A UNIFYING APPROACH FOR COMPARING ONE-TIME PAYOUTS AND RECURRING DIVIDENDS

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ABSTRACT

This paper examines the market responses to four cash payout methods: regular dividend increases, special dividends, tender-offer repurchases and open market repurchases. We also investigate the reasons why firms choose one payout form over another. We use relative, and discounted relative, residuals as the unifying concepts whereby the market reaction is related to payout magnitude and likely recurrence as need be. With these measures, the responses to one-time payouts and recurring dividends can be directly compared and integrated for testing purposes. Our results show that various forms of payouts can be equally effective provided the form is properly chosen, repurchases being more efficient for erasing larger stock undervaluation whereas dividends will best be chosen for mitigating agency problem.

JEL: G32; G35

KEYWORDS: Relative Residuals; Signaling; Agency Theory; Regular Dividends; Special Dividends; Tender Offer Repurchases; Open Market Repurchases.

INTRODUCTION

We compare the market responses to four competing forms of incremental payouts: regular dividend increases, special dividends, self-tender offer repurchases and open market repurchases. We also investigate the reasons why firms choose one payout form over another. Our purpose is to assess the extent to which the market responses involved are compatible with prevailing hypothesis, namely the agency and signaling theories. At the same time, we want to address the still obvious lack in the literature, deplored by Ofer and Thakor (1987), of coherent measures for comparing the market's reaction to one-time payouts with the reaction to recurring payouts. Accordingly, we put forward the unifying concepts of relative, and discounted relative, residuals whereby the market response is related to payout magnitude and, whenever applicable, recurrence of payouts.

The integrated framework used is convenient for securing evidence about questions such as the following: 1) Does the announcement of a dollar of payout elicit the same market response whatever the payout form chosen and the total amount it is part of? 2) Which signaling or agency theory implications appear to be the most compatible with the competing market responses observed? 3) What indications do the market responses provide about the economic rationale behind the payout form chosen? Etc. Our tentative answers are obtained using US data from the 1985-2003 periods. They include 1,304 regular dividend increases and 249 special dividends in addition to 63 self-tender offer repurchases and 547 open market repurchases.

To the extent that a low Q ratio indicates stock undervaluation or poor growth opportunities for a firm, and its combination with large cash flows reflects overinvestment (Lang et al., 1991), our results essentially suggest that various forms of payouts are equally effective signals but convey different information: 1) more undervalued firms will be inclined to repurchase their shares on a self-tender basis; 2) less undervalued firms will favor open market repurchases; 3) firms with growth opportunities will prefer disbursing special dividends; 4) firms likely to overinvest (those with low Q and large cash flows) will be more inclined to increase regular dividends.

The remainder of the paper is organized as follows. Section 2 reviews the literature that is deemed pertinent for explaining the market responses to multiform payouts. In section 3, we describe our sampling procedure before we characterize the variables that influence the choice of payout forms by firms. Section 4 presents our results indicating that the various forms of payouts can have equally valuable effects provided the form chosen is appropriate, repurchases being more effective for erasing larger stock undervaluation whereas dividends will best be chosen for mitigating agency problems. Section 5 summarizes our findings.

LITERRATURE REVIEW

Agency and signaling hypothesis are the two major theories for explaining the market reaction to dividend payouts. On the one hand, according to signaling theory, a "good" company will find advantageous to differentiate itself from a "bad" company by increasing its payout, because, by doing so, it sends a credible message about its performance. Therefore, the value of its share will rise beyond the opportunity cost related to an increased payout. On the other hand, according to agency theory, a company that increases its payout distributed an increased fraction of its cash flow. By doing so, the manager (the shareholders' agent) has less opportunity to squander the company's value. Consequently, the increase in payouts reduces its agency costs related to cash flow and increase the value of its shares.

These theories also provide frameworks for comparing market responses to multiform payouts. From a signaling standpoint, the relative advantage of dividends relative to repurchases depends, namely, on the signaling costs considered. For example, in Miller and Rock (1985), where signaling costs lie in reduced future profitable investment, equal amounts of dividends and repurchases are perfect substitutes and either announcement should elicit the same market reaction. In John and Williams (1985) however, where signaling costs lie in the imposed revenue taxation, they are not perfect substitutes since dividends are taxed at a higher rate than revenues from repurchases. Thus, the market should react differently in the two cases. Finally, according to Ofer and Thakor (1987), announced dividend and repurchase decisions are both valid signals, and neither signal always dominates over the whole range of possible distributions. On a dollar for dollar basis, dividends are less costly signals than repurchases but the amount required to convey private managerial information is greater in the case of dividends. Consequently, dividends will be a more (less) effective distribution method than repurchases to correct for smaller (larger) stock undervaluation. Similar conclusions are reachable within other theoretical frameworks. For instance, Brennan and Thakor (1990) do so after relying on shareholder preferences expressed through an unspecified majority voting procedure.

According to the agency theory in its free cash flow version (Jensen, 1986), managers with excess funds will tend to keep the resources under their control and accept wealth-reducing projects. Should they resist overinvestment and increase payouts instead, stock value should rise to the extent of the averted loss in rents. In the same vein, Kanatas and Ofer (1990) assert that only a seemingly permanent increase in dividends will bring the market to revise the firm's value upward. Single payouts are not convincing enough for the market because, once made, the incentive to reduce agency costs abates. More recently, combining elements of free cash theory with the evolution in the firm's investment opportunity, DeAngelo and DeAngelo (2006) propose a lifecycle explanation of dividends whereby younger firms with high growth opportunities will refrain from paying dividends while more mature firms with large cash flows and less investment opportunities will optimally pay out the excess funds.

Even if prevailing theories provide partially competing, although not mutually exclusive, explanations of the market response to multiform payouts, the literature has heretofore been devoid of integrated empirical comparisons. In fact, the available evidence is mainly restricted to studies involving payouts of the same nature, namely those of Charest (1978) and Aharony and Swary (1980) for regular dividend increases, Brickley (1983) and Jayaraman and Shastri (1988) for special dividends and Vermaelen (1981)

and Comment and Jarrell (1991) for repurchases. The obvious need is for tests comparing different forms of payouts within an integrated framework as recognized by Ofer and Thakor (1987). These authors warned of the methodological difficulty in comparing the announcement residuals involved, given that typical repurchases compared to dividends consume a much larger fraction of firm equity.

Few studies compare the market reaction to different cash payout methods. Choi and Chen (1997) show results indicating that tender-offer repurchases elicit a more positive stock price reaction upon announcement than increases in regular dividends. More recently, and after controlling for payout size and the market's expectation about cash flow shocks, Guay and Harford (2000) present results indicating a higher positive market response to dividend increases when compared to open market repurchases. However, these studies involve essentially the treatment of only two payout methods. An exception is Lie (2000) who studies three payout methods but on a distinct basis. For firms paying large special dividends, he finds that their announcement residuals are related to their excess funds and investment opportunities. He observes a similar relation for self-tender offers and no significant relation when increments in regular dividends are considered. Let us now describe the variables that are deemed pertinent in the literature to affect the choice between payout methods.

Signalling Related to Size and Yield Variables

Signalling theory argues that management has private information about a firm's prospects which is superior to that available to investors. The latter will interpret an increase in cash distribution as a signal that management entertains improved prospects. Thus, signalling models predict a market reaction that increase with signal intensity and degree of informational asymmetry between managers and investors (Miller and Rock, 1985; John and Williams, 1985).

Following Yoon and Starks (1995), etc., we use a Size variable as a proxy for informational asymmetry since it is widely documented that more (less) asymmetry are associated with smaller (larger) firms. The increase in yield (ΔYield) implied by the distribution is used as a proxy for signal intensity following Asquith and Mullins (1986) and Denis et al. (1994). ΔYield is measured by dividing the per share cash paid out (ΔD) by the share price observed two days prior to announcement date, where ΔD is the announced increase in payout per share for the dividend categories (regular and special). For the tender-offer repurchase category, ΔD equals the targeted number of shares multiplied by the per share offer price and divided by the number of shares outstanding; for the open market repurchase category, ΔYield equals the percentage of shares announced to be repurchased.

Agency Context and Variables at Play

According to agency theory, firms with substantial free cash flows will tend to overinvest by accepting negative net present value projects, rather than distributing the excess cash flows to shareholders. To curb overinvestment, Jensen (1986) argues that debt service may be more effective than dividends in many forms. For instance, share repurchases are mild commitments that leave managers much in control of future free cash flows. Similarly, an increase in regular dividends is also a weak commitment since dividends can be reduced in the future. Hence, the view that because it is more binding, debt service can only but be more effective in preventing managers from making poor use of free cash flows. Some authors, including Feldstein and Green (1983), contend that dividend payments may simply be used as a means of control over the desired leverage ratio. Another aspect underlined by Jensen and Meckling (1976) and developed by Rozeff (1982), is that the agency problem relates to extant managerial ownership in the firm and dividend policy. According to Rozeff, dividends are part of the firm's optimum monitoring package and serve to reduce agency costs. Bagwell and Judd (1988) make a possibly more compelling case whereby dominant shareholders, be they managers, will favor the payment of dividends since it always keeps the firm ownership intact, contrary to share repurchases.

Consequently, more managerial, and dominance in, ownership, will favor the choice of dividends over repurchases.

Overinvestment is taken into account below by combining the Tobin's Q and Cashflow variables as justified in Lang et al. (1991) and Denis et al. (1994). Q ratios are measured as the sum of the market value of equity, book value of long-term debt, book value of short-term debt, and preferred stock at carrying value, divided by the book value of assets. As in Lang et al. (1991), Cashflow equals operating income before depreciation minus interest expenses, taxes, preferred and common dividends. The ratio of total debt over total asset is used as a proxy for leverage. Ownership is measured as the fraction of shares held by the officers and directors as well as the major stockholders with at least 10% of the firm's stock as recorded in the Value Line issue preceding the announcement.

SAMPLES CHARACTERIZED AND METHODOLOGY

In this section, we describe our sampling procedure and characterize the sampled firms in terms of variables that are hypothesized to explain the preference for a given payout form.

The sample is drawn from the set of firms quoted on the NYSE and AMEX during the 1985-2003 periods. The announcement dates are taken from the CRSP files for the dividend cases whereas those of the self-tender and open market repurchases come from the Security Data Company's online database of domestic acquisitions. The sampled cases meet the following criteria: 1) The necessary data can be found on the CRSP (Daily Return and Daily Master) files. 2) Regular dividends are paid quarterly and the increase occurs after at least two years of stability as justified in Charest (1978). 3) Announcements of special dividends (whether labeled "special" or "extra") are not preceded by similarly labeled dividends within the two previous years. 4) Repurchases must be clearly identifiable as being of the tender-offer or open market type.

The sampling procedure yielded 1,304, 249, 62 and 547 cases of regular dividend increases, special dividends, tender-offer, and open market, repurchases, respectively.

The Variables Characterized

Table 1 shows, in accordance with expectations (Ofer and Thakor, 1987; and Brennan and Thakor, 1990), that larger payouts occur through repurchases of the two types. Indeed, we find that the mean increase in payout, ΔD, and the corresponding effect on yield, $\Delta Yield$, are respectively \$4.90, 19.06% for tender-offer repurchases and \$1.51 and 6.63% for open market repurchases. We observe much lower corresponding levels for regular dividend increases (\$0.06 and 0.31%) and special dividends (\$0.69 and 4.18%). The Kruskall-Wallis chi-square statistics indicate significant differences with a p-value at the 1% level. As for the other variables (Size, Ownership, Cashflow, Q ratios and Debt), they differ significantly across firms resorting to different forms of payouts. The indication here is that the choice of payout form may depend on firm-specific characteristics.

To better understand the preference for a given form of payout, a multinomial logit analysis is also conducted. The probability of observing form j = 0, 1, 2 or 3 when firm i chooses between increase in regular dividends, special dividend, tender-offer, or open market, repurchases, respectively, for enlarging its payout is taken to be a function of its characteristics (X_{ik}; k=1,..., n=6), that is,

$$\text{Prob}(Y=j|X_{ik}) = \frac{\exp\sum_{k=1}^{6}(ß_{jk}X_{ik})}{\sum_{j=0}^{3}\exp\sum_{k=1}^{6}(ß_{jk}X_{ik})} \quad (1)$$

where $X_1 = D_{high\ q}$, X_2 = Cashflow, $X_3 = (\text{Cashflow} * D_{low\ q})$, X_4 = Size, X_5 = Debt, X_6 = Ownership.

Table 1: Characterizing the Firms According to the Form Chosen for Enlarging their Payouts

Number of observations		Increases in regular dividends 1304	Special dividends 249	Tender offer repurchases 63	Open market repurchases 547	Kruskal-Wallis χ^2-stat.
ΔD	Mean	0.061	0.686	4.896	1.507	702 ***
	Med.	0.030	0.200	2.906	0.544	
	Std.	0.128	1.296	5.392	7.447	
ΔYield (%)	Mean	0.309	4.175	19.059	6.631	811 ***
	Med.	0.104	1.130	17.300	5.300	
	Std.	0.759	8.305	11.400	4.917	
Q ratio	Mean	1.410	1.429	1.391	1.463	164 ***
	Med.	1.097	1.095	1.183	1.238	
	Std.	2.369	1.443	0.949	0.731	
Market capitalization or Size in millions of dollars	Mean	1173.32	1010.87	965.79	2566.42	97.0 ***
	Med.	190.35	93.731	189.79	560.63	
	Std.	3943.34	4502.17	1473.78	8405.84	
Cashflow/TA (%) (TA=Total assets)	Mean	-3.575	12.046	1.625	2.431	7.00 **
	Med.	2.475	5.033	7.736	5.226	
	Std.	28.652	109.30	18.565	14.208	
Total debt/TA (%)	Mean	52.000	54.465	45.124	52.240	256 ***
	Med.	51.774	54.587	48.183	52.300	
	Std.	18.769	23.524	11.280	16.740	
LT debt/TA (%)	Mean	27.634	30.290	13.052	14.254	256 ***
	Med.	5.569	7.247	1.568	2.606	
	Std.	96.305	74.073	21.300	31.193	
Ownership (%)	Mean	11.314	17.638	27.862	11.908	195 ***
	Med.	8.650	17.908	25.490	7.869	
	Std.	14.269	13.548	19.272	15.467	

*ΔYield equates with ΔD divided by the stock price two days prior to the announcement date.ΔD is the announced increase in payout per share for the dividend categories; for the repurchase category,ΔD equals the targeted number of shares multiplied by the per share offer price and divided by the number of shares outstanding. Q ratios equal the sum of the market value of equity, book value of long-term debt, book value of short-term debt, and preferred stock at carrying value, divided by book value of assets. Cashflow equals operating income before depreciation minus interest expenses, taxes, preferred and common dividends. Ownership is the fraction of shares held by the officers and directors as well as dominant stockholders holding at least 10% of the firm's stock as recorded in the Value Line issue preceding the announcement. The payouts sampled cover firms quoted on the NYSE during the 1985-2003 periods. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Firms are classified as high or low Q if their Q ratio is greater or less than unity. $D_{high\ q}$ is a dummy variable with value 1 for high Q firms and 0 otherwise. Conversely, $D_{low\ q}$ is a dummy variable with value 1 for low Q firms and 0 otherwise. The $ß_j$ parameters are estimated using the maximum likelihood method and the results are reported in Table 2. The coefficients are interpreted as measuring the marginal effect of the independent variables (x_j) on the probability of choosing a given form of payout. For the contrast between special and regular dividends, we find that: $D_{high\ q}$ and Ownership have positive and significant coefficients; Size and Debt have negative but insignificant coefficients; and, those for Cashflow and the interaction variable (Cashflow*$D_{low\ q}$) are insignificant. In the case of tender-offer repurchases versus regular dividends, the coefficients for Cashflow and Ownership are positive and significant whereas the other four variables are all negative and significant. As for open market repurchases versus regular dividends, the only negative and significant coefficient belongs to Cashflow*$D_{low\ q}$ and the only significantly positive coefficients belong to $D_{high\ q}$ and Cashflow.

As summarized in Table 3, the coefficient levels and signs revealed in Table 2 in combination with the payout characteristics in Table 1 suggest that:

1) High Q firms (those overvalued or with good investment opportunities) are likely to reject tender-offers repurchases; this inference lies in the strongly negative $D_{high\ q}$ coefficient of this payout category; by comparison, the other coefficients indicate that high Q firms would opt instead for open

market repurchases before they consider paying special dividends in preference to paying more regular dividends. Understandably, high Q firms will refrain from tender-offer repurchases since they have neither substantial undervaluation to erase, nor the intent to mortgage their valuable future growth opportunities. Note that the preference of high Q firms for open market repurchases over special dividends is consistent with the relative persistence of such dividends. In fact, in our sample more than 50% of the special dividend cases have witnessed one or more repetitions within 5 years. Overall, large firm with good investment opportunities and large, but likely non-recurring free cash flows. By contrast, firm with the same investment opportunities and small, but likely recurring free cash flows will prefer special dividends.

Table 2: Multinomial Logit Regression Addressing the Choice of Payout Form

	Special dividends vs. Increases in regular dividends	Self-tender offer repurchases vs. Increases in regular dividends	Open market repurchase vs. Increases in regular dividends
Intercept	-0.491 ***	-5.162 ***	6.671 ***
$D_{high\ q}$	0.216 **	-2.819 ***	2.036 ***
Cashflow / Total assets	0.001	0.231 ***	3.431 ***
(Cashflow x $D_{low\ q}$)	0.001	-0.027 ***	-0.032 **
Log (Size)	-0.207	-1.191 ***	0.098
Total debt / Total assets	-0.163 *	-7.140 ***	0.087
Ownership	0.237 ***	0.693 **	0.005
Likelihood index or Pseudo-R^2	15.90%		
% of correctly classified	78.53%		

*Q ratios equal the sum of the market value of equity, book value of long-term debt, book value of short-term debt, and preferred stock at carrying value, divided by book value of assets; a firm is classified as high or low Q if its Q ratio is greater or less than unity; $D_{high\ q}$ is a dummy variable with value 1 for high Q firms and 0 otherwise; conversely, $D_{low\ q}$ is a dummy variable with value 1 for low Q firms and 0 otherwise. Cashflow equals operating income before depreciation minus interest expenses, taxes, preferred and common dividends. Ownership is the fraction of shares held by the officers and directors as well as dominant stockholders holding at least 10% of the firm's stock as recorded in the Value Line issue preceding the announcement. The p-values are given in parentheses. (NB: The samples involve NYSE and AMEX firms of the 1985-2003 periods which witnessed 1304 increases in regular dividends, 249 special dividends, 63 self-tender offer repurchases and 547 open market repurchase). ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

2) Conversely, low Q firms will choose to repurchase their shares through self-tender offers rather than effecting open market repurchases or enlarging their dividends. Moreover, as shown in Table 1, the largest payouts occur via repurchases. Since undervalued firms, or firms with limited growth opportunities, are expected to have a lower Q ratio than they would otherwise, the findings are consistent with the assertion that the largest payouts will be carried out via repurchases, presumably because they can more effectively correct for large undervaluation. It could also be that repurchases represent the firm's best investment opportunities. Furthermore, less levered firms favor tender-offer repurchases, possibly because they can sustain the attendant increase in leverage. Obviously, by sizably decreasing firm equity compared to dividend distributions, repurchases produce a neat increase in firm leverage, this being even more true if repurchases are debt-financed.

3) Low Q firms endowed with large cash flows and firms with lower managerial ownership will more likely choose to increase their regular dividends. Since they suffer most from agency problems, this result is consistent with the hypothesis whereby increases in regular dividends can help reduce agency costs (Easterbrook, 1984; Jensen, 1986). Indeed, low Q and large cash flow levels are associated with overinvestment (Lang et al., 1991) whereas agency costs are held to increase as managerial ownership falls (Jensen and Meckling, 1976). Since larger firms are also presumed to bear more agency costs, they are expected to choose regular dividends over share repurchases.

The firm characteristics having been described, let us now compare the market reactions to alternative payout announcements.

Table 3: Firm Characteristics and the Payout Form

Firm Type	Payout form
Firm with agency problems	Increase in regular dividends
Undervalued firms	Tender offer repurchase
Large firm with fairly good investment opportunities and large, but likely non-recurring free cash flows	Open market repurchase
Firm with valuable investment opportunities and small, but likely recurring free cash flows	Special dividends

RESULTS: MEASURING THE MARKET REACTION TO PAYOUTS

Comparing the Residuals

Abnormal returns (residuals) are estimated from the market model using the CRSP equally-weighted Index and Scholes-Williams (1977) betas with an estimation period covering 120 daily stock returns, from days -70 to -11 and days + 11 to +70, relative to announcement day 0.

The first column of Table 4 (panel A) shows the mean residuals for each sample. We observe highly significant residuals around all forms of payout announcements, from a low of 1.28% on average for increases in regular dividends to a high of 8.62% for tender-offer repurchases, with special dividends and open market repurchases falling in between at 1.86% and 1.71%, respectively.

As evidenced by Table 4 (Panel B, first column), tender-offer repurchases have a mean residual that is significantly higher than those found for regular and special dividends and open market repurchases as revealed through Scheffé's multiple comparison procedure (In Scheffé's procedure the decision rule is to reject H_o if $|t| > \sqrt{(j-1)F^{a}_{j-1}}$, where j is the number of comparisons, *a,* the significance level, t and F standing for the usual statistics (see Toothaker, 1993)). The stronger market reaction to tender-offer repurchases is consistent with the reasoning of Ofer and Thakor (1987), whereby repurchases are held to be more effective in correcting for larger stock price undervaluation. However, these residuals cannot be directly compared for at least two reasons: 1) self-tender repurchases, compared to other forms of payout, consume a much larger fraction of the firm's equity; and, 2) the amount by which the regular dividend is increased has a recurring nature compared to one-time payouts. The stronger market response observed for tender-offer repurchases could then be due to the larger yield increase involved (see Table 1). To make the market response directly comparable, we compute a stock's payout related residual or relative residual (RR), by dividing its coincident residual by the change in yield implied by the announced payout; that is:

$$\text{Relative residual} = RR = \frac{Residual}{\Delta Yield} = \frac{\text{AR}}{\Delta Yield}\ , \tag{2}$$

where, $\Delta\text{Yield}=(\Delta D/P_{t=-2})$, the change in yield, is given by the change in payout per share over the share price observed at day t=-2; here ΔD stands for the announced per share increase in regular dividends, the special dividend itself, or the expected payout from the shares tendered calculated thus: (Number of shares tendered)$_*$(Per share offer price)/(Number of shares outstanding). As for open market repurchases, ΔYield equals the percentage of shares announced to be repurchased by the firms.

Developing equation (2), we have:

$$\text{RR} = \frac{\text{Residual}}{\Delta\text{Yield}} = \frac{\text{Abnormal change in price/Price}}{\text{Change in dividend/Price}} = \frac{\text{Abnormal}\,\Delta\text{P}}{\Delta\text{D}}, \tag{3}$$

and see that the RR are estimates of the stock's abnormal price variation per added dollar paid out; as such, they lend themselves to comparisons of the wealth effects associated with alternative payouts. To illustrate, suppose identical firms A and B, except for number of shares priced at \$16 and \$32, respectively, announce a 2¢ dividend increase. Then, if the abnormal market reaction for A is 1%, it should be 0.5% for B, given that 1% of \$16=0.5% of \$32. Since both firms are identical, the market reaction per dollar paid out per share should also be identical. This is the case here since

$$RR_A = \frac{\Delta P}{\Delta D} = \frac{1\%(16)}{0.02} = 8 = RR_B = \frac{0.5\%(32)}{0.02} = 8 .$$

Given the one-time nature of repurchases, the allegedly similar nature of special dividends and the persistent nature of the increase in regular dividends, comparisons should be improved if the RR's of the latter are based on the present value of the increase. In fact, announcing an increase in the regular dividend is tantamount to announcing a permanent addition to revenue with a present value equal to:

$$PV = (1+r)(\Delta D/r), \tag{4}$$

r being the discount rate measured following Choi and Chen (1997) as $R_f + (R_m - R_f)\beta$. Where R_f, R_m-R_f and β stand, respectively, for the risk-free rate (assumed to be 5%), the market risk premium (assumed to be 8%, a reasonable level given the high returns of the 1985-2003 periods involved) and the market model equity beta, the latter being estimated using daily stock returns and the CRSP value-weighted market returns for days –350 to –101 relative to announcement day 0. Hence our use of discounted relative residuals (DRR) which are measured thus:

$$DRR = \frac{\text{Residual}}{\text{PV/Price}} = \frac{\text{Residual}}{\text{Total added yield}} . \tag{5}$$

Because the sampled regular dividend increases belong to quarterly series, quarterly discount rates are deemed suitable for calculating the DRR. Of course, DRR equates with RR for repurchases because they are clearly one-time payouts. For special dividends, the equality between RR and DRR could be a convenient assumption even though it is less likely the case. Indeed, in our sample, special dividend repetitions are observed for more than half the cases in the five years following the announcements. More precisely, 17.8%, 10.5%, 7.0%, 4.8% and 12.5% of them have been repeated 1, 2, 3, 4 and 5 times or more, respectively. Thus, it was deemed appropriate to measure the DRR for special dividends by assuming that their recurrence over a five-year horizon is perfectly anticipated.

In Table 4 (Panel A, columns 2 and 3) we present the mean of our relative residuals measures (RR, and DRR) for each sample. We observe that when the market response is measured per dollar of added payout as is called for by our RR's, then the relative response turns out to be much smaller (even though significant) for repurchases. That is 0.0065 and 0.0003 on average respectively for tender-offer and open market repurchases, compared to 0.95 for special dividends and 10.67 for increases in regular dividends. Furthermore, as Panel B shows, the average relative response to the increase in regular dividends is significantly stronger than the responses to special dividends and both repurchases categories whereas the difference between the latter two is not significant. This result is consistent with Jensen's (1986) free cash flow theory, which suggests that the recurring payouts are more effective than one-time payouts for curbing agency costs.

Alternatively, our results in terms of RR can be reconciled with signaling theory. After all, in the presence of valuable growth opportunities, and assuming, as in Kalay (1980), that the reluctance of managers to renege on their implicit dividend commitments represents a signaling cost (the cost

associated with foregoing such opportunities or relying on onerous external financing), then we should expect a stronger relative market response to increases in regular dividends than to non recurring payouts.

Table 4: Comparing Cumulative Three-Day Residuals Centered on Payout Announcement Day

	Standard residuals (CAR %)	Relative residuals (RR)	Discounted relative residuals (DRR)
Increases in regular dividends	1.28 (14.19***)	10.67 (7.80***)	0.51 (7.80***)
Special dividends	1.86 (6.67***)	0.95 (2.08**)	0.63 (1.98**)
Tender offer repurchases	8.62 (7.78***)	0.0065 (7.25***)	0.0065 (7.25***)
Open market repurchases	1.71 (5.26***)	0.0003 (0.17)	0.0003 (0.17)
Panel B: Differences of means			
Regular dividends vs. Special dividends	-0.58 (-1.98)	9.72 (6.74**)	-0.12 (-0.29)
Regular dividends vs. Tender offer repurchases	-7.34 (-6.61**)	10.66 (7.79**)	0.50 (1.45)
Regular dividends vs. open market repurchases	-0.43 (-1.31)	10.67 (7.80**)	0.51 (1.55)
Special dividends vs. Tender offer repurchases	-6.76 (-5.92**)	0.94 (2.07)	0.62 (1.54)
Special dividends vs. open market repurchases	0.15 (2.40)	0.95 (2.09)	0.63 (1.55)
Tender offer vs. open market repurchases	6.91 (7.78**)	0.006 (1.40)	0.006 (1.40)

*The relative residuals result from dividing the residuals by the observed increase in yield. Similarly, the discounted relative residuals result from a division by the total discounted yield achievable through the increase in payout, using quarterly discount rates for increases in regular dividends and annual rate for the comparisons involving repeated special dividends. Scheffé's procedure is used to test for differences in means in Panel B. It has a critical F value of 2.608 at the 5% significance level. F-statistics are given in parentheses in panel B with double asterisk (**) for the significant differences at the 5% level. In panel A, t-statistics are given in parentheses. *** and ** indicate significance at the 1 and 5 percent levels respectively. (NB: The samples involve NYSE and AMEX firms of the 1988-2003 period which witnessed 1304 increases in regular dividends, 249 special dividends, 63 self-tender offer repurchases and 547 open market repurchase).*

However, at first glance at least, the above results run counter to more standard signaling models (e.g., Miller and Rock, 1985) since these models do not differentiate between the forms of payouts. Thus, all else being equal, a dollar paid out in dividends should have the same signaling power as a dollar of stock bought back. Yet, it stands to reason that an increase in regular dividends, given its recurring nature, will bring the market to react to both the increase per se and the ensuing cash stream expected from the move. Thus, the contention can be sustained that the market response should be measured relative to the total discounted value involved. If the market response is measured this way for increases in regular dividends and special dividends, then comparisons with the responses to tender-offer repurchases will rest on a more coherent base and we can expect market reactions to be similar whatever the payout form.

As shown in Table 4 (Panel B), the discounted relative residuals of regular dividend increases and recurrent special dividends do not, on average, differ statistically from the relative residuals of tender-offer and open market repurchases. Furthermore, similar results obtain using the Vermaelen's (1981) information variable in lieu of the abnormal return (AR) to compute the relative residuals of repurchases. Note that Vermaelen measures his information variable (Info) as a weighted average of the return from tendering shares (X) and that from non-tendering (Y). Thus Info =aX + (1-a)Y, where a stands for the fraction of shares purchased, $X=(P_T-P_o)/P_o$, $Y=(P_e-P_o)/P_o$, and P_T, P_o, P_e are respectively, the tender price, the price per share before the announcement and the price after the expiration of the offer. Info is meant to capture, in the assessment of the market reaction, the put option involved in any tender-offer repurchases. Recall that before tender-offer expiration, a share held confers a put option exercisable at tender price P_T. These robust indications accord with prevailing contentions in signaling theory whereby any distributed dollar should elicit the same market response whatever the payout form adopted. For such a contention to stand, discounted values should be compared whenever the added payout has a recurring nature.

To sum up, the results shown in Table 4 appear consistent with signaling theories provided the signals are expressed in terms of discounted expected payouts whenever applicable. Thus, a marginal dollar distributed through an increase in regular dividends leads to a stronger relative market response due to its recurring nature. The regression results below complement our evidence on the effectiveness of various payouts.

Regression Results

In our regression models, the dependent variable is the market reaction as measured by the three-day standard cumulative residuals straddling the payout announcements. These models are estimated using weighted least squares with the weights equal to the inverse of the standard deviation of the market model residuals. This estimation procedure was used because we found the variance of the market model residuals to vary across firms (OLS regressions yield similar results). In Model 1, the market reactions are related to the nature of the payouts.

The results shown in Table 5 (Model 1) indicate that: (a) the market reacts positively and significantly to increases in regular dividends since the constant term, which captures the average market response to such increases, is positive and significant; and (b) the average market responses to special dividends, tender-offer, and open market, repurchases are stronger than that for regular dividends since the coefficients of D_{Spec}, D_{Tor}, and D_{Omr} are positive and significant. Note that these three coefficients measure the differential average market responses to special dividends, tender-offer, and open market, repurchases relative to the response associated with the regular dividends.

However, the wealth effects associated with the four forms of payouts cannot be directly compared unless the magnitude of the added payout involved is taken into account. This is achieved by extending model (1) using a ΔYield variable and three interaction terms, as per estimated models (2a), (2b) and (2c). The interaction variables (D_{Spec} *ΔYield), (D_{Tor}*ΔYield) and (D_{Omr}*ΔYield) are included to determine whether the sensitivity of the market response differs with payout form. Their coefficients capture the differential effects on the stock price per dollar of special dividends, tender-offer and open market repurchases relative to a dollar increase in regular dividends.

As shown in Table 5 (model 2a), the ΔYield coefficient is negative but insignificant whilst the three interaction coefficients (D_{Spec}*ΔYield, D_{Tor}*ΔYield, D_{Opr}*ΔYield) are positive and significant. This reveals that the increase in regular dividends elicits a weaker market response per dollar of payout compared to either, special dividends, tender-offer, or open market, repurchases. A premature conclusion here would be that the relative market reaction is stronger for special dividends or repurchases (tender offer or open market) than it is for regular dividends. This contradicts Ofer and Thakor's (1987) view whereby, on a dollar for dollar basis, dividends and repurchases are both valid signals with one never dominating the other over the whole range of payouts. Nonetheless, given the results of Model 3 (Table 5), for the dividend increase cases, we can sustain the contention that the relative market response is stronger for regular dividends of smaller magnitude, since the interaction variable ($D_{low\ div}$) is positive and significant. A more convincing test should therefore involve two separate regressions of type (2a). Accordingly, we estimated the first one using the below-mean subsample of dividend increases (Model 2b) combined with the complete samples of special dividends and both types of repurchases. In the second regression, the sampled cases combine the above-mean increases in regular dividends with special dividends and both types of repurchases.

As expected, the coefficients of the three interaction variables are all negative and significant in regression (2b) whereas in regression (2c) they are positive and significant. This accords with Ofer and Thakor's (1987) model in which: (a) for relatively small distributions, the marginal wealth effect of a

dollar paid out through an increase in regular dividends is stronger than that of a dollar distributed via repurchases; and, (b) for large distributions, repurchases elicit a stronger wealth effect.

Table 5: Regression Analysis Comparing the Market Reaction to Regular Dividend Increases, Special Dividends, Tender-Offer Repurchases and Open Market Repurchases.

Variables	Model 1	Model 2a	Model 3	Model 2b	Model 2c	Model 4	Model 5
Intercept	0.0108***	0.0109***	0.013***	0.0029*	0.013***	0.024***	0.039***
$D_{high\ q}$						-0.001	-0.007
Cashflow						0.001	0.006
Cashflow$*D_{low\ q}$						-0.005*	-0.003
Size						-0.002***	-0.003***
Debt						-0.004	-0.012
Ownership						-0.0001	0.0002*
$D_{post\text{-}1986}$						-0.003*	0.006
ΔYield		-0.0273	-0.152**	5.301***	-0.152	3.130**	0.0006
$D_{low\ div}$			-0.010***				
D_{Spec}	0.0159***	0.0077***		0.014***	0.005**	0.009**	0.052***
D_{Tor}	0.0970***	0.0585***		0.067***	0.056***	0.059***	-0.140
D_{Omr}	0.0112***	0.0065***		0.012***	0.0043	0.007**	-0.054*
$D_{low\ div}$ *ΔYield			5.458***				
(D_{Spec}*ΔYield)		0.224**		-5.110***	0.356**	-2.910**	0.377**
(D_{Tor}*ΔYield)		0.265**		-5.082***	0.378**	-2.978**	0.383**
(D_{Omr}*ΔYield)		0.189**		-6.031***	0.287**	-3.112***	0.192**
Adj. R-square	0.123	0.156	0.01	0.173	0.218	0.316	0.332

*In all our regression models, the dependent variable is the market reaction as measured by the three-day standard cumulative residuals. ***, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

To check whether this finding is due to some firm-specific characteristics, it was deemed appropriate to extend models (2b) and (2c) using those variables that have been proved in our logit analysis to influence the preference of firms for a given form of payout, namely: $D_{high\ q}$, Cashflow, (Cashflow$*D_{low\ q}$), Size, Debt and Ownership. In addition to these variables, we also included a dummy variable ($D_{post\text{-}1986}$) with value 1 for post-1986 cases and 0 otherwise, since, as underscored by Bernheim and Wantz (1995), the 1986 Tax Reform Act may have changed appreciably the market response per dollar of a given form of payout. Indeed, Before January 1, 1987, the marginal tax rate on dividend revenues for wealthy individuals stood at 50% versus 20% for gains from repurchases (=50% of its 40% formerly taxable portion). See Auerbach and Slemrod, 1997, p. 597. Note that this variable may also proxy for other time-specific factors. For example, the investors' perception of dividend and repurchase events may have changed after the October 1987 crash. This extension of models (2b) and (2c) leads to our models (4) and (5) respectively. The results are included in Table 5.

Let us note that the three interaction variables show coefficients that remain negative and significant in Model (4) but positive and significant in Model (5). Among the firm-specific factors, only the Size variable proves to be significant in both models at the 5% level. The coefficients for $D_{post\text{-}1986}$ do not come out significant, thus indicating that the tax rate changes involved have not materially altered the relative market responses to competing forms of payouts. Overall, our results are seen as supportive of the contention that various payouts can be equally effective provided the form chosen is in harmony with the wealth effect sought by the firm.

CONCLUSION

We have evaluated, within an integrated framework, the effectiveness of increasing firm payouts via alternative forms: increases in regular dividends, special dividends, tender-offer repurchases or open market repurchases. The effectiveness is inferred from stock residuals defined in both standard and relative terms. Relative residuals measure the market's reaction, in dollars of abnormal price change per dollar of the extra revenue paid out or promised. They make comparisons between one-time and

recurring dividend payouts more coherent from a market standpoint and allow integration of findings about the market's reaction to alternative payouts. The quality of comparisons is enhanced whenever relative residuals of one-time payouts are compared with the discounted relative residuals of increases in regular dividends, the latter involving the estimated present value of the likely permanent increase.

Likewise, a logit analysis was performed to estimate the propensity of firms to opt for a given form of payout. We have found that an increase in regular dividends would be the choice of firms beset by agency problems (low managerial ownership, low Q ratios and large cash flows). More often than not, firms with valuable investment opportunities (high Q firms) will favor special dividends. By contrast, the most undervalued firms (low Q firms) will choose repurchases.

In summary, the evidence gathered is supportive of the contention that various forms of payouts can be equally effective signals, provided the effectiveness measure takes into account the recurring nature of the payouts whenever applicable.

However, this study presents some limitations that could be an interesting subject of future researches. For example, our measures of the payouts are naive, since we consider the entire added dividends as unexpected. The analysis could be refined using a forecasting model (see Lintner, 1956) to extract the unexpected part of the payout. Another possible research could be to test in an integrated framework, the claim that the market reaction to the issuance of debts is less negative than that related to equity issuances. To do so, we could apply the methodology developed in this paper to compare, on a dollar for dollar basis, the market responses to different financing methods.

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