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# Market Imperfections and Dividend Policy Decisions of Manufacturing Sector of Pakistan

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**ABSTRACT**

Dividend policy is an important issue of corporate finance and the present study examines the effect of market imperfections such as asymmetric information, agency costs and transaction cost of issuing external on corporate dividend policy for 138 firms selected from all major manufacturing sectors of Karachi Stock Exchange over the period 2003 to 2011. The results show that dividend yield depends on the last year's dividend yield and current year earnings that supports the Lintner (1956) model suggesting that management follow smooth dividends and are reluctant to change dividend policy. The results confirm that dividends signal the firm value (returns) and firm performance (returns on assets, market to book value and earnings). The positive and significant relation of free cash flow and collateral capacity with dividend indicate that dividends help to reduce agency cost problems and these findings support agency cost theory. The results confirm that dividends are used as a tool to reduce transaction cost of issuing external finance and that firm size and sales growth are more effective instruments to reduce transaction costs. Large and more profitable firms pay more dividends. Firm age, market to book value and price to earnings ratio are used to capture firm maturity the results show the firm life cycle theory of dividend is not valid. The irrelevance of life cycle theory further confirms signalling theory of dividend more relevant in explaining dividend decisions in case of Pakistan. Free cash flow and return on asset are significant and support free cash flow hypothesis. The results support dividends are used as signalling devise for outside investors that firm is running on profitable lines and reduce the agency cost and transaction costs but signalling theory is the most dominant This evidence is in confirmation with empirical findings of other emerging markets.

*JEL Classification:* G0, G3, G32, G35

*Keywords:* Dividend Policy, Signalling Theory, Agency Theory, Transaction Theory, Smooth Dividend, Manufacturing Firms

## 1. INTRODUCTION

Dividend policy has been considered an important but undecided issue by financial economists for over a half century. “The harder we look at the picture, the more it seems like a puzzle, with pieces that don’t fit together” [Black (1976)]. This discussion goes back to the seminal work of Miller and Modigliani (1961) who held the view that dividend policy was irrelevant in deciding the share value under perfect capital market condition. The “Bird-in-the-hand” theory advanced by Lintner (1962) and Gordon (1963) on the other hand suggests that increase in dividend payout raises firm value. Some investors consider dividends more profitable than an uncertain future capital gain. Some other theories suggest that corporate dividend policy has an impact on firm value because different tax systems that prevail in the market [Litzenberger and Ramaswamy (1979); Poterba and Summers (1984); Ang, *et al.* (1991); Barclay (1987)]. Latter Pettit (1977) and Scholz (1992) find that “Clientele Effects” also respond to dividend policy decisions because investors are divided into different clienteles according to their preferences and they choose a company where their investment objectives are in line with their dividend decisions. Bhattacharya (1979; Miller and Rock (1985) and Bali (2003) suggest that dividends signal the market about the firm’s performance. This is called the “Signalling theory” which states that dividend helps to reduce information asymmetries between the manager and the shareholder. Another theory, namely the “Agency” theory, states that dividend is a source that helps to mitigate the cost arising from conflict of interest between the manager and the shareholder.

Dividends also monitor the firm’s management activities [Rozeff (1982); Easterbrook (1984); Jensen (1986)] maintain that dividend paying ability reduces extra funds available to management and through which it resolves the over-investment problem.

The finance managers have to deal with two main operational decisions—investment and finance. The finance manager may also deal with a third decision which arises when the firm starts making profit. The finance managers have to decide what portion of earnings should be distributed to shareholders as dividend or should it be reinvested into business. Managers have also to consider that their dividend policy also affects the share price [Bishop, *et al.* (2000)]. Generally, shareholders receive dividends when a company generates

profit. Hence dividends are not regarded as expense but as sharing of profits with shareholders. The Board of Directors and the management decide the dividend policy. Even though enormous research has been done on dividend policy yet little is known about how companies make dividend policies. Market imperfections are a factor which can be categorised into at least three divisions—agency costs, irregular information and transaction cost—whose role in influencing the dividend decisions of manufacturing firms must be investigated.

However, in case of Pakistan very few studies have been done on the issue and those that have been done mainly focus on the effect of corporate dividend policy on share price, the determinants of this policy and the impact of corporate governance on it [Nishat and Irfan (2003); Mehar (2005); Naeem and Nasr (2007); Ahmed and Javid (2009); Nazir, *et al.* (2010); Akbar and Baig (2010) and Asghar and Suleman (2011)]. These studies pay no attention to the effect of different market imperfections on dividend decisions of the firms.

The present study tries to fill this gap by analysing the role of different market imperfections in explaining corporate dividend policy of manufacturing industries listed on the Karachi Stock Exchange. It tests the relevance of the Lintner (1956) model in explaining the dividend policies and checks whether firms in the manufacturing sector follow a smooth and stable dividend policy or not. It also investigates how dividends help in reducing agency and transaction costs of the firms and how the policy reduces information asymmetry by signalling corporate operating characteristics of these firms. This study also tests the life cycle hypothesis to know whether mature, profitable, low growth firms pay more dividends or not.

The present study contributes to the existing literature by examining how market imperfections affect dividend decisions in Pakistan which is an important emerging market. This study tests the significance of dividend theories such as signalling, agency, transaction and residual, life cycle and stability on manufacturing sector firms listed on KSE. The questions relating to dividend policy are important for emerging markets for many reasons. Firstly, the stability and growth of firms can be signalled by its dividend paying capacity. Investors use dividends as indicator for the firm's long-term consistency in earnings. Secondly, as the residual dividend theory states, a firm decides to pay dividend when it has less possibilities of profitable investment. Further, many researchers believe that a firm's dividend decision is related to investment decision and that the firm's stock price is also influenced by it.

The study is organised as follows: Section two provides a review of theoretical and empirical literature on the dividends policy in developed and developing markets. Section three explains the methodological framework, variable description and data collection sources. The empirical results are discussed in section four and section five concludes the study.

## 2. LITERATURE REVIEW

Since the seminal work of Modigliani and Miller (1965), postulating that dividends are irrelevant under perfect market conditions, researchers investigated the firms' dividend decisions under imperfect market conditions. This lead to the development of different theories of dividend distribution and a large body of empirical literature emerged to test these theories. This section is divided into two sub-sections; Section 2.1 reviews the theoretical literature and Section 2.2 reviews relevant empirical literature in this area.

### 2.1.1. *Miller and Modigliani's Dividend Irrelevance Theory*

Although many researchers worked on dividend policy decisions but these studies were not based on the theory of firm value evaluation [Miller and Modigliani (1961)]. Miller and Modigliani (MM) in 1961 were the first to explain this issue and they verified the irrelevance theory.

MM 1958, 1961 and 1963 have discussed the issue of optimal capital structure in their papers. They have described three cases of dividends irrelevant to the firm's value. First, when the firm has enough cash and decides to pay dividend which reduces its cash balance and equity account. It shows that financial assets and liabilities may change, not the net operating assets which are constants. Hence the company value remains constant. The second proposition arises when a firm finances the payout to shareholders by issuing new shares. MM states that the firm's financial value is increased by the sale of new shares but the firm's decision to pay dividend decreases this value. Whereas when new issued shares are sold at market price these two effects cancel each other out and the value of the firm remains the same. In the third case the firm decides not to share its profits with the shareholder but the shareholders need dividends. They change the corporate dividend policy by selling part of their shares to another investor and thus meet their cash needs and create homemade dividends which weaken their hold on the company. The company's value remains constant but only in case if shares are sold at fair market rates.

### 2.1.2. *Gordon and Lintner Theory*

Gordon and Lintner had given their view even before MM in favour of dividend policy in perfect capital market conditions. Gordon (1959) states that even in perfect capital markets ambiguity about a future situation is enough to affect the share price, known as "the bird in hand theory". Gordon considers dividends as important in the matter of stock value. In his famous growth model he subordinates it to the discounted flow of future dividends. The model is as follows:

$$P_0 = D_1 / K - G_e$$

where dividends grow at a constant rate in perpetuity, $P_0$ is stock value, $D_1$ is the expected dividend per share in the next year, $K$ is the required return and $G$ the growth rate. Firms receive dividend along with capital gains from shares and can be separated when they are received. Hence dividends are considered favourably to returns from shares and provide protection from possible future losses. Dividends can only be lost when the firm reinvests them poorly. But when shareholders receive them they should be considered as safe gains. Many researchers strongly criticise the Gordon and Lintner model. Economists mainly focus on the mathematical and theoretical models and criticise the bird in hand theory [Brennan (1971) and Bhattacharya (1979)].

### 2.1.3. *Tax Preference Theory*

The tax preference theory states that historically dividends have been taxed at a level higher than capital gains. Non-dividend paying stocks are preferable under the tax preference theory. Kalay (1984) concludes that these are preferable for investors in high income tax brackets whereas investors in lower brackets will more likely invest in high dividend payout stocks. Investors can make homemade dividends if they require regular income. Hence today capital gains are taxed equally in almost all countries. Gains from dividends are taxed in the same years whereas investors who keep their shares will be taxed in the year in which they sell them. This is more desirable as taxable money can be reinvested to generate extra profits.

### 2.1.4. *Agency Cost Theory*

In corporate management agency problem has been one of the earliest. The problem has its basis in the division of ownership and management requiring each agent to make a decision that is beneficial for the firm and not for him alone. Easterbrook (1984) states that when a firm pays dividend, it reduces the cash available for the company to invest, increasing the need for external finance. Under specific efficient monitoring firms avoid unprofitable investment decisions. Fama and Jensen (1983a, 1983b) have explained the agency problem among bondholders and shareholders and they stress that agency problems can be reduced by appropriate agreements dealing with property rights.

### 2.1.5. *Behaviour Theory*

Schiller (1984) has suggested that financial analysts and scholars tend to ignore the investors' character and their social practices. This is understandable as this aspect would be hard to express statistically, though adding these behavioural determinants in modelling somehow would certainly help form the corporate dividend policy and assist in solving many corporate issues. The substance of the behavioural theory has been given by Thaler and Shefria (1981)

and further advanced by Shefrin and Statman (1984). They emphasise that investors regard home dividend as less favourable than dividend paying stocks because of what is termed as self control dilemma. Small retail investors require stable cash flows whereas corporate and institutional investors may not need that. The behavioural theory comes in when in the market individual investors are more powerful.

### 2.1.6. *Free Cash Flow Theory*

The free cash flow hypothesis provides the link between the agency theory and the signalling theory. Free cash flow is primarily the amount of cash that would be left after all positive net present value projects have been taken care of. Therefore the firm's decision about the dividend policy settles the amount of funds available for future investment and consumption in other projects. Owners hire managers to run the company with the goal to maximise the wealth of the shareholders but the managers may use the funds inefficiently. Jensen (1986) explains this over-investment theory and relates it to the agency theory. There are two different situations: the first is that managers do not pay dividends and do not always invest in positive NPV projects; the second is that managers pay dividends and reduce the amount of free cash flow and reduce over-investment problems.

### 2.1.7. *Signalling Theory*

The signalling theory has its basis in the information irregularities among managers and shareholders. Many researchers have explained the variables that may have signalling characteristics. Among them are Miller and Modigliani (1961), Bhattacharya (1979), Hakanson (1982), John and Williams (1985) and Miller and Rock (1985) who have explained the signalling theory models. All financial articles about dividend payouts can be divided into two categories. The first view suggests that dividends carry relevant information; the other view covers dividends that do not provide any signalling effects. The signalling theory states that managers have better knowledge about the value of the firm's assets than the shareholders. It is the managers who inform the shareholders about the financial situation of the company through the dividends policy. Therefore some financial economists think that shareholders can get abnormal returns when dividends are announced.

### 2.1.8. *Dividend Stability Theory*

Bringham and Houstan (2004) hold that a stable dividend policy is essential for firm value. Revenues, favourable financing circumstances and cash flows change with time. The shareholders' concern is mainly about stability of dividend policy since they depend on dividends to meet their costs. In addition, if the firm reduces the dividend and provides funds for capital investment, this

could send a wrong signal to the investors. They might construe it as an indication of the firm's low profit expectations in the future which will hit the stock price. Therefore the firm can increase its stock price to keep the balance between its internal use and shareholders' requirements.

### 2.1.9. *Life Cycle Theory of Dividends*

The life cycle theory of dividends states that young corporations have more investment opportunities than firms which cannot meet all operating expenses with cash available internally. Furthermore, it is also difficult for young firms to generate cash from extra sources. Such firms therefore maintain cash by not distributing dividends to shareholders. With time the firm passes through growth stages and reaches to the maturity stage in its life cycle. At that juncture, the firm faces low investment opportunities, its growth and profitability lines become smooth, systemic risks decrease and the firm is able to generate more cash internally. As a result the firm starts to pay dividend to shareholders to distribute its earnings. Mature firms distribute part of their earnings among the shareholders to an extent at which the stockholders' and the managers' interests converge. The life cycle theory of dividend anticipates that the company will start to pay dividends when its growth rate and earnings are expected to fall in future. It is contradictory to the signalling theory of dividends.

## 2.2. Review of Empirical Literature

The decision whether to pay dividend or retain dividend earnings has been the main topic of research by economists for the last five decades.

### 2.2.1. *Empirical Evidence on Lintner Model*

Lintner's (1956) work is considered as the most authentic study to date. Lintner (1956) states that US firms' financial managers believe that shareholders are authorised to receive a reasonable share of the firm's earnings in the form of dividend. Firms set their target payout ratio in such a way that the companies can continue their capital investment and can realise their targeted growth in the long run. Lintner's (1956) findings are confirmed by a number of other studies for developed markets. The results of Brittian (1964, 1966) and Fama and Babiak (1968) are consistent with his findings. They improve the Lintner model by using more extensive experimental approach and conclude that firms follow a stable dividend policy. Fama (1974) has used a large sample and once again finds the same results about dividend policy stability for USA. The available literature on dividend policy is mainly focused on developed countries but there are a few studies on developing countries also. Isa (1992) has conducted a survey study and concluded that firms follow stable dividend policy in Malaysia. The Lintner model is further tested by Kester and Isa (1996), Annuar and

Shamser (1993) and Gupta and Lok (1995) and they also find similar results. Pandey and Bhat (1994)check the validity of the Lintner model in India and they find that Indian firms favour its findings. Ariff and Johnson (1994), Adaoglu (2000) test the Lintner model for firms listed on Turkish stock exchange. Glen, *et al.* (1995) have carried out a study of dividend policy in seven developing countries: Chile, Jamaica, India, Mexico, Thailand, Turkey and the Philippines. The study concludes that firms in developing markets set a targeted dividend payout ratio and try to maintain this payout ratio ignoring short term changes in earnings. Anyhow, when firms have a target payout ratio they usually give less importance to changes in dividends overtime and as a result dividend's smoothing with time becomes less relevant. Consequently it is found that dividend policies of emerging markets are more volatile than developed countries.

### 2.2.2. *Empirical Evidence on Agency Theory*

Many empirical studies support the view that dividend helps to reduce agency costs. Crutchley and Hansen (1989) and Mohammad, *et al.* (1995), Brav, *et al.* (2003) and Easterbrook (1984) have stated that financial rules like paying dividends help to reduce agency problems. Rozeff (1982) develops a cost minimisation model which supports the agency theory. The model combines the transaction costs that may be controlled by reducing the payout ratio with the agency costs that may be controlled by increasing the payout ratio. The model states that the optimal payout ratio is at level when the sum of agency and transaction costs is minimised. The model uses two proxies for agency cost: insider ownership and ownership dispersion. Lloyd, *et al.* (1985) have added firm size in Rozeff's model and find that large firms pay large amount of dividends to reduce agency cost. Jensen's (1992) also favours their point of view that large firms have more disperse ownership which increases agency cost and so large firms should pay more payouts to reduce agency problems. Another variable squared measure for insider ownership is added by Schooley and Barney (1994) who argue that there is a non-monotonic relationship between dividend and insider ownership.

Mohammad, *et al.* (1995) have modified the cost minimisation model by including institutional holdings and find that institutional ownership is significant and positive. Holder, *et al.* (1998) have extended the cost minimisation model by adding free cash flow as an additional agency variable. Ang, *et al.* (2000) have used the measure of agency cost which is the difference between the value of the 100 percent owner-managed firm and less than 100 percent owner-managed firm. Both studies support the Jensen and Meckling (1976) agency theory. Manos (2002) has modified the cost minimisation model by using four proxies for agency cost theory: foreign ownership, institutional ownership, insider ownership and ownership dispersion which shows that there

is greater need for outside monitoring to reduce the free rider problem. Deshmukh Sanjay (2005) has found negative and insignificant relationship between insider ownership and dividend yield. Harada and Nguyen (2006) and Khan (2006) have concluded that firms with high ownership concentration pay lower dividends. Mancinelli and Ozkan (2006) show that when ownership concentration is high, managers are reluctant to distribute dividends to shareholders.

Mollah, *et al.* (2007) show that agency cost variables had less explanatory power in ownership concentrated firms before the financial crisis of 2008 period and had no support after the crisis period. Obema, *et al.* (2008) find that only institutional ownership has a significant relationship with dividend policy because they vote for higher payout ratios to increase managerial control by external capital markets. Kouki and Guizani (2009) show that institutional ownership is negatively and ownership of the five largest shareholders is positively related to dividend payments that supports the view that multiple large shareholders have a positive role in dividend policy. Chen and Dhiensiri (2009) have examined the signalling, agency, residual and stability theories of dividend, and strongly favour the agency cost theory.

Afza (2010) shows that in Pakistan, corporate governance is not performing well so managers have the opportunity to hold cash in their hands and not pay dividends to shareholders. Sharif, *et al.* (2010)have concluded that the payout ratio has significant positive relation with ownership concentration and institutional shareholding in the case of Tehran stock exchange. Afza and Mirza (2010) have shown that for Pakistani listed firms individual ownership, managerial ownership and cash flow sensitivity are negatively related to cash dividends. Harada and Nguyen (2011) find dividend policy is used as a substitute for shareholder control and concentrated ownership is negatively related to dividend payout.

### 2.2.3. *Empirical Evidence on Transaction cost and Residual Theory*

Empirical research on the agency theory provides varying results which divert attention to another theory which is called the Transaction Cost theory. Williamson (1988, 1996) states that corporate finance and corporate governance questions can be answered with the help of transaction cost economics. Rozzeff presents a cost minimisation model and has used three proxies for transaction cost in the model: risk, firm's historic and predicted rates. A firm that faces high growth and high risk uses external finance to fulfil its investment needs and for payment of its debt obligations. External financing increases its cost of transaction.

Eddy and Seifert (1988), Jensen, *et al*. (1992), Redding (1997), Fama and French (2001) and Higgins (1981) and Aivazian, *et al.* (2003) find that large firms have easier access to capital markets and can easily generate external

funds. So the relationship between dividend yield and size is positive in large firms. Sawiciki (2005) has examined that large firms face the problem of ownership dispersion and are unable to monitor the firms' inside and outside activities which reduces management efficiency. As a solution of this problem firms can pay large amounts of dividend to shareholders and finance their investment activities through external finance which leads to increase the control of the creditors over large firms. Grullon, *et al.* (2002) have discussed the maturity hypothesis which states that capital expenditure declines as firms become more mature because their growth and investment opportunities are reduced. The over-investment problem can be eased because firms face less risk and pay more dividends. Chen and Dhiensiri (2009) have used four proxy variables for testing transaction and residual theory—size, beta, growth rate of revenues and their results—that to some extent favour the transaction and residual theory. Elston (1996) states that dividends and investments both need funds from retained earnings and compete with each other. High growth and investment possibilities are negatively related to dividends. It is also consistent with the free cash flow hypothesis [Jensen (1986)] and Lang and Litzenberger (1989). Kanwal and Sujata (2008) show a negative relation between growth possibilities and dividend which is related to the pecking order theory.

Rozeff (1982), Jensen, *et al.* (1992), Alli, *et al.* (1993), Mohammed, *et al.* (2006) find that dividends and investment opportunities are negatively related. Fama and French uphold the view that dividends are influenced by investment opportunities. Firm decision of paying dividend is independent of investment policy [Grill, *et al*. (1983)]. When growth increases, firm needs more external finance which in turn increases its sales and cash inflows [Higgins (1981)]. Rozeff (1982), Lloyd, *et al.* (1985), Collins, *et al.* (1996), and recently Amidu and Abor (2006) find that historical sales growth and dividend payout are significantly and negatively related.

### 2.2.4. *Empirical Evidence on Signalling Theory*

There are two main ideas about signalling theory. First, company managers have easy approach to accurate information than investors; second, if managers and investors receive the same level of information, they do not analyse in the same way [Vernimmen, Quiry, Dallocchio, Le Fur and Salvi (2005)]. Watts (1973) has investigated the effect of dividends on stock prices and future earnings to check whether dividends convey any information to investors or not. He finds that dividends are not a trustworthy source of accurately forecasting future earnings and concluded: "…in general, the information content of dividends can only be trivial."

The results of Benartzi, Michaely, and Thaler (1997) support the signalling hypothesis that if managers decided to pay dividends and distributed them with regularity, the firm did not face any decline in its future earnings. But

it is also not necessary that the firm faces large increases in earnings. Evidence has shown that firms that announce to pay dividends are less likely to face a fall in their earnings.

Bhattacharya (1979) states that firms pay dividends only when they hope a good cash position in the future which is based on their decision to invest in profitable projects. On the strength of quality projects managers can signal investors by announcing high dividends. Asquith and Mullins (1983) and Healy and Palepu (1988) have shown that stock price and decision of paying dividend are positively related. Similarly, the signalling theory has examined that financial markets do not take any decrease or dividend cut as a good sign for firm value [Benartzi, Michaely, and Thaler (1997), Healy and Palepu (1988), Michaely, Thaler, and Womack (1995)]. Managements are reluctant to pay dividends if they feel that in the long term the firm would not be able to pay constant dividends because there is a perception that the market punishes firms that fail to pay dividends more than reward those that pay.

Miller and Rock (1985) conclude that dividends are a signal of good news and their findings are consistent with Bhattacharya's reasoning. Raei, *et al.* (2012) have concluded that dividends provide information about return and earnings, therefore the signalling theory plays an important role in determining the return and earnings of the firm. A positive relation between dividend and return is shown by Park (2010) and Lettaua and Ludvigson (2005). Chen, *et al.* (2005) conclude that dividend and performance are weakly related. Harada and Nguyen (2005) have stated that dividend signals on performance and return. Weak relation between dividend and earnings is shown by Brave, *et al.* (2005). De Angelo, *et al*. (2000) and Fukuda (2000) have divided information about earnings. Powell and Baker, *et al*. (2000) and Healy and Palepu (1998) have stated that dividends affect earnings positively.

### 2.2.5. *Empirical Evidence on Life Cycle Theory of Dividends*

The free cash flow hypothesis is contrary to growth hypothesis. It states that corporations with less growth and investment opportunities face the problem of over-investment. Therefore such firms prefer to pay more dividends. During the life of the company, growth opportunities change with time. Grullon, *et al.* (2002) state that firm maturity and growth opportunities are negatively related. The price earning ratio is considered to be a good proxy for firm's growth opportunities. It also provides market judgment about the firm's future cash flows. Market to book value and the price earning ratio can provide reliable results only under stable market conditions. Al-Malkawi (2007) has showed that old firms have low investment opportunities and consequently lead to low growth rates. Farinas and Moreno (2000) and Huergo and Jaumandreu (2002) have used companies' age to capture its life cycle phase. Very few researchers investigate the direct relationship between the firm's age and dividend policy.

Mostly researchers have used the proxy of the firm's age to capture growth and investment opportunities. Afza and Mirza (2011) have found non-linear relationship between age and dividend payouts of corporations. De Angelo and Stulz (2006) have tested the life cycle theory of dividend by using the proxy of retained earnings to total assets. It is stated that firms with high retained earnings to total asset ratio are more mature with more profits and so pay more dividends. Their results support the life cycle theory of dividends and show positive significant relationship between dividend and retained earnings to total assets.

## 3. METHODOLOGY AND DATA

### 3.1. Model Specification

#### 3.1.1. *Lintner Partial Adjustment Model*

John Lintner in 1956 analysed important determinants of dividend payout. His is a fundamental model that discusses important determinants of corporate dividend decisions. Lintner has surveyed corporate Chief Executive Officers and Chief Financial Officers. He has found that shareholders prefer smoothened dividend income and managers believe that stable dividends reduce investors' negative reactions. He has concluded that earnings are the most significant determinants of any change in dividends and reported that majority of managers develop long term payout ratio targets and use periodical partial adjustments to reach target levels. In his interview of 28 management teams he has announced target payout ratio of 50 percent. The Lintner model helps to explain 85 percent of dividend changes in his sample of companies.

Lintner's survey is summarised by Dorsman, *et al.* (1999) in four "stylised facts". First, that firm has long term target dividend payout ratios; second, managers give more importance to dividend changes than to absolute levels; third, managers tend to smooth dividends so that a temporary change in earnings does not affect dividend payments over the short term and finally, managers are reluctant to cut dividends. To explain the change in dividends each year, Lintner developed a model. The assumption of this model is that managers will try to pay an amount of dividend that is a most favourable percentage of the profit made, given by the Equation (1):

$$D^*_{it} = \alpha_i E_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where $D_{it}^*$ is the target level dividend for fund $i$ year $t$, $\alpha_i$ is the optimal amount of dividend as a percentage of the profit for fund $i$. $E_{it}$ is the profit company $i$ made in year $t$. The value of $\alpha$ lies between 0 and 1 since companies usually won't pay more dividends than their profits. When the profit changes the actual amount of dividend paid differs from the optimal amount that follows out of (1). To compensate for this difference the company will gradually adjust the

dividends, as seen in the next Equation (2) called the Lintner full adjustment model:

$$D_{it} - D_{i(t-1)} = C_i\left(D_{it}^{*} - D_{i(t-1)}\right) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Where, *c* is Velocity at which a company adjusts the dividend that lies between 0 and 1.

$$D_{it} - D_{i(t-1)} = a_i + C_i\left(D_{it}^{*} - D_{i(t-1)}\right) + u_{it} \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

Where $D^{*}_{it}$ is the desired dividend payment during period 't', $D_{it}$ is actual dividend payment during period '*t*', $\alpha_i$ is Target payout ratio, $E_{it}$ is earnings of firm during period '*t*', $a_i$ is a constant related to dividend growth, $C_i$ is partial adjustment factor, $u_{it}$ is error term. Positive value of constant '*a***'** shows that firms avoid dividend cuts and try to increase dividend paying ability at a steady rate.

This model can further be simplified in the form of a multiple regression equation

$$D_{it} - D_{i(t-1)} = a_i + C_i\left(D_{it}^{*} - D_{i(t-1)}\right) + u_{it} \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

$$D_{it} - D_{i(t-1)} = a_i + C_i\left(\alpha_i E_{it} - D_{i(t-1)}\right) + u_{it} \quad \ldots \quad \ldots \quad (5)$$

$$D_{it} = a_i + \alpha_i C_i E_{it} + (1 - C_i) D_{i(t-1)} + u_{it} \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

The Lintner model provides three important conclusions: (1) Stable dividends with steady increase whenever possible, (2) Set a suitable target payout ratio, (3) If possible, avert dividend cuts. Volatility of net income, managers' attitude towards future possibilities and importance given to stable dividend rates are factors that affect the reaction coefficient 'c'. Corporations with stable net income are more likely to select a high reaction coefficient and instantly respond to variations in net income. Firms with large changes in their net income choose their reaction coefficient on the basis of the value they attach to stable dividend rates and their willingness to maintain this rate. Corporations interested in dividend stability have to choose low reaction coefficients.

### 3.1.2. *Lintner Model and Dividend Stability Theory*

A steady and certain dividend policy is considered to be an important element of company policies. Reduction in dividend is identical to news that the company is in financial trouble. Directors and managers choose their dividend payout polices very carefully, dividends are lowered only if they have no other solution and they will increase dividends only if they believe they can maintain this payout ratio. The market quickly responds when a firm declares larger than expected dividend or unpredictably declares a dividend cut. To test the stability in dividend policy the above model can be modified as:

$$DPS_{it} = \alpha_{it} + \beta_1 EPS_{it} + \beta_2 DPS_{it-1} \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

Where $DPS_{it}$ is dividend per share during period *t*, $EPS_{it}$ is earning per share during period *t*, α, $\beta_1$ and $\beta_2$ is the regression coefficient of dividend per share during period *t*–1 i.e. (1–*c*) and c is the adjustment factor. This implies α*i* is target payout ratio which is $\beta_1/(1-\beta_2)$. The actual changes in dividends correspond to expected changes if α has zero value and $C_i$ is 1. On the contrary when $C_i$ is 0 no change in dividend policy can be observed towards expected levels. Corporations adjust their dividend policies gradually with changes in the level of earnings which shows that the speed of adjustment coefficient lies between 0 and 1. Furthermore, the positive value of constant α shows the management avoids dividend cuts.

### 3.1.3. *Signalling Theory*

For assessing the significance of the signalling theory following Raei, *et al.* (2012), three models are tested using three proxies of signalling one by one and taking size of the firm and leverage as the control variables. The following model explains the relationship between dividend and return:

$$Div_{it} = \alpha + \beta_1 SIGNAL_{it} + \beta_2 SIZE_{it} + \beta_3 LEVERAGE_{it} + \beta_4 DY_{i(t-1)} + \varepsilon_{it} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (8)$$

The three proxies used for signalling (SIGNAL) by the firms are: returns, performance and earnings. The variables used are annual returns during the year *t*; for performance: ROA (return on asset) for year *t*, MB (market to book value of equity) for period *t*; for earnings: NI (net income) for period *t*; Div for total amount of dividends for year *t*; for SIZE: natural logarithm of total assets for year *t*.

### 3.1.4. *Agency Cost Theory*

Dividends are used as a device for reducing agency costs [Rozeff (1982)]. Therefore firms prefer to distribute cash resources to shareholders. In this study three proxies are used for the agency theory—free cash flow (FCF), insider ownership (MSO) and collateral capacity (Lnfix). These are also used by Chen and Dhiensiri (2009). Two control variables, sales growth (SG) and return on asset (ROA) are used for estimation. The firm size is also used by Llyod, *et al.* (1985), Holder, *et al.* (1998) and both have showed positive relation with dividend. Rozeff (1982), Depaul (2005) and Al-Malkawi (2007) have also used insider ownership and have found negative relation with dividends. In the third case collateral capacity is used as a proxy of agency cost following Bardley, *et al.* (1984), Mollah, *et al*. (2000) and Alli, *et al*. (1993) and they conclude that firms with more fixed assets are more likely to pay more dividends. Increase in fixed asset positively affects the dividend policy according to Chen and Dhiensiri (2009). The following model tests the agency cost theory:

$$Div_{it} = \alpha + \beta_1 Agency_{it} + \beta_2 SG_{it} + \beta_3 ROA_{it} + \beta_4 DY_{i(t-1)} + \epsilon_{it} \quad (9)$$

Finally all three proxy variables are used collectively in one mode with the control variables.

### 3.1.5. *Transaction and Residual Cost Theory*

The transaction cost theory also favours the firm decision of paying dividends. The transaction cost associated with cashing in the dividend is low for small investors as compared to transaction cost linked with selling a part of the share [Allen and Michaely (2002)]. Low transaction cost of equity or debt financing encourages firms to pay more dividends. The firm's beta, size and growth are used as a proxy variable suggested by Chen and Dhiensiri (2009) for testing transaction and residual theory with two control variables, profit on net income and earning per share.

Riskier firms pay low dividend and therefore have low dividend yields. The firms with high financial and operating leverage will choose lower dividend payout policy [Rozeff (1982)]. Firm size is added by Lloyet, *et al.* (1985) in Rozeff's model (1982). Higgins (1981) and Aivazianet, *et al.* (2003) state large firms have easy access to capital markets and can efficiently produce external funds, so they pay more dividends. Naceure, *et al.* (2006), Belans, *et al.* (2007) and Jenog (2008) show positive relation with growth and dividend yield. Rozeff (1982), Lloydet, *et al.* (1985), Collins, *et al.* (1996) show negative relation between growth and dividend payouts. Following is the model estimated to test transaction cost theory:

$$Div_{it} = \alpha + \beta_1 Transaction_{it} + \beta_2 NI_{it} + \beta_3 EPS_{it} + \beta_4 DY_{i(t-1)} + \varepsilon_{it} \quad (9)$$

Finally, all three proxy variables used in the above equations are estimated collectively in this model. Where net income (NI) to estimated transaction cost, and earning per share(EPS) are used as a control variables. Lagged dividend yield ($DY_{t-1}$) helps to remove serial auto correlation.

### 3.1.6. *Life Cycle Theory of Dividends*

The life cycle and free cash flow hypothesis are tested by Thanatawee (2011) and Afza and Mirza (2011) who have used these models: First, the present study separately estimates all three proxy variables of firm age (AGE), market to book value (MB) and price earning ratio (P/E). These are used to capture life cycle phase of firms. Net income (NI) and leverage (LEV) are used as control variables.

$$Div_{it} = \alpha + \beta_1 LIFECYCLE_{it} + \beta_2 NI_{it} + \beta_3 LEVERAGE_{it} + \beta_4 DY_{i(t-1)} + \varepsilon_{it} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (10)$$

Life cycle and free cash flow hypotheses are together estimated with the help of following model for robustness check.

$$Div_{it} = \alpha + \beta_1 FCF_{it} + \beta_2 ROA_{it} + \beta_3 MB_{it} + \beta_4 P/E_{it} + \beta_5 Leverage_{it} + \beta_6 DY_{t-1} + \varepsilon_{it} \quad (4.1.6e)$$

### 3.2. Econometric Modelling

As this study uses the information for 138 firms over the period of 2003 to 2011 to test the dividend theories, panel data estimation technique is suitable for this purpose. Empirical researches on dividend behaviour possibly encounter two sources of discrepancies, missing variables and endogeneity biases. The generalised method of moment GMM estimator which deals with changes of dividend policy and helps to correct the problem of omitted variables and endogeneity biases.

When panel data is used, one faces the question whether the individual effect is taken as common, fixed or random factor. To compare the common effect and fixed effect models the F test is used. For that purpose two models are estimated separately: the common effect model in which the constant terms are all equal and the fixed effect model in which the intercepts are different. Then the F test is applied to check the null hypothesis that there is no difference in common effect model and fixed effect model.

The generalised method of the moment model suggested by Arellano and Bond(1991)and modified by Blunder and Bond (1998) is used as the estimation technique. Correia da Silva, *et al.* (2004) and Georgen, *et al.* (2005) have also used this method to examine dividends' behaviour. GMM estimators are consistent under two conditions. First, the instruments should be valid and second, the error terms should not be serially correlated. Arellano and Bond (1991) have suggested two tests to deal with this issue. The first test is a Sargen test of over identifying restrictions. It checks the overall validity of the instrumental variables by examining the sample analog of the moments conditions. Its null hypothesis is that instruments are valid. The second test checks whether the error terms are serially correlated.

### 3.3. Data and Sample Selection

The present study tests the significance of different dividend theories in case of Pakistani Manufacturing firms listed on KSE. The data employed is derived from Balance Sheet Analysis of KSE listed firms published by State Bank of Pakistan and *Business Recorder*. The time period is from 2003 to 2011. The data includes top sectors of the manufacturing industry like Textile, Sugar, Food and Beverages, Automobiles, Paper and Board, Oil and Gas etc. The variables used in this study are briefly discussed in the Table reported in the Appendix.

## 4. EMPIRICAL RESULTS

The empirical significance of different dividend theories is tested in this study by using data of 138 manufacturing firms listed at KSE from the period 2003-2011.The empirical result discussion starts with summary statistics of the data. After that regression results are presented.

### 4.1. Summary Statistics of Data

Table A2 in Appendix shows descriptive statistics of the dependent variables with all of the independent variables from 2003-2011. Analysis shows that on average dividend yield is 3 percent, the mean value of earning per share is 10.56. Leverage shows average value of 171.87 which concludes that firm value debts in handling financial and economic affairs of its assets. The mean value of net earnings is 555.935 which is positively skewed. The sales growth has average of 8 percent. The size is measured by the log of total assets and the log of market capitalisation and their mean values are 7.78 and 3.47 respectively, which show that sample firms mostly invest more in their assets. The average value of return on asset ROA is 7.59 and it is negatively skewed. Beta shows average value of 0.282 and it lies between –1.3523 to 1.6697 and is also negatively skewed. The collateral assets have the mean value of 0.704. Free cash flow shows a mean value of 13.7 percent and insider ownership 18.63. Free cash flow and insider ownership both are positively skewed. The age and price earning ratio show average value of 29.87 and 6.76 respectively.

The correlation matrix presents the relationship between dependent variable dividend yield and all other explanatory variables. The results are reported in Appendix Table A3 (a, b). Table A3 (a) shows the association between dependent variable dividend yield (DY) and Lintner model, stability model and signalling theory variables. Whereas Table A3 (b) shows the relationship between dependent variable (DY) and agency cost and transaction cost theory variables. Table A3 (a) shows positive relationship between dividend yield (DY) and net earnings (NI). Dividend per share (DPS) and earning per share (EPS) are also positively related with dividend yield. Signalling theory's explanatory variables, i.e., return (RETURN), return on asset (ROA) and market to book value (MB) show positive association with dividend yield. Table A3 (b) shows the relationship of agency cost and transaction cost theory variables with dividend yield. Results show collateral capacity (Lnfix), free cash flow (FCF), sales growth (SG) and size (SIZEA) are positively related with dividend yield, whereas insider ownership (MSO), beta (BETA) and leverage (LEV) are negatively associated with dividend yield.

### 4.2. Empirical Results of Regression Analysis

In this section the results on panel data estimation are discussed using GMM estimation technique that deals with endogenity problem, and lag explanatory variables are used as instruments. The probability value of

probability J-statistic shows the instruments are valid in all the models. The common effect model, fixed effect model and random effect model are estimated. The $F^*$ test supports the fixed effect model compared to common effect model and among fixed effect and random effect models the Haussman test's p value indicates that the random effect model better describes the data.

### 4.2.1. *Lintner Model*

The estimation results of Lintner's partial adjustment model are reported in Table 1. The random effect model better describes the relationship as shown by Hausman test. The results of random effect model show that net income and lagged dividend are positive and highly significant indicating that firms follow a smooth dividend policy. Another useful statistic is the target payout ratio (β/1-α) in the partial adjustment model; the random effect model shows the target payout ratio which is 53 percent with speed of adjustment at 43 percent. Lintner (1956) has suggested 50 percent target payout ratio and 30 percent speed of adjustment.

Table 1

*Results of Lintner Model*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| NI | 0.23*(2.44) | 0.08(0.48) | 0.23*(2.54) |
| $D_{t-1}$ | 0.57*(19.8) | 0.30*(9.01) | 0.57*(20.63) |
| Constant | 0.012*(8.26) | 0.02*11.64) | 0.012*(8.58) |
| Adjusted R-squared | 30.7% | 35.92% | 30.7% |
| Sargantest (p-value) | 0.4 | 0.97 | 0.4 |
| Hausman Test | | | 0.60 |
| Durbin Watson(p-value) | 2.1 | 2.0 | 2.1 |
| The speed of adjustment ($1-a_i$) | 43% | 70% | 43% |
| The target payout ratio ($\beta/(1-a_i)$) | 53% | 11.42% | 53% |
| Firms | 138 | 138 | 138 |
| Observations | 966 | 966 | 966 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

### 4.2.2. *Fama and Babiak Version for Testing Dividend Stability*

The dividend stability estimation results are given in Table 2, where following Fama and Babiak (1968) dividend per share is used as dependent variable and earning per share of current period and lagged term dividend per share as explanatory variables. As Hausman test suggests the Random effect model is better in explaining the model and results indicate that earning per share and lagged dividend per share are positively related with dividend per

share and highly significant. The target payout ratio at 25 percent is lower than Lintner's suggested target payout ratio of 50 percent and the speed of adjustment is 32 percent. The high speed of adjustment coupled with low target payout ratio shows absence of dividend stability.

Table 2

*Results of Dividend Stability*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| EPS | 0.08*(13.07) | 0.07*(10.38) | 0.08*(14.77) |
| $DPS_{t-1}$ | 0.68*(31.26) | 0.27*(8.90) | 0.68*(35.35) |
| Constant | 0.30*(2.07) | 1.98*(12.11) | 0.30*(2.35) |
| Adjusted R-squared | 70.92% | 76.90% | 70.92% |
| Hausman test(p-value) | | | 0.49 |
| Sargantest (p-value) | 0.124 | 0.061 | 0.115 |
| Durbin Watson(p-value) | 2.3 | 2.2 | 2.3 |
| The speed of adjustment $(1-a_i)$ | 32% | 73% | 32% |
| The target payout ratio $(\beta/(1-a_i))$ | 25% | 9% | 25% |
| Firms | 996 | 996 | 996 |
| Observations | 138 | 138 | 138 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

Empirical studies provide different speed of adjustment and the target payout ratio. Fama and Babiak (1968) find average speed of adjustment nearly 0.37 for non-financial US firms. They have found the speed of adjustment a little greater than Lintner (1956) findings of 30 percent whereas the value of target payout ratio is almost near to Lintner's (1956) 50 percent suggested value. Behm and Zimmerman (1993) find speed of adjustment and target payout ratio for German listed firms. They conclude that speed of adjustment varies from 13 percent to 58 percent and target payout ratio ranging between 25 percent and 58 percent. Glen, *et al.* (1995) find the speed of adjustment and target payout ratio for Zimbabwe and Turkey. The speed of adjustment and target payout ratio for Zimbabwe is 40 percent and 30 percent respectively. For Turkey it is 90 percent and 40 percent respectively. Belanes, *et al*. (2007) find the speed of adjustment and target payout ratio for Tunisian listed firms. It lies between 23.66 percent to 96.59 percent and target payout ratio varies from 14 percent to 52.96 percent.

### 4.2.3. *Results of Signalling Theory*

The present study uses four variables as proxy of signal stock returns, return on asset, market to book value and net income. The size of the firm and leverage is used as control variables. In panel data estimation Hausman test suggests that random effect model best explains the relationship, therefore the results of random effect model are presented in this section.

First, model results show stock returns negatively and significantly affect dividends. Lie (2005) also finds negative market reaction to dividend declaration because market regards fall in dividend support as earning for management, not for investment. In second model the return on asset is used as a proxy of performance for testing signalling theory. Results show return on asset is positive and highly significantly related to dividend yield. This result is consistent with findings of Power, *et al.* (2007) Belans, *et al.* (2007) and varies from the results of Sawaminath, *et al.* (2002). In the third model MB (market to book value) is also used as a proxy variable for performance testing the signalling theory. The relationship between market to book value and dividend yield is positive is by using random effect model but insignificant. It shows dividends are not sensitive to market to book value. The results reject the hypothesis that there is relationship between market to book value and dividend policy. In the fourth model, the results of random effect model show net income is positive and significantly affects the firm's dividend policy. Kim and Ettredge (1992), Priestley and Garrett (2000), Bhattacharya (2003), Wilson, *et al.* (2006), Amidu and Abor (2006), Belans, *et al.* (2007) support the results. However, this result is different from the findings of Bhat and Pandey (2007), Kapoor and Anil (2008), as well as Jeong's (2008).

Table 3

*Results of Signalling Model*

| Regressors | Model 1 | Model 2 | Model 3 | Model 4 |
|---|---|---|---|---|
| Constant | –0.003(1.02) | –0.008(0.229) | –0.003(0.85) | 0.005**(1.91) |
| Return | –0.039**(1.98) | | | |
| ROA | | 0.04*(5.82) | | |
| MB | | | 0.08(0.96) | |
| NI | | | | 0.179**(1.92) |
| SIZE | 0.002*(4.75) | 0.0016*(3.30) | 0.0023*(4.47) | 0.002*(3.40) |
| Leverage | –0.008*** (1.63) | –0.004(0.91) | –0.009***(1.8) | –0.004(0.90) |
| $DY_{t-1}$ | 0.56*(21.73) | 0.51*(19.11) | 0.54*(19.02) | 0.54*(18.69) |
| Adjusted R-squared | 34.81% | 35.75% | 31.75% | 31.42% |
| Hausman test(pvalue) | 0.321 | 0.3228 | 0.321 | 0.32 |
| Sargantest(p-value) | 0.07 | 0.07 | 0.09 | 0.56 |
| Durbin Watson(p value) | 2.11 | 2.04 | 2.08 | 2.08 |
| Firms | 138 | 138 | 138 | 138 |
| Observations | 1104 | 1104 | 966 | 966 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

In all four models the large sized firms pay more dividends because they have easy access to capital markets, and able to generate more funds and therefore they distribute more dividends to shareholders. This view is supported by Osobov (2008), Hosami (2007), Aivazian (2003), Al-Twaijry (2007), Eriotis (2005), Ahmed and Javid (2009), Kuwari (2009), and Olantundun (2000).

Empirical research about relationship between leverage and dividend policy is mixed. Leverage and dividend payout are negatively related, may be because of debt agreements. Rozeff (1982) states that transaction cost can be reduced if high leverage firms pay low dividends. Al-Malkawi (2007) also supports their view and finds negative and significant relationship between leverage and dividend payout.

### 4. 2.4. Results of Agency Cost Theory

To test the significance of agency cost model three proxy variables have been used. The study tests these proxy variables separately with two control variables in each model. Lagged dividend is used to deal with problem serial of auto correlation.

Table 4

*Results for Agency Cost Theory*

| Regressors | REM | REM | REM |
|---|---|---|---|
| FCF | 0.032*(2.32) | | |
| MSO | | 0.005(1.16) | |
| LNFIX | | | 0.016*(2.34) |
| SG | 0.015*(3.25) | 0.09*(2.48) | 0.09*(2.31) |
| ROA | 0.02(1.55) | 0.05*(6.87) | 0.05*(6.47) |
| $DY_{t-1}$ | 0.53*(16.25) | 0.5*(17.76) | 0.48*(16.36) |
| Constant | 0.09*(5.37) | 0.09*(5.51) | -0.017(0.314) |
| Adjusted R-squared | 38.25% | 34.12% | 33.64% |
| Hausman test(p-value) | 0.21 | 0.21 | 0.21 |
| Sargantest(p-value) | 0.107 | 0.138 | 0.110 |
| Durbin Watson(p-value) | 1.99 | 2.02 | 2.03 |
| Firms | 138 | 138 | 138 |
| Observations | 690 | 966 | 924 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

Table 4 reports only the results of random effect model as Huasman test supports these results. First, this study has estimated free cash flow (FCF) with two control variables which are sales growth and return on asset. The free cash flow is positively related with dividend yield and is highly significant under the random effect model. Free cash flow comes to firms for distribution to shareholders as dividends. It is also used for debt payment and lowers the chances of these funds being invested in unfeasible projects [Jensen (1986), Amidu and Abor (2006)]. The growth return on asset and lagged dividend are statistically significant and also positively related with dividend yield. Sales growth is used as a proxy in signalling theory. The result indicates that high

growth firms are more likely to pay high dividends. Increase in sales of the company's products is likely to raise its profits and provide more cash for its use and operational activities. So firms have sufficient amount of cash to distribute to shareholders as dividend. These results are supported by findings of Naceure, *et al.* (2006), Belans, *et al.* (2007), Jeong (2008) and deviate from the findings of D'Souza (1999), Amidu and Abor (2006).

In the second model of agency cost theory, this study has estimated the insider ownership (MSO) with two control variables—growth and return on asset. The result shows that insider ownership is positively associated with dividend yield but is insignificant in case of Pakistani markets. Non-financial firms listed on KSE with more concentrated ownership pay more dividends. Farina and Fronda (2005), Amidu and Abor (2006) and Mehar (2005) also find similar results. Growth and return on assets are positively related with dividend yield and are highly significant.

In the third model of agency cost theory this study has estimated the natural log of fixed asset (Lnfix) with two control variables—growth and return on asset. The collateral capacity is positively related with dividend yield and highly significant. Firms with more fixed assets are able to pay more dividends because it is easy for them to raise funds than from those firms that have few fixed assets. Finally, all three proxy variables for agency cost free cash flow, insider ownership and collateral capacity are estimated collectively and two control variables, growth and return on asset. The results remain the same. Lagged dividend is also positively related with dividend yield and is significant at 1 percent significance level.

Table 4(a)

*Results of Combined Model of Agency Cost Theory*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| FCF | 0.05*(5.72) | 0.054*(4.95) | 0.05*(6.03) |
| MSO | 0.00814(1.28) | 0.003*(2.05) | 0.00814(1.35) |
| LNFIX | 0.018*(2.06) | 0.06*(3.09) | 0.018*(2.17) |
| SG | 0.015*(3.04) | 0.008*(2.07) | 0.015*(3.20) |
| $DY_{t-1}$ | 0.52*(14.60) | 0.30*(9.58) | 0.52*(15.38) |
| Constant | –0.06(0.841) | –0.04*(2.57) | –0.06(0.886) |
| Adjusted R-squared | 37.32% | 38.10% | 37.32% |
| Hausman test(p-value) | | | 0.27 |
| Sargantest(p-value) | 0.106 | 0.187 | 0.106 |
| Durbin Watson(p-value) | 2.0 | 2.0 | 2.0 |
| Firms | 136 | 137 | 136 |
| Observations | 657 | 1064 | 657 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

### 4.2.5. *Results of Transaction Cost and Residual Theory*

The significance of transaction and residual theory is tested with three proxy variables. This study has tested these proxy variables separately with two control variables in each model. Lagged dividend is used to deal with the problem serial of auto correlation.

Table 5

*Results for Transaction Cost and Residual Theory*

| Regressors | REM | REM | REM |
|---|---|---|---|
| Beta | –0.039(0.172) | | |
| SIZEA | | 0.017* (3.27) | |
| SG | | | 0.011*(3.01) |
| NI | 0.177**(1.90) | 0.12(1.28) | 0.168***(1.83) |
| EPS | 0.02*(4.73) | 0.02*(4.11) | 0.0002*(4.35) |
| $DY_{t-1}$ | 0.54*(19.19) | 0.52*(18.34) | 0.53*(19.09) |
| Constant | 0.01*(6.85) | –0.01(0.468) | 0.01*(6.80) |
| Adjusted R-squared | 32.10% | 32.80% | 32.69% |
| Hausman test(p-value) | 0.17 | 0.11 | 0.10 |
| Sargantest (p-value) | 0.69 | 0.86 | 0.71 |
| Durbin Watson(p-value) | 2.07 | 2.05 | 2.06 |
| Firms | 138 | 138 | 138 |
| Observations | 966 | 966 | 966 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

The Hausman test suggests that the random effect model is better, therefore only results of random effect model are reported in Table 5. In the first model the study has used proxy variable beta with two control variables i.e. net income and earning per share. Beta is negatively related with dividend yield but insignificant. Rozeff (1982) has also concluded that other things remaining equal, expensive external financing leads to high beta. Therefore such firms choose lower dividend payout policies. In the second model of transaction cost and residual theory, this study has estimated size with two control variables—net income and earning per share. Firm size is positively related with dividend yield and significant at 1 percent level. Higgins (1981), Aivazian, *et al*. (2003) and Sawiciki (2005) also find positive relation with dividends because large firms can generate external finance easily and secondly large firms may face the issue of ownership dispersion. Therefore, increase in dividend payouts helps to reduce this problem too. In the third model for transaction and residual theory this study has estimated sales growth with the same two control variables i.e., net income and earning per share. The sales growth is positively and

significantly related with dividend yield. Increase in sales of firm's products increases the firm's profitability and therefore such firms pay more dividends [Imran Kashif (2011)]. Firms with high growth rate pay more dividends as concluded by Naceure, *et al.* (2006), Belans, *et al.* (2007) and Jeong (2008).

Both control variables, net income and earning per share, are positively related with dividend yield in all the three models. Net earnings as a control variable is used by Pani (2008), Adesola and Okwong (2009), Ahmed and Javid (2009) and Al-Kuwari (2010) in their study. Companies' profit positively affects the dividend paying capacity of the management. Shareholders give importance to firm profits because this profit indicates good future prospects of the firm. Baskin (1989), Allen and Rachim (1996), Liu and Hu (2005), Adefila, Oladipo and Adeoti (2004), Adesola and Okwong (2009) and Chen, Huang, and Cheng (2009) find earning per share positively affects share price and results in the firm paying more dividends. For testing the significance of transaction and residual theory the present study has estimated combined model with three proxy variables—beta, size and growth and similar results are obtained as reported in Table 5 (a).

Table 5(a)

*Results of Overall Transaction and Residual Theory*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| Beta | –0.013(0.65) | 0.449(0.019) | –0.013(0.667) |
| SIZEA | 0.017*(3.47) | 0.027*(2.63) | 0.017*(3.55) |
| SG | 0.01*(2.80) | 0.0082*(2.15) | 0.010*(2.87) |
| EPS | 0.01*(2.99) | 0.019*(2.73) | 0.015*(3.06) |
| NI | 0.114(1.25) | –0.103(0.66) | 0.114(1.28) |
| $DY_{t-1}$ | 0.53*(20.06) | 0.32*(10.57) | 0.53*(20.53) |
| Constant | –0.02(0.718) | –0.04(0.49) | –0.02(0.735) |
| Adjusted R-squared | 34.08% | 37.82% | 34.88% |
| Hausman test(p-value) | | | 0.23 |
| Sargantest (p-value) | 0.29 | 0.45 | 0.29 |
| Durbin Watson(p-value) | 2.08 | 2.04 | 2.08 |
| Firms | 138 | 138 | 138 |
| Observations | 1104 | 1104 | 1104 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

### 4.2.6. *Results of Life Cycle Theory of Dividends*

The life cycle theory of dividend is tested with three proxy variables, net income (NI) and leverage (LEV) as control variables in each model and lagged dividend to deal with the problem of serial auto correlation. (Table 6).

Table 6

*Results of Life Cycle Theory of Dividends*

| Regressors | REM | REM | REM |
|---|---|---|---|
| AGE | 0.0061 (0.725) | | |
| MB | | 0.0012 (1.40) | |
| P/E | | | 0.0023 (0.38) |
| NI | 0.228* (2.46) | 0.209* (2.25) | 0.225* (2.40) |
| LEV | –0.005 (1.02) | –0.005 (0.90) | –0.005 (1.01) |
| $DY_{t-1}$ | 0.57* (20.42) | 0.56* (19.96) | 0.57* (20.50) |
| Constant | 0.011* (3.83) | 0.012* (6.68) | 0.013* (7.41) |
| Adjusted R-squared | 30.8% | 30.7% | 30.8% |
| Hausman test (p-value) | 0.21 | 0.22 | 0.22 |
| Sargantest(p-value) | 0.75 | 0.05 | 0.64 |
| Durbin Watson(p-value) | 2.1 | 2.1 | 2.1 |
| Firms | 138 | 138 | 138 |
| Observations | 960 | 966 | 957 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

Table 6 (a)

*Overall Model for Life Cycle Theory of Dividends*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| AGE | 0.062 (0.70) | –0.002 (0.16) | 0.006 (0.74) |
| MB | 0.001 (1.34) | –0.006* (4.42) | 0.001 (1.41) |
| P/E | 0.0017 (0.27) | –0.002 (0.38) | 0.002 (0.28) |
| NI | 0.202* (2.05) | 0.114 (0.66) | 0.202* (2.16) |
| LEV | –0.0068 (1.17) | –0.0017 (0.23) | -0.0068 (1.23) |
| $DY_{t-1}$ | 0.56*(18.78) | 0.30* (8.9) | 0.56* (19.72) |
| Constant | 0.012*(3.28) | 0.028* (5.58) | 0.012* (3.45) |
| Adjusted R-squared | 30.8% | 37.2% | 30.8% |
| Hausman test (p-value) | | | 0.18 |
| Sargantest (p-value) | 0.17 | 0.05 | 0.17 |
| Durbin Watson(p-value) | 2.1 | 2.1 | 2.1 |
| Firms | 138 | 138 | 138 |
| Observations | 957 | 957 | 957 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

The random effect model fits the data well as shown by the Hausman Test. The results of the random effect model are presented in Table 6(a). In the first model this study has used firm age (AGE) as a proxy variable to capture firm life cycle phase with two control variables, net income and Leverage.

Results show age is insignificant but positively related with dividend yield. Firm maturity does not affect firm ability of paying dividend of non-financial firms listed on Karachi stock exchange. In the second and third model, market to book value (MB) and price earning ratio (P/E) are separately estimated with the same two control variables. The results show market to book value (MB) and price earning ratio (P/E) that are insignificant and do not support the firm life cycle theory in case of Pakistani manufacturing sector. Net income and lagged dividend both are significant positively related to dividend yield in all three models. Now the present study will estimate all three proxy variables—firm age (AGE), market to book value (MB) and price earning ratio (P/E) in one model and test the significance of firm life cycle theory of dividends. As reported in Table 6 (a) the model yields the same results.

Another model is also used to test the firm life cycle theory of dividends and free cash flow hypothesis. The price earning ratio (P/E) and market to book value (MB) are used to capture the investment opportunities available to the firm and free cash flow (FCF) and return on asset (ROA) are applied to test the hypothesis. (Table 6b).

Table 6(b)

*Results of Life Cycle and Free Cash Flow Hypothesis*

| Regressors | CEM | FEM | REM |
|---|---|---|---|
| FCF | 0.028* (2.05) | 0.034* (2.38) | 0.028* (2.15) |
| ROA | 0.03* (2.15) | 0.04* (2.42) | 0.03* (2.25) |
| MB | –0.01 (1.59) | –0.06* (5.42) | –0.01 (1.59) |
| P/E | –0.02 (0.38) | –0.02 (0.26) | –0.023 (0.39) |
| LEV | –0.06 (0.11) | –0.04 (0.30) | 0.06 (0.12) |
| $DY_{t-1}$ | 0.50* (16.8) | 0.30* (9.68) | 0.50* (17.63) |
| Constant | 0.011* (5.68) | 0.019* (8.02) | 0.011* (5.78) |
| Adjusted R-squared | 34.17% | 39.1% | 34.17% |
| Hausman test (p-value) | | | 0.11 |
| Sargantest (p-value) | 0.11 | 0.29 | 0.11 |
| Durbin Watson(p-value) | 2.02 | 2.0 | 2.02 |
| Firms | 138 | 138 | 138 |
| Observations | 957 | 1094 | 957 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

Table 6(b) shows the results of the common effect model, fixed effect model and random effect model for comparison. The probability value of Hausman test is (0.000) which supports the results of the random effect model. Free cash flow is statically significant and positively related with dividend yield. Large firms have more free cash flow and dividends are a help to reduce agency cost problems that

arise due to large cash flows and also support the free cash flow hypotheses. The return on assets is used as a proxy variable for firm profitability. The results show that a firm with high return on assets is more likely to pay more dividends. It supports the free cash flow hypothesis which exhibits state positive relationship between firm profitability and dividend yield. When firms are able to generate more profits and have free cash flow in their reserves, then firms distribute some portion of their earnings to shareholders as dividends. Although the price earning ratio and market to book value are negatively related with dividend but insignificantly, therefore they fail to support the firm life cycle theory of dividends.

### 4.3. Industrial Effect

Now we examine the dividend pattern of different manufacturing industries of Pakistan. Industry specific effect of dividend policy is estimated by adding industry dummies into the basic Lintner (1956) partial adjusted model. Keeping sugar industry as the base industry we evaluate the pattern of dividends of other industries. The dummies for automobiles, cable, engineering, cement, chemical and pharmaceutical, food, miscellaneous, oil and refinery, paper and board and textile are included. The results indicate that lagged dividend is significantly and positively related with the current year's dividend yield. Therefore lagged dividend plays an important role in determining dividend policy of all industries. In the random effect model, chemical and pharmaceutical, oil and refinery, paper and board and textile are significant at 1 percent level of significance which indicates that these industries perform differently than the sugar industry in paying dividends. Furthermore industry dummies with negative coefficients pay fewer dividends than the sugar industry. (Table 7).

Table7

*Results of Lintner Model with Industrial Effect*

| Regressors | CEM | REM |
|---|---|---|
| NI | –0.112(0.321) | –0.122(0.498) |
| $DY_{t-1}$ | 0.50* (7.69) | 0.40* (9.562) |
| DAUTO | 0.005(0.04) | –0.346(1.743) |
| DCABELENG | 0.044(0.673) | 0.0273(0.246) |
| DCEM | –0.0007(0.010) | –0.1906(1.529) |
| DCHEM | 0.124(1.45) | 0.244* (2.092) |
| DFOOD | 0.118*** (1.817) | 0.1715(1.523) |
| DMISCL | –0.006(0.138) | –0.108(1.514) |
| DOILREF | 0.06(0.764) | 0.300* (2.748) |
| DPAPER | 0.134(1.30) | 0.387* (2.563) |
| DTEXTILE | 0.063(1.016) | 0.1979* (2.32) |
| Constant | –0.042(0.886) | –0.079(1.101) |
| Sargantest(p-value) | 0.06 | 0.26 |
| Durbin Watson(p-value) | 2.0 | 2.1 |
| Firms | 138 | 138 |
| Observations | 966 | 966 |

*Note:* The values in the parenthesis are t-values. The * indicates significance at 1 percent, ** significance at 5 percent and *** indicates significance at 10 percent.

## 5. CONCLUSION

Dividend policy is a controversial issue in corporate finance. There are numerous theories about dividend but this study focuses on some important theories like the signalling, agency transaction and residual, life cycle and stability theories and how they affect the corporate dividend policy of Pakistan's manufacturing sector firms listed on the Karachi Stock Exchange (KSE) for the period 2003 to 2012. This study considers market imperfections such as asymmetric information, agency and transaction costs of issuing external finance and how these capital market deficiencies affect the dividend policy of corporations. The panel data estimation technique suggested by Blunder and Bond (1995) is used to deal with endogeneity. The random effect model is supported by Hausman Test.

In the first part of the study the Lintner (1956) model is estimated using three techniques for non-financial firms.. The results show that dividend yield has a positive relationship with last year's dividend yield and current year earnings. It is concluded that manufacturing sector firms consider last year's dividend payout as an important factor. Further, earnings are also positively related with dividend yield which indicates that more profitable firms are able to pay more dividends without disturbing their financial obligations.

Using the Fama and Babiak (1968) model we find that the variation in the speed of adjustment ranges from 32 percent to 73 percent, which is very high. We conclude that non-financial firms follow a smooth dividend policy. This speed of adjustment is higher than many developing countries. The target payout ratio is found ranging from 9 percent to 25 percent which is very low as compared to Lintner (1956). The high speed of adjustment coupled with low target payout ratio shows the absence of stability in dividend policies of Pakistani firms.

The evidence for signalling theory approach is established on the hypothesis that individual investors outside the firm have less information than the managers about the firm's prospective circumstances and they have the rationale to signal that information to the shareholders. This study has examined the signalling theory by using three important variables: returns, performance and earnings. The results show that returns are negatively and significantly related with dividend yield. Two other proxies, returns on assets and market to book value show that the former is significantly positively related and the latter positively related with dividend yield but it is not significant in case of Pakistani firms. Earnings are also significantly positively related with dividend yield. It shows that dividends signal information by two operating characteristics of firms, i.e. earnings and performance. Therefore the signalling theory is supported by these variables in case of Pakistan's manufacturing sector.

The present study also investigates the agency theory using insider ownership, free cash flow and collateral capacity to test whether dividends help

to reduce agency costs. It is concluded that chances of dividend would be higher if firm had large concentrated ownership. Free cash flow and collateral capacity are more useful tools to minimise agency costs. The positive relationship between collateral capacity and dividend yield shows that firms with more fixed assets pay more dividends. These results confirm that agency costs are reduced by paying divided.

This study has used beta, size and growth of the firm to evaluate whether dividends reduce transaction costs. The results show negative but insignificant relationship between beta and dividend yield. It is hypothesised that firms with high operating and financial leverage will choose to pay low dividends. Firm size and sales growth are more effective instruments to reduce transaction costs. The results support the transaction cost theory. Firm size is important in establishing dividend payout ratio of corporations. Large firms face low issuing cost for external finance because of economies of scale.

In case of life cycle theory it is found that firm maturity doesn't have any impact on dividend policy in case of Pakistani non-financial firms. Free cash flow and return on assets are used to test free cash flow hypothesis and results support this hypothesis indicating that when firms have more free cash flow managers choose to pay more dividends.

The conflicting results of the life cycle theory further confirm the signalling theory which is also relevant in the above analysis.

To sum up, the results indicate that managements of non-financial firms follow smooth but not stable dividend policy and are reluctant to change their dividend policy. The Fama and Babiak (1968) model shows the speed of adjustment ranges from 32 percent–73 percent and the target payout ratio varies from 9 percent–25 percent. This shows dividends signal outside investors that the firm is running on profitable lines and generating sufficient cash flow. This result agrees with earlier findings of Bhattacharya (1979), Miller and Rock (1985), Healy and Palepu (1988) Michaely, Thaler, and Womack (1995), Benartzi, Michaely, and Thaler (1997), De Angelo, *et al*. (2000), Fukuda (2000), Baker and Powel (2000), Harda and Nguyen (2005), Raei, Moradi, and Eskandar (2012). That dividends reduce agency cost is supported by earlier findings of Grossman and Hart (1980), Rozeff (1982), Easterbrook (1984), and Jensen (1986), Crutchley and Hansen (1989), Moh'd, Perry, and Rimbey (1995), Holder, Langrehr and Hexter (1998) Brav, *et al.* (2003), Harada and Nguyen (2006), Naceur, *et al.* (2006), Chen and Dhiensiri (2009), Harjito (2009). The following studies support the view that dividends help to reduce transaction cost associated with issuance of external finance: Higgins (1981), Rozzeff (1982), Lloyd, *et al.*(1985),Williamson (1988, 1996), Eddy and Seifert (1988), Jensen, *et al*. (1992), Redding (1997), Fama and French (2001), Grullon, *et al.* (2002), and Aivazian, *et al.* (2003), Mohammed (2007), Imran Kashif (2011).

## APPENDIX

**Table A: Variables Description**

| Variables | Theories | Definitions | Expected Sign |
|---|---|---|---|
| EPS | Stability theory | EPS=Net Income/No of outstanding shares | + |
| DPS | | DPS=Total amount of dividend/No of outstanding shares | + |
| RETURN | Signalling theory | RETURN=$(P_1–P_0)/P_0$ | – |
| ROA | | ROA=Net Income/Total assets | + |
| MB | | MB=Market price/Book value | + |
| NI | | NI=Profit before tax-Tax | + |
| LEVERAGE | | LEVERAGE=Total debt/Total equity | – |
| MSO | Agency theory | MSO=No of shares held by managers/No of outstanding shares | + |
| COL | | COL=Natural logarithm of fixed assets | + |
| FCF | | FCF=Free cash flow/Total assets | + |
| BETA | Transaction & Residual theory | BETA=Covariance of stock return with market return/Variance of market return | – |
| SG | | SG=Natural logarithm of firm sales | + |
| SIZEA | | SIZEA=Natural logarithm of firm total assets | + |
| AGE | Life cycle theory | AGE=listing date-2012 | + |
| P/E | | P/E ratio=Market Price/Earning per share | + |
| MB | | MB=Market price/Book value | + |

**Table A2: Descriptive Statistics**

| | Mean | Maximum | Minimum | STD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| DY | 0.030448 | 0.27 | 0 | 0.044052 | 2.147406 | 8.973003 |
| BETA | 0.2821 | 1.669737 | –1.3523 | 0.50276 | –0.11948 | 3.834465 |
| COL | 0.7047 | 2.726619 | 0 | 0.388847 | 0.591241 | 4.424634 |
| DPS | 3.758003 | 36.00429 | 0 | 6.971497 | 2.649673 | 9.951565 |
| EPS | 10.56279 | 127.9 | –98.4 | 21.90926 | 1.553322 | 9.077722 |
| FCF | 0.137015 | 0.958849 | –0.57028 | 0.182464 | 0.639857 | 5.643938 |
| GS | 0.084987 | 1 | –1.59202 | 0.286969 | –1.63761 | 9.66679 |
| LEV | 171.8789 | 1394 | –788 | 207.9705 | 0.953757 | 9.719735 |
| MB | 1.169835 | 7.370981 | –3.96846 | 1.322048 | 0.956238 | 5.722128 |
| MSO | 18.63883 | 98.24 | 0 | 23.20577 | 1.224346 | 3.71271 |
| NI | 559.1557 | 7903.100 | –3901.70 | 1390.946 | 2.337996 | 11.0367 |
| RETURN | 0.047662 | 2.993789 | –3.06347 | 0.572726 | –0.04089 | 6.087551 |
| ROA | 7.597641 | 68.8 | –50.4 | 15.46688 | –0.09964 | 6.088513 |
| SIZEA | 7.778394 | 12.50957 | –1.24419 | 2.299795 | –1.36267 | 6.189006 |
| SIZEM | 3.470216 | 7.709017 | –1.07881 | 1.597671 | –0.45921 | 2.952505 |
| AGE | 29.87540 | 60 | 6 | 13.78619 | 0.463008 | 2.145902 |
| P/E | 6.767300 | 113.3333 | –102.500 | 18.87655 | 0.229085 | 13.37563 |

**Table A3(a)**

**Correlation Matrix for Lintner Model, Stability Model and Signalling Theory**

| | DY | NI | EPS | DPS | RETURN | ROA | MB |
|---|---|---|---|---|---|---|---|
| DY | 1 | | | | | | |
| NI | 0.1504 | 1 | | | | | |
| EPS | 0.2553 | 0.1818 | 1 | | | | |
| DPS | 0.4942 | 0.2550 | 0.6271 | 1 | | | |
| RETURN | 0.0772 | 0.0256 | 0.1640 | 0.0986 | 1 | | |
| ROA | 0.3859 | 0.2766 | 0.5706 | 0.5189 | 0.2024 | 1 | |
| MB | 0.1822 | 0.1894 | 0.2431 | 0.3147 | 0.2254 | 0.4185 | 1 |

**Table 3A(b)**

**Correlation Matrix for Agency and Transaction Cost Theory**

| | DY | LNFIX | MSO | FCF | BETA | GS | SIZEA | LEV |
|---|---|---|---|---|---|---|---|---|
| DY | 1 | | | | | | | |
| LNFIX | 0.178 | 1 | | | | | | |
| MSO | –0.021 | –0.043 | 1 | | | | | |
| FCF | 0.3958 | 0.181 | –0.111 | 1 | | | | |
| BETA | –0.010 | 0.077 | –0.025 | 0.040 | 1 | | | |
| GS | 0.114 | 0.041 | –0.008 | 0.128 | –0.009 | 1 | | |
| SIZEA | 0.216 | 0.873 | –0.090 | 0.215 | 0.079 | 0.066 | 1 | |
| LEV | –0.082 | 0.072 | 0.083 | –0.158 | –0.025 | 0.016 | 0.094 | 1 |

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