

*Full Length Research Paper*

# Impact of financial leverage on dividend policy: Empirical evidence from Karachi Stock Exchange-listed companies

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**This paper examines the relationship between dividend policy and financial leverage of 403 companies, listed with Karachi Stock Exchange during the period 2002 to 2008. Dividend policy, vastly followed by the companies, was tested by applying the extended model of Linter (1956) with the debt ratio of the firm, the previous year's dividend yield as its independent variables and change in earnings as a dummy variable. At first, the descriptive statistics for our entire variables were calculated and then correlation matrix was calculated to identify the preliminary relationship among all the variables, followed by regression analysis on panel data to examine the significance and magnitude through fixed and random effects models. Theoretical assertions were justified through random effect model that the level of corporate debt (leverage) and widely practiced dividend policy, significantly, affect the dividend policy of the Pakistani firms. On the other hand, financial leverage was found to have a negative impact on dividend payout, indicating less dividend payments by high-debt firms. The findings also revealed/confirmed that change in earnings has no significant impact on dividend policy in case of Pakistani firms while the dividend yield has positive impact and vice versa. Fixed effect model, applied for the study, supports only the significant effect of dividend yield on dividend per share.**

**Key words:** Dividend policy, leverage, earnings, dividend yield, corporate debt, Pakistan, KSE.

## INTRODUCTION

Much of the existing literature on the recent Asian crisis focuses on the macroeconomic problems of the economies, highlighting the problem of bad loans and moral hazard at the aggregate level as the common source of excessive borrowing and over-investment (Corsetti et al., 1999). Micro analysis, focusing on the firm level analysis is still felt missing. Particularly, vacuum is felt in the literature regarding analysis of the behavior of leverage, at the firm level, and the extent to which firms attempt to change their behavior in the face of financial crisis. This is, precisely, what the present paper aims to do with a large data sample size to adjust the micro analysis to minimize the post crises impact on leverage with a particular focus on the partial adjustment process towards

an optimum leverage in a dynamic financial framework and its impact on the earnings and dividend policy of the firm.

During the recent years, many studies (Nishat, 1992; Hafeez and Attiya, 2009; Naeem and Nasr, 2007) regarding the determination of the dividend policy have been conducted in Pakistani scenario with a purpose to extend the research conducted in the global perspectives, to test and verify its appropriateness in the Pakistani scenario after due modification. Dividend occupies a pivotal position in corporate finance, mainly due to its relationship with capital structure; traditionally and primarily funded by retained earnings, which otherwise is required to be covered by the financial debts and/or other kind of external financing. Typical situation may arise when the capital shortage, arising due to the high dividend payout, forced the corporate managers to arrange costly working capital, investments and debt payments. Alternatively, the financial management has to issue new stock or raise debt. The

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real word situation forces the business concerns to consider different options and strategies, such as, balance between dividend payment, debt leverage and issuance of new stock. This is perhaps one of the major tasks faced by the finance managers.

A small dividend payment corresponds to high earning retention with less need for externally generated equity funds. A number of studies (Lintner, 1956; Fama and Babiak, 1968; Joannos and Filippas, 1997) suggest that most firms have a long-term targeted dividend payout ratio with many others smooth dividends by moving only partway toward the target payout in each year. The management of the firms also considers the current and expected future income in setting the long-run target while many finance managers believe in the direct and strong correlation among the dividend, investment and the financial mix decisions. Alternatively, corporate finance managers fear the loss of liquidity for the high dividends payout, resulting in less availability of money for reinvestment and working capital and ultimate reliance upon expensive external financing.

In the trade-off models, firms obtain optimal leverage by comparing the costs and benefits of an additional unit of debt. Costs of debt include costs of potential bankruptcy and also the costs due to agency conflicts (if there are informational problems) between the agents involved (e.g., managers, shareholders and lenders). At the leverage, optimum marginal costs will be equated to marginal benefits of an additional unit of debt. Considerations of bankruptcy and agency costs, however, modify the central hypothesis of Modigliani and Miller (1958). For example, in the presence of asymmetric information, retained earnings and debt could be regarded as better financing tools than new equity, especially when the equity is under priced. Secondly, in the presence of bankruptcy costs, there is a limit to the issuance of risky debt before new equity is preferred. Thus leverage will be dependent on the net present value (NPV) so that firms with higher NPV are more likely to issue higher debt. This is the focus of a number of theoretical papers on optimal choice of leverage under asymmetric information. For example Ross (1977), Leland and Pyle (1977) model also predicts a positive correlation between firm quality and leverage. Similar arguments are presented by Brennan and Kraus (1987); Kale and Noe (1991). Graham (2000) estimates the marginal tax benefit of debt as a function of the amount of interest deducted and calculates total tax benefits of debt by integrating under this function. The marginal tax benefit is constant up to a certain amount of leverage, and then it starts declining. At this declining point if leverage increases then NPV declined and move towards negative.

For financing the operations, investments and dividend payment decisions are major corporate decisions, requiring precise accuracy as they directly affect the stock value. The fact that if larger dividends are paid, the lesser amounts will be available to be retained for the entity to pay out the debt and to be applied as the working capital is

accepted by many, such as, Lintner (1956), Brittain (1964), Modigliani and Miller (1961), Pettit (1972), Black and Scholes (1973), Michael, Thaler and Womack (1995), Dhillion and Johnson (1994), Amibud and Murgia (1997) and Charitou and Vafeas (1998).

The balance between the retained earnings and dividend payout has been treated as the ideal one to optimize the value of the firm (Soyode, 1975; Oyejide, 1976; Ariyo, 1983). Modigliani and Miller (1961) are of the view that potential investors are not concerned with the dividend payment as it has no effect on the financial value of a firm and its stock where as Black (1976) finds no justification for the payment of cash to the stockholders. For the corporate circles of Pakistan, no standard policy is prescribed, legally, either by Security and Exchange Commission of Pakistan (SECP) or any other statutory body, leaving the KSE listed-companies free to decide according to their needs and practices except Section 365 of Companies Act 1965 binding the companies to pay the dividend but from their earnings.

As no significant academic investigations are made on the subject in Pakistan about the dividend policy and its related issues, this study was conducted to fill the gap in the literature. Using a KSE panel data set, this paper examines the impact of the debt ratio on the dividend per share of the major KSE listed firms during the period 2002 to 2008 to provide an empirical support to the hypothesized relationship between dividend policy and financial leverage with a distinction between the positive or negative changes in the earnings of the firm between time  $t$  and time  $t-1$ .

## LITERATURE ON CORPORATE LEVERAGE

The leverage of the firm is an important determinant of its equity risk since preferred stocks have priority over common stock in the financial residual, in case of capital bankruptcy. The larger the debt in the firm's capital structure, the higher is the risk of default and the lower is the valuation of its equity.

### Empirical models of dividend policy

In the mid 1950s Lintner reported a number of dividend policies, which were the outcome of his interviews with corporate managers. First of them, firms are primarily concerned with the stability of dividends, followed by earnings which were treated as the most important determinant of any change in dividends. Third, all the financial decisions are taken in pursuance of dividend policy. Lintner (1956) presents his findings into the following model:

$$\Delta D_{it} = \alpha_1 + \alpha_2 E_{it} + \alpha_3 D_{i, t-1} + \epsilon_{it}$$

Where,  $\Delta D_{it}$  is the change in dividend from time  $t-1$  to

time  $t$ , for the firm  $i$ ,  $E_{it}$  is the earnings of the firm  $i$  during a period  $t$ ,  $D_i$  is the actual dividend payment during period  $t-1$ ,  $\beta_1$  and  $\beta_2$  are parameters and finally  $\varepsilon_{it}$  is the error of the model. Lintner's estimation of the above model appeared 'fairly good', explaining 85% of the dividend changes in his sample of companies.

A comprehensive analysis of the critical performance of Lintner model was made by Fama and Babiak (1968) and the Lintner's model was tested, empirically, with their own data and procedure. The results obtained by Fama and Babiak (1968) explored that Lintner's model was performing satisfactorily but asserted that the model presented by Lintner could be improved further by introducing another variable; the earnings retained from the operations of last year, but without constant term, which they thought, would enhance its effectiveness.

Patsouratis (1989) examined the empirical data of the Greek corporate dividend policies and behavior by applying the covariance which was based on the research work by Brittain (1964) covering 25 firms during the period 1974 to 1983. Later on, Joannos and Filippas (1997) evaluated the dividend payment practices of 34 business firms registered with Athens Stock Exchange for the period 1972 to 1988 the results of which helped to draw general conclusion that dividend policy of the Greek companies reflected the Lintner's model. The dividend payment practice from the current year profits constitutes the most related and important variable which causes the change in the dividend while dividend payment practices and policies of the companies are also influenced by the previous dividend paying period.

Vasiliou and Eriotis (2003) tested one of the basic models in dividend policy; the model of Lintner (1956). They concluded that the original model introduced by Lintner could be improved in two ways; by treating the change in the dividend between time  $t$  and time  $t-1$ , as independent variables and as independent variables, the change in the earnings of the firm between time  $t$  and  $t-1$  and the change in dividend between time  $t-1$  and  $t-2$ :

$$\Delta D_{it} = \alpha_1 + \alpha_2 \Delta E_{i,t-1} + \alpha_3 D_{i,t-1} + \varepsilon_{i,t-1}$$

Where  $D_{it}$  is the dividend of the firm  $i$  at time  $t$ ,  $E_{it}$  is the net income of the firm  $i$  available to stockholders at time  $D_{it} = D_{it} - D_{i,t-1}$  is the change between the dividend at time  $t$  and time  $t-1$ , for the firm  $i$ ,  $\Delta E_{it} (E_{it} - E_{i,t-1})$  the change in the net income available to stockholders, at time  $t$  and time  $t-1$ , and  $\varepsilon_{it}$  is the error at time  $t$ . The next empirical model that they test considers the same variables, dependent and independent, but this time without the changes between time  $t$  and  $t-1$

$$D_{it} = \alpha_1 + \alpha_2 E_{it} + \alpha_3 D_{i,t-1} + \varepsilon_{it}$$

Eriotis and Vasiliou (2003) are of the view that Greek

companies adopt discrete dividend practice, i.e. payment of dividend, depending upon the long-run target of dividend payment (*represented by the dividend variable with a lag*) which is adjusted according to the net earnings of the firm, a fact which is 'well known'. However, a company's dividend decision has a direct impact on its financial mix. Assume for a while that the management of a firm has already decided how much to invest and has chosen its debt-equity mix for financing these investments. The decision to pay a large dividend means, 'simultaneously deciding', to retain little, if any, earnings; which in turn results in a greater reliance on external equity financing. Conversely, given the firm's investment and financing decisions, a small dividend payment corresponds to high earning retention with less need for externally generated equity funds. From the above analysis, it follows that a company's dividend decision has an immediate impact upon the firm's financial structure.

However, the link between dividend policy and capital structure has not been investigated upon, adequately, in many countries but Greece, where Eriotis and Vasiliou (2003) investigated the association of the dividend policy with the debt ratio. The investigation was performed by considering a model that associates the corporate dividend per share at time  $t$  with a long-run target dividend per share (represented by the dividend variable at time  $t-1$ ), the earnings per share at time  $t$ , and the debt ratio (expressed as the ratio of total debt to total assets) at time  $t$ . Their regression results suggest that there is a positive association between dividend policy and the examined variables for the majority of the firms listed on the Athens Stock Exchange for the period 1996 to 2001.

DeAngelo et al. (2004) observed significant correlation between the dividend payment decision and the ratio of earned capital to total controlling capital, size of the firm, profitability of the company, growth rate, leverage and cash in hand and previous dividend payment history. The dividend payment has a hidden management opportunity as with the retention of the earnings, increases the money managers control upon the retained earnings which may be applied for better investment opportunities but may also be disbursed without any suitable monitoring. The leverage (*Lev*) also influences the dividend behavior of companies, provided the level of the leverage is high, which means that investment in the firm is comparatively riskier in the manners of cash flow. The negative impact of leverage upon the dividend payment documented by Higgins (1972) and McCabe (1979) who finds that companies who have a past of higher leverage normally pay lower dividend to avoid the higher cost of raising external capital for the company.

The negative association of dividend and leverage was also supported by Rozeff (1982) who hypothesized that if a firm has higher operating and financial leverage, other things kept equal, the firm will choose lower dividend payout policy to lower its costs of external financing. His findings were based on his hypothesis that dividend payout is a significantly negative function of firm's past and

expected future growth rate of sales, a significantly negative function of its beta coefficient by the influence of financial leverage, a significant negative function of the percentage of stock held by insiders, and significantly positive function of the firms' number of common stock holders.

### Leverage effects and their impact on capital structure

Models of debt and capital investment functioning as decision variables, developed by Alti (2006), were employed by Titman and Wessels (1988); Rajan and Zingales (1995) with addition of market to book ratio, lagged leverage, size of the firm, the physical assets and R&D expenses. The behavior, that firms with high stock prices, issue the additional stock was also observed by Dittmar and Thakor (2007) and this behavior was adopted by the managers when they were in agreement with shareholders about the future payments. Similar control variables are also applied by those, previously defined by Rajan and Zingales (1995) and Titman and Wessels (1988), which includes the sales, asset tangibility, higher returns and unique product.

A small number of studies focus on international samples to test capital structure models. Rajan and Zingales (1995) and Booth et al. (2001) present two visible exceptions. Rajan and Zingales (1995) find similar levels of leverage across the countries including members of G7 club, highlighting the idea that countries with bank-oriented economies are more leveraged than those in the market-oriented ones. However, they recognized that this distinction is constructive in analyzing the various sources of financing. They find that aggregate leverage is roughly identical across these countries. They applied the following leverage regression test:

$$LF_i = \alpha + \beta_1 TA_i + \beta_2 MBR_i + \beta_3 LS_i + \beta_4 RA_i + \varepsilon_i$$

Where, LF = Leverage (Firm), TA = Tangible Assets, MBR = Market to Book Ratio, LS = Log Sales and RA = Return on Assets.

A small portion of Chinese firms was, empirically, investigated upon by Huang and Song (2005) to verify the phenomenon that the financial leverage was correlated with conventional variables, determining the capital structure of the companies. Their investigations confirmed the previous findings from the various researchers that leverage was positively correlated with the size of the firm and the fixed physical assets of the firm and relatively correlated with profitability and non debt tax shields, applied by the firms while the results of the investigation of the Chinese companies also revealed a positive correlation between the leverage and the volatility of the stock. It was found that understudy Chinese companies had, significantly, lower long-term debt. Huang and Song (2005) finally, remarked that static trade

trade-off model provided a reasonable account of the capital structure of understudy Chinese companies as compared to the pecking order hypothesis and that while the ownership structure is there to affect the capital structure, as noted by the Jensen and Meckling (1976), the minor shareholding in China cannot be expected to have much effect.

Li et al. (2006) observed that capital structure and the quality of the financial institutions depends upon the capital suppliers. By applying the Chinese statistical agencies' database of 700 listed and 260,095 unlisted companies, Li, Yue and Zhou (2006) examined the relationship between the different forms of leverage and the specific characteristics, such as, capital structure, institutional management, micro and macro economic factors and that Chinese firms are highly leveraged with short-term debt, while it was also noted that ownership and institutional factors account for about a third of the total variation in leverage ratios.

Rao and Lukose (2003) studied the capital structure determinants of non-financial firms of India before and during the liberalization of financial markets in 1997 and cross sectional examination of the market and book value leverage were studied upon for the period prior 1990 to 1992 and post 1997 to 1999 liberalization periods with the help of conventional explanatory variables, such as, tangible asset model, growth rate, size, and profitability. The main targets were domestic conglomerates, foreign or smaller private companies. Foreign firms were, inversely, correlated with the leverage but the industry dummy variables were not proved significant.

Mahagaonkar and Narayanan (2007) in their book used appropriately feasible least square methods to develop a model of capital structure for the manufacturing sector of India which included the control mechanism for the firm size, tax rate, cash in hand, interest coverage, and profitability. Their analysis also included the effect of tenure of the firm on leverage by interacting with each of the independent variable with a dummy variable for the age and size as well. Size and the profitability were proved to be most important determinant factors for the capital structure for the new firms. Size was positively while the profitability was inversely related to the leverage.

In one of the theories, Michael et al. (1995) presented that corporate financial options reflect the attempts of the money managers to balance and win the tax shield as against the increased profitability and inverse, i.e. financial loss and bankruptcy. Optimal leverage along with the optimal dividend policy is studied in some models, such as, one developed by Fan and Sundaresan (2000) which revolves around the flow-based insolvency. Here, default occurs when fluctuating cash level becomes lower than the coupon to be paid. Optimum dividend policy covers distribution of differences between the cash and the coupon, when positive. Financial policies, such as dividend and leverage, will affect managerial policy and decision of managers to join as owner of the firm, an issue tested by many, such as, Mahadwartha (2002), Mahadwartha and

Hartono (2002), Crutchley and Hansen (1989) and Jensen et al. (1992) who tested the issue with different perspectives and variables. Mahadwartha (2002), Mahadwartha and Hartono (2002) used Indonesian data and find a significant result in support of managerial ownership to control agency cost of equity and agency cost of debt. The main differences between these two studies are in firm specific variables, observation and period of analysis.

According to Jensen and Meckling (1976), Jensen (1986) and Stulz (1988), financial leverage has an important role in monitoring managers thus reducing agency costs arising from the shareholder-manager conflict. Dynamics, deterministic variables, factors of dividend payout policy and practices of 320 non-financial institutions, listed in KSE during the period 2001 to 2006, were examined by Hafeez and Attiya (2009) by applying the extended Lintner (1956) model. The results of the investigations by Hafeez and Attiya (2009) identified that non-financial companies listed with KSE, adopt the policy of relying not only upon current earnings per share but also upon past dividend per share payments. Hafeez and Attiya (2009) further reported the findings of the panel-regression performed to examine the dividend payout policy that dividends tend to be more concerned to current earnings than previous earnings. Some more corporate practices, observed and noted by Hafeez and Attiya (2009) were that firms with stable flow of cash and profitability pay more and larger dividends and that ownership structure and market liquidity shows having positive impact on dividend payout policy and practices, while the available investment opportunities and leverage have the inverse effect on dividend payout ratio.

Mookerjee (1992) noted that dividend declaration is considered so important that some firms are forced by law to pay dividends, even though through external finances. Nakamura (1985) observed that the Indian firms have the practice of paying dividend by borrowing from banks, at subsidized rate, than from their own profit.

## OBJECTIVE AND SCOPE OF THE RESEARCH WORK

The premise of the current study is that if higher management care more about the capital structure by choosing the better debt equity choice, then the net profit may increase and that business can also avail several different advantages. Consequently, shareholder wealth will increase and they will become more loyal to business.

## METHODOLOGY

The conceptual framework of this study is constructed around the financial leverage level of Pakistani companies. It includes the generation of the research hypothesis, research design, operationalization of variables, limitations, and expected problems in research, which are subsequently discussed (Figure 1).

## Research question

Answers to the two fundamental questions, in addition to many supplementary ones, are sought from the current study; first, *is dividend policy affected by leverage, dividend yield and change in earnings* and second, *what relation exists between dividend payouts and leverage of Pakistani firms.*

## Research hypotheses

H<sub>1</sub> = DR (Leverage) has no impact on DPS (dividend per share)

H<sub>2</sub> = DY has no impact on DPS (dividend per share)

H<sub>3</sub> = ΔE has no impact on DPS (dividend per share)

## Data collection procedure

This study uses data of listed companies in KSE sourced from Analysis reports; an online database of worldwide stock information. Annual reports of listed companies, State Bank of Pakistan website, Business Recorder website and joint stock companies, analysis reports from SBP. Personal visits to Security and Exchange Commission of Pakistan (SECP) and Islamabad Stock Exchange were made for collection of data for the years 2002 and 2003.

## Selection of sample

To qualify as the subject company, first test was availability-of-data preliminary screening, followed by exclusion of companies due to delisting and default in the years 2007 and 2008, resulting in 403 companies who qualified as sample of the study while remaining continuously listed for period 2002 to 2008. 2821 observations from 403 companies were the target of statistical analysis (Detailed list of subject companies included in the research is given in Annex 1).

## Operationalization of variables

Key variables of the model are dividend per share (*DPS*), debt ratio (*DR*), dividend yield (*DY*) and changes in earnings (*ΔE*), initial calculation of which are given below:

Dividends per share (*DPS*) = Total amount of dividends ÷ No. of shares of the firm *i* at time *t*.

Debt ratio (*DR*) /Leverage = Total debt ÷ Total assets of the firm *i* at time *t*.

Dividend yield (*DY*) = Dividend per share ÷ Price of the share.\*  
Changes in earnings (*ΔE*) = Earnings<sub>it</sub> – Earnings<sub>i, t-1</sub> ÷ Earnings<sub>i, t-1</sub> and  $\epsilon_{it}$  is the error term.

## Data processing

Panel data was utilized to verify the Null hypothesis with the help of regression analysis while *Random Effect Model and Fixed Effect Model*, coefficient of correlation and descriptive analysis were applied, wherever needed. A common model for panel data, to formulate the differences in the behavior of the cross-section elements is, theoretically, written as follows:

\*The chosen price, applied as denominator, corresponds to the share price at the end of financial year, when all the dividend announcements for corporate dividend have been made.

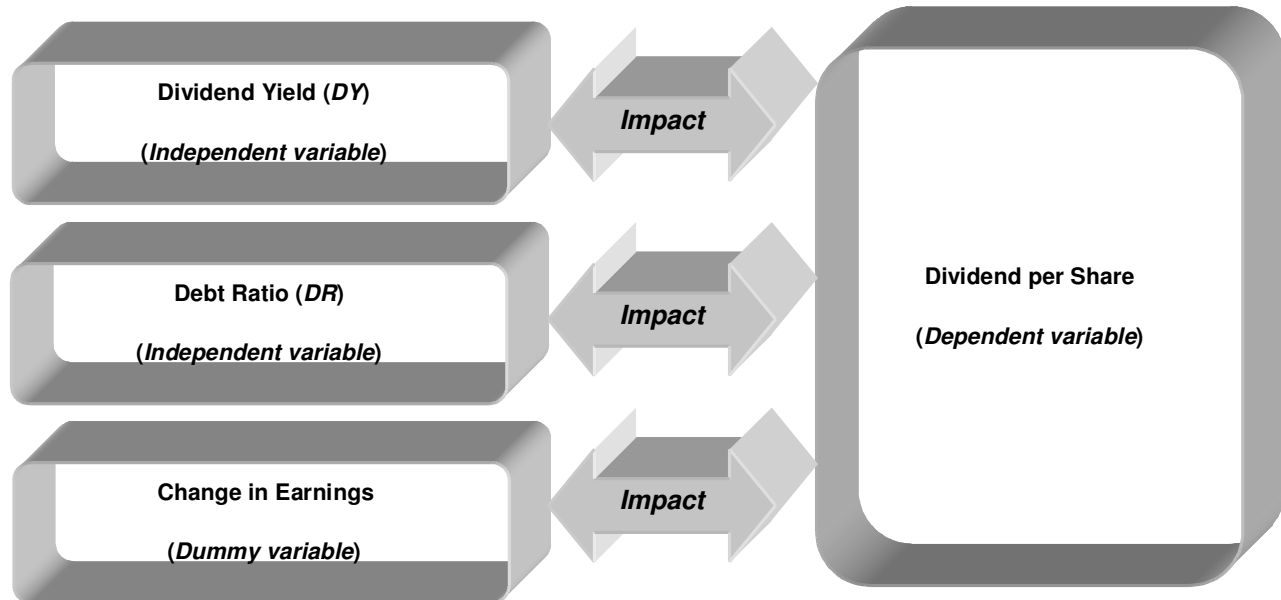


Figure 1. Conceptual framework.

$$Y_{it} = X_{it}'\beta + Z_{it}'\alpha + \varepsilon_{it}$$

Where,  $y_{it}$  is the dependent variable,  $x_i$  is the matrix with the independent variables, and  $z_i$  is a matrix which contains a constant term and a set of individual or group specific variables which may be observed or unobserved. This model is classical regression model. If the matrix  $z_i$  can be observed, for all individuals, then the least square method gives efficient and consistent estimators. The pooled regression considers that  $z_i$  contains only a constant term. In this case, the ordinary least square method provides an efficient and consistent estimate for the  $\beta$  and  $\alpha$  coefficient. If  $z_i$  is unobserved and correlated with the independent variables, then the least squares estimator of  $\beta$  is biased and inconsistent, as a consequence of an omitted variable. The fixed effect method takes those problems into account and gives an unbiased and consistent estimator of  $\beta$  and  $\alpha$ . If the unobserved individual effects can be formulated and it is predicted that these observations are uncorrelated with the independent variables, the econometric model can be estimated by the random effect method.

This paper tests the relations of the dividend of the firm with the capital structure, the last year's dividend yield and the changes in the earnings of the firm. The dividend policy of the firm is taken as the dependent variable ( $\Delta DPS$ ) while the Debt Ratio ( $DR$ ) and Dividend Yield ( $DY$ ) are taken as the independent variables and change in earnings  $\Delta E$  as a dummy variable. Thus, to test the hypothesis, following model is, empirically, tested and applied:

$$DPS_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 DY_{i,t-1} + \alpha_3 \Delta E_{it} + \varepsilon_{it}$$

Where  $DPS_{it}$  is the dividend per share of the firm  $i$  at time  $t$ ,  $DR_{it}$  is the debt ratio (expressed as the ratio of total debt over total assets) of the firm  $i$  at time  $t$ ,  $DY_{i,t-1}$  is the dividend yield of the firm  $i$  at time  $t-1$ ,  $\Delta E_{it}$  is the change in net earnings before taxes of the firm  $i$  at time  $t$ .

## RESULTS AND DISCUSSION

Descriptive analysis (Table 1) including standard deviation, skewness and kurtosis, were calculated to test the validity of the data on time series. While analyzing the data for the current study, mean value of  $DPS$  is Rs. 2.78 which is a good sign of firm's profitability and that management is more concern with maximization of share holder's wealth. But, the median of  $DPS$  is less than 1 (0.892), i.e. majority of firms have  $DPS$  below 1. The maximum and minimum range of  $DPS$  is quite surprising because the minimum average level is zero but the maximum average level of the dividend paid by the Pakistani firms is 109.14. The Standard Deviation of  $DPS$  as compared to mean is quite high i.e. '7.69596'.

The average value of Debt ratio is '0.72876', that is, on average Pakistani firm's assets are financed by 72% of debts and remaining 28% is contributed by equity. The majority falls near 70% of the debt ratio but the maximum value '5.01' indicates that there are some organizations, which are financed by debts 5 times greater than their assets (one such company defaulted in year 2008). In addition, majority of the companies fall in 2.5 to 3.5 range (see particularly *sugar and textile industries*) which is an alarming and vulnerable situation for these industries which might end in liquidity crisis, ultimately facing bankruptcy in near future.

The average value of  $DY$  is '0.0938', is quite low, that is, share price of an average firm is a bit high as compare to dividend which appears to be the major cause of investors' heavy reliance on capital gains in secondary to boast their income. The  $DY$  of majority of firms is '0.0276' indicating that share market price of many firms is high as compared to  $DPS$ . The negative sign with minimum value

**Table 1.** Descriptive analyses.

	DPS	DR	DY	$\Delta E$
Mean	2.78798	0.72876	0.09386	-1.1042
Median	0.89286	0.70550	0.02763	-0.01
Maximum	109.143000	5.01000	4.6466	21.06
Minimum	0.00000	0.03400	-0.1687	-191.84
Std. Dev.	7.69596	0.44253	0.35068	12.3116
Skewness	8.72047	3.89506	9.79164	-12.583
Kurtosis	103.468	31.6964	111.317	176.843
N	402	402	402	402

**Table 2.** Correlation matrix.

	DPS	DR	DY	$\Delta E$
<b>DPS</b>	1			
<b>DR</b>	-0.135	1		
<b>DY</b>	0.485	-0.088	1	
<b><math>\Delta E</math></b>	0.036	0.0589	0.022	1

indicates that there are few firms whose average *DPS* is negative, they are transferring a loss to their share holders and their market price is quite low but few firms are playing a very significant role which is shown by the maximum value of '4.64'. It indicates that they are giving 4 times greater dividend as compare to their market price of share.

The negative value of mean of  $\Delta E$  -1.1042' indicates that the performance of majority of firms in our sample period is deteriorating and the magnitude of change in earning indicates that the decreasing loss is a little bit higher, that is, more than two times of the last year performance. The maximum and minimum range of  $\Delta EPS$  indicates high positive and negative growth.

The value of skewness of *DPS* and *DY* shows that they are highly positively skewed and the positive value for the skewness indicates data that are skewed on the right. The negative value of skewness, in case of  $\Delta E$  indicates that data is skewed on the left side of the central point and *DR* is near to the normality of the data.

### Correlation analysis

Pearson Correlation was used to check the correlation among the variables. Table 2 shows that how variables are associated with each other. Correlation between *DPS* and *DY* is highly positive, while that between leverage *DR* and *DPS* is negative, indicating that there is an inverse correlation between debt and dividend, i.e. increase in debt is not beneficial for dividend). It also indicates that highly leveraged firms are paying fewer dividends. On the other hand, the increase in *DY* will increase *DPS* which is an identification of the repeating

trend in Pakistan, i.e. the rather weak positive correlation of '0.036' between *DPS* and  $\Delta E$  indicates that less than average number of firms have the practice of shifting higher earning to the shareholders in the form of dividend.

By viewing the other variables from correlation matrix table, it is clearly observed that there is a negative relationship between leverage *DR* and *DY* which support the above discussion also. But the positive relation between  $\Delta E$  and *DR* shows that gain in earnings is dependent on increase in *DR* (*leverage*) and  $\Delta E$  is positively affecting the *DPS*. This is a very critical point to consider when improving the management performance. There is possibility that conflict take place due to shareholders and creditors. However, this will be discussed below in model results.

### Regression analysis

The fixed effect and random effect models were applied to estimate the effect of each independent variable at the dividend per share with an extension of least square process where cross section weights and White heteroscedasticity have been taken into account. Tables 3 and 4 showed the results of fixed and random effects model respectively. The results of Fixed Effect Model can be concluded as:

1. With P-value higher than 0.05 and *t-value* -1.7 the result indicates that *DR* has a negative and insignificant (at 5% level), relationship with *DPS*. The relationship is significant at 10% level of significance ( $H_1$  accepted).
2. With P-value less than 0.05 and *t-value* 9.172 the result indicates that *DY* has a positive and significant

**Table 3.** Regression analyses (Fixed effect model).

Model	$DPS_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 DY_{i,t-1} + \alpha_3 \Delta E_{it} + \varepsilon_{it}$			
Method	Fixed effect (cross sectional weight)			
	Coefficient	t- stat	Prob. (t-stat)	Std. error
DR <sub>it</sub>	-1.458	-1.709	0.088	0.853
DY <sub>i,t-1</sub>	9.458	9.172	0.00	1.031
ΔE <sub>it</sub>	0.004	0.137	0.891	0.029
R <sup>2</sup>	0.379			
R <sup>2</sup> Adj.	0.257			
F- Stat	3.096			
S.E.	6.636			

EViews results, GLS: Generalized least square, S.E. is the square error of the regression, White heteroskedasticity- consistent standard errors and covariance.

**Table 4.** Regression analysis (Random effect model).

Model	$DPS_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 DY_{i,t-1} + \alpha_3 \Delta E_{it} + \varepsilon_{it}$			
Method	Random Effect (GLS, Variance components)			
	Coefficient	t- stat	Prob. (t-stat)	Std. error
Constant	3.025	4.559	0.000	0.644
DR <sub>it</sub>	-1.644	-2.158	0.031	0.762
DY <sub>i,t-1</sub>	10.459	10.897	0.000	0.960
ΔE <sub>it</sub>	0.019	0.699	0.485	0.027
R <sup>2</sup>	0.245			
R <sup>2</sup> adj	0.240			
F- Stat	43.112			
S.E.	6.711			

EViews results, GLS: Generalized least square, S.E. is the square error of the regression

relationship with *DPS*. ( $H_2$  rejected)

3. With P-value more than 0.05 and t-value 0.137 the result indicates that  $\Delta E$  has a slightly positive but not significant relationship with *DPS*. ( $H_3$  accepted)

The  $R^2$  is 37.9%, which is far greater than the  $R^2$  of the random model. The F – Statistic proves the validity of the estimated model. The results from the fixed effects model indicate that the debt variable and the change in earning cannot be accepted in the confidence level of 95%. According to our findings, the coefficients of the independent variables except the debt ratio have positive signs.

The regression with the sample shows the values of -1.458 for *DR*, 9.458 for *DY* and 0.004 for  $\Delta E$ . If a firm increases its *DR* (leverage) by Rs 1, it would result in an average of about 1.45Rs decrease in its *DPS*. Oppositely increase in *DY* will increase the *DPS* by Rs9.4. The effect of  $\Delta E$  on *DPS* is less pronounced than *DY*. Increase in  $\Delta E$  would result in an average of 0.004 increases in *DPS* which is a very low impact.

## Results of random effects models

In Random Effect the constant for each section is not fixed, but is treated as random parameters. Random effect model has fewer parameters to estimate compared to the fixed effect method. Also it allows for additional explanatory variables that have equal value for all observations within a group (Austerio and Hall, 2007). The results of random effect model can be concluded as;

1. With *p-value* less than 0.05 and *t-value* -2.1 the result indicates that *DR* has negative but significant relationship with *DPS* ( $H_1$  rejected).
2. With *p-value* less than 0.05 and *t-value* 10.89, the result indicates that *DY* has positive and significant relationship with *DPS* ( $H_2$  rejected).
3. With *p-value* more than 0.05 and *t-value* 0.699 the result indicates that  $\Delta EPS$  has slightly positive but not significant relationship with *DPS* ( $H_3$  accepted).



All the estimated coefficients are statistically significant according to the P value and *t-statistics* except the coefficient of change in earning. The results from the random effects model imply that the model explains only the 24.5% of the changes in dividend from year to year. The F-Statistic proves the validity of the estimated model. In addition, except  $\Delta E$ , all coefficients i.e. dividend per share (*DPS*), Debt ratio (*DR*) and dividend yield (*DY*) are statistically significant in level of confidence 95%.

The regression with the sample yields the value of -1.644 for *DR*, 10.45 for *DY* and 0.019 for  $\Delta E$ . If a firm increases its *DR* (leverage) by Rs 1, it would result in an average of about Rs1.644. decreases in its *DPS*. Oppositely increase in *DY* by Rs1 will increase the *DPS* by Rs10.459. The effect of  $\Delta E$  on *DPS* is less pronounced than *DY*. Rs1 increase in  $\Delta E$  would result in an average of 0.019 Rs increase in *DPS*.

So, according to the fixed effect model,  $H_1$  and  $H_2$  are accepted, that is, the leverage and change in earnings have no significant impact on *DPS* while  $H_3$  is rejected and alternate will be accepted, i.e. *DY* has significant impact on *DPS*.

Similarly, our random effect model implies that two null hypothesis  $H_1$  and  $H_2$  have been rejected and alternate will be accepted i.e. Leverage and Dividend Yield have significant impacts on *DPS*, while  $H_3$  is accepted i.e. there is no significant impact of Change in earning on *DPS*. So our random effect model is showing the significant impact of our two variables i.e. leverages and dividend yield on *DPS* but its  $R_2$  is less than the fixed effect model that is, 24%.

### Dividend yield (DY)

The positive sign of Dividend Yield coefficient means that this year's dividend is positively related to the last year's dividend. This means that an increase in the dividend yield has a direct correlation with the next year's dividend. This result supports the claim that most of the firms take into account their stockholders' expectations, i.e. the stockholders who have faced a high rate of dividend yield in the previous year, expects something similar for this year too and, the firm increases the dividend in order to be consistent with their expectations. The same phenomenon has been pointed out by Eriotis and Vasiliou (2006) i.e. cash disbursement to shareholders might delay the implementation of investment plans especially for highly leveraged firms. Their empirical results also suggest that the higher (lower) the leverage the higher (lower) the dividend.

### Debt ratio (leverage)

As far as the capital structure variable is concerned, estimated coefficient has been observed with a negative sign which indicates that the financial leverage of the firms

has a negative correlation with their dividends; the higher the leverage the firm employs, the lower the dividend per share that it distributes. This finding is similar to that pointed out by Mookerjee (1992) that declaration of dividend is considered so important that many of the firms are under pressure to adopt the practice of paying the dividend by applying the external financial resources, a phenomenon observed by Nakamura (1985) and Mookerjee (1992) who identified, more abruptly, that Indian firms had the practice of paying the dividend by borrowing, mainly from the financial institutions, perhaps, due to their practice of subsidized rates, rather than from their own profits. This trend looks an exact replica of one, pointed out by Higgins (1972) and McCabe (1979), that debt has an inverse impact on the dividend payment.

It looks that financial leverage does not have the direct impact upon the financial wealth of the firm, but common stock holder is, felt to be, at stack. Stockholders demand a correspondingly higher return due to his/her financial risk. Consequently, the firms provide the higher return to their stockholders by increasing their dividends per share. But as far as Pakistani firms are concerned, they are highly leveraged than their capacity, that's why; they show the negative relation with *DPS*. This is the main cause that majority of the Pakistani firms are running on over-debt participation as a result of which the benefit from the debt was not earned (*due to tax deductibility on interest, 'TCD'*). The negative sign indicates that increase in a debt portion will negatively affect the dividend per share and vice versa and the magnitude of *DR* coefficient shows that one dollar increase in debt will, negatively, affect the *DPS* a phenomenon pointed out, rightly, by Modigliani and Miller (1961) as  $V_L = V_U + PV(TCD)$ , that is, firm value adjusted for tax deductibility which is elaborated that the value of levered firm is greater than the value of un-levered firm up to  $TCD$  amount, where  $TCD$  is the tax deduction on debt. In other word 'M&M' proposition said that one dollar of debt increases the firm value more than the equity up to ' $TCD$ ' value. However, according to this proposition firms must be 100% financed by debt while it always shows the positive relation with the *DPS* but the result of the current study indicates the negative correlation of debt and dividend. In fact, these firms are using more debt than their capacity and their financial distress is increasing so high, due to increase in continuous payment of interest, that debt results in increase in the cost of future financial deficit which, ultimately, results in the fact that cost is more than the benefit of debt. In short,

Pakistanis firms are considered more 'highly leveraged firms' because  $TCD < P.V.[E(CFFD_{debt})]$ , where  $TCD$  is the advantage of debt financing and  $P.V.[E(CFFD_{debt})]$  is the present value of expected future financial deficit only from debt. In highly leveraged firms the  $P.V.[E(CFFD_{debt})]$  is greater than the  $TCD$ , where this value indicates the conflict of shareholder and creditor

due to lack of efficient and high performing management. In such a case, firm is not applying the optimal capital structure and increase in debt will decrease the value of a firm. Most probably, the management might be using short term loans to provide the direct benefit to the share holder as a dividend just to make good image of firm in the market. Our result shows the poor and unethical performance of management.

### Changes in earning ( $\Delta E$ )

Change in earning is a dummy variable which is already explained in the above section of the paper. The results shows that there are, certainly, some psychological factors, such as, earning stability, tax penalties and the financial leverages, ability to manage the external finance and overall profitability of the company, which affect the stock price of the company who does not pay dividend. Such psychological factors require the considerable time for the company finance managers. The target dividend payout is a fraction of the current period's earnings. Our results also support the Lintner (1956) findings, who concluded that the most important determinant of a company's dividend policy is a major change in earnings "out of line" with existing dividend rates. Our findings are also supported by Vasiliou and Eriotis (2003) that the dividend of the firm is positively related to the earnings. Similarly Hu and Liu, (2005) concluded that there is a positive relationship between the current earnings of a company and the cash dividend they pay, and a significant negative relationship between the debt to total assets and dividends.

### CONCLUSION AND RECOMMENDATIONS

The main purpose of this paper is to shed some light into the association between dividend policy and corporate leverage by employing a sample of the major Pakistani firms listed on the Karachi Stock Exchange for the period 2002 to 2008. The investigation is performed by considering a model that associates the corporate dividend per share at time  $t$  with the debt ratio of the firm, the dividend yield and the alteration of the earnings of the firm. Panel data was utilized to verify the Null hypothesis with the help of regression analysis while Random Effect Model and Fixed Effect Model, coefficient of correlation and descriptive analysis were applied, wherever needed. The results from the fixed effects model indicate that the debt variable and the change in earning cannot be accepted in the confidence level of 95% and the coefficients of the independent variables except the debt ratio have positive signs. The regression results suggest through random effects model that there is a significant impact of leverage and Dividend yield on DPS but the leverage association is negative with DPS while Change in earnings may impact dividend policy under certain circumstances.

Our results are supported by Mookerjee (1992) who stated that the dividend declaration is so important in some economies that firms are even forced to pay dividends through external finances. Another point of view of some different nature was attributed to Nakamura (1985) that firms in India pay dividends by borrowings mainly from banks at subsidized rates rather than their own profit. Similarly, our study also support the work of Higgins (1972) and McCabe (1979) who suggest that debt has a negative influence on the amount of dividends paid. This is because firms with higher fixed charges pay lower dividends in order to avoid the costs of external finance. Our results are also closer to Pakistani researchers that is, Nishat (1992) who had checked the relationship of leverage with stock returns and return volatility. He was in the view that the leverage at industry level has been historically high in Pakistan and he checked the relationship of leverage and returns. His findings were that there is negative and significant relationships between return and volatility change.

In most cases, highly levered industries had a stronger negative relationship between return and volatility change than the less levered industries. Our findings are also consistent with Hafeez and Attiya (2009), who studied the dynamics and determinants of dividend payout policy of 320 non-financial firms listed in KSE during the period of 2001 to 2006 by using model of Litner (1956) and its extended version. They found that Pakistani listed non-financial firms rely on both current earnings per share and past dividend per share to set their dividend payments. However, the dividend tends to be more sensitive to current earnings than prior dividends. They were also of the view that besides the investment opportunities, leverage has the negative impact on dividend payout policy.

Debt Ratio (*leverage*) and dividend yield are found to be the most influential variables affecting the dividend payout policy of the corporate sector of Pakistan but the coefficient and relationship of DR with Dividend policy is negative which means that firms are facing the over debt management problem. There should be strategies to improve the company's debt management system to minimize the risk. It is also found that firms are not setting target capital structure which they have to follow to avoid risk of default. Dividends are treated as the rewards to the stockholders for the assumption of the risks, distribution of surplus earning or, sometimes, capital stock, paid out to the stock holders. It is not liked, rather illegal in some laws, to pay the dividends out of the invested capital stock or excess received over stock par value.

Second significant finding was observed that changes in earning has no significant impact on dividend per share shows that companies are forced to pay the dividend, nevertheless, of their earnings. This could be due to KSE strict rules and regulation or maybe to achieve the good market image. More than seventy five companies were de-listed from the Karachi Stock Exchange during the last five years, majority of which opted for the option of delisting

delisting deliberately. A major reason of this voluntary delisting of the companies was the emphasizing on dividend payments by the Ministry of Finance and the SECP while the companies required the funds for re-investment, to expand and modernize their equipment to compete in the free trade regime. In fact, the SECP, Economic Affairs Division, ministries of Finance, Commerce, Industries, Investment and Privatization, and the State Bank of Pakistan, should work in the harmonized way to develop the stock market as deterministic and reflector of the economy. The Planning authorities should identify the priority sectors with the help of information and trends provided by the Ministry of Industries and Ministry of Commerce, while, SECP and SBP should develop the strategies to promote the investment in those priority sectors through debts and equity financing by institutional and individual investors.

Rather poorly formulated and charted financial policies, relatively non-competitive role, prevalent in the corporate development, and a worse-considered practice of underpricing of initial offering, ultimately, result in high levered stocks in KSE. This trend forced Nishat (1999) quote KSE as the high risk but high return emerging market where speculators, rather investors, come to speculate. The corporate sector in Pakistan has, comparatively, easy access to debt, resulting in high debt to equity ratio which the statutory bodies plans to control from 50: 50 to, by 1994 which had, traditionally been 60 to 40 rather 80 to 20, particularly due to the extent of the concessional loans and priorities set for the corporate sector by the governmental fiscal policies. Specific strategies to manage, monitor, check and maintain balance on the issuance of debentures and bonds by corporate, should be formulated.

Pakistani companies are recommended to inject the specific amount of equity to improve the capital structure along with leverage ratios in addition to focusing on matching of liabilities with the type of assets they own (that is, short term borrowing to be obtained solely for working capital purpose).

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**ANNEX****Table 1.** Total companies included in sample.

<b>S/N</b>	<b>Industries</b>	<b>Companies</b>	<b>S/N</b>	<b>Industries</b>	<b>Companies</b>
1	Mutual Funds	8	15	Engineering	10
2	Modarbas	17	16	Automobile assembler	10
3	Leasing Companies	11	17	Automobile parts and accessories	8
4	Commercial/Inve banks	25	18	Cables and electrical goods	6
5	Insurance	16	19	Transport and communication	5
6	Textile Spinning	82	20	Fertilizer	3
7	Textile Composite	36	21	Pharmaceuticals	8
8	Woolen	2	22	Chemical	18
9	Synthetic and Rayon	11	23	Paper and board	9
10	Jute	5	24	Vanaspati	1
11	Sugar	29	25	Leather and tanneries	5
12	Cement	17	26	Food and allied industries	15
13	Tobbaco	4	27	Glass and ceramics	7
14	Fuel, energy, oil and gas	21	28	Miscellaneous	14
	Total	284		Total	119
	<b>Grand total</b>	<b>403</b>			