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Dynamics and Determinants of Dividend Policy in Pakistan (Evidence from Karachi Stock Exchange Non-Financial Listed Firms)

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Abstract

This study examines the dynamics and determinants of dividend payout policy of 320 non-financial firms listed in Karachi Stock Exchange during the period of 2001 to 2006. For the analysis we use dividend model of Lintner (1956) and its extended versions in dynamic setting. The results consistently support that Pakistani listed non-financial firms rely on both current earning 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. The listed non-financial firms having the high speed of adjustment and low target payout ratio show the instability in smoothing their dividend payments. To find out the determinants of dividend payout policy dynamic panel regression has been performed. It is found that the profitable firms with more stable net earnings can afford larger free cash flows and therefore pay larger dividends. Furthermore the ownership concentration and market liquidity have the positive impact on dividend payout policy. Besides, the investment opportunities and leverage have the negative impact on dividend payout policy. The market capitalization and size of the firms have the impact on dividend payout policy which shows that the firms prefer to invest in their assets rather than pay dividends to their shareholders.

JEL Classification: G32, G35

Key words: Dividend policy, partial adjustment model, dividend dynamics, target payout, Dynamics panel data

1. Introduction

The behaviour of dividend policy is the most debateable issue in the corporate finance literature and still keeps its prominent place both in developed and emerging markets. Many researchers try to uncover the issue regarding the dividend behaviour or dynamics and determinants of dividend policy but we still don't have an acceptable explanation for the observed dividend behaviour of firms (Black, 1976; Allen and Michaely, 2003 and Brealey and Myers 2005). One of the well known explanations of dividend behaviour is the smoothing of firm's dividends vis-a-vis earnings and growth. In his seminal research, Lintner (1956) find that firms in the United States adjust their dividends smoothly to maintain a target long run payout ratio. Several studies appear after this work and evidence suggest that the dividend policy of the companies varies from country to country due to various institutions and capital market differences.

The Pakistan's capital market and the economy have several important features for examining the dynamics of dividend policy. Firstly, Pakistan is moving towards the development and improving the economy position in the world since the 1980.¹ The capital markets of Pakistan

¹ The economic growth and revolution has been identified by many researchers. From being a poverty suffering and economically backward country in 1980 with the GDP per capita income of only US\$680, it exceeded US\$ 2600 in 2007 that will show the much better shape then it was ever before. Pakistan's economy is 56.8% free, according to the assessment of 2008 which makes it the world 93rd freest economy Pakistan is ranked 16th out of 30 countries in Asia pacific region.

are much develops as before². Many studies conclude that firms are likely to pay stable dividend during the high growth period and it is interesting to find that how dynamic dividend policy is determined in growing economy like Pakistan. Secondly, due to weak corporate governance the ownership structure of Pakistani firms is often characterized by the dominance of one primary owner who manages a large number of affiliated firms with just a small amount of shares or investment which result in the agency conflict between the shareholders and the owner, where controlling shareholders confiscate value from minority shareholders and can influence the dividend policy easily. Thirdly, the tax environment in Pakistan is totally different as compare to developed markets. There is no capital gain tax³ on stocks in Pakistan while 10% withholding tax is charged on dividend incomes and it is important to mention here that if the firms earned the profit and not announced the dividend that the 35% of the income tax is charged by the Government of Pakistan. There is a possibility of differences in the tax system may influence the dividend policy and also influence the degree of dividend smoothing in Pakistan since this adverse tax treatment of dividend income is a more serious issue than the developed countries like United States. Fourthly, in the Pakistan the payment of dividend is voluntary. In Korea for example, it is mandatory for listed companies to pay the annual dividend divided by its face value at a level equal to the interest rate of one year time deposit. In fact, in Pakistan the many major investors are still disagreed with dividends and consider stock prices appreciation as the major component of stock returns therefore, it is assumed that investor attitude towards dividends is expected to have an impact on the way in which firms set their dividend policy in Pakistan.

The theoretical and empirical evidences suggest that there are many firm specific factors related to governance related which play an important role in dividend signalling and agency cost explanation of dividend behaviour. The main focus of the study is to examine factors could empirically explain cross sectional differences in firm's dividend smoothing behaviour in Pakistani market. The main reason to examine the smooth dividends behaviour is that the firms' dividend behaviour affects it capital structure. Other objective is to explore the role of various determinants such as ownership concentration, profitability, liquidity, size, leverage and investment opportunities on the firms' dividend paying behaviour by using the sample of 320 non-financial firms listed at Karachi Stock Exchange listed for the period of 2001 to 2006.

The present study is the first attempt up to the authors' knowledge to analyse the dynamics and determinants of dividend policy of Pakistan. It contributes to the limited literature in this area and extends the traditional framework of Lintner (1956), Fama and Blacomin (1968) and the Belanes *et al.* (2007) and also compare different econometric approaches for modelling the dynamics of dividends according to the capital market of Pakistan. In addition several estimation techniques are applied to check the robustness in addition to dynamic panel data to examine the dynamics and determinants of dividend policy in Pakistan. The present study explores the factors involved in determination of dividend policies in Pakistan. We try to find out that the future earnings of the firms can be used for signal of dividends and controlling growth, firm size, cash balance, retained earnings, market capitalization. In Pakistan there are few firms which are paying dividend consistently. We try to find the answer to the questions why the listed firms of Karachi Stock Exchange (KSE) are not able to smooth their dividends and what are the factors which are influencing or determining the dividend policy in Pakistan.

2. Literature Review

During the last fifty years the several theoretical and empirical studies are done leading to the mainly three outcomes: the increase (decrease) in dividend payout affect the market value of the

² The Karachi StockExchange has witnessed an unprecedented growth in its infrastructure development and business. The market capitalization increased from Rs. 203.8 billion in 1992 to Rs. 469.2 billion in 1997. It then fell to Rs. 256 billion in 2001 but then increased to Rs. 595 billion in 2002. This further went up to 951 billion in 2003 to 1474 billion in 2004 and 3065.8 billion in 2006.

³ The Government have given the extension till 2010 so before the 2010 no capital gain tax will be collected on stocks in Pakistan

firm or the dividend policy of the firm does not affect the firm value at all. However, we can say that empirical evidence on the determinants of dividend policy is unfortunately very mixed. Furthermore there are numerous theories on why and when the firms pay dividends. Miller and Modigliani (1961) suggest that in perfect markets, dividend do not affect firms' value. Shareholders are not concerned to receiving their cash flows as dividend or in shape of capital gain, as for as firm's doesn't change the investment policies. In this type of situation firm's dividend payout ration effect their residual free cash flows and the result is when the free cash flow is positive firms decide to pay dividend and if negative firm's decide to issue shares. They also conclude that change in dividend may be conveying the information to the market about firm's future earnings. Gordon and Walter (1963) present the bird in the hand theory which says that investors always prefer cash in hand rather than a future promise of capital gain due to minimizing risk. The agency theory of Jensen and Meckling (1976) is based on the conflict between managers and shareholder and the percentage of equity controlled by insider ownership should influence the dividend policy. Easterbrook (1984) gives further explanation regarding agency cost problem and says that there are two forms of agency costs; one is the cost monitoring and other is cost of risk aversion on the part of directors or managers. The explanation regarding the signalling theory given by Bhattacharya (1980) and John Williams (1985) dividends allay information asymmetric between managers and shareholders by delivering inside information of firm future prospects. Miller and Scholes (1978) find that the effect of tax preferences on clientele and conclude different tax rates on dividends and capital gain lead to different clientele. Life Cycle Theory explanation given by the Lease *et al.* (2000) and Fama and French (2001) is that the firms should follow a life cycle and reflect management's assessment of the importance of market imperfection and factors including taxes to equity holders, agency cost asymmetric information, floating cost and transaction costs Catering theory given by Baker and Wurgler (2004) suggest that the managers in order to give incentives to the investor according to their needs and wants and in this way cater the investors by paying smooth dividends when the investors put stock price premium on payers and by not paying when investors prefer non payers.

As regards the empirical literature the roots of the literature on determinants of dividend policy is related to Lintner (1956) seminal work after this work the model is extended by the Fama and Babiak (1968). D'Souza (1999) finds negatively relationship between agency cost and market risk with dividends payout. However, the result does not support the negative relationship between dividend payout policies and investment opportunities. The empirical analysis by Adaoglu (2000) shows that the firms listed on Istanbul Stock Exchange follow unstable cash dividend policy and the main factor for determining the amount of dividend is earning of the firms. Omet (2004) comes to the same conclusion in case of firms listed on Amman Securities Market and further the tax imposition on dividend does not have the significant impact on the dividend behaviour of the listed firms. DeAngelo *et al.* (2004) document highly significant association between the decision to pay dividends and the ratio of earned equity to total equity controlling for size of the firm, profitability, growth, leverage, cash balance and history of dividends. In addition, the dividend payments prevent significant agency problems since the retention of the earnings give the managers' command over an additional access to better investment opportunities and without any monitoring. Eriotis (2005) reports that the Greek firms distribute dividend each year according to their target payout ratio, which is determined by distributed earnings and size of these firms. Stulz *et al.* (2005) observe significant association between decision to pay dividends and contributed capital mix.

In investigating the determinants of dividend policy of Tunisian stock Exchange Naceur *et al.* (2006) find that the high profitable firms with more stable earnings can manage the larger cash flows and because of this they pay larger dividends. Moreover, the firms with fast growth distribute the larger dividends so as attract to investors. The ownership concentration does not have any impact on dividend payments. The liquidity of the firms has negatively impacted on dividend payments. In Indian case Reddy (2006) show that the dividends paying firms are more profitable, large in size, and growing. The corporate tax or tax preference theory doesn't appear to hold true in Indian context. Amidu and Abor (2006) find dividend payout policy decision of listed

firms in Ghana Stock Exchange is influenced by profitability, cash flow position, and growth scenario and investment opportunities of the firms.

Meggison and Eije (2006) observe that the dividend paying tendency of fifteen European firms decline dramatically over this period 1989 to 2003. The increase in the retained earnings to total equity doesn't increase the payout ratio, but company age does. They also find that the effect of catering the dividend systematically which is nor conclusive evidence of continent and wide convergence in dividend policy. Baker *et al.* (2007) reports that Canadian dividend paying firms are significantly larger and more profitable, having greater cash flows, ownership structure and some growth opportunities. Daniel *et al.* (2007) conclude that managers treat expected dividend levels as a vital earning threshold for Korean firms. Jeong (2008) identifies that the Korean firms make dividend payments on the basis of firm's stock face value which is very close to the average interest rate of deposits. The change in dividends is less likely to reflect change in fundamentals of the firms. They find the determinants of dividend smoothing, firm risk, size and growth factors play very important role in explaining the cross section of smoothing the dividend behaviour. The role of dividend as mechanism in countries with different legal system and distinct agency cost problem is studied by Farinah and Foronda (2005) and they find that the firms from Anglo Saxon tradition follow relationship between dividend and insider ownership the pattern of earning of negative-positive-negative and in civil law countries relationship is positive-negative-positive.

There is an increasing interest in analyzing the dividend behavior of the firms after the introduction of Code of Corporate Governance by SECP in 2002 in Pakistan but many issues in this area are uncovered. In particular, the factors involve for determination of dividend policies in Pakistan, which is central issue of this area needs in depth research. It is in this perspective this study aims to make contribution in the literature on dividend policy.

3. Methodology and Data

We start our analysis by empirically testing the partial adjustment model of Lintner (1956) According to the Lintner each firms i has target dividend payout ratio (r_i). By using the target payout ratio Lintner calculated the target dividend at time (D_{it}^*) as percentage of net earning of the firms i at the time t , the relationship is given below:

$$D_{it}^* = r_i E_{it} \quad (1)$$

In reality the dividend which firms finally pay at time t (D_{it}) is different from the target one (D_{it}^*). Therefore, it is more reasonable to model the change between the real dividends at time $t-1$, instead of the real dividend at time t only. By taking the change in real dividend into account it is realistic and consistent with the long run target payout ratio, we assume that the real change in dividend at time t ($D_{it} - D_{it-1}$) equal to the constant portion (α_i) plus the speed of adjustment to the target dividend at time t ($D_{it}^* - D_{it-1}$). Since the target dividend at time t is a proportion of the net earnings at the time t , the final model become as follow:

$$D_{it} - D_{it-1} = \alpha + c_i r_i E_{it} - c_i D_{it-1} \quad (2)$$

Where D_{it} is the actual dividend paid by the firms during period t , E_{it} is the net earnings of the firms during the period t ; c_i is the adjustment factor which shows the speed of adjustment of dividends, at the time $t-1$, to optimum target payout ratio of dividends at time t and r_i is the target payout ratio. This theoretical model can be estimated using the following econometric model:

$$\Delta D_{it} = \alpha + \beta_1 E_{it} + \beta_2 D_{it-1} + \varepsilon_{it} \quad (3)$$

Where ΔD_{it} is the change in dividend form time $t-1$ for the firm i , β_1 represents the c_i times r_i of the theoretical model β_2 is represent the variable c_i of the theoretical model with negative sign ($\beta_2 = -c_i$) and ε_{it} represent the error term.

Fama and Babiak (1968) extend Lintner (1956) model by incorporating one more explanatory variable that is the difference between the current earnings and previous earnings of earnings without constant term:

$$D_{it} = \alpha + \beta_1 \Delta E_{it} + \beta_2 D_{it-1} + \varepsilon_{it} \quad (4)$$

Where D_{it} is the dividend of the firm i at the time t , ΔE_{it} the change in income to the stockholders, at the time t and the time $t-1$ and ε_{it} is the error term.

We estimate the above model by taking the ΔDPS_{it} is the change in dividend per share of the firm i at the time t as dependent variable and ΔEPS_{it} , is change in earning per share at the time t as explanatory variable and the model becomes as follow:

$$\Delta DPS_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 \Delta DPS_{t-1} \quad (5)$$

In the empirical literature, the Lintner model is tested by using dividend per share data and the aggregate dividend data. We use dividend per share, total dividend and dividend yield data for more rigorous analysis. We use the earning per share after tax because dividend has been paid earning after interest, taxes and after depreciation and calculated as net earnings divided by number of shares.

We also test the Lintner's extended version of dividend model incorporating a set of determinants that influence the dividend policy as proposed by Vasiliou and Eriotis (2003) and Belanes *et al.* (2007). The model is as follows

$$DY_{it} = \beta_0 + \beta_1 DY_{it-1} + \beta_2 NE_{it} + \beta_3 OWN_{it} + \beta_4 MV_{it} + \beta_5 LIQ_{it} + \beta_6 INV_{it} + \beta_7 SIZE_{it} + \beta_8 SG_{it} + \beta_9 LEV + \beta_{10} MBV_{it} + \varepsilon_{it} \quad (6)$$

We use the dividend yield (DY) as dependent. The dividend yield is calculated as dividend per share divided by price per share. The set of determinants of dividend yield consist of following variables. The earning per share after tax (EPS) is used because dividend has been paid earning after interest, taxes and after depreciation and calculated as net earnings divided by number of shares. The major number of shareholders (OWN) is calculated as the shareholder having more than 5 percent holding and used as proxy of inside ownership structure. According to the Gomes (2000) and La Porta et al (2000) the solution of agency cost is the structure of ownership of the firms. Brav *et al.* (2004) argue that closely held firms regarding the consequences of dividend cuts and omission to be less serious. They find that closely held firms more likely to pay dividends in response to temporarily changes in earnings than the firm will diffused ownership. The net earnings after interest, depreciation and tax (NE) capture the role of earnings to pay dividends. The explanatory variable of tax has been included in the study to check the impact of corporate tax in the listed firms of Karachi Stock Exchange (KSE) on the dividend payments. The leverage (Lev) also influence the dividend behaviour of the firm, if the level of the leverage is high its mean the firm is more risky in the cash flows. The negative effect of leverage on dividends payments is documented in the literature (Higgins, 1972 and McCabe, 1979). Rozeff (1982) finds that the firms with higher leverage pay lower dividends in order to evade the cost of raising external capital of the firm. The slack (INV) is the very important factor for the making the decision regarding dividend policy and it captures the investment opportunities available to firms. It is calculated as the accumulated retained earnings divided by total assets of the firm. According to the theory the presences of slack reduce the external financing requirements and become the important factor to solve the problem of the under investment. According to the Myers and Majluf (1984) and John and William (1985), it reduced the signalling need of the firms and incentives to smooth the dividend behaviour. The sales growth (SG) is included because according to the signalling theory the high growth firms are smoother to pay their dividends to shareholders. The firm size (SIZE) defined as natural logarithm of total assets is expected to have a positive affect on dividend payouts as large more diversified firm are likely to have very low chance of bankruptcy and can sustain higher level of debt. Scott and Martin (1975) find that the size of the firm can affect the firms' dividend policy and debt policy. The market capitalization (MV) is used in the study to capture value of the firm which plays very important role to determine the decision of dividend policy (Belanes *et al.*, 2007). Market liquidity (LIQ) is one of very important factor that can effect the decision or behaviour of the dividend policy (Belanes *et al.*, 2007). The return on assets (ROA) is added in the study as control variable and the characteristics of return on assets are as profitability of the firm. The return on assets is expected to be positively related to dividend yield (Belanes *et al.*, 2007). The market to book value of equity (MBV) is the signal for the shareholders that firms pay dividends smoothly and vies versa (Bleans *et al.*, 2007).

In Pakistan there are few firms which are paying dividend consistently. In order to investigate why the listed firms of Karachi Stock Exchange (KSE) are not able to smooth their dividends and the factors which are influencing or determining the dividend policy in Pakistan, we test the following hypothesis.

H₁ : The Listed Firms of KSE smooth or stable in paying dividends

H₂ : There is positive relationship between dividend payout and earnings

H₃ : There is positive relationship between dividend payout and previous dividend payout.

H₄ : There is positive relationship between dividend payout and net earnings

H₅ : There is a positive relationship between dividend payout and ownership structure

H₆ : There is a positive relationship between liquidity and dividend payout.

H₇ : There is negative relationship between dividend payments and investment opportunities.

H₈ : There is negative relationship between dividend payout and leverage.

H₉ : There is negative relationship between dividend payout and size of the firms.

Data

For the study the sample of 320 non financial listed firms listed on the Karachi Stock Exchange (KSE) are selected. The 320 non financial firms cover the 85% of the total firms in the market (KSE and in 2007. The data is collected from Securities Exchange Commission of Pakistan, State Bank of Pakistan and the Karachi Stock Exchange. The variables of the study are calculated from the Audited Annual Accounts⁴ of 320 firms for the period of 2001 to 2006 which is about 1830 observations for each variable and it is a long period enough to smooth out variable fluctuations (Rozeff, 1982)

The panel character of data allows us to use the panel estimation technique. The panel data estimations are considered most efficient analytical methods in handling of econometric problem such as omitted variables and endogeneity biases. To deal with this issue we apply the Generalized Method of Moments (GMM) as estimation technique. The lag dependent and explanatory variables are used as instruments following Arellano and Bond (1991). The Hausman (1978) test is used to make decision between fixed effect and random effect approaches.

4. Empirical Results

The analysis of this study divided into two parts, First part of the regression analysis shows the dividend stability of the non financial firms listed in Karachi Stock Exchange and the second part of the paper explain the determinants of dividend payout policy in Pakistan.

4.1 Evidence on the Stability of Dividends

For estimating the dividend stability we use three models: Lintner (1956), Fama and Blacomb (1968) and one we extended Lintner model with dividend per share and earning per share which is more suitable choice of variables in case of Pakistani Market. To perform the econometrics analysis we apply four different methods to check the robustness of the model: Generalized Method of Moments (GMM), pooled time-series cross-section data with common effect (POOL), pooled data with fixed effect model (FEM) and pooled data random effect model (REM).

Table1 reports the parameter estimates obtained for the dividend stability model. The coefficient on the lagged dependent variable (dividend) α varies from 0.22 obtained from GMM estimations to 0.58 when ordinary least square level is used by pool, fixed effect random effect. Though the speed of adjustment $(1-\alpha)$ lies within the range of 41 to 77.73 percent. This suggests that there are some unobserved individual firm's effects on the dividend smoothing behaviour which are not captured by this model and cause a large variation in the speed of adjustment. The coefficient of dividend declines from 0.58 to 0.27 in fixed effect method estimation which suggest the firm-specific factors effects in the dividend payout policy of Karachi stock exchange and the endogeneity is also an issue to deal with. Furthermore the coefficients of the dividends are

⁴ List of Variables is provided in appendix Table A1

significant with the fixed effect method. The other useful statistics is the implicit target payout ratio which is shown in the above table of partial adjustment model. The target payout ratio ($\beta/1-\alpha$) varies from 18 to 55 percent and the significantly lower than the target payout ratio observed from the data. The coefficient of the determination R^2 is also varies from 0.39 to 0.65.

Table 1: Evidence on Dividend Stability

The table reports the results of extended dividend stability model of Lintner (1956) by applying GMM, pooled time series cross section data with common effect model (POOL), fixed effect model (FEM) and random effect model (REM).

$$\Delta D_{it} = \alpha + \beta_1 E_{it} + \beta_2 D_{t-1} + \varepsilon_{it}$$

ΔD_{it} is the change in dividend from time t-1 for the firm i

E_{it} is the net earnings of the firms during the period t

The *, ** and *** indicates the significance levels at 1%, 5%, and 10% respectively. The values in parenthesis are t-statistics.

Independent Variables	GMM	Pooled	FEM	REM
D_{it-1}	0.23* (2.50)	0.58* (30.10)	0.27* (15.35)	0.52* (35.82)
E_{it}	0.25* (2.20)	0.23* (7.29)	0.13* (21.34)	0.11* (3.66)
R^2	0.56	0.56	0.66	0.39
Hausman Test (p-value)			0.002	
Speed of adjustment (1- α)	77.33%	41.90%	72.70%	48%
Target Payout Ratio ($\beta/1-\alpha$)	32%	55%	18%	23%
Firms	210	210	210	210
Observations	1210	1344	1344	1344

Table 2: Evidence on Dividend Stability

The table reports the results of extended dividend stability model of Fama and Babiak (1968) by applying GMM, pooled time series cross section data with common effect model (POOL), fixed effect model (FEM) and random effect model (REM).

$$D_{it} = \alpha + \beta_1 \Delta E_{it} + \beta_2 D_{t-1} + \varepsilon_{it}$$

D_{it} is the dividend of the firm i at the time t,

ΔE_{it} the change in income to the stockholders at the time t and the time t-1.

The *, ** and *** indicates the significance levels at 1%, 5%, and 10% respectively. Values in parenthesis are t-statistics.

Sample

Independent Variables	GMM	Pooled	FEM	REM
D_{it-1}	0.37* (1.97)	0.37* (19.15)	0.70* (36.3)	0.38** (18.90)
ΔE_{it}	0.12 (0.07)	0.12* (33.20)	0.13* (12.56)	0.28* (22.17)
R^2	0.97	0.98	0.82	0.92
Hausman Test (p-value)				0.001
Speed of Adjustment (1- α)	59.01%	63.26%	52.41%	42.50%
Target Payout Ratio $\beta/1-(1-\alpha)$	27%	32.10%	38.49%	25%
Firms	210	210	210	210
Observation	1197	1322	1322	1322

The above Table 2 shows that parameter estimates obtained from the dividend stability model modified by Fama and Babiak (1968). The result indicates that the coefficient on the lagged dependent variable dividend α varies from 67 percent to 37 percent; the variation in the dividend coefficient is large in the Karachi Stock Exchange listed non financial firms. The result shows that the speed of adjustment also varies from 32 percent to 68.20 percent. On the other hand the target payout ratio is also not consistent, the target payout ratio vary from 19 percent to 44.60 percent which is lower then the observed target payout ratio of 25 to 38.50 percent. The coefficient of the determination of all four models (GMM, POOL, FEM and REM) vary from the 0.59 to 0.74. These results suggest that the KSE listed firms are not smooth to pay their dividends. These results are opposite compared with the findings of other developing markets for example Fama and Babiak (1968) in case of United States market observe that the speed of adjustment approximately 0.37 which is little bit high from the Lintner (1956) who finds it is 0.30. However our findings are consistent with some developing market results for example Belanes *et al.* (2007) find in case of the Tunisian Stock Exchange the speed of adjustment is vary from 96.59 percent to 23.66 percent and the target payout ratio 14.12 to 52.96 percent and conclude that the hypothesis of dividend stability is rejected.

Table 3: Dividend Stability Model

The table reports the results of extended dividend stability model of Lintner (1956) modified by using dividend per share and earning per share. The GMM, pooled time series cross section data with common effect model (POOL), fixed effect model (FEM) and random effect model (REM) are used as estimation technique

$$\Delta DPS_{it} = \alpha + \beta_1 EPS_{it} + \beta_2 \Delta DPS_{t-1}$$

ΔDPS_{it} is the change in dividend per share of the firm i at the time t.

ΔEPS_{it} is the change in earning per share of the firm i at the time t.

The *, ** and *** indicates the significance levels at 1%, 5%, and 10% respectively. Values in parenthesis are t-statistics.

Independent Variables	GMM	Pooled	FEM	REM
ΔDPS_{t-1}	0.41** (2.12)	0.37* (19.20)	0.48 (29.40)	0.58* (36.40)
ΔEPS_{it}	0.16* (22.48)	0.20 (0.64)	0.20 (1.23)	0.11** (1.65)
R^2	0.97	0.98	0.82	0.92
Hausman Test (p-value)				0.001
Speed of adjustment(1- α)	59.01%	63.26%	52.41%	42.50%
Target Payout Ratio($\beta/1 - \alpha$)	27%	32.10%	38.49%	25%
Firms	210	210	210	210
Observations	1197	1322	1322	1322

After the analysis of the above models partial adjustment model and the model of Fama and Babiak (1968) we modify the model which by using the change in dividend per share as dependent variable and regress it on change in earning per share of current period and lagged term of change in dividend per share. The parameter estimates obtained from our dividend stability models are reported in above Table 3. The coefficient of the lagged term dividends α varies from 40 percent by GMM estimation to 57 percent by OLS when it's used in levels. The balanced panels have been used to estimate the above mentioned model. The results of the model show that the speed of adjustment (1- α) lies within the range of 42.5 percent to 59.01 percent by GMM method which suggest that the estimate techniques use in the model are appropriate. The random effect estimation shows that the extensive firm specific effects in the dividend policy in Pakistan. The endogeneity of the explanatory variables coefficient of dividends is taken account of when GMM is used as estimation technique against OLS but the significant level is reduced when the GMM is used to however, the variation in the significance is very small.

On the other side the target payout ratio ($\beta/1-\alpha$) which is also shown in the above table. The target payout ratio vary from 25 percent to 38.49 percent which is significantly equal to the observed target payout ratio which amounts to 30 percent in full sample and 35.7 percent in dividend paying firms sample. The coefficient of determination does not have the variation. The firms listed on Karachi stock exchange are continuously improving their target payout ratio by applying this model and we can say that the Pakistan's listed firms non financial are not smooth to pay their dividends.

The results of the adjustment of the speed and the target payout ratio when compared with the findings in the empirical studies, the Fama and Babiak (1968) find that for non-financial US firms the average speed of adjustment approximately 0.37 slightly higher than Lintner (1956) findings of 0.30 and target payout ratio of 50% almost equal to the Lintner (1956). The Behm and Zimmerman (1993) for German listed firms find a speed of adjustment ranging from 0.13 to 0.58 and the target payout ratio lies between 25 to 58 percent. Glen *et al.* (1995) find the speed of adjustment between 40 percent in Zimbabwe and 90 percent in Turkey and the target payout ratio between 30 percent and 40 percent. Belanes *et al.* (2007) find the speed of adjustment in Tunisian listed firms which is 23.66 to 96.59 percent and the target dividend payout ratio lies between 14 to 52.96 percent. Our results regarding the speed of adjustment and target payout ratio are closer to findings of other developing markets for example Turkey and Tunisia however, less then the speed of adjustment and target payout ratio of Germany and United States.

To sum up the test of the Lintner partial adjustment model and the modified model on the sample of Karachi Stock Exchange Listed non financial firms reject the null hypothesis that that dividend decision are not based on the long term target dividend payout ratio. However, there is an indication that the firms give the higher importance on stable dividend payout to signal their future profitability to minimize the agency cost.

4.2 Determinates of Dividend Pay-out Policy

As regards the determinants of dividend payout policy in Karachi Stock Exchange listed non financial firms, we use the lagged dividend yield as explanatory variable to examine the pervious effect of the dividend yield with other explanatory variables and dividend yield as the dependent variable because the sample having the firms with negative earnings. The set of variable used as determining factors include: NE_{it} is net earnings defined as earning per share after tax, OWN_{it} is ownership structure defined as numbers of majority shareholders holding more then 5 percent of stocks, MBV_{it} is market to book value of equity, LIQ_{it} is turnover defined as the value of stock traded/stock market capitalization, INV_{it} is slack or investment opportunities defined as accumulated retained earnings/ total assets, $SIZE_{it}$ is size defined as natural logarithm of total assets, SG_{it} is sales growth defined as percentage change in sales and LEV_{it} is defined as total debts/ current year value of equity MV_{it} the logarithm of market capitalization. The analysis is done for two sets: dividend paying companies separately and on the sample of combined of both dividend paying and not-paying companies. The estimation is done by using the General Method of Moment (GMM), Pooled least square method (POOL), fixed effect Method (FEM) and Random Effect method (REM).

The results presented in Table 4 are for the sample of dividend paying firms shows that the lagged dividend yield has a positive and highly significant relationship with the dividend yield of the current year by using the pool time series and cross-section with common effect model, fixed effect model and random effect model. This evidence suggests that dividend yield of the current year depend on dividend yield of pervious year and is supported by the findings of Belans *et al.* (2007) and Amidu and Abor (2006) and opposite from the findings of Reddy (2006). The net earnings show the positive and significant association with the dividend yield indicates that the firms with the positive earnings pay more dividends. Therefore, we fail to reject the null hypothesis and conclude that firms listed in Karachi Stock Exchange determining the amount of dividends according to the net earnings (profitability) of the firm. The evidence supported by Adaoglu (2000), Amidu and Abor (2006) and Belans et al (2007) and deviate from Jeong (2008). The number of majority shareholders (OWN) is positively and significantly linked with the

dividend yield indicating that the ownership concentration is positively affect dividend payout in Pakistani market. The firms listed in KSE with major shareholding (Inside) pay more dividends play important role to determine the dividend payout policies. This result leads to acceptance of the null hypothesis that there is positive relationship between dividend payout and ownership structure. The evidence supported by the findings of Farina and Fronda (2005), Amidu and Abor (2006) and contrast from the results of Belans *et al.* (2007).

Table 4: Determinants of Dividend Pay-out Policy

The table reports the results of determinants of dividend model based on sample of dividend paying firms, there are 224 firms which pay dividend to shareholders

$$DY_{it} = \beta_0 + \beta_1 DY_{it-1} + \beta_2 NE_{it} + \beta_3 OWN_{it} + \beta_4 MV_{it} + \beta_5 LIQ_{it} + \beta_6 INV_{it} + \beta_7 SIZE_{it} + \beta_8 SG_{it} + \beta_9 LEV_{it} + \beta_{10} MBV_{it} + \varepsilon_{it}$$

DY_{it} is dividend yield is calculated as dividend per share divided by price per share

NE_{it} is net earnings defined as earning per share after tax

OWN_{it} is ownership structure defined as numbers of majority shareholders holding more then 5% of stocks

MBV_{it} is market to book value of equity

LIQ_{it} is turnover defined as the value of stock traded/stock market capitalization

INV_{it} is slack defined as accumulated retained earnings/ total assets

$SIZE_{it}$ is size defined as natural logarithm of total assets.

SG_{it} is sales growth defined as percentage change in sales

LEV_{it} is leverage defined as total debts/ current year value of equity

The *, ** and *** indicates the significance levels at 1%, 5%, and 10% respectively. Values in parenthesis are t-statistics.

Independent Variables	GMM	Pooled	FEM	REM
DY_{it-1}	0.03** (1.71)	0.84* (12.27)	0.71* (12.44)	0.72* (58.37)
NE_{it}	0.17* (2.05)	0.002* (6.70)	0.001* (6.15)	0.001* (5.27)
OWN_{it}	0.003*** (1.53)	0.001** (1.74)	1.00*** (1.55)	0.001 (1.26)
MV_{it}	1.17* (5.05)	-0.006* (-4.50)	-0.002* (-4.00)	-0.001*** (1.59)
LIQ_{it}	2.07* (5.40)	0.05* (3.85)	-0.01* (-2.29)	0.01 (0.44)
INV_{it}	-0.71* (-2.53)	-0.07* (-2.78)	-0.15* (-11.94)	-0.26* (-14.82)
$SIZE_{it}$	-0.003*** (-1.43)	-0.002* (-2.59)	-0.001* (-2.69)	-0.004 (-1.05)
MBV_{it}	0.09* (2.00)	0.03*** (1.57)	0.009** (1.94)	0.04** (1.97)
SG_{it}	0.003 (0.06)	-0.006 (-0.27)	-0.002 (-0.03)	0.002 (0.81)
Lev_{it}	0.06*** (1.45)	0.001 (1.15)	-0.001* (-3.39)	-0.001 (-1.15)
R^2	0.39	0.67	0.93	0.92
F -Statistic		273.78	8888.14	
J -Statistic	0.019			
Firms	224	224	224	224
Observation	1158	1319	1315	1315

Table 5: Determinants of Dividend Model

The table reports the results of determinants of dividend model based on full sample of KSE listed non-financial dividend and non dividend paying firms

$$DY_{it} = \beta_0 + \beta_1 DY_{it-1} + \beta_2 NE_{it} + \beta_3 OWN_{it} + \beta_4 MV_{it} + \beta_5 LIQ_{it} + \beta_6 INV_{it} + \beta_7 SIZE_{it} + \beta_8 SG_{it} + \beta_9 LEV + \beta_{10} MBV_{it} + \varepsilon_{it}$$

DY_{it} is dividend yield is calculated as dividend per share divided by price per share

NE_{it} is net earnings defined as earning per share after tax

OWN_{it} is ownership structure defined as numbers of majority shareholders holding more than 5% of stocks

MV_{it} is market to book value of equity

LIQ_{it} is turnover defined as the value of stock traded/stock market capitalization

INV_{it} is slack defined as accumulated retained earnings/ total assets

$SIZE_{it}$ is size defined as natural logarithm of total assets.

SG_{it} is sales growth defined as percentage change in sales

LEV_{it} is leverage defined as total debts/ current year value of equity

The *, ** and *** indicates the significance levels at 1%, 5%, and 10% respectively. Values in parenthesis are t-statistics.

Independent Variables	GMM	Pooled	FEM	REM
DY _{it-1}	0.03*** (1.34)	0.0714* (43.14)	0.76* (13.36)	0.76* (15.27)
NE _{it}	0.001* (4.97)	0.001* (6.26)	0.004* (5.37)	0.004* (5.24)
OWN _{it}	0.003* (3.23)	0.003* (8.77)	0.004*** (1.32)	0.001*** (1.36)
MV _{it}	0.003 (1.13)	-0.001** (-1.77)	0.003* (0.34)	-0.002 (-0.55)
LIQ _{it}	-3.00* (-2.53)	-0.24* (-12.89)	-0.06 (-9.83)	-0.19* (-14.96)
INV _{it}	-0.01* (-0.07)	-0.07* (-2.78)	-0.15* (-11.94)	-0.26* (-14.82)
SIZE _{it}	-0.001* (-3.24)	-0.005*** (-1.38)	-0.002** (-1.70)	-0.001 (-0.25)
SG _{it}	-0.003* (-2.89)	--0.004 (--0.04)	0.001* (2.53)	0.005 (0.90)
Lev _{it}	-0.001 (-0.41)	-0.002 (-1.26)	-0.001* (-0.43)	-0.001 (-0.73)
MBV _{it}	-0.002*** (-1.46)	-0.002* (-10.26)	-0.001*** (-1.34)	0.002 (1.07)
R ²	0.52	0.73	0.93	0.92
F-Statistic (p-value)	0.01		0.00	
J-Statistic				
Firms	320	320	320	320
Observation	1466	1824	1830	1830

The results show that there is a negative and significant relationship between dividend payout and size. This result shows that large-sized firms prefer to pay less dividend; therefore, we fail to reject the null hypothesis that size has negative relationship with dividend payout. Belans *et al.* (2007), Jeong (2008) and Avazian *et al.* (2006) come up with contradictory evidence. The relationship between the firm's liquidity and dividend is positive which explains that firms with more market liquidity pay more dividends. Reddy (2006), Amidu and Abor (2006) find opposite evidence and Belans *et al.* (2007) have come up with the same conclusion. The relationship between the investment opportunities or slack and dividend payout policies is negative and highly significant with all four models. The firms with large financial opportunities pay less dividends. Therefore, we can say that growing firms with more investment opportunities pay less dividends to their shareholders in Pakistani market. The evidence supported by finding of Jeong (2008),

Baker *et al.* (2007) and opposite from the findings of Naceur *et al.* (2006) and Belans *et al.* (2007). The relationship between the leverage and dividend payout is mix and significant in two models and sales growth has no significant impact on divided payout in all four models. These results indicate that the leverage and sales growth are not the determinant of dividend payout policies in listed firms of KSE. Baker *et al.* (2007) find the same relationship however, Belans *et al.* (2007), Avizan *et al.* (2006) find in contrast a significant relationship. The coefficient of determination and the F-Statistics are consistent in all above models the results are consistent with the empirical studies on determinants of dividend payout policy.

The model of determinants of dividend payout policy is also use to make the estimation for full sample and we come up identical findings as we get with sample of dividend paying firms. The results reported in Table 5 show that the lagged dividend yield has a positive relationship with the dividend yield of the current. The net earnings positively affect the dividend yield. The firms listed in KSE with major shareholding pay more dividends play important role to determine the dividend payout policies. As regards the financial characteristic of the firm size, it has negative association with dividend payout ratio. The relationship between the investment opportunities, market to book value and liquidity with dividend payout policies are negative and significant indicating that the firms with large investment opportunities, more market to book value and with more liquidity pay less dividends. The growth of the firm has no clear association with the dividend payout policy. The relationship between the leverage and dividend payout is negative and insignificant by using all the models so we conclude that the leverage is not the determinant of dividend payout policies in listed firms of KSE.

The robustness test consists on the sample of dividend paying firms. The dividend stability and the determinants of dividend payout policy in the KSE are presented in the modified model. The results of our study indicate that both lagged dividend per share and change in earning per share depends on mostly on the pervious earning per share. However the target dividend payout ratio is vary from 25 to 38.50 percent and the speed of adjustment varies from which is high with comparing to Turkey, US and Germany but low compare to developing markets like Tunisia, Ghana and Zimbabwe. These findings confirm the absence of dividend smoothing in Karachi Stock Exchange as calculated by Lintner (1956) for US market and finds it 30 percent slightly smoothing their dividends. As for as the determinants of dividend payout ration are concerned, the results of dividend paying firms are almost identical to the results of full sample firms. The lagged dividend yields of this time (t-1) have positive influence on current dividend.

5. Conclusion

We attempt to find the answer of the following questions: Do the firms listed in Karachi Stock Exchange follow the stable dividend payout policies? And what are the main factors that determine the dividend payout policies in listed firms of Karachi stock exchange?

The first part of the study, Lintner's, Fama and Babiak and a modified model which is the extension of the partial adjustment model is applied using the static and panel data regressions. Our results shows that Pakistan's listed firms rely more on the current earnings that past dividend to fixed their dividend payments in this way the dividends tends to be more sensitive to current earnings and also on the prior dividends. The variability in the earnings of the firms is reflected in the level of dividends. The high variation in the speed of adjustment in the both models Lintner's and Fama and Babiak is tested by using panel regression analysis with four techniques: GMM, pool with common effect model, fixed effect model and random effect model. The variations in the speed of dividend paying firms are 42.50 to 63.26 percent which is high. This suggests the listed firms Karachi Stock Exchange do not smooth in paying their dividends. Additionally, the target payout ratio is very low 25 to 38.50 percent with the sample of dividend paying firms. Therefore, low target payout ratio and high speed of adjustment shows the trends towards the low smoothing and instability of dividend payout policies in Pakistan.

The second part of the study is highlighted some determinants that may influence the dividend payout policies. The results show that the firms having high profitability with stable earnings can afford larger free cash flows thus pay out larger dividends. The firms with larger

investment opportunities can easily influence and play important role to determinant of dividend payout policies in Pakistan. The ownership structure has the major impact to determine the dividend payout policy in Pakistan. The firms with the major inside share holdings pay more dividends to its shareholders in Pakistan, which means the firms with high inside ownership or major inside shareholding pay dividend to reduce the cost associated with agency conflict. Moreover, the growth of the firms does not have any impact on the dividend payout and this result is not agreed with the informative content of dividends. The market liquidity of the firms has a positive influence which confirms that firms with higher market liquidity pay more dividends. The size is the highly negative and significant which shows that the large-sized firms invest in their assets rather than paying dividends to its shareholder, the results of our study generally support the pervious empirical studies on the determinants of dividend payout policy.

One implication of our findings is that pro-growth polices generate more profitable investment opportunities and stimulate the financing needs of the corporations and leads the firms to distribute less and use the retained earning for expanding the corporations. Therefore large sized firms with more profitable investment opportunities want to rely less on external financing and more on retained earnings. Other implication that comes out from our study is that ownership structure has significant impact on dividend payout policy in Pakistan. The inside ownership is positively associated with the growth of dividends. When legal environment does not provide sufficient protection for outside Investors, entrepreneurs and original owners are forced to maintain large positions in their companies which resulted in concentration of firm ownership. The countries like Pakistan with poor investor protection corporate ownership have significant impact on dividend policy. Ownership concentration appeared to be more important tool to resolve agency conflict between controlling and minority shareholders when investor protection is weak. Furthermore it is important to mention here that the high relationship of ownership of major shareholders can create the block of holders which may be easily influence the dividend payout policy in Pakistan. The Securities Exchange Commission of Pakistan has to proper manage the shareholding pattern of the listed firms of Karachi Stock Exchange, Lahore Stock Exchange and Islamabad Stock Exchange.

This paper contributes to the literature of dynamics of dividends and determination of dividend payout policies, where we find significant effect of ownership on dividend payouts in case of emerging markets like Pakistan. There is a need to further analyze this issue with respect to corporate governance and the dividends payout policy. Examining the dynamic and determinants of dividend payout policy in relation with corporate governance would be an important and interesting exercise at the time when Securities and Exchange Commission of Pakistan wants to revise the Code of Corporate Governance.

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Appendix

Table1: Set of Variables

Financial Characteristics		Explanatory Variables
Profitability	NE	Net Earnings and Earning Per Share after tax
Signals	MBV SG	Market to Book Value of equity Growth in term of Sales
Ownership	OWN	Numbers of majority shareholders holding more than 5% of stocks
Leverage	LEV	Total debts/ current year value of equity
Sales Growth	SG	Percentage change in sales
Size	MV SIZE	Market capitalization is defined as number of share outstanding in the market times the current market price of the shares Size in term of total assets
Market liquidity	LIQ	Annual value of stock traded/stock market capitalization
Investment opportunities	INV	Accumulated retained earnings/ total assets.
Return on Asset	ROA	Net income divided by total assets