstanding than that of control group (39 millions compared to 6.2383 millions).

Several investment opportunity set variables are used. As mentioned before, no single proxy can perfectly measure the investment opportunity facing by firms. The descriptive statistic also shows this imperfection. MKTASS, MKTEQ and EP variables are statistically different for the two groups, but there is inconsistency in value for each variable. The mean value of MKTASS variable for sample group is smaller than that of control group, but the mean values of MKTEQ and EP for sample group are greater than those of control group. On the contrary, the mean values of RDASS and IOS variables are statistically indifferent between the two groups.

Finally, shareholders in sample group ,on average experience higher change in wealth than those in control group ($119.17 millions increases in wealth compared to $4.49 millions). The sample group also significantly increases its cash dividend

Table 2. **Descriptive Statistics**

Variable	Sample Firms		Control Firms		p-Value
	Mean	Std. Dev.	Mean	Std. Dev	
Firm's Size:					
FASSET	996.9681	4187.2790	80.9139	174.3475	0.0433
TASSET	1805.8990	8468.3389	143.5576	245.4010	0.0691
SALES	2067.3741	9517.0545	169.2932	293.3315	0.0648
EARNING	55.2727	244.5895	4.8239	17.9749	0.0568
Debt and Equity:					
DEBT	441.6316	1582.6408	35.6086	121.4440	0.0185
EQUITY	694.8085	4128.8698	55.7824	82.2392	0.1502
LEV	0.8918	2.5209	0.5445	3.3388	0.4160
RETAIN	554.8718	3643.5601	35.4377	62.9563	0.1846
HOLDER	11.6044	31.3961	2.8447	5.8846	0.0115
Market Value					
PRICE	19.8340	12.6146	17.5932	20.6647	0.3614
SHARE	39.0006	194.5186	6.2383	8.0765	0.1180
Investment Opportunity Set (Growth):					
MKTASS	1.2933	0.5444	1.3854	0.6257	0.2846
MKTEQ	1.6450	1.9447	1.3823	1.9947	0.3609
EP	0.0543	0.3425	0.0332	0.5436	0.1802
RDASS	0.0081	0.0218	0.0168	0.0307	0.0236
IOS	0.1849	0.3807	0.0575	0.0857	0.0028
Changes in shareholders' wealth and policies:					
ΔSW	119.1662	770.3862	4.4902	29.1795	0.1664
ΔDIVPR	0.1544	0.5514	0.1224	0.3115	0.6299
ΔDEBT	85.1252	310.9358	8.1899	35.7145	0.0063

Definitions:

FASSET = fixed assets (in millions of dollars); TASSET = total assets (in millions of dollars); SALES = net sales (in millions of dollars); EARNING = income before extraordinary items (in millions of dollars); DEBT = long-term debt (in millions of dollars); EQUITY = common equity (in millions of dollars); LEV = ratio of long-term debt to equity; RETAIN = retained earnings (in millions of dollars); HOLDER = number of shareholders (in thousands); PRICE = closing price of stocks (in dollars and cents); SHARE = common shares outstanding (in millions of shares); MKTASS = market-to-book assets ratio; MKTEQ = market-to-book-equity ratio; EP = earnings-per-share/price ratio; RDASS = R&D-to-assets ratio; IOS = ratio of investment to net sales; ΔSW = change of stockholder wealth (in millions of dollars) measured as change in common stockholder returns and is calculated as $(P_t \times S_t + DPS_t - P_{t-1} \times S_{t-1})$, where P_t, S_t and DPS_t are closing stock price, number of shares outstanding and dividend-per-share at year t; ΔDIVPR = change of cash dividend payout ratio; ΔDEBT = change of long-term debt (in millions of dollars).

payout ratio greater than that of control group. But, the two groups significantly are indifferent in change of their debt levels.

Results

Instrumental Variables

To examine the robustness of the investment opportunity variables, two instrumental variables are also used. The two instrumental variables are IVIOS1 and IVIOS2. These instrumental variables are derived as follows. Each of the investment opportunity variables is substituted into the system one by one at the time. The fittest one (MKTEQ) is chosen as the primary proxy. This variable is then regressed on the other investment opportunity variables. The predicted value is the first instrumental variable (IVIOS1). The

Table 3. **Estimated Regressions for Instrumental Variables.**[a]

Variable	Dependent Variable is MKTEQ			
	Sample Group		Control Group	
	IVIOS1	IVIOS2	IVIOS1	IVIOS2
Constant	-1.5558***	-1.4060***	-.73600	-.54388
	(-3.363)	(-3.216)	(-1.415)	(-1.248)
EP	1.6681***	1.6897***	.50155	.73836***
	(3.346)	(3.448)	(1.446)	(2.737)
IOS	.61393			2.8124
	(1.320)			(1.328)
IOE	.00710			.11037
	(.150)			(.572)
RDASS	-3.4048			2.6529
	(-.431)			(.431)
MKTASS	2.3231***	2.2881***	1.3294***	1.3903***
	(7.298)	(7.420)	(4.263)	(4.847)
R^2	.42324	.40500	.22593	.19022

[a]t-statistics are shown in parentheses.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Definitions:
MKTASS = market-to-book assets ratio; MKTEQ = market-to-book-equity ratio; EP = earnings-per-share/price ratio; RDASS = R&D-to-assets ratio; IOS = ratio of investment to net sales; IOE = ratio of investment to net income.

MKTEQ variable is also regressed only on other significant investment opportunity variables. The predicted value from this regression is the second instrumental variable (IVIOS2). The regression results from deriving these instrumental variables are given in Table 3. These instrumental variables are robust enough for not to change the sign or significance of the other coefficients in the system (see results in Tables 4, 5 and 6).

Preliminary Test

A univariate *t*-test for the difference between means of change in shareholders' wealth (ΔSW) for sample and control groups is performed. Table 2 shows that shareholders in sample group on average experience higher change in wealth than those in control group. Shareholders in sample group enjoy $119.17 thousands increase in wealth compared to only $4.49 thousands for shareholders in control group. The result from the univariate test only preliminarily supports the first hypothesis, since the test fails to control other firm's extraneous characteristics.

Results from the System of Equations

Results from the three-stage generalized least square (3SLS) for the systems of equations are presented in Tables 4, 5 and 6. Table 4 presents the results of dividend and financing policies on the change of shareholders' wealth. The results show that both changes of cash dividend payout ratio and debt are statistically significant only at the 10 percent and 1 percent levels respectively for sample group. But for control group, these two variables are insignificant. This results support the first hypothesis. For the pooled group, the dummy variable mostly is significant at the 1 percent level. This result further supports the first hypothesis that the two groups lead to the difference shareholders' wealth. The analysis is also repeated using different definition of dividend payout. Specification 5 shows the results using cash dividend per-share rather than using cash dividend payout ratio. The results remain the same.

Table 5 presents the results for firm's financing policy. ΔDIVPR variable is positively significant at the 5 percent level for the sample group, and is not significant for the control group. Table 6 presents the results for firm's dividend policy. ΔDEBT is insignificant both for sample and control groups. These suggest that for the sample group, dividend policy influences financing policy, but not the reverse that financing policy influences dividend policy. These results support the second hypothesis.

Only two control variables are significant for the financing policy. These are FASSET and LEV. Both variables are positively significant at the 1 percent level for both sample and control groups. The positive sign of FASSET confirms the *secured debt hypothesis* that firms with higher fixed assets can borrow more. The negative sign of LEV is consistent with predicted sign.

Table 6 also presents the results for the determinants of the firm's dividend policy. RE is negatively significant at the 1 percent level. The negative sign of this variable is consistent with the prediction that firms pay higher cash dividend have lower retained earnings to avoid tax penalty for unnecessary earnings accumulation. PROFIT is positively significant at the 1 percent level. The positive sign of this variable confirms with the predicted sign that profitable firms pay higher cash dividend. The significance of variables RE and PROFIT supports the hypothesis that accounting decision is the determi-

nant of dividend policy. The insignificant of LHOLDER means that dividend policy is not determined by shareholders. For the control group, the only variable that is significant is LHOLDER. These overall results suggest not to support hypothesis 3a but to support hypothesis 3b.

Table 4. **Simultaneous Equation Results for Equation 1**[a]

Dependent Variable is ΔSW

PANEL A. Sample Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	-85.624*	-164.64*	-4.0528	-101.57*	-103.57*	-11.352
	(-1.939)	(-1.840)	(-.092)	(-1.727)	(-1.700)	(-.163)
ΔDIVPR	-218.26*	-281.22*	-301.60*	-283.10*	-274.99*	
	(-1.677)	(-1.885)	(-1.932)	(-1.917)	(-1.862)	
ΔDIVPS						-1719.1***
						(-2.853)
ΔDDEBT[c]	2.3627***	2.3626***	2.3476***	2.3643***	2.3657***	2.2470***
	(24.742)	(22.677)	(21.545)	(22.758)	(22.950)	(19.798)
LEV	-60.899***	-34.336***	-35.949***	-37.157**	-36.320***	-67.493***
	(-4.373)	(-3.269)	(-3.232)	(-3.553)	(-3.489)	(-4.104)
MKTEQ[d]	55.731***					94.712***
	(2.914)					(4.429)
MKTASS		121.19**				
		(2.058)				
EP			37.042			
			(.375)			
IVIOS1				58.563**		
				(2.323)		
IVIOS2					58.483**	
					(2.282)	
R^2	.86820	.84416	.83081	.84557	.84762	.70366

[a]t-statistics are shown in parentheses.
[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification is ΔDIVPS.
[c]Using level of DIVPR and DEBT instead of their changes do not alter the results very much.
[d]Other instrumental variables such RDASS, IOS and IOE are insignificant if included in the system. Inclusion of these insignificant variable does not change the sign and significance of other variables in the equation.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Table 4. (Continued)[a]

PANEL B. Control Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	5.7424	-13.011	1.2525	-11.631*	-7.4374	-15.171
	(.932)	(-1.408)	(.209)	(-1.667)	(-.959)	(-.703)
ΔDIVPR	-40.221	-17.128	-22.018	-13.324	-17.128	
	(-1.011)	(-.450)	(.478)	(-.362)	(-.450)	
ΔDIVPS						75.833
						(.446)
ΔDEBT	.00417	.02605	-.19061*	-.03210	.02605	-5.6094***
	(.045)	(.297)	(-1.765)	(-.371)	(.297)	(-8.283)
LEV	- .28221	.13150	-.10969	.18944	.13150	-3.3236
	(-.264)	(.132)	(-.102)	(.196)	(.132)	(-.520)
MKTEQ	2.7907*					3.4434
	(1.841)					(.553)
MKTASS		14.248***				
		(3.089)				
EP			28.851***			
			(3.465)			
IVIOS1				12.577***		
				(4.313)		
IVIOS2					10.248***	
					(3.089)	
R^2	.00843	.13029	.45013	.19032	.13029	.57438

[a]t-statistics are shown in parentheses.
[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification isΔDIVPS.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Definitions:
ΔSW = change of stockholder wealth measured as change in common stockholder returns and is calculated as $(P_t \times S_t + DPS_t - P_{t-1} \times S_{t-1})$, where P_t, S_t and DPS_t are closing stock price, number of shares outstanding and dividend-per-share at year t; ΔDIVPR = change of cash dividend payout ratio; ΔDIVPS = change of cash dividend per-share; ΔDEBT = change of long-term debt; LEV = ratio of long-term debt to equity; MKTEQ = market-to-book-equity ratio; MKTASS = market-to-book assets ratio; EP = earnings-per-share/price ratio; IVIOS1 = first instrumental variable; IVIOS2 = second instrumental variable.

Table 5. **Simultaneous Equation Results for Equation 2.**[a]

Dependent Variable is ΔDEBT

PANEL A. Sample Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	-1.4797 (-.180)	-3.8829 (-.250)	-3.5691 (-.478)	1.9823 (.195)	.06514 (.006)	7.2127 (.403)
ΔDIVPR	53.162** (2.207)	54.909** (2.119)	54.409** (2.106)	53.747** (2.102)	53.706** (2.083)	
ΔDIVPS						206.43 (1.317)
FASSET	.07348*** (56.671)	.07346*** (55.309)	.07347*** (55.555)	.07339*** (55.668)	.07340*** (55.598)	.07985*** (34.238)
TIE	.15249 (.390)	.14775 (.377)	.22491 (.580)	.19838 (.503)	.17240 (.435)	.06342 (.109)
LEV	7.6318*** (3.195)	7.7074*** (4.424)	8.0492*** (4.574)	7.7126*** (4.438)	7.6599*** (4.409)	7.8319* (1.764)
MKTEQ	-1.3638 (-.392)					-13.268** (-2.307)
MKTASS		-.10910 (-.011)				
EP			-18.080 (-1.101)			
IVIOS1				-3.6163 (-.812)		
IVIOS2					-2.3695 (-.517)	
R^2	.97097	.97027	.97080	.97088	.97078	.90018

[a]t-statistics are shown in parentheses.
[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification is ΔDIVPS.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Table 5. **(Continued)**[a]

PANEL B. Control Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	36678 (.087)	-.03173 (-.005)	-.26055 (-.058)	-.27132 (-.053)	.57273 (.107)	-3.2567 (-1.133)
ΔDIVPR	45.132 (1.633)	38.079 (1.413)	53.264 (1.594)	40.363 (1.479)	38.079 (1.413)	
ΔDIVPS						29.419 (1.280)
FASSET	-.20085*** (-16.181)	-.19981*** (-16.639)	-.18946*** (-12.479)	-.19876*** (-16.077)	-.19981*** (-16.639)	-.02379*** (-11.303)
TIE	-.00019 (-.075)	-.00011 (-.042)	-.00020 (-.081)	-.00014 (-.055)	-.00011 (-.042)	.00013 (.824)
LEV	2.2208*** (3.206)	2.2365*** (3.429)	2.0852*** (2.652)	2.2396*** (3.375)	2.2365*** (3.429)	.52916 (.631)
MKTEQ	.70768 (.687)					-.47165 (-.578)
MKTASS		1.5452 (.484)				
EP			7.1137 (1.202)			
IVIOS1				1.4588 (.694)		
IVIOS2					1.1114 (.484)	
R^2	.64291	.68611	.58864	.67306	.68611	.38935

[a]t-statistics are shown in parentheses.
[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification is DDIVPS.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Definitions:
ΔDEBT = change of long-term debt; ΔDIVPR = change of cash dividend payout ratio; ΔDIVPS = change of cash dividend per-share; FASSET = fixed assets; TIE = ratio of earnings to interest expense; LEV = ratio of long-term debt to equity; MKTEQ = market-to-book-equity ratio; MKTASS = market-to-book assets ratio; EP = earnings-per-share/price ratio; IVIOS1 = first instrumental variable; IVIOS2 = second instrumental variable.

Table 6. **Simultaneous Equation Results for Equation 3.**[a]

Dependent Variable is ΔDIVPR

PANEL A. Sample Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	34636***	33865**	.37306***	.32150***	.33454***	.03515**
	(3.519)	(2.238)	(4.007)	(2.894)	(3.013)	(2.178)
ΔDEBT	-.00001	-.00002	-.00002	-.00002	-.00002	-.00006*
	(-.060)	(-.114)	(-.093)	(-.097)	(-.103)	(-1.787)
LHOLDER	.01173	.01975	.01683	.02096	.02075	.03901***
	(.338)	(.604)	(.529)	(.645)	(.634)	(6.055)
RE	-1.3475***	-1.2956***	-1.3284***	-1.3130***	-1.3067***	-.04409
	(-3.883)	(-3.746)	(-3.862)	(-3.824)	(-3.776)	(-.891)
PROFIT	1.2978***	1.2148***	1.4543	1.2966***	1.2980***	.46773
	(2.944)	(2.724)	(1.323)	(3.000)	(2.978)	(1.632)
MKTEQ	.02454					-.00103
	(.852)					(-.481)
MKTASS		.02296				
		(.225)				
EP			-.01080			
			(-.019)			
IVIOS1				.02825		
				(.627)		
IVIOS2					.01974	
					(.424)	
R2	.14381	.13445	.14066	.14076	.13895	.22730

[a]t-statistics are shown in parentheses.

[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification is DDIVPS.

*significant at the 10% level

**significant at the 5% level

***significant at the 1% level

Table 6. **(Continued).a**

PANEL B. Control Group

	(1)	(2)	(3)	(4)	(5)	(6)[b]
Constant	.10785**	.18593**	.12266***	.13989**	.16624**	.06670***
	(2.288)	(2.092)	(2.872)	(1.998)	(2.303)	(3.345)
ΔDEBT	-.00019	-.00010	.00071	-.00005	-.00010	-.00076
	(-.190)	(-.097)	(.623)	(-.047)	(-.097)	(-.639)
LHOLDER	.06227**	.05743*	.04334	.05735*	.05743*	.00681
	(2.002)	(1.886)	(1.410)	(1.873)	(1.886)	(.685)
RE	.02261	-.07298	-.07027	-.04961	-.07298	-.01554
	(.202)	(-.589)	(-.674)	(-.411)	(-.589)	(-.373)
PROFIT	-.09899	.09887	.12637	.00263	.09887	.37422**
	(-.265)	(.242)	(.364)	(.006)	(.242)	(2.021)
MKTEQ	-.01130			-.00255		
	(-.672)			(-1.037)		
MKTASS		-.05035				
		(-.968)				
EP			-.11015			
			(-1.534)			
IVIOS1				-.01852		
				(-.520)		
IVIOS2					-.03621	
					(-.968)	
R^2	.03645	.49585	.58660	.42984	.04958	.38890

[a]t-statistics are shown in parentheses.
[b]Using different sample of data consists of 132 firms increasing cash dividend per-share instead of cash dividend payout and debt simultaneously. The independent variable for this specification is DDIVPS.
*significant at the 10% level
**significant at the 5% level
***significant at the 1% level

Definitions:
ΔDIVPR = change of cash dividend payout ratio; ΔDIVPS = change of cash dividend per-share; ΔDEBT = change of long-term debt; LHOLDER = natural log of number of shareholders; RE = ratio of retained earnings to total assets; PROFIT = ratio of operating income to total assets; MKTEQ = market-to-book-equity ratio; MKTASS = market-to-book assets ratio; EP = earnings-per-share/price ratio; IVIOS1 = first instrumental variable; IVIOS2 = second instrumental variable.

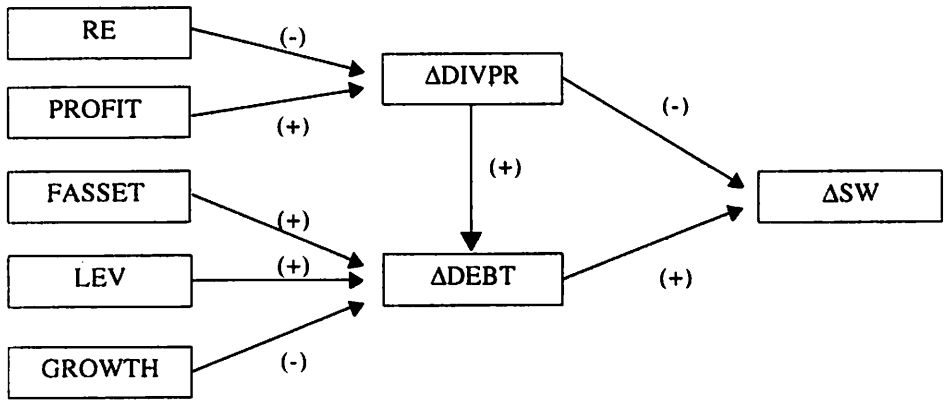
Conclusion and Limitations

Evidence to support the Easterbrook's hypothesis has been reported previously by Ratnaningsih and Hartono (2002). This study reexamines the hypothesis and also supports the hypothesis. This study also supports the hypothesis that dividend policy is a mechanism to influence the financing policy and dividend policy is determined by manager's accounting decision not by shareholders' power.

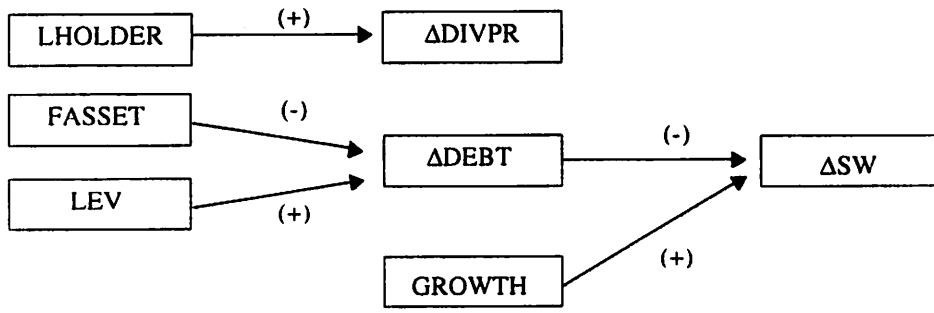
From the results suggest that even though Easterbrook's hypothesis is true that firms that increase cash dividend payout will increase their debt to increase the shareholders' wealth through shifting the monitoring costs from shareholders to

Figure 1. **The Relationships among Variables from the Results**

Panel A. For Sample Group



Panel B. For Control Group



Definitions:

ΔSW= change of stockholder wealth measures as change in common stockholder returns and is calculated as ($P_t + S_t + DPS_t - P_{t-1} + S_{t-1}$), where P_t, S_t, and DPS_t are closing stock price, number of shares outstanding and dividend-per-share at year. ΔDIVPR= change of cash dividend pay out ratio; ΔDEBT= chabge of long-term debt; LEV= ratio of long-term debt equity; FASSET= fixed assets; TIE= ratio of earnings to interest expense; GROWTH= investment opportunity set variables; LHOLDER= natural log of number of shareholders; RE= ratio of retained earnings to total assets; PROFIT= ratio of operating income to total assets.

bondholders, but the explanation of the mechanism is not quite true. Easterbrook suggested that dividend payout is the mechanism used by the shareholders. The result of this study suggests that firms increase their dividend payment not because of shareholders' power to force manager to do so, but because of the manager's accounting decision. Manager of the firms' increases dividend payout because of tax retained earnings constraint and firms were enjoying higher profits.

To summarize, the interrelationships among variables from the results are given in Figure 1. Panel A of Figure 1 shows the interrelationships among variable for the sample group. The change of shareholders' wealth is determined by the change of cash dividend payout ratio, the change of debt, financial leverage and firms' future growth. Dividend policy is only determined by accounting variables not by shareholders' power. Financing policy is determined by level of fixed assets, financial leverage and dividend policy. The result of dividend policy is independent with investment policy is consistent with Partington's (1985, 1989) result.

Panel B of Figure 1 shows the interrelationships among variable for control group. The change of shareholders' wealth is only determined by firms' future growth. Dividend policy is determined by shareholders' decision. Financing policy is determined by level of fixed assets and financial leverage. Dividend policy, financing policy and investment policy are independent.

However, some limitations are noted in this study. *First*, among the three models used in this paper, the dividend policy model is the weakest one. For sample group, this model (equation 3) has only about 14 percent power to explain the variations. It is suggested that there must be some missing variables. One possible variable is the percentage of common stock held by insiders. It is hypothesized that the larger the shares owned by outside shareholders, they higher will be the dividend payments. Unfortunately, this variable is not provided by the Compustat tapes. This variable is available in the May issue of Forbes Magazine. Again, unfortunately, the sample firms are not matched with those in Forbes' survey.

Second, some exogenous variables in the system are in fact partially endogenous as determined by the opportunistic behavior of the management. While in this paper it is assumed that opportunistic behavior of the management does not affect policies, but in fact it does. To control the opportunistic behavior of the management is difficult, if not impossible.

Third, this study suggests that cash dividend payment is a manager's accounting decision, not shareholders' power. In this study, the shareholders' power variable is proxied by the number of shareholders (LHOLDER) following Roseff (1982). A new better variable may be needed to proxy shareholders' power better.

Fourth, as suggested by Smith and Watts (1992) and Gaver and Gaver (1993), other corporate policies can be examined. These are compensation, hedging, leasing, tax, and other accounting policies.

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