Dividend Policy that Boosts Shareholder Value

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Abstract

A growing number of companies are increasing shareholder returns via cash dividends and share buybacks. Theoretically, however, increased returns to shareholders do not necessarily boost shareholder value. In this paper, we have conducted empirical analysis for the following two hypotheses regarding the relationship between dividend policy and shareholder value: the signaling hypothesis and the free cash flow hypothesis. The results of our empirical analyses were consistent with both hypotheses.

We conclude that a reduction in agency costs, which results in stock price discounts, is more important for increasing shareholder value than shareholder returns themselves.

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## 1. Examining Japanese Companies' Dividend Policies

A recovery in profitability has left many Japanese companies with large cash holdings. These companies need to respond to market expectations about the effective use of this cash to boost share value, which makes an appropriate dividend policy an important management issue.

Newspapers often report measures implemented by companies to boost shareholder value, such as dividend increases and share buybacks, as a defense against hostile take-over bids. Now, even investors who had previously acquiesced at low payout ratios are focusing more closely on companies that boost shareholder returns through dividends and share buybacks. Here, I would like to look at whether an appropriate dividend policy necessarily involves increasing the payout ratio.

Needless to say, dividend increases and share buybacks do not always increase enterprise value. That is because, theoretically, dividend policy does not have an impact on enterprise value (assuming a perfect market with no taxes and no transaction costs), as shown by Miller and Modigliani (1961). And, when taxes are taken into account, cash dividends actually diminish enterprise value.

In reality, however, it can be confirmed that the stock prices of companies announcing dividend increases tend to perform strongly (**Exhibit 1**). If dividend increases can increase shareholder value, corporate managers probably need to boost returns to shareholders even further. I have undertaken empirical analysis of why dividend increases contribute to an increase in the value of shares and for what type of company the potential for a dividend increase to boost the value of its shares is greatest.

Exhibit 1: Performance of Companies Increasing Dividends
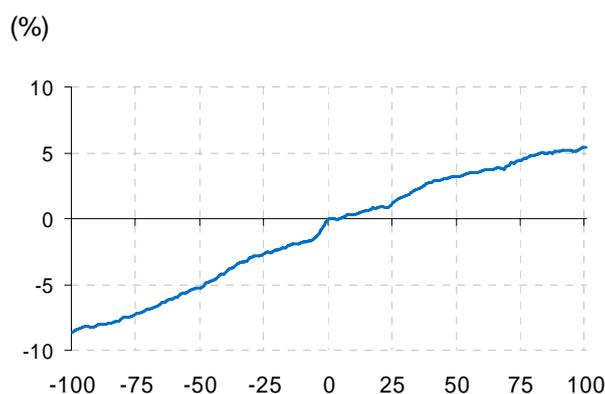
Notes: The population in our analysis comprises stocks listed on the 1st Section of the Tokyo Stock Exchange for which Toyo Keizai raised its dividend per share forecast for the 'current' fiscal years between June 1999 and 7 June 2006. We defined cumulative abnormal return (CAR) as the average cumulative beta-adjusted excess return against TOPIX, and the date of the forecast revision as the base day (zero day).
Source: Goldman Sachs Research.

Here, I would like to outline the structure of this article. In section 2, I look at two theories of why

dividend increases tend to boost the value of shares. In section 3, I attempt an empirical analysis of one of those two theories, signaling theory, and section 4 discusses free cash flow theory. In section 5 I analyze the relationship between dividend increases and stock price performance. Finally, in section 6, I summarize the results of my analysis, and examine what dividend policy for companies is most likely to maximize shareholder value.

2. Dividend Increases and Shareholder Value

1) Signaling Theory

The dividends of many Japanese companies are largely fixed, and do not change because of a certain amount of fluctuation in earnings. This is because managers dislike cutting dividends again after having previously raised them, and so will increase the payout only to a level that is sustainable long term. This tendency is not necessarily peculiar to Japanese companies, and recent surveys by Brav et al. (2004) regarding how the managers of US companies determine dividend policy show that they too dislike cutting dividends, and prefer to maintain dividends at the existing levels.

Signaling theory explains an increase in enterprise value resulting from dividend increases in the following way. When a company has raised its dividend, it will not need to reduce it again if future earnings are sufficient to fund the larger dividend. As a result, managers will not elect to raise dividends unless they are highly confident of earnings growth. In this way, a dividend increase can be seen as a signal by management that it is confident earnings will exceed the market consensus. As management places priority on maintaining the level of the dividend, a dividend increase is a signal not of near-term earnings growth, but rather of the level of earnings sustainable over the long term.

If this theory is correct, then it should be possible to observe actual improvements in corporate earnings after dividend increases.

2) Free Cash Flow Theory

The free cash flow theory of Jensen (1986) is another explanation of why dividend increases may increase enterprise value. Corporate management is expected to act as an agent for shareholders, and to conduct business in a way that maximizes shareholder value. However, investors do not have the same view of internal conditions at a company as company management does, making it difficult for investors to know (completely) when management has diverged from the principle of shareholder value maximization. Some examples of this divergence would include wasteful investment that destroys value or opportunity losses due to the failure to invest appropriately. In either case, management has greater discretion at companies with large holdings of excess cash, so the extent of damage to shareholder value is likely to be larger. This damage to value is known as agency cost. The free cash flow theory posits a decline in the possibility of damage to shareholder value if cash flow is reduced through interest or dividend payments that therefore restrict the discretion of managers. This reduces agency cost, and boosts enterprise value. According to the free cash

flow theory, the numerous Japanese companies with ample excess cash would increase shareholder value by increasing their dividends.

Agency cost should be minimal even at companies with ample cash if managers utilize funding effectively to maximize shareholder value. In this case, simply increasing returns to shareholders through dividend increases may not be the best option, but rather dividend policy would need to be consistent with future investment plans. By communicating this to investors, management would be able to rectify the asymmetry of information.

3. Analysis of Signaling Theory of Dividends

The signaling theory of dividends is that when information asymmetry exists between company insiders and investors, managers can communicate (signal) to investors their expectation that profit growth will surpass the market consensus estimate by announcing a dividend increase. Assuming that company managers tend to not like lowering dividends once they have raised them, a decision regarding dividend increase should be based to a certain extent on long-term profit forecasts.

In other words, if the signaling theory is correct, then companies that raise the dividend should post a comparatively higher improvement in earnings, and profits should remain strong over an extended period of time. We tested this theory by computing the probability of profit growth of companies that increased their dividends for a five-year period following a dividend increase and comparing this to the probability of profit growth at companies that did not change their dividends.

Our analysis covered parent company earnings (March end) from October 1976 through March 2006 of listed firms that did not execute stock splits or change their accounting periods in the previous or 'current' fiscal year. We divided the stocks into three groups according to whether they raised, lowered, or did not change their dividends per share in the previous fiscal year. We compared the EPS growth rate for the one to five years following a dividend increase/reduction to EPS growth in fiscal years prior to the dividend increase/reduction (see **Exhibit 2** for companies that raised their dividend and **Exhibit 3** for companies that lowered their dividend).

Exhibit 2: Five-Year Earnings Performance for Companies that Raised Their Dividend

Probability of Positive EPS Growth, %

	No Change	*Dividend Increase*	*Dividend Increase (Resume Paying Div.)*	*Dividend Increase (Raise Div. Amount)*
1year	49.8	78.7 *	83.4 *	78.1 *
2	49.7	66.5 *	74.4 *	65.4 *
3	49.8	58.7 *	69.4 *	57.1 *
4	49.3	52.9 *	63.3 *	51.3 *
5	47.0	48.0	59.2 *	46.5

Notes: Null hypothesis: Probability of EPS growth is equal when there is no dividend change. * indicates that the null hypothesis is rejected at the 1% significant level by binominal testing.
Source: Goldman Sachs Research.

Exhibit 3: Five-Year Earnings Performance of Companies that Lowered Their Dividend

(Probability of positive EPS growth, %)

	No change	*Dividend decrease*	*Dividend decrease (No div payment)*	*Dividend decrease (Decrease in div amount)*
Year 1	49.8	20.8 *	11.7 **	23.8 *
2	49.7	32.0 *	35.8 *	30.8 *
3	49.8	37.9 *	48.5	34.6 *
4	49.3	39.6 *	53.8 *	35.1 *
5	47.0	40.8 *	55.9 *	36.1 *

Notes: Null hypothesis: Probability of EPS growth is equal when there is no dividend change. * indicates that the null hypothesis is rejected at the 1% significant level by binominal testing. ** indicates 5% significant level.
Source: Goldman Sachs Research.

As expected, we found that companies that raised their dividend had a higher probability of sustaining profit growth than companies that did not. The probability of improved earnings was especially high with companies that began paying dividends after not paying them in the previous fiscal year (companies that resumed paying dividends or began paying dividends for the first time). Similarly, the earnings performance of companies that lowered their dividend was well below that of companies that did not change their dividend. One interesting finding was that the earnings performance of companies that stopped paying dividends was—in the third year after dividends were suspended—comparable to that of companies that did not change their dividends.

The results of our analysis confirm that dividend increases are a sign of improvement in a company's long-term performance. Upward revisions to dividend forecasts generate active returns because investors, upon receiving the signal provided by a dividend increase, implicitly raise their long-term earnings projections for that company.

Amid the recent, growing pressure from investors for dividend increases, some companies may raise their dividends even in the absence of any expected long-term changes in profits. Dividend increases of this sort would not be the same type of signal of long-term profit growth that we have been discussing here. This is one point that investors should keep in mind when considering investments in companies that have announced dividend increases.

4. Analysis of Free Cash Flow Theory

1) Valuation Model for Market Value of Cash Holdings

According to the free cash flow theory, surplus cash holdings result in higher agency costs. In other words cash holdings at companies with high agency costs have a lower value for investors than the book value itself. For these companies, reducing surplus cash through such means as increasing dividends translates into

higher equity value.

A large number of articles have been published recently that examine the actual impact of the market value of companies' cash holdings based on agency costs.

Presumably, the greater the degree to which corporate governance has been established, the lower the agency costs and the higher the market value of cash holdings. Ditmar and Mahrt-Smith (2005) examined the relationship in the US market between Gompers et al. (2003) and Bebchuk et al. (2004) corporate governance index, shareholding ratios, and other data for institutional investors and public pension funds, and the market value of cash holdings. Pinkowitz, Stulz, and Williamson (2005) examined the relationship between the degree of corporate governance in 35 countries and the market value of cash holdings in those countries. In both cases, the authors concluded that the degree to which corporate governance has been established has an impact on the value of cash holdings.

One factor other than agency costs that has an impact on the market value of cash holdings is the real option value of financial slack. That is because possessing financial slack has a greater value for companies with many—but uncertain—growth opportunities, but which have difficulty raising funds (see Suwabe [2006]). Pinkowitz and Williamson (2002) showed that in the US market the existence of growth options, the degree of uncertainty in investment opportunities, and good access to capital markets all have an impact on the market value of cash holdings

A company's cash holdings can either create value through growth opportunities (growth option value) or destroy it through agency costs. This chapter analyses the impact agency costs and growth option value have on enterprise value. If agency costs really do influence price formation, then companies should be able to increase share value by reducing agency costs.

2) Factors Affecting the Market Value of Cash Holdings

We performed an analysis to test a number of different hypotheses concerning the factors that affect the market value of cash holdings. The indicators we used in our analysis are listed in **Exhibit 4**.

> **Hypothesis 1: Market value of cash holdings is higher at companies with greater growth opportunities.**

The market value of cash holdings is presumably higher at companies with greater growth opportunities. We assumed that companies that make greater capital expenditures and R&D outlays have greater growth opportunities. We used indicators of growth potential itself such as forecast sales growth, past sales growth, and actual asset growth, and additionally chose the dividend payout ratio and a no-dividend dummy variable. A variety of factors determine payout ratio, but companies that do not disburse dividends because they are aiming at growth through retained earnings may believe a lower dividend payout ratio proportionally increases growth opportunities. The same is true for a no-dividend dummy variable.

> **Hypothesis 2: Market value of cash holdings is higher at companies with highly uncertain growth opportunities.**

There is presumably considerable value—the more value the more uncertain future growth opportunities

are—in possessing financial latitude and being able to divert cash into investments at opportune times.

For our indicators here we selected share price volatility, the dispersion of earnings forecasts (I/B/E/S forecast EPS standard deviation/BPS), actual earnings variability, cash flow variability, and capex variability. We also used market cap in line with the view that greater business uncertainty attaches to small-cap stocks.

Hypothesis 3: The market value of cash holdings is higher for companies with higher fund-raising costs.

There is presumably greater value in holding surplus cash for companies that incur costs for additional fund raising. The indicators we selected for this hypothesis are market cap (small cap), financial leverage (high), and interest expense (high).

Hypothesis 4: Market value of cash holdings is lower at companies with higher agency costs.

The market value of excess cash could well be lower at companies with greater information asymmetry and greater agency costs.

Under the free cash flow theory, indicators of dividend policy, financial leverage, interest charges, and the like, indicate the extent of discipline imposed. As explained earlier, moral hazard increases agency costs at companies with large cash holdings. Companies can control wasteful expenditure by reducing cash holdings through channeling them externally at periodic intervals. For companies with high financial leverage, interest

Exhibit 4: Drivers of Market Value of Cash Holdings

	Growth opportunity	Uncertainty of growth opportunity	Ease of raising capital	Corporate governance	Total
Capex/Total assets	+				+
R&D/Total assets	+				+
Forecast sales growth	+				+
Actual total asset growth	+				+
Actual sales growth	+				+
Payout ratio	-			+	+/-
Payout ratio (including share buybacks)	-			+	+/-
No-dividend dummy	+			-	+/-
Volatility		+			+
Dispersion of earnings forecast		+			+
Earnings variability		+			+
CF variability		+			+
Capex variability		+			+
Log of market capitalization		-	-	+	+/-
Financial leverage			+	+	+
Interest expense ratio			+	+	+
Foreign ownership ratio				+	+
Institutional ownership ratio				+	+
Major shareholder ratio				-	-
Free float ratio				-	-
Number of board members				-	-
Number of managing directors				-	-
External/Internal directors ratio				+	+
Ratio of directors-cum-executive officers				-	-
Existence of executive officers				+	+
Company with committees				+	+
Existence of stock option program				+	+

payments on debt consistently reduce the amount of excess cash, so the value of cash is higher as moral hazard is less likely. Similarly, the value of cash holdings is higher at companies with large interest charges and companies that allow cash to flow out via dividends.

The second category is the extent of monitoring of management by external parties. This could be described as the degree of corporate governance. We selected mainly indicators related to shareholder structure and the extent of monitoring of the board of directors.

First of all, we selected shareholding ratios for foreign investors and institutional investors (pension funds, etc.). This reflects our view that external monitoring of management is more stringent at companies whose shares are owned by foreign investors, who place an extremely high emphasis on corporate governance. Conversely, we concluded that monitoring functions may not operate properly at companies where major shareholders have a high shareholding ratio (the top 10 shareholders according to the *Shikiho* 〔Japan Company Handbook published quarterly by Toyo Keizai〕 definition and the combined shareholdings of executives and the firm) and whose shares are concentrated in the hands of the top shareholders. For this reason, we assumed that the higher the shareholding ratio, the lower the market value of cash. Similarly, with respect to the free float ratio, we assumed that monitoring of management is more difficult when ownership is concentrated in the hands of small shareholders and individual investors.

We selected indicators of the size of the board of directors and accountability. We assumed that the cost of equity is lower when there is a smaller number of directors (relative value with respect to the logarithm of total assets) and directors who are managing directors or above (relative value with respect to the logarithm of total assets). Other indicators we chose are the external directors ratio, the director-cum-executive officer ratio, the existence (or absence) of an executive officer system, and whether or not it is a company with committees

Although it does not apply to the aforementioned categories, we also considered the establishment of a stock option program as an indicator of corporate governance.

3) The Market Value of Cash Model

We estimated the average market value of cash holdings at companies using the following regression model to determine the ratio of market value to book value and how much this differs according to a stock's attributes.

$$
\begin{aligned}
\text{Enterprise Value}_{i,t} = {} & \left[\alpha_t + \sum_{j=1}^{N} \beta_{j,t} F_{i,j,t} \right] \times \text{Cash}_{i,t} \\
& + \left[\alpha_{A,t} + \beta_{A,t} ROA_{i,t} \right] \times \left(\text{Total Asset} - \text{Cash} \right)_{i,t} \\
& + \varepsilon_{i,t}
\end{aligned}
$$

In our model, we assume that enterprise value (= market capitalization + book value of interest-bearing debt) is expressed as the sum of (1) cash and cash equivalents (cash and securities owned temporarily), and (2) non-cash assets to which a fixed multiple has been applied. However, we divide both sides by the book value of total assets to adjust for individual stock size.

The coefficients for each asset (in parentheses) are expressed as the ratio of the asset's market value to its book value. When this value is greater than 1.0, this can be interpreted as a market assessment that there is economic value added in future cash flow generated by that asset. Conversely, a value of less than 1.0 can be interpreted as a market assessment that by holding the asset in question, a company is destroying value.

Another assumption in the model is that the coefficients for each asset differ depending on stock attributes. As shown in the equation, the coefficient for cash divided by total assets is determined according to a stock's attributes, as we previously explained. For non-cash liquid assets and fixed assets, the coefficient is determined by profitability (ROA).

The cash coefficients are divided into a constant α and a regression coefficient β. α represents the average market value of cash holdings for all companies, excluding the impact of stock attributes. In this analysis, we standardized factor F so that the average value for all companies works out to zero, so α represents the market value of cash holdings (multiple) for companies with average stock attributes. β represents the differences in market value of cash holdings arising from stock attributes.

4) Data

(i) Universe

We took stocks listed on the 1st Section of the Tokyo Stock Exchange (excluding the financial sector) for which consolidated financial data is obtainable as our analysis universe. In making our model estimates, we excluded stocks whose variables were in either the top or bottom 2% of the population in order to avoid the impact of outliers.

(ii) Analysis period

We made model estimates according to a cross-sectional regression analysis at the end of each month using monthly data from end-June 1990 to end-May 2006.

(iii) Handling of outliers

We standardized the stock attribute indicators for the stocks in our analysis population at the end of each month so that the average works out to 0 and standard deviation to 1. (To handle outliers, for scores of over ±3 standard deviations we repeated the process of bringing the scores to ±3 three times.)

(iv) Data sources

For actual financial data and earnings estimates, we used consolidated earnings data. For R&D, we used parent company data when consolidated data was unavailable. We used the Toyo Keizai database as a data source. For the capex to total assets ratio, we used only figures from June 2000 on in our model based on considerations of data availability.

For board of directors-related data and the use of stock options, we used the Nikkei corporate governance evaluation system as our data source. We only used data from the end of July 2003 on owing to data availability.

For the shareholding ratios, we used Toyo Keizai's major shareholder data. The institutional investor shareholding ratio is a combination of the shareholding ratios for pension funds, investment trusts, and foreign shareholders.

In all cases, we used data from the point in time when it became available to investors. For example, we used actual financial data at the time the company reported earnings, not at the end of the accounting period. However, for cash flow variability and capex variability, we used earnings data available for all stocks and computed the standard deviation. Accordingly, we used values computed using future data even in our analysis of past points in time.

5) Results of Our Estimates of the Market Value of Cash Holdings

The results of our single-factor analysis are provided in **Exhibit 5**. We estimated the market value of cash holdings for an average company α, and the regression coefficient for each indicator β, by plugging each of the 27 stock attributes that determine the market value of cash holdings into our model one at a time. Exhibit 5 shows the average values for α and β for the entire time period and the results of our analysis using data for a comparatively recent time period, beginning at end-June 2000 (beginning at end-July 2003, however, for the Nikkei Cges data).

(i) Market value of cash holdings for average company

The average value α represents the market value of cash holdings for an average company. There is some marginal variance depending on the model, but the average α values obtained in the full-period analysis are generally above 1. The average for all of the models is 1.007. That is to say, the average market value of cash holdings for the entire time period since 1990 is very close to book value, with a premium of just under 1%. This means that the decline in value due to agency costs was completely offset by the rise in value due to the real growth option. The average value for the model from June 2000 on is 0.858, showing that the average differs depending on the analysis time period.

The time-series trend for cash constant α is provided in **Exhibit 6**. This reveals that the market value of cash holdings (the constant) for an average company fluctuates over time. It also reveals that the market value of cash holdings increases when the economy is in an expansionary phase and the market has high expectations for corporate growth, as reflected in the uptrends beginning in 1999 and mid-2003. The market value of cash holdings remained below 1 between the second half of 2000 and the middle of 2004. This was presumably a period during which agency costs exceeded the growth option value of cash. This means that during this period, holding surplus cash would cause an average company's shares to trade at a discount. It was a period when reducing surplus cash by paying dividends and repaying debt translated into higher equity value.

The market value of cash holdings has been 1.439 since 2005, reflecting a premium of approximately 44%. That is to say, the value of the growth option exceeds agency costs, so reducing levels of surplus cash does not necessarily translate into higher equity value for ordinary companies.

Exhibit 5: Valuation Model for Market Value of Cash Holdings (Results of Parameter Estimates)

	Entire period					From June 2000/July 2003					Hypothesized Effect
	α		*βj*			*α*		*βj*			
	Coef	*t-Stat*	*Coef*	*t-Stat*		*Coef*	*t-Stat*	*Coef*	*t-Stat*		
Capex/Total assets						0.935	(6.35)	0.235	(4.41)	**	+
R&D/Total assets	1.006	(12.48)	0.169	(6.00)	**	0.844	(5.69)	0.231	(6.55)	**	+
Forecast sales growth	1.000	(12.43)	0.181	(5.38)	**	0.847	(5.56)	0.202	(3.45)	**	+
Actual total asset growth	1.002	(12.12)	0.123	(2.28)	*	0.821	(5.53)	0.241	(4.65)	**	+
Actual sales growth	1.012	(12.41)	0.134	(1.86)		0.850	(5.62)	0.249	(3.23)	**	+
Payout ratio	1.008	(12.32)	-0.031	(-0.97)		0.854	(5.61)	-0.092	(-1.73)		+/-
Payout ratio (including share buybacks)						0.854	(5.61)	-0.087	(-1.79)		+/-
No-dividend dummy	1.069	(13.82)	0.330	(10.07)	**	0.933	(6.61)	0.318	(9.73)	**	+/-
Volatility	1.034	(12.98)	0.346	(4.71)	**	0.896	(6.35)	0.499	(6.89)	**	+
Dispersion of earnings forecast	1.038	(12.91)	0.132	(4.94)	**	0.881	(5.80)	0.112	(3.65)	**	+
Earnings variability	1.018	(12.83)	0.038	(1.88)		0.871	(5.77)	0.016	(0.60)		+
CF variability	1.013	(12.91)	0.231	(5.56)	**	0.873	(5.87)	0.343	(11.27)	**	+
Capex variability	1.020	(12.61)	0.223	(10.52)	**	0.875	(5.71)	0.220	(7.31)	**	+
Log of market capitalization	0.996	(11.71)	0.381	(3.25)	**	0.838	(5.03)	0.674	(6.45)	**	+/-
Financial leverage	1.021	(16.00)	0.015	(0.28)		0.969	(6.76)	0.186	(4.45)	**	+
Interest expense ratio	1.009	(12.78)	-0.005	(-0.32)		0.869	(5.80)	0.000	(-0.01)		+
Foreign ownership ratio	0.947	(10.24)	0.201	(2.98)	**	0.750	(4.47)	0.367	(5.03)	**	+
Institutional ownership ratio	0.947	(10.02)	0.213	(2.74)	**	0.743	(4.28)	0.421	(4.50)	**	+
Major shareholder ratio	1.012	(12.74)	0.035	(1.71)		0.864	(5.89)	-0.007	(-0.28)		-
Free float ratio	0.976	(11.05)	-0.127	(-2.17)	*	0.801	(4.85)	-0.257	(-3.43)	**	-
Number of board members						1.080	(6.23)	-0.091	(-4.08)	**	-
Number of managing directors						1.048	(6.44)	-0.165	(-3.57)	**	-
External/internal directors ratio						1.092	(6.72)	0.196	(3.90)	**	+
Ratio of directors-cum-executive officers						1.083	(6.36)	-0.117	(-4.72)	**	-
Existence of executive officers						1.099	(6.11)	0.037	(1.27)		+
Company with committees						1.103	(6.20)	0.025	(0.47)		+
Existence of stock option program						1.026	(6.54)	0.235	(4.15)	**	+

Notes: The entire period is from end-June 1990 to end-May 2006. The *t*-statistic is based on Newey and West's autocorrelation and heteroskedasticity consistent standard errors (lag = 12). *5% significance; **1% significance.
Source: Compiled by Goldman Sachs Research.

Exhibit 6:   Market Value of Cash Holdings for an Average Company

Source: Goldman Sachs Research.

(ii) Differences deriving from stock attributes

Differences in the market value of cash holdings deriving from stock attributes are represented by the average value of β. For example, in the case of R&D/assets, the average coefficient of regression for the entire period is 0.169. As outlined above, stock attributes are normalized so that they average 0 and standard deviation is 1. This means that the market value of the cash holdings of a company with R&D/assets 1 standard deviation higher than the average is 16.9% higher than for an average company. In reverse, the market value of the cash holdings of a company that spends little on R&D is lower.

So the sign of the coefficient of regression derived beforehand from our hypothesis matches the sign of the coefficient of regression resulting from our analysis. In addition, results were statistically significant for many variables.

Sign conditions matched and the *t*-statistic indicated statistical significance also for stock attributes related to growth options, including capital spending/assets, R&D/assets, expected sales growth rates, asset growth rates, and the no-dividend dummy. The result was also statistically significant for actual sales growth rates, although the sample was limited to the period from June 2000 onwards. Results were also as expected for attributes related to the uncertainty of investment and access to capital markets.

Now, I would like to look at the results for stock attributes related to agency costs. For external governance, the sign was as expected and results were statistically significant for all variables other than ownership by major shareholders. Results were consistent with our hypothesis that the greater the ownership by foreign investors and institutional investors, who monitor management closely, and the lower the free float, monitoring by which is weak, the lower the agency costs and the higher the market value of cash holdings.

With respect to the accountability of the board of directors, the market value of cash was higher the smaller the number of directors (relative to total assets) and directors who were managing directors or above, the higher the number of external directors, and the lower the number of directors who were also executive officers. The results could also be interpreted as indicating that the market sees stock-option reward systems as reducing agency costs by matching managers' and shareholders' interests.

(iii) Multi-factor model

We constructed a cash holdings market value model that simultaneously incorporated multiple stock attributes. We produced a score from the perspective of four indicators that single-factor analysis had confirmed were explanatory. (1) and (2) are scores related to growth option value, while (3) and (4) are scores related to agency costs. We set sign conditions so that the higher the score, the higher the forecast market value of cash holdings.

(1) Growth: capital spending/assets, R&D/assets, expected sales growth rates, actual asset growth rates, no-dividend dummy.

(2) Uncertainty of growth opportunities: volatility, change in cash flow, change in capital spending.

(3) External governance: foreign ownership, ownership by institutional investors, free float (-).

(4) Internal governance: number of directors (-), number of managing directors and above (-), ratio of external directors, ratio of executive directors (-), adoption of stock option scheme.

Exhibit 7 shows the results of the model. Analysis of factors related to the transparency of the board of directors covers the period from July 2003 onwards due to data availability issues.

The *t*-statistic of the coefficient of regression for all four scores was high, indicating that they capture the market value of cash holdings deriving from stock attributes. For example, for companies whose ownership structure would indicate that external monitoring is functioning, we estimate that the market value of cash holdings is on average 23.1% higher where the score standard deviation is 1 (using data since July 2003).

Exhibit 7: Valuation Model for Market Value of Cash Holdings (Multi-Factor Model)

		Entire period			After July 2003		
		Coef	*t-Stat*		*Coef*	*t-Stat*	
Cash holdings	Intercept	0.962	(11.862)	*	0.970	(6.32)	*
	Growth	0.278	(7.55)	*	0.282	(7.77)	*
	Uncertainty of growth opportunity	0.356	(6.84)	*	0.398	(5.06)	*
	External governance	0.204	(3.19)	*	0.231	(5.12)	*
	Internal governance				0.174	(3.64)	*
Non-cash assets	Coefficient	0.945	(22.67)	*	0.887	(14.14)	*
	ROA	0.194	(9.02)	*	0.296	(7.04)	*

Notes: The entire period is from end-June 1990 to end-May 2006. The *t*-statistic is based on Newey and West's autocorrelation and heteroskedasticity consistent standard errors (lag = 12). *1% significance.
Source: Goldman Sachs Research.

For companies with a standard deviation of -1, there is a 23.1% discount.

6) Summary of this Section

Our empirical analysis obtained results which are consistent with those forecast by the free cash flow theory, that the market will discount enterprise value by the amount of agency costs for companies with excess cash but insufficient growth opportunities. The market value of cash held by the average company is 1.007, close to book value. Disparities between the market value of cash deriving from stock properties, however, are considerable. The market value of cash is determined by company growth options and the size of agency costs. It is not the case for all companies that raising the dividend will boost shareholder value. Nevertheless, the market is likely to value the cash holdings of companies with few growth opportunities and high agency costs at less than book value, in which case reducing excess cash through dividend increases would boost shareholder value.

## 5. Dividend Increase Announcements and Stock Price Performance

Here we look at whether the relationship between dividend increases and equity value according to both the signaling and free cash flow theories is reflected in near-term stock price performance.

1) Impact of Dividend Increases on Near-Term Stock Price Performance

We defined the cumulative abnormal return (CAR) for stocks for which Toyo Keizai raised its dividend per share forecast for the current fiscal year in or after June 1999 (through June 7, 2006) as the cumulative beta-adjusted excess return against TOPIX. However, two cases can be envisaged: the case in which the forecast dividend is increased in line with an upward revision to profit forecasts, so the payout ratio remains unchanged, and the case in which there is no change to profit forecasts, but the dividend is nevertheless increased (payout ratio rises). In the former case, it is impossible to distinguish whether the impact on stock prices was due to the upward revision of the dividend forecast, or due to the upward revision of earnings forecasts. In order to isolate the impact on share prices of the market evaluation of shareholder returns, it is necessary to distinguish between the two. To this end, we examined share price performance following dividend increases in three separate cases: (1) when there is no change in the Toyo Keizai consensus current-fiscal year EPS forecast, (2) when the forecast has been revised upward, and (3) when the forecast has been revised downward (see **Exhibit 8**).

First, examination of share price performance prior to forecast revisions shows that active return (CAR) for the 100 prior business days was 6.9% for stocks for which the dividend was raised but EPS remained unchanged, compared with 13.4% where both the dividend and EPS were raised, and 4.7% where the dividend was raised but EPS lowered, so there is a significant disparity. In contrast, the active returns in the 100 business days following the change in dividend forecast were nearly the same, at 4.3% (no change to EPS), 7.0% (raised), and 5.9% (lowered), respectively. CAR was positive even where the EPS forecast was

Exhibit 8: Impact of Dividend Increases on Stock Prices
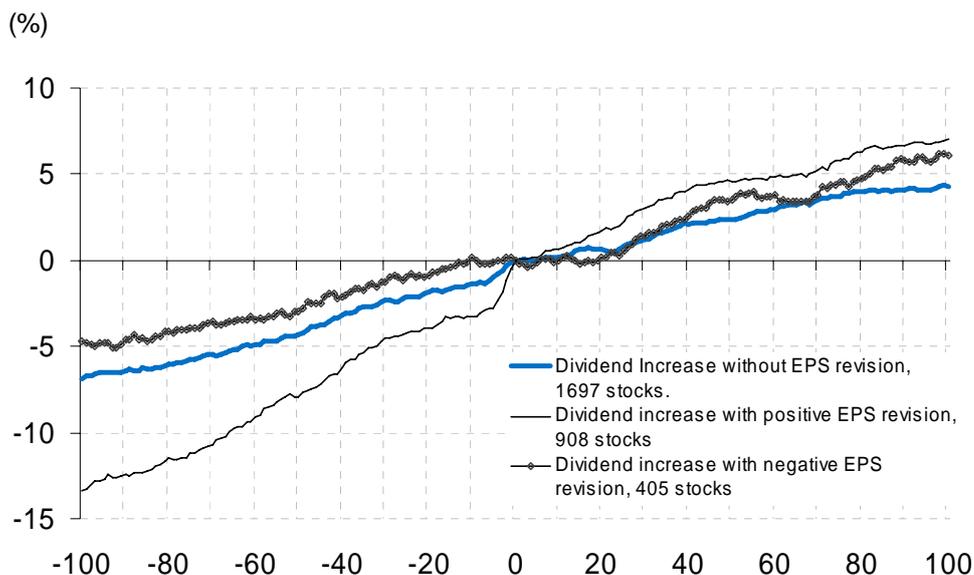
Notes: The population in our analysis consists of stocks listed on the 1st Section of the Tokyo Stock Exchange for which Toyo Keizai raised its dividend per share forecast for the current fiscal year in or after June 1999. We defined cumulative abnormal return (CAR) as the cumulative beta-adjusted excess return against TOPIX.
Source: Goldman Sachs Research.

lowered.

This has two implications. First, the fact that the announcement of a dividend increase has nearly the same positive impact regardless of whether the profit forecast is raised or lowered suggests that investors interpret a dividend increase as a signal of an increase in enterprise value. This is more consistent with the signaling theory, that a dividend increase is a signal regarding strong earnings long term, than with the free cash flow theory, which dictates that on average a dividend increase would not necessarily contribute to an increase in enterprise value, as on average the market value of cash of 1.007 was above 1.0.

Second, the fact that active returns are positive even when profit forecasts are reduced suggests that news of dividend increases has a greater impact than downward revisions to earnings forecasts. This is also highly consistent with the signaling theory.

2) Stock Attributes and Dividend Increase Impact

We looked at the attributes of stocks for which CAR was high after a dividend increase announcement.

Here, we assumed that stocks priced in the dividend increase in the first 100 business days following announcement, and therefore used simple regression to find the relationship between CAR after 100 days and the stock attributes we used in our model for the market value of cash. **Exhibit 9** shows the results of our analysis. The sign shown in the table is the sign of the coefficient of regression as forecast by the cash market value model. As the increase in shareholder value due to a dividend increase is larger the smaller the market value of cash, we would expect the sign to be the opposite of that for the cash market value model.

Exhibit 9: Impact of Dividend Increase Announcement on Share Price

Factor	Hypothe sized Effect	Intercept	t-Stat	β	t-Stat		R^2	n
Capex/Total assets	-	5.12	12.13	-0.42	-1.35		0.001	2097
R&D/Total assets	-	4.60	8.63	-0.51	-1.48		0.001	1507
Forecast sales growth	-	5.43	13.70	-0.98	-2.68	*	0.003	2674
Actual total asset growth	-	5.33	13.52	-1.04	-2.52	*	0.002	2645
Actual sales growth	-	5.57	13.94	-1.29	-3.14	*	0.004	2645
Payout ratio	+/-	5.01	11.39	1.01	1.18		0.001	2387
Payout ratio (including share buybacks)	+/-	4.57	8.68	-0.55	-0.64		0.000	2387
No-Dividend dummy	+/-	5.45	13.23	0.40	1.03		0.000	2693
Volatility	-	4.99	12.17	-0.90	-2.97	*	0.003	2661
Dispersion of earnings forecast	-	4.11	8.18	1.31	1.14		0.001	1732
Earnings variability	-	4.51	9.89	-0.13	-0.33		0.000	1908
CF variability	-	4.54	7.10	-2.51	-2.50	*	0.005	1224
Capex variability	-	4.05	5.85	-1.13	-2.60	*	0.006	1188
Log of market capitalization	+/-	6.73	13.27	-1.33	-4.39	*	0.007	2693
Financial leverage	-	5.33	13.21	-0.30	-0.24		0.000	2674
Interest expense ratio	-	5.48	12.64	-1.88	-2.10	*	0.002	2197
Foreign ownership ratio	-	5.89	13.97	-1.09	-3.72	*	0.005	2680
Institutional ownership ratio	-	6.04	13.80	-1.04	-3.72	*	0.005	2680
Major shareholder ratio	+	5.23	12.82	-0.26	-0.97		0.000	2680
Free float ratio	+	5.91	13.98	0.97	3.78	*	0.005	2680
Number of board members	+	4.70	10.66	0.17	0.56		0.000	1518
Number of managing directors	+	4.60	10.29	0.46	1.49		0.001	1518
External/internal directors ratio	-	4.69	10.71	-1.08	-3.12	*	0.006	1520
Ratio of directors-cum-executive officers	+	4.81	10.98	1.25	3.79	*	0.009	1520
Existence of executive officers	-	4.79	10.84	-0.44	-1.68		0.002	1520
Company with committees	-	4.69	10.66	-0.81	-1.05		0.001	1520
Existence of stock option program	-	4.95	10.68	-0.46	-1.82		0.002	1414

Notes: We ran univariate regressions in which we regressed cumulative beta-adjusted excess return vs TOPIX (CAR). We standardized factor scores to produce an average of zero and standard deviation of 1 in Tokyo Stock Exchange 1st Section stocks at the end of the month immediately prior to data observation. * indicates that the null hypothesis is rejected at the 5% significant level.
Source: Goldman Sachs Research

The sign was the same as that forecast for 21 of the 23 attributes excluding the four attributes which could theoretically have either a positive or negative sign. The result was statistically significant for 13 of these attributes. For example, the active return resulting from a dividend increase was higher where, from the perspective of corporate governance, the market value of cash was expected to be low, such as cases where shareholdings of foreign investors and institutional investors were small, the number of external directors was small, and the proportion of directors who were also executive officers was high. The impact of a dividend increase was limited in other cases where the market value of cash was low, such as for companies with low growth potential as measured by forecast sales growth rates, and where the uncertainty of growth opportunities was low and growth option value small.

Companies seen to have low market value of cash due to high agency costs increase equity value most by announcing a dividend increase. This is consistent with the hypothesis of free cash flow theory that reducing excess cash boosts shareholder value.

6.　Conclusion

In this article, we empirically analyzed both signaling and free cash flow theory regarding the relationship between dividend policy and enterprise value. Our results largely supported both.

Our empirical analysis of signaling theory showed that management tends to raise dividends when it is confident that earnings will remain robust over several years. In this case, stock prices rise because of an increase in equity value as recognized by the market due to the signal from management constituted by a dividend increase. Stock prices cannot be expected to rise, as there is no change in equity value, where a dividend is raised simply to boost shareholder returns and there is in fact no change to the future outlook. (Investors cannot distinguish whether or not there is a signal from management so such a dividend increase could boost share prices near term.)

Our empirical analysis of free cash flow theory showed that, due to the existence of information asymmetry between the inside of a company (management) and the outside (investors), companies' excess cash holdings are discounted by the amount of agency costs. Companies with high agency costs can reduce them, and thereby increase equity value, by cutting excess cash through returns to shareholders.

Measures to boost shareholder returns, such as dividend increases and share buybacks, do not themselves increase shareholder value. Dividend policy should take into account future investment opportunities and fund-raising plans, making it increasingly important to overcome information asymmetry by communicating this to investors. Equity values can be increased by reducing agency costs, which cause stock price discounts, by improving information disclosure to investors regarding not only dividend policy but a broad range of factors, while also ensuring effective corporate governance.

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