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The Paradox of Rising Dividend Payouts in a Recession: Evidence from Pakistan

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Abstract

This paper applies a probit model to a panel of 319 firms listed on the Karachi Stock Exchange over the period 1999–2010, and finds that changes in inflation have a statistically significant, positive impact on the probability of paying cash and bonus dividends. Inflation induces firms to revalue their assets, which raises their distributable revaluation surplus. This, in turn, serves as a good buffer when distributing cash and bonus dividends, especially during periods of high inflation and the low profitability of firms during a recession. Bonus dividend distribution becomes relatively more attractive for firms in such a scenario because these enhance debt capacity (collateral) through the revaluation of assets and reduce the debt-equity ratio. We also highlight other factors that contribute to the probability of paying cash and bonus dividends.

Keywords: Cash dividends, bonus/scrip/stock dividends, inflation, dividend history, growth/investment opportunities, earnings.

JEL classification: G35, G33.

1. Introduction

The Pakistan economy has recently seen two interesting growth periods during 2001–10, both distinguishable from each other. The first half was a high-growth period, with a relatively low rate of inflation, while the second half can be described as a period of stagflation, i.e., declining economic growth (recession) combined with significantly high rate of cost-push inflation. Consequent to these economic changes, the corporate sector witnessed significant improvements in liquidity and profitability during the first half while a significant decline occurred during the second.

It is worth noting that an increase in the revaluation surplus contributed significantly to the recent sharp rise in reserves during the

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period of high inflation. For instance, the increase in revaluation surplus was PKR 52.81 billion during 1999–2010, which constitutes almost 53 percent of the increase in total reserves. In addition, we also note a paradox of corporate behavior in that firms significantly boosted their dividend payout ratio and scrip/stock dividend distributions during bad times (declining growth, and weakening profitability and liquidity) and high inflation rates (2006–10), while these remained relatively low during the period of relatively low inflation (1999–2005) and good times (high growth, liquidity, and profitability). For example, the dividend payout ratio was almost 2 percent during 2000, fell to 0.5 percent in 2005, and has remained closer to 1 percent in recent years, while the proportion of bonus dividend distributions in total dividends fell from 11.64 percent in 2000 to 4.63 percent in 2005, and went up to 13.49 percent in 2010.

The literature defines the dividend payout ratio as follows:

$$dividend \quad payout \quad ratio = \frac{total \quad dividends}{net \quad profit \quad after \quad tax} * 100 \qquad (1)$$

In view of this definition, corporate behavior regarding the dividend payout ratio is easily understandable. Total and cash dividends are far less volatile, while bonus dividends—though volatile—remain a very small proportion of total dividends compared to net profit after tax and reserves. This provides empirical evidence of dividend smoothing (more or less constant growth) in Pakistan. Given constant growth in dividends (total and cash), if net profit after tax grows faster than dividends, the dividend payout ratio will decline and vice versa. However, the paradox of corporate behavior regarding especially high bonus dividend distribution during a period of high inflation and bad times still needs extensive research.

To the best of our knowledge, no study in the context of Pakistan has yet explained which firms are likely to pay bonus dividends, and why the proportion of bonus dividend distribution by firms increases during bad times and vice versa. This study aims to fill this gap in the literature.

The remaining paper is organized as follows: Section 2 reviews the literature on the subject. Section 3 describes the data sources and variables used, and the research design and methodology. Section 4 presents and discusses the results, and Section 5 concludes the study.

2. Literature Review

Miller and Modigliani (1961) show that a firm's value is independent of the dividend policy under perfect market assumptions. Corporate dividend distribution is one of the most important corporate decisions because a company's consistency and ability to pay and increase stable dividends over time conveys information about the management's assessment of the firm's future prospects, and thus sends strong signals to the market about its fundaments. This, in turn, induces favorable stock price and return reactions according to the dividend-signaling hypothesis (see, for example, Bhattacharya, 1979; John & Williams, 1985; Miller & Rock, 1985). Travlos, Trigeorgis, and Vafaes (2001), assessing the Cyprus market, Gurgul, Madjosz, and Mestel (2003), the Austrian market, and Yilmaz and Gulay (2006), the Turkish market, all support the dividend information content hypothesis. Jensen (1986) highlights the role of dividends and other payouts in resolving agency-based conflict between insiders and outside shareholders because higher dividend payouts reduce the shareholder money available to managers to put into unprofitable projects.

Rehman (2012) points to the positive impact of the debt-to-equity ratio, profitability, current ratio, and corporate tax on the dividend payout ratio, while the operating cash flow per share and market-to-book value ratio have a negative impact. The study identifies profitability, debt-to-equity, and market-to-book value ratios as significant determinants of the dividend payout ratio in Pakistan. Al Shabibi and Ramesh (2011) examine firm-specific factors in addition to the corporate governance factors that affected dividend policy for 90 nonfinancial companies in the UK in 2007. They conclude that board size, board independence, firm size, profitability, financial leverage, and risk have a positive impact on dividends per share while audit type and firm growth have a negative impact. However, they report that the impact of firm growth, audit type, and financial leverage is insignificant.

Asif, Rasool, and Kamal (2011) examine the relationship between dividend policy and financial leverage for 403 companies listed on the Karachi Stock Exchange (KSE) during the period 2002–08. They show that financial leverage has a negative impact on dividend payouts. A change in earnings has no significant impact on dividend policy, while the dividend yield has a positive impact and vice versa.

Ahmed and Javid (2008) examine the dynamics and determinants of the dividend payout policy of 320 nonfinancial firms listed on the KSE

for the period 2001–06. They conclude that Pakistani listed nonfinancial firms rely on current earnings per share and past dividends per share when setting their dividend payments. Their results indicate that dividends tend to be more sensitive to current earnings than prior dividends. The listed nonfinancial firms that are quick to adjust and have a low target payout ratio indicate unstable smoothing in their dividend payments. The study also finds that profitable firms with more stable net earnings can afford larger free cash flows and, therefore, pay larger dividends. Ownership concentration and market liquidity have a positive impact on dividend payout policy, while investment opportunities and leverage have a negative impact. Market capitalization and firm size affect dividend payout policy in such a way that firms prefer to invest in their assets rather than pay dividends to their shareholders.

Mohsin and Ashraf (in press) study the behavior of 100 listed firms for the period 2001–09 using Lintner' modified model. Their findings show that, under a restricted monetary policy, the cost of external funds increases and firms prefer to utilize internal funds, leading to a reduction in dividend payouts. Using data on 100 companies representing all major sectors of the KSE for the period 2005–07, Mirza and Azfa (2010) show that managerial and individual ownership, cash flow sensitivity, size, and leverage are negatively related to cash dividends, while operating cash flow and profitability are positively related to cash dividends. Managerial ownership, individual ownership, operating cash flow, and size are the most significant determinants of dividend behavior, while leverage and cash flow have an insignificant impact.

Al-Najjar and Belghitar (2011) explore the simultaneous relationship between corporate cash holdings and dividend policy, using a large sample of around 400 nonfinancial firms for the period 1991 to 2008. Their results show that dividend policy is affected by cash, leverage, growth, size, risk, and profit. In a cross-sectional OLS regression analysis of 882 Nigerian firms for the period 1984–97, Adelegan (2002) shows that liquidity, financial leverage, and profit before tax all have a positive and significant impact, while size and earnings volatility have a negative and insignificant effect on the dividend payout ratio.

Adaoglu and Lasfer (2011) conclude that bonus distributions are carried out by transferring the accumulated equity reserves—mainly the inflation revaluation equity reserves—to paid-in capital, leaving the total equity unchanged. They point out that firms opt for bonus distributions to mitigate the impact of inflation on their eroding paid-in capital to reduce

their leverage, which in turn increases their credibility and borrowing capacity especially in a market of limited access to external equity financing. Using time-series analysis, Lee (1996) finds that dividends respond strongly to permanent changes in earnings without any significant over-reaction, but little, if at all, to transitory changes in earnings. Rankine and Stice (1997) view stock dividend distributions as an indication of management optimism that future income will replenish retained earnings.

3. Methodology

3.1. Research Design

We estimate two separate equations for cash and bonus dividends using a probit model. In the first equation, we use a binary form of the dependent variable, the cash dividends [$CD_{i,t}$] of firm *i* in year *t*. We model the probability [Pr] of observing a positive value of cash dividends as follows:

$$\Pr(CD_{i,t} = 1[X_{i,t}, \beta), (Z_t, \gamma)] = 1 - F[(-X_{i,t}, \beta), (Z_t, \gamma)] \quad (2)$$

where $X_{i,t}$ is a vector of firm-specific explanatory variables that vary across firms as well as over time; Z_t is a vector of explanatory variables that vary only over time; and *F* is a continuous, strictly increasing function that takes a real value and returns a value ranging from 0 to 1. We assume that the index specification's parameters are linear so that they take the form $(X_{i,t}, \beta)$ and (Z_t, γ), respectively. The choice of function determines the type of binary model. It follows that:

$$\Pr(CD_{i,t} = 0[(X_{i,t}, \beta), (Z_t \gamma)] = -F[(-X_{i,t}, \beta), (-Z_t, \gamma)] \quad (3)$$

Based on this specification, we can estimate the parameters of this model using the maximum likelihood method. The likelihood function can be written in the following form:

$$l(\beta) = \sum_{i=1}^{n} CD_{i,t} \log[1 - F[(-X_{i,t}, \beta), (-Z_t, \gamma)] + 1 - C[\log F[-X_{i,t}, \beta), (-Z_t, \gamma)] \quad (4)$$

We code the values of $CD_{i,t}$ as follows:

$$CD_{i,t} = \begin{cases} 1 & if \quad CD_{i,t} > 0 \\ 0 & if \quad CD_{i,t} = 0 \end{cases} \quad (5)$$

Coding the $CD_{i,t}$ variable in binary form implies that its expected value is simply the probability that $CD_{i,t} = 1$:

$$E(CD_{i,t} = 1[(X_{i,t}, \beta), (Z_t, \gamma)] = 1.\ \Pr(CD_{i,t} = 0[(X_{i,t}, \beta), (Z_t, \gamma)] + 0.$$

$$\Pr(CD_{i,t} = 0[(X_{i,t}, \beta), (Z_t, \gamma)] \quad (6)$$

This implies that we can express the binary model of cash dividends as a regression model:

$$CD_{i,t} = (1 - F[(X_{i,t}, \beta), (Z_t, \gamma)] + \varepsilon_i \quad (7)$$

where ε_i is a residual representing the deviation of the binary $CD_{i,t}$ from its conditional mean.

Similarly, we can specify our bonus dividends model as follows:

$$BD_{i,t} = [1 - F\{(X_{i,t}, \beta), (Z_t, \gamma)\}] + \varepsilon_i \quad (8)$$

3.2. Choice and Discussion of Variables

We use cash [CD] and stock [BD] dividend distributions by firms as dependent variables in our three models. To test whether inflation affects firms' dividend payout policies in Pakistan, in addition to inflation, we include growth opportunities, firm size, current profitability, permanent profitability, earnings volatility, efficiency, financial leverage, investment opportunities, GDP growth, and the real interest rate as control variables. Most studies have used current profit before tax (Adelegan, 2002), net profit after tax (Mohsin & Ashraf, in press) earnings per share (Al Shabibi & Ramesh, 2011; Mirza & Azfa, 2010; Ahmed & Javid, 2008) and found that they have a positive impact on dividend distributions (Rehman, 2012; Mohsin & Ashraf, in press; Al Shabibi & Ramesh, 2011; Al-Najjar & Belghitar, 2011; Mirza & Azfa, 2010; Ahmed & Javid, 2008; Adelegan, 2002). We use return on assets as a measure of profitability, calculated as follows:

$$ROA_{i,t} = \frac{NPAT_{i,t}}{TA_{i,t}} * 100 \quad (9)$$

Suppose we view the current earnings ($ROA_{i,t}$) of firm *i* at time *t* as the sum of permanent earnings ($PROA_{i,t}$) and earnings volatility ($RROA_{i,t}$). We can write this as follows:

$$ROA_{i,t} = PROA_{i,t} + RROA_{i,t} \tag{10}$$

We use the following simple technique to isolate permanent earnings ($PROA_{i,t}$) from current earnings ($ROA_{i,t}$).

Step 1: We regress current earnings ($ROA_{i,t}$) on current earnings lagged by one year ($ROA_{i,t-1}$) in the following form:

$$ROA_{i,t} = \alpha + \beta^{*} ROA_{i,t-1} + \mu_{i,t} \tag{11}$$

where $\mu_{i,t}$ represents transitory earnings $RROA_{i,t}$.

Step 2: We create a series of residuals ($\mu_{i,t}$) based on the results of equation (11) above to capture earnings volatility or risk factor ($RROA_{i,t}$).

Step 3: We subtract the residual series [($RROA_{i,t}$)] obtained in step 2 from the series of current earnings ($ROA_{i,t}$) to obtain the permanent component of earnings ($PROA_{i,t}$).

There are several measures of firm size, including the logarithm of total assets (Mirza & Azfa, 2010; Ahmed & Javid, 2008), the number of employees (Al Shabibi & Ramesh, 2011), and relative market share in gross sales (Hussain, 2012) or total assets. The impact of firm size on dividend distributions is controversial in the literature. Some studies substantiate its positive relationship (Mirza & Azfa, 2010; Al Shabibi & Ramesh, 2011; Rafique, 2012) while others establish its negative relationship with dividend distributions (Ahmed & Javid, 2008; Mirza & Azfa, 2010). We measure relative firm size as follows:

$$RFS_{i,t} = \frac{RMSTA_{i,t}}{\sum_{i=1}^{n} RMSTA_{i,t}} * 100 \tag{12}$$

where $RFS_{i,t}$, $RMSTA_{i,t}$, and $\sum_{i=1}^{n} RMSTA_{i,t}$ denote relative firm size, the book value of a firm's total assets, and the sum of the book value of total assets of *i* to *n* number of firms in the corporate sector, respectively.

In view of growth opportunities, firms invest in assets; therefore, growth in total assets represents growth opportunities. We measure growth opportunities as the logarithm of the book value of total assets [log(TA)]. Improvement in growth opportunities serves as a signal for

better future earnings; therefore, we expect it to have a positive impact on dividend distributions.

Efficient firms, i.e., those that utilize their assets more effectively, are likely to pay higher dividends. Asset turnover [ATO] is a good proxy for efficiency, and is calculated as follows:

$$ATO_{i,t} = \frac{GS_{i,t}}{TA_{i,t}} * 100 \tag{13}$$

where $GS_{i,t}$ and $TA_{i,t}$ denote gross sales and the total assets of firm *i* in year *t*, respectively.

The sign of the financial leverage coefficient varies with the choice of dependent and independent variables. The literature provides evidence that financial leverage can have both a positive impact (Al-Najjar & Belghitar, 2011; Al Shabibi & Ramesh, 2011) and negative impact (Mirza & Azfa, 2010; Ahmed & Javid, 2008; Asif et al., 2011) on dividend distributions. Corporate gearing (Hussain, 2012) and the debt-equity ratio are widely used measures of financial leverage. We use the debt-equity ratio [DER], which is calculated as follows:

$$DER_{i,t} = \frac{TL_{i,t}}{TE_{i,t}} \tag{14}$$

where $TL_{i,t}$ and $TE_{i,t}$ signify the book value of the total liabilities and total equity of firm *i* in year *t*.

The sign of the liquidity coefficient also varies with the choice of dependent and independent variables. The literature shows that financial leverage can have both a positive impact (Ahmed & Javid, 2008; Adelegan, 2002) and negative impact (Rehman, 2012; Mirza & Azfa, 2010) on dividend distributions. The operating cash flow, current ratio, and quick assets ratio are widely used measures of liquidity. Adelegan (2002) finds that financial leverage has a positive impact and Rehman (2012) finds it has a negative impact on dividend distributions. We use the current ratio [CR] as a proxy for liquidity, which is calculated as follows:

$$CR_{i,t} = \frac{CA_{i,t}}{CL_{i,t}} \tag{15}$$

where $CA_{i,t}$ and $CL_{i,t}$ represent the book value of current assets and current liabilities, respectively, of firm *i* in year *t*.

Ahmed and Javid (2008) point out that a firm with more investment opportunities in the future is likely to retain its profits for future expansion if it prefers or intends to use internal sources of funds according to the pecking order theory, especially where equity markets are not well developed. We therefore introduce investment opportunities [IO] as an explanatory variable in our model, using the retention of profits after tax scaled by total assets as a proxy for investment opportunities as follows:

$$IO_{i,t} = \frac{R_{i,t}}{TA_{i,t}} \tag{16}$$

where $R_{i,t}$ is the current year's retained profit and $TA_{i,t}$ denotes the total assets of firm *i* in year *t*.

DeAngelo, DeAngelo, and Stulz (2004) show that a firm's dividend history has a positive impact on its probability of paying dividends after controlling for other variables. Following their study, we include the firm's history of paying dividends to capture dividend smoothing and persistence in the probability of paying dividends.

Accordingly, we introduce three macroeconomic variables that are likely to influence dividends. GDP growth [GDPG] serves as a proxy for macroeconomic environment. In view of the empirical evidence of the relationship between the macroeconomic environment and profitability and its likely effect on investment and growth opportunities for the corporate sector, we expect it to affect the firm's dividend decisions. Suppose a firm intends/prefers to use internal sources of funds for growth or investment. The firm may choose to restrict cash dividend distribution or pay stock dividends. The predicted sign of the GDP growth coefficient, therefore, may either be positive or negative. If, however, an improvement in GDP growth indicates a better macroeconomic environment and signals better future business, the firm is more likely to pay more dividends as its management may expect to replenish retained earnings from future earnings.

Lack of data on revaluation surplus prevents us from using inflation [INF] as a proxy for revaluation surplus. In view of the current period's inflationary pressures, firms revalue their assets by the end of their accounting year. We therefore expect inflation to have a lagged positive effect on revaluation surplus. Since it can be used to pay either

cash or stock dividends, it is expected to have a positive impact on dividend distribution (Adaoglu & Lasfer, 2011).

The real interest rate [RIR] serves as a proxy for returns on substitutes for equity, and is therefore expected to compel firms to pay matching returns (dividends) on equity. A higher RIR can raise financing costs and slow down firms' growth, which, in turn, can dampen profitability and reduce the probability of paying dividends. High financing costs can also motivate firms to retain and use internal funds, thus also reducing dividends (Mohsin & Ashraf, in press). Therefore, the expected sign of the RIR coefficient may either be positive or negative.

3.3. Dataset

We have used secondary data for the period 1999–2010, derived from balance sheet analyses of joint stock companies listed on the KSE (State Bank of Pakistan, 1999–2010). The sample covers all listed companies with a complete and consistent 12-year data series, and excludes those with an incomplete and/or inconsistent data series. Statistics on GDP growth, the real interest rate, and rate of inflation have been taken from the *Pakistan Economic Survey* for the years under study.

4. Results and Discussion

We present matrices for correlation coefficients in Table 1 to rule out perfect multi-colinearity between the variables. There is no evidence of perfect multi-colinearity between the variables, either for the cash or bonus dividend models. However, the correlation between relative firm size and growth opportunities, and between earnings volatility and permanent earnings, though not perfect, is fairly high in both cases.

The regression results for both models are presented in Table 2. The sample and number of included observations for regression purposes have been adjusted due to the use of some lags and the first difference of certain variables.

Table 1: Matrices of correlation coefficients

a. Cash dividends

	CD	LOG(TA)	RFS	ROA	PROA	RROA(-1)	ATO	DER	CR	IO	D(GDPG(-1))	D(INF(-1))	RIR	CD(-1)
CD	1	0.247	0.115	0.404	0.369	0.237	0.259	0.014	0.091	0.190	0.024	0.001	0.098	0.600
LOG(TA)	0.247	1	0.571	0.114	0.120	0.059	-0.104	-0.015	-0.009	0.050	-0.071	0.148	-0.170	0.225
RFS	0.115	0.571	1	0.067	0.059	0.033	-0.002	-0.023	-0.011	0.014	0.005	-0.012	0.014	0.106
ROA	0.404	0.114	0.067	1	0.474	0.358	0.262	0.011	0.077	0.674	0.068	0.005	0.023	0.333
PROA	0.369	0.120	0.059	0.474	1	0.882	0.219	0.019	0.062	0.236	0.034	-0.069	0.047	0.408
RROA(-1)	0.237	0.059	0.033	0.358	0.882	1	0.145	0.013	0.035	0.203	0.051	-0.068	0.048	0.263
ATO	0.259	-0.104	-0.002	0.262	0.219	0.145	1	0.013	0.002	0.138	0.002	-0.014	0.050	0.244
DER	0.014	-0.015	-0.023	0.011	0.019	0.013	0.013	1	0.000	0.008	0.033	-0.031	0.030	0.021
CR	0.091	-0.009	-0.011	0.077	0.062	0.035	0.002	0.000	1	0.056	-0.001	0.007	-0.015	0.058
IO	0.190	0.050	0.014	0.674	0.236	0.203	0.138	0.008	0.056	1	0.080	-0.007	0.022	0.162
D(GDPG(-1))	0.024	-0.071	0.005	0.068	0.034	0.051	0.002	0.033	-0.001	0.080	1	-0.217	0.161	0.047
D(INF(-1))	0.001	0.148	-0.012	0.005	-0.069	-0.068	-0.014	-0.031	0.007	-0.007	-0.217	1	-0.476	-0.110
RIR	0.098	-0.170	0.014	0.023	0.047	0.048	0.050	0.030	-0.015	0.022	0.161	-0.476	1	0.147
CD(-1)	0.600	0.225	0.106	0.333	0.408	0.263	0.244	0.021	0.058	0.162	0.047	-0.110	0.147	1

b. Bonus dividends														
	BBDIV	**LOG(TA)**	**RFS**	**ROA**	**PROA**	**RROA(-1)**	**ATO**	**DER**	**D(CR)**	**IO**	**D(GDPG(-1))**	**D(INF(-1))**	**RIR**	**BD(-1)**
BD	1	0.178	0.045	0.173	0.160	0.088	0.035	0.004	-0.004	0.102	-0.003	0.096	-0.081	0.471
LOG(TA)	0.178	1	0.571	0.114	0.122	0.060	-0.104	-0.015	-0.008	0.050	-0.071	0.148	-0.170	0.197
RFS	0.045	0.571	1	0.067	0.060	0.034	-0.002	-0.023	-0.002	0.014	0.005	-0.012	0.014	0.069
ROA	0.173	0.114	0.067	1	0.478	0.362	0.262	0.011	0.018	0.674	0.068	0.005	0.023	0.128
PROA	0.160	0.122	0.060	0.478	1	0.880	0.221	0.019	-0.011	0.238	0.034	-0.067	0.044	0.152
RROA(-1)	0.088	0.060	0.034	0.362	0.880	1	0.146	0.013	-0.013	0.205	0.051	-0.065	0.045	0.085
ATO	0.035	-0.104	-0.002	0.262	0.221	0.146	1	0.013	0.007	0.138	0.002	-0.014	0.050	0.023
DER	0.004	-0.015	-0.023	0.011	0.019	0.013	0.013	1	-0.001	0.008	0.033	-0.031	0.030	0.005
D(CR)	-0.004	-0.008	-0.002	0.018	-0.011	-0.013	0.007	-0.001	1	0.025	-0.020	-0.003	-0.003	-0.001
IO	0.102	0.050	0.014	0.674	0.238	0.205	0.138	0.008	0.025	1	0.080	-0.007	0.022	0.075
D(GDPG(-1))	-0.003	-0.071	0.005	0.068	0.034	0.051	0.002	0.033	-0.020	0.080	1	-0.217	0.161	-0.064
D(INF(-1))	0.096	0.148	-0.012	0.005	-0.067	-0.065	-0.014	-0.031	-0.003	-0.007	-0.217	1	-0.476	0.064
RIR	-0.081	-0.170	0.014	0.023	0.044	0.045	0.050	0.030	-0.003	0.022	0.161	-0.476	1	-0.068
BD(-1)	0.471	0.197	0.069	0.128	0.152	0.085	0.023	0.005	-0.001	0.075	-0.064	0.064	-0.068	1

Source: Author's calculations.

Table 2: Regression results

	Dependent variable: cash dividends (CD)	Dependent variable: bonus dividends (BD)
	Method: ML – binary probit (quadratic hill-climbing)	Method: ML – binary probit (quadratic hill-climbing)
	Sample (adjusted): 2001–10	Sample (adjusted): 2001–10
	Included observations: 3,159 after adjustments	Included observations: 3,158 after adjustments
	Convergence achieved after 5 iterations	Convergence achieved after 5 iterations
	Covariance matrix computed using second derivatives	Covariance matrix computed using second derivatives

	Variable	Coefficient	SE	z-stat.	Prob.	Variable	Coefficient	SE	z-stat.	Prob.
C	C	-3.4296	0.2038	-16.8277	0.0000	C	-2.9171	0.2322	-12.5618	0.0000
LOG(TA): growth opportunities	LOG(TA)	0.2384	0.0253	9.4232	0.0000	LOG(TA)	0.1528	0.0303	5.0435	0.0000
RFS: relative firm size	RFS	-0.1227	0.0439	-2.7969	0.0052	RFS	-0.1683	0.0660	-2.5511	0.0107
ROA: current earnings	ROA	0.0308	0.0028	11.1995	0.0000	ROA	0.0090	0.0033	2.6996	0.0069
PROA: permanent earnings	PROA	0.0456	0.0086	5.3170	0.0000	PROA	0.0395	0.0095	4.1779	0.0000
RROA(-1): earnings volatility	RROA(-1)	-0.0152	0.0040	-3.7853	0.0002	RROA(-1)	-0.0160	0.0047	-3.3678	0.0008
ATO: firm efficiency	ATO	0.2805	0.0406	6.9179	0.0000	ATO	0.0054	0.0333	0.1633	0.8703
DER: financial leverage	DER	0.0000	0.0000	0.0506	0.9596	DER	0.0000	0.0000	0.0803	0.9360
CR: firm liquidity	CR	0.0006	0.0002	4.0956	0.0000	D(CR)	0.0000	0.0001	-0.3518	0.7250
IO: investment opportunities	IO	-1.3267	0.2353	-5.6386	0.0000	IO	0.0799	0.3313	0.2412	0.8094
GDPG(-1): macroeconomic environment	D(GDPG(-1))	0.0125	0.0141	0.8873	0.3749	D(GDPG(-1))	0.0404	0.0168	2.4054	0.0162
D(INF(-1)): inflation	D(INF(-1))	0.0410	0.0099	4.1573	0.0000	D(INF(-1))	0.0304	0.0115	2.6537	0.0080
RIR: real interest rate	RIR	0.0396	0.0074	5.3574	0.0000	RIR	-0.0111	0.0086	-1.2899	0.1971
Dividend history	CD (-1)	1.2366	0.0605	20.4521	0.0000	BD(-1)	1.4672	0.0802	18.3007	0.0000
	McFadden R-squared	0.3920	Mean dependent variable		0.45521	McFadden R-squared	0.25676	Mean dependent variable		0.1203

Variable	Coefficient	SE z-stat.	Prob.	Variable	Coefficient	SE z-stat.	Prob.
SD dependent variable	0.4981	SE of regression	0.36242	SD dependent variable	0.32540	SE of regression	0.2807
Akaike info criterion	0.8468	Sum of squared residuals	413.09	Akaike info criterion	0.555266	Sum of squared residuals	247.72
Schwarz criterion	0.8737	Log likelihood	-1323.53	Schwarz criterion	0.58212	Log likelihood	-862.76
Hannan-Quinn criter.	0.8564	Restr. log likelihood	-2176.96	Hannan-Quinn criter.	0.56490	Restr. log likelihood	-1160.82
LR statistic	1,706.85	Avg. log likelihood	-0.4189720	LR statistic	596.11000	Avg. log likelihood	-0.2732
Prob. (LR statistic)	0.0000			Prob. (LR statistic)	0.0000		
Obs. with dep. = 0	1,721	Total observations	3159	Obs. with dep. = 0	2,778	Total observations	3,158
Obs. with dep. = 1	1,438			Obs. with dep. = 1	380		

Source: Author's calculations.

Firms with higher current [ROA] and permanent earnings [PROA] have a higher probability of paying both cash and bonus dividends. It is interesting to note that current earnings are relatively more significant compared to permanent earnings for cash dividends while the reverse is true for bonus dividends. The impact of earnings volatility (lagged) [RROA (-1)] on the likelihood of paying both cash and bonus dividends is negative and significant, which implies that a higher degree of earnings volatility motivates firms to conserve funds and cash flows for distribution during bad times to ensure dividend smoothing. Our results also conform with those of Lee (1996), who finds that dividends respond strongly to permanent changes in earnings, contrary to the view that dividends respond little, if at all, to transitory changes in earnings. Lee, however, concludes this using time-series analysis.

The coefficient of growth opportunities [log (TA)][1] is positive and highly significant. Our regression results indicate that firms with better growth opportunities are likely to have a higher probability of paying both cash and stock dividends. Our results reflect the signaling hypothesis—corporate managers use dividend payouts to signal firms' future earnings, i.e., earnings are distributed from reserves and retained earnings during the current period will be recouped from future earnings. These signals can also create better opportunities to motivate external financing for future growth. The negative and significant firm size coefficient indicates that larger firms are less likely to pay dividends. Following the pecking order theory, larger firms are likely to rely more on internal funds, hence the lower probability that they will pay dividends.

Efficient firms, i.e., those that use their assets more effectively, are more likely to generate smooth operating cash flows to pay cash dividends. Stock dividends, on the other hand, do not require cash flows, and therefore efficiency [ATO] has an insignificant impact on the likelihood of stock dividends. Liquidity has a positive and significant impact on the probability of paying cash dividends, while liquidity does not matter for stock dividend distribution.

Better investment opportunities [IO] have a negative and significant impact on the likelihood of cash dividend distribution. This implies that firms conserve their cash flows for investment by reducing cash dividends. Our results conform to the pecking order theory and to Ahmed and Javid's

[1] Some studies have used log[TA] as a measure of firm size (see, for example, Mirza & Azfa, 2010; Rafique, 2012). In my view, this is an inappropriate proxy for size. Current expansion or growth in total assets better reflects firms' growth opportunities. Relative firm size can be better measured by the relative size of gross sales or total assets.

(2008) findings. However, the impact of investment opportunities on the probability of paying stock dividends is positive but insignificant.

It is interesting to note the positive and significant coefficient of lagged changes in inflation, D[INF (-1)]. Subsequent to the acquisition of plant(s), property, and equipment assets, International Accounting Standard 16[2] allows companies to choose between a cost and a revaluation model for fixed assets. In the revaluation model, increases in the value of assets are debited from the respective 'asset' account, credited to 'other comprehensive income' in the 'profit and loss' account, and accumulated under the heading of 'revaluation surplus' as part of shareholders' equity. Therefore, the revaluation of assets initially increases both assets as well as equity. Companies can distribute both cash and/or stock dividends to shareholders from the revaluation surplus, depending on their liquidity situation. Thus, inflationary pressures create an opportunity for firms to raise or maintain dividend distribution despite their weak profitability and liquidity in a poor macroeconomic environment.

In addition, if companies declare and pay a bonus dividend, say, out of their revaluation surplus, they can debit the 'revaluation surplus' and credit their 'capital stock'[3], which requires no cash payments. This has no impact on assets, merely changing the composition of equity and leaving total equity unchanged. On the other hand, the increased value of assets consequent to initial revaluation gives collateral a greater value, enhances borrowing capacity, and reduces the debt-equity ratio. This, in turn, improves firms' credibility during a period of weaker profitability and liquidity in a poor macroeconomic environment. Therefore, inflation has a positive impact both on stock and cash dividends, and allows financially weaker firms to save face. Our results are consistent with the findings of Adaoglu and Lasfer (2011).

Interestingly, the real interest rate [RIR] has a positive impact on the probability of paying cash dividends because an increase in the real interest rate implies that returns on substitutes for equity have risen, and firms are then compelled to pay matching returns on equity (dividends). However, RIR has an insignificant impact on the probability that a firm will pay stock dividends. Changes in GDP growth, D[GDPG(-1)], have a lagged positive and significant impact on the likelihood of stock dividend payouts, and a positive but insignificant impact on the probability of cash dividend payouts.

[2] See http://www.iasplus.com/en/standards/standard14.

[3] Additional paid-in capital stock may also be credited if shares are issued at more than their par value.

5. Conclusion

It is interesting to identify the impact of changes in inflation on both cash and bonus dividends. The lagged impact of high inflation on dividend payout policy arises subsequent to the revaluation of assets, simultaneously giving rise to a distributable revaluation surplus permissible under international accounting standards. Firms find it more attractive to revalue assets and distribute bonus dividends during a period of high inflation and low profitability because the revaluation of assets reduces the debt-equity ratio and increases the value of collateral.

Our regression results suggest that current earnings, permanent earnings, efficiency, liquidity, growth opportunities, the real rate of interest, inflation, and the firm's history of cash dividends have a positive and statistically significant impact, while earnings volatility, size, and investment opportunities have a negative and significant impact on the probability of paying cash dividends. However, the impact of the macroeconomic environment and debt-equity ratio is insignificant. For bonus dividends, on the other hand, current earnings, permanent earnings, growth opportunities, the macroeconomic environment, inflation, and history of bonus dividends have a positive and significant impact. Earnings volatility and size have a negative and significant impact, although the impact of efficiency, investment opportunities, liquidity, and the real rate of interest is insignificant.

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