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Exploring the Relationship Between Risk-Adjusted Stock Returns and Dividend Yields

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***Abstract*:** This study examines the association between dividend yield and stock returns of firms listed on Karachi Stock Exchange (KSE), adjusting the returns for risk using the Capital Asset Pricing Model (CAPM) and Fama and French (1993) three factor model. This research study will provide useful contribution to the existing knowledge base and to ascertain whether investors demand high before tax returns against high dividend paying stocks. The current study explored the time series difference in average returns across stocks having different dividend yield. To determine whether the higher dividend yield paying firms produces high risk-adjusted returns, the sample data of 125 non-financial firms listed on Pakistan Stock Exchange - PSX are classified into five portfolios/quintiles ranking from low dividend yield firm to high dividend yield firms for the period spanning over 2003-2012. The stock returns are risk-adjusted using Fama and French (1993) three factor model. The findings of the study show that there exists a positive relationship between dividend yield and raw return, of five dividend yield sorted portfolios/quintiles. But the relationship does not persist between dividend yield and portfolio returns after adjusting returns for risk factors namely, market risk premium, size premium and value premium. Moreover, it is also found that among the PSX listed firms, large size firms are the highest dividend paying firms. Furthermore, out of the three risk factors applied; only market risk factor captures and explains most of the variation in dividend yield portfolio returns obtained, applying both CAPM and Fama and French three factor model. This finding indicates the presence of market risk factor for dividend paying firms as it is significant while applying both the models. In other words, the other two premiums (size and value premium) are not priced by the investors. Thus, the results are not showing any sign of tax-effect in PSX stock market implying that investors do not require higher returns against tax penalty on dividend.

Keywords: Dividend yield effect, Risk-adjusted stock returns, Pakistan Stock Exchange, Tax-effect hypothesis, Market premium, Size premium, Value premium

1. Introduction

The financial decisions typically fall into three categories i.e. financing, investing and payout decisions. They are all interrelated and influence the firms' value. The investment decision will influence potential future dividends and future earnings whereas; dividend decision will affect the cost and also the proportion of equity in firm's capital structure. Nonetheless, the ultimate goal is that mangers' decisions must lead to the maximization of their shareholders' wealth. Dividend decision, broadly termed as dividend policy, arises when a firm starts earning profit. Should all or a portion of firm's profit be disbursed among the shareholders (Dividend payout) or should the business reinvest to expand business and generate more cash flows (Retained Earnings). Much debate exists whether dividend decision has any role, if any, on share prices. In 1961 dividend proposition was presented by

Merton Howard Miller and Franco Modigliani. This theory started the debate concerning the relevance of firm's dividend policy to its value. The theory stated that under some assumptions, negative association between dividend payout and value of the firm. The real consideration for the firm is productivity of its assets and investment policy not the form of dividend payout. Prior to this work it was widely believed that paying more dividend increases the value of a firm (the bird in hand hypothesis)[1]. However, in practice, when the assumptions of dividend irrelevance argument are relaxed capital market perfection does not hold and dividend policy might become relevant. As markets are subject to various imperfections such as differential taxation, agency cost, transaction costs, asymmetric information, floatation expenses, and behavioral considerations might cause dividend irrelevance to fail in practice. This framework has subsequently laid down foundation for many hypotheses to explain whether there exists any role of the dividend decision on the share prices as discussed in the tax preference theory, clientele affect, ex-date effect, valuation effect, agency problem and information content/signaling hypothesis.

Modern corporate finance has to focus more on above phenomena to explain whether dividend payment affects firm's value. In this regard opinions can be categorized into three belief groups. The first group propagates dividend irrelevance hypothesis that a firm value is not affected by dividend policy. The second group propagates that as dividends carry/signal information regarding future projections of a firm therefore, when dividend payout increased by the firms it also upsurges its value. In contrast, some academicians claim that increases in dividends are regarded as a signal that a firm is getting short of business ideas and is unable to identify positive NPV projects. While, decrease or cut in dividend payouts indicate that for some future growth opportunities a firm is retaining cash. The third group of researchers propagates that a company paying more dividends is viewed negatively where dividend income are taxed higher relative to capital gain taxes.

In M&M perfect capital market, among other things, with no tax difference between dividend and capital gain, dividends are irrelevant and firm's value is unaffected. However, in practice the presence of taxes makes dividend relevant. Historically, corporations have paid significant amount of dividends out of their earnings despite of the fact that they are heavily taxed and individuals pay heavy amount of taxes on the received dividends. In US and many other countries dividends are taxed higher than capital gains[2]. Observing this, Michael J. Brennan (1970) pioneered CAPM and after tax version. The model exhibits that pre-tax expected stock returns are surely and linearly associated to expected dividend income and systematic risk respectively. This suggest that firms paying more dividends are likely to be more heavily taxed than firms distributing less dividends out of their total returns. This happens due to tax disadvantage associated with dividend. The after tax CAPM is based on tax-effect hypothesis which predicted that tax compensation is disadvantage linked with income from dividend, investors demand greater earlier tax risk-adjusted earnings against stocks having high dividend yield. This implies that in order to compensate the highly taxed investor, stocks having higher dividend yield should offer more premium in form of high returns (risk-adjusted) than lower or no dividend paying stocks and this also implies that companies that pay more dividends tend to decrease their systematic risk.

In tax related literature, dividend policy impact and dividend taxation on prices of long term equity are investigated through relating dividend yield and stock returns. Such research works are titled as CAPM based studies[3]. In the context of dividend payout, test the implication of investor level dividend taxation on equity prices various methods are used such as longer run proceeds, event studies, valuation models, and ex-dividend day pricing studies. CAPM based studies incorporating long run returns provide some of the first evidences i.e. positive relationship exist among stock returns and dividend yields. However, academic scholars have provided various explanations of the dividend yield effect. One explanation of yield-effect can be tax outcome as anticipated by Brennan (1970). To compensate the tax disadvantage related with dividend income, investors demand greater before tax returns that are risk-adjusted against stocks having high dividend yield. The other explanation is that dividend yield might be a proxy for some omitted variables or risk factors. The literature investigating the effect of dividend yields and stock returns has revealed that the results are sensitive to few factors like dividend yield might be correlated with some omitted variable or risk factors[4] and the way dividend yields are calculated. If, in the model, the non-tax factors are not adequately controlled by some unobservable risk factors or other variables are proxy by dividend yield, then it's

[1] See Gordon and Shapiro (1956); Gordon (1959); Lintner (1962) and Walter (1963)

[2] See Allen and Michaely (2003); Graham (2003); Kalay and Lemmon (2008) and Mensa, Michaely and Schmalz (2014) for reference.

[3] The papers related to this literature include, for example, Brennan (1970); Black and Scholes (1974); Litzenberger and Ramaswamy (1979, 1982); Blume (1980); Miller and Scholes (1982); Naranjo, Nimalendran and Ryngaert (1998); Kalay and Michaely (2000); Dhaliwal, Krull, Li, and Moser (2005) and Sialm (2009).

[4] Gordon and Bradford (1980), Chen, Grundy and Stambaugh (1990), Fama and French (1993) and Naranjo, Nimalendran and Ryngaert (1998).

hard to decide whether dividend yield effect is due to tax-effect. The interpretation of dividend yield effect becomes more complicated if there are non-tax factors of paying dividend.

Do higher anticipated dividend yield stocks earn higher stock returns? The empirical and theoretical research regarding this question is well documented in US by Black & Scholes (1974); Litzenberger & Ramsawamy (1982); Kalay & Michaely (2000); Naranjo et al., 1998; Sialm, 2009) and in United Kingdom (UK) (Poterba and Summers, 1984; Reinganum and Shapiro, 1987; Levis, 1989; Lasfer, 1995; Morgan and Thomas, 1998) but in emerging market countries like Korea and Hong Kong little work is done especially true for Pakistan. In our country, over the period 2009-13 dividends were paid by 39.0% (on average) of the profitable companies[5]. It is an important fact that despite the tax disadvantages of cash dividend as compared to capital gain (totally tax exempted before June 2010) such a large percentage of firms pay dividend, thus this issue invites detailed investigation. This thesis examine the variation in returns by dividing the stock of KSE listed non-financial firms during the period 2003-12 into portfolios on the basis of lagged dividend yield. Firstly, the purpose is to test whether yield-effect (positive yield-return relationship) exists or not. Secondly, dividend yield might proxy for risk factors. Therefore, it is to examine, if yield-effect exist, then this relationship is consistent after adjusting the returns for risk i.e. higher dividend yields earning higher risk-adjusted stock returns. This objective is achieved to adjust the return's risk applying CAMP and Fama-French (1993- three factor model).

This research study follows positivistic paradigm as the purpose of research is to understand the behavior of firms and stock market in a manner as they work, not to bring changes in them. The ontological assumption or world view of the author is that stock market and events of dividend payment is a real phenomenon and objective in nature, epistemological stance is that acceptable knowledge about this reality is based on concrete/observable facts not on human feelings and focuses on testing the relationship of financial variables while controlling for risk needing quantitative data thus leading to positivism approach. The axiological stance is also objective as the researcher is independent of data. The analysis understudy follows objective ontology, positivist epistemology and quantitative technique/method used for data analysis such as regression. Positivism relies on concrete facts and models/methods followed are just like used in natural sciences searching for the relationships among objects being studied (Saunders, Thornhill and Lewis, 2009).

The problem statement for the current research study is expressed as: "To investigate the relationship between dividend yield and stock returns, controlling for systematic risk and Fama and French factors". Keeping in view the problem statement the objectives are addressed as:

a) To determine whether yield-effect exist, and
b) To determine whether this yield-effect is consistent after adjusting for systematic risk and Fama and French factors.

2. Literature Review

In the course of last several decades, the tax literature related to the impact of investor level taxes on equity prices and returns has received enough attention in the area of accounting, economics and finance. In finance, the primary focus is to understand the effect of dividend and capital gains tax on payout policy, capital structure and portfolio allocation as the discounted expected after tax cash flows determines the market value of a firm. In the context of payout policy, the differential taxation between dividend income and capital gains may influence the after tax returns of the investors further affecting their demand for dividend. This might induce mangers' dividend payout decision by adjusting the supply of dividend to maximize the market value. Therefore, financial researchers have conjectured that taxes might have a significant impact both on corporate dividends and personal investment decisions.

Historically, in US and many other countries dividends are taxed higher than capital gains[6]. In Pakistan, corporate dividends are currently taxed at 10%, whereas capital gain tax on disposal of securities was tax exempted before 1st July, 2010. The rate of capital gains tax has two divisions on the basis of holding period of a security i.e. short run holding period and long run holding period. Short run holding period is further split into two slabs. One, where the security holding period is less than six months the capital gain tax rate on the disposal of a security is 10% for the years 2011 and 2012 and where holding period is more than six months but less than twelve months the tax rate on

[5] See Annual Report, Karachi Stock Exchange (2013).

[6] See Allen and Michaely (2003); Graham (2003); Kalay and Lemmon (2008); Malkawi, Rafferty & Pillai, 2010and Farre-Mensa, Michaely and Schmalz (2014) for reference.

the redemption of security is 7.5% and 8% for the years 2011 and 2012 respectively. The long run holding period of a security is more than twelve months which is tax exempted[7].

M&M (1961) dividend irrelevance theory claimed that tax has no effect on a firm's dividend policy resulting in high or low stock prices. Under the assumption of a perfect capital market the tax impact of dividend and capital gain was inferred to be same. In real world, however, tax difference does exist (taxes on dividend income are higher than taxes on capital gains) which should induce rational investor for tax related dividend aversion. Other things being constant, investors should be inclined towards low dividend yield stocks. When stocks prices are stable (i.e. demand and supply are equal and no price pressure exists) dividend aversion should demand higher pre-tax risk-adjusted returns against high dividend yield stocks. This is referred to as the tax-effect hypothesis which should suggest that a tax-induced positive correlation should exist between risk-adjusted returns and dividend yield due to differential taxation between dividend and capital gain which may affect a firm's valuation.

This hypothesis was tested through two distinct settings. Firstly, the notion as how the differential taxation of dividend and capital gains can affect a firm's value or its returns referred to as CAPM based Studies[8]. These studies follow after-tax version of CAPM developed by Brennan (1970). The tests developed under this rationale, incorporated static equilibrium models to investigate a relationship between dividend yields and risk-adjusted returns. In static models, investors can trade only once and follow a buy and hold strategy. Thus, they have to make long-term decisions regarding their security holdings in order to minimize taxes, while keeping all other things constant[9].

Secondly, researchers tested the argument that how the difference in taxation across investors may affect dividend tax clienteles? Under this argument researchers have analyzed the tax-effects on dividend yields observing the ex-dividend day price data, categorized as ex-dividend day studies. Such studies examined the behavior of stock prices before and after the ex-dividend days incorporating dynamic models. Under these models, investors can trade at different timings and were able to take different position considering taxes, risk and transaction costs to further reduce the tax liability. Investors could decide just before the ex-dividend date to receive (avoid) dividend paying stock temporarily if they are taxed the least (more). The main purpose of tax based literature on dividend payout seems to find out whether the tax-effect exists or not.

This focus of this thesis is to analyze the relationship between dividend yields and stock returns over long horizon returns. This chapter starts with a discussion of fundamental assumptions of M&M's (1961) dividend irrelevance propositions and the implications of relaxing each assumption on firm's dividend payment choices and value. Subsequent section reviews the tax related literature analyzing the impact of relative taxation of dividend on firm's value or stock prices/returns.

2.2. Dividend Irrelevance Theory

M&M (1961) stated dividend irrelevance proposition (also famously known as M&M theory). This theory started a debate concerning the relevance of firm dividend policy to its value. Prior to this proposition it was widely believed that dividend payout increases firm's value (the bird in hand hypothesis)[10]. M&M propagated that, holding the assumption of a perfect market, dividends cause no impact on a firm's value or its cost of capital rather it depends on net profit or earning power of assets and investment policy. Shareholders don't really choose between cash dividends now or the future capital gains, as far as a firm's investment policies remain the same. The shareholders are concerned about the income generated through the firm's investment decisions rather than how it is distributed. This is the reason why investors are indifferent between dividend and capital gains as "homemade" dividends are created by adjusting the portfolio according to their own preferences. The theory explains that shareholders are at gains either ways whether they receive dividends or there is a share price appreciation.

The dividend irrelevance hypothesis gained a lot of attention and many researchers endorsed it (Black & Scholes, 1974; Miller & Scholes, 1982; Kaleem & Salahuddin, 2006).While there are many others who have rejected this

[7] Income tax ordinance 2001, (2011-2012), First Schedule, Division III (1)

[8] The papers related to this literature include, for example, Brennan (1970); Black and Scholes (1974); Litzenberger and Ramaswamy (1979, 1982); Blume (1980); Miller and Scholes (1982); Naranjo, Nimalendran and Ryngaert (1998); Kalay and Michaely (2000); Dhaliwal, Erickson, Frank, and Banyi. (2003) and Sialm (2009).

[9] Static view is further categorized into two groups. Firstly, different taxpayer groups or clienteles are differently taxed. According to M & M (1961) argument, in such case firms have incentives to supply stocks to clientele in such a way that lessen each clientele taxes. Secondly, all investors are taxed alike and dividend income is taxed higher than capital gain. In a perfect capital market, the optimal policy is to pay no dividend. Firms with low dividend yield are valuable than firms having high dividend yield.

[10] The studies related to this hypothesis include Gordon and Shapiro (1956); Gordon (1959); Lintner (1962) and Walter (1963)

hypothesis based on their findings (Lintner, 1956; Pettit, 1972; Baker, Farrelly & Edelman, 1985; Brav, Graham, Harvey, & Michaely, 2005; McCluskey et al., 2006). They argued that irrelevance of dividends is unrealistic as the existence of an ideal economy in real world is impossible as markets are subject to imperfections such as taxation, asymmetric information, incomplete contracts, transaction cost and irrational managers and investors.

Dividend irrelevance hypothesis assumes for efficient markets that there is perfect information available to all participants. Information asymmetries can easily negate the irrelevance proposition in view of moral hazard and adverse selection. (Bhattacharya, 1979, 1980) provides an argument that as the insiders (managers) have more information than the outsiders (shareholders) about the future prospects of a firm therefore changes in a firm's corporate dividend policy can forecast the firm future performance.

Complete contracting assumption of irrelevance hypothesis claims that no agency problem exists between managers and shareholders. Jensen (1986) presented a hypothesis for dividends based on principal agent framework. The theory explains that there exists a conflict of interest & incentives between managers (agents) and stockholders (principal) especially when firms have large cash flows the problem of overinvestment is more notable. Managers avoid dividend payouts in order to have control over firm's resources and in the end waste such left over free cash flow on negative NPV projects due to unavailability of positive NPV projects. Jensen (1986) also contended that managers are interested in increasing the optimal size of business resulting in growth in sales thus guaranteeing more compensation and bonuses for managers. So dividend payout is used as a tool to control and monitor the behavior of mangers.

Lastly, M&M's theory of irrelevance assumes that all market participants are rational. In real, some or all market participants exhibit less than rational behavior. Some investors are more interested in the steady stream of dividends (Shefrin and Statman,1984; Baker and Wurgler, 2004) or sometimes the irrational investors' misevaluation are exploited by managers as they buy back the firm's undervalued shares.

2.3. Risk-Adjusted Returns and Dividend Yield

As M&M (1961) stated that in a world without taxation dividends were irrelevant and do not affect firm's value. Whereas, several authors have concluded that in the presence of taxation dividend is relevant. Therefore, CAPM based research studies can be split into two groups: one who argue that dividends are irrelevant or there is no tax-effect (Black and Scholes, 1974; Miller and Scholes 1982; Kalay and Michealy, 2000) and the other who support the notion that dividend affect value of the firm and there is a tax-effect (Litzenberger and Ramaswamy, 1979, 1982; Naranjo et al., 1998; Sialm 2009). It is not surprising to report that most of the literature on dividends and payout policy has focused on the presence or absence of the tax-effects and have provided mixed and conflicting empirical results. In this area all of the studies focused on taxation effects and avoiding information effect of dividends when establishing the relationship between dividend yield and stock returns. This thesis relates to the research stream devoted to test the Brennan's model.

In their earlier work M&M (1958, 1963) explicitly considered the corporate taxes and found that dividends are irrelevant for a firm's value. They propagated that a corporation through increasing its debt to equity ratio can increase the value of its shares. Farrar and Selwyn (1967) developed a partial equilibrium model assuming that investors require high after tax income. They considered both corporate income taxes and personal income taxes along with capital gain taxes, at a lower rate. They noted that under certain circumstances firms are reluctant to have much debt in their capital structure. In this framework two choices are given to investors. First one is to choose between the amount of corporate and personal leverage and the other to choose either dividend or capital gain. The preferred choice is the one with least tax liability and optimal policy is to pay no dividend.

Brennan (1970) extended Farrar and Selwyn work and developed market equilibrium model and motivated the tests that examine the relationship between risk-adjusted returns and dividend yield. Brennan developed the after-tax version of CAPM. His model stated that a stock's expected pre-tax returns are linearly and positively related to its expected dividend yield and its systematic risk. Finding a significantly positive and statistically different from zero dividend yield coefficient is interpreted as an indication of tax-effect. As investors demand higher pre-tax risk-adjusted returns for holding higher dividend yield stocks to compensate for the tax disadvantage associated with these returns. This suggests, while holding other things constant such stock sell at low prices due to tax disadvantage associated with dividend income.

2.3.1. Empirical Evidences

The findings and results related to the literature investigating the relationship between dividend yields and equity returns is sensitive to factors like how dividend yield is calculated and whether dividend yield might be correlated

with some omitted risk factors. Earlier studies documented a positive yield-effect induced by tax differential between dividend yield and capital gains using both long run (Black and Scholes, 1974; Blume, 1980; Keim, 1985; Kalay and Michealy, 2000) and short run (Litzenberger and Ramaswamy, 1979; Miller and Scholes, 1982; Park and Kim, 2010) definition of dividend yield.

Black and Scholes (1974) were the first one to test Brennan's model. They formed 25 portfolios of US common stock data for the time period 1926-1966 and tested the effects of dividend yield on their expected risk-adjusted returns. They used a before tax version of CAPM adding dividend payout variable and while using the annual data employed the long run dividend yield definition expressed as a ratio between previous year sum of dividend paid and year end stock prices. They found that the coefficient of dividend yield is not significantly different from zero either for the entire sample period from 1936-1966 or for the shorter sub-periods of 10 years. They concluded that the before tax risk-adjusted returns of high and low dividend yield stocks demonstrated no differences. However, the argument depends on "clientele effect" where high yield stocks are held by non-tax paying investors and low yielding stocks are held by investors paying high taxes (Blume, 1980). Otherwise corporation would alter dividend policy in line with investors' demand unless there is no substantial cost associated with dividend policy alteration. Thus, they suggested that firm's dividend policy do not have a permanent effect on stock prices.

Litzenberger and Ramaswamy (1979, hereafter L&R) criticized the method and results of Black and Scholes, especially their long run definition of dividend yield and use of annual data for forming the portfolios without differentiating between non-ex-dividend months and ex-dividend months. They used individual data; applied maximum likelihood procedure to correct the errors in variable problems for estimating betas[11]. They used short term dividend yield definition over monthly data for the period 1931-1977. The short term definition for ex-dividend months was calculated as Dt/pt-1 (the dividend announced divided by the price at the beginning of the month). They also classified stocks into yield classes, on the basis of dividend yield calculated, identified as zero-dividend yield class and positive-dividend yield class. In months where no dividend was paid they were assumed as having zero dividend yields. The results showed a significant positive dividend yield coefficient $\gamma 2$ (0.236) and the positive association between dividend yield and pre-tax expected returns was more pronounced in ex-dividend months than non-ex-dividend months thus their results supported the tax-effect hypothesis.

Miller and Scholes (1982) criticized the results of L&R and argued that the positive dividend yield coefficient is not an evidence of tax-effect but an outcome of information effect or bias. L&R ignored the dividend omission announcement, in contrast to positive dividend announcement, perceived as negative news in the market and erroneously reported zero dividend yields against the dividend omissions months resulting in negative excess returns for these zero expected dividend yield. Thus, the resulting dividend yield coefficient will tend to bias upward. Miller and Scholes when included only dividend declared in advance in the sample or when dividend yield is defined as dividend yield in t-12 month, they found insignificant dividend yield coefficient.

In response to this criticism, L&R (1982) re-examined the relationship between stock returns and dividend yields. They adjusted the dividend yield variable including only that information which investor could possess at the same time. The sample included only those stocks which were either paid in month t and declared in t-1 month or paid in t-1 month. The yield coefficient was one again positive and statistically significant consistent with their previous findings.

The question, whether positive dividend yield coefficient is due to taxes, still remain unconvinced. Kalay and Michaely (2000, hereafter K&M) presented a reconciliation of the two major tests of Brennan (1970) model, the Black and Scholes (1974) and L&R (1979, 1982) test, both leading to conflicting results. K&M attributed the difference in their results to the difference in their experimental design. Black and Scholes test was designed to predict cross-sectional variation of long-term before tax expected returns across high and low dividend yields. In other words, whether higher dividend yield stocks earn higher pre-tax returns throughout the year whereas, L&R experiment compared the pre-tax risk-adjusted returns of ex-dividend period to those of non-ex-dividend period thus, through its very nature their test was inadvertently designed to discover whether stocks offer higher risk-adjusted returns during the ex-dividend period. They classified stock offering positive dividend yield only for one month out of three (during its ex-dividend period) for quarterly dividend paying firms and categorized stocks having zero dividend yield for rest of two months. This seasonal phenomena was referred as time series return variation which itself is not an evidence of tax-effect. Thus, making it difficult to relate dividend yield coefficient to taxes as L&R static model is insufficient to predict cross-sectional variation in returns and likely to uncover time

[11] Litzenberger and Ramaswamy used MLE and GLS procedures to correct error in variables and heteroscedasticity problems but the estimated coefficients are not sensitive to the methodology applied. The other methodologies generated the similar estimated betas with little difference in the significance level.

series variation in returns[12].

K&M (2000) used weekly returns data to re-examine the L&R experiment. Their sample contained only those cases where the ex-dividend week followed the announcement week. They excluded all weeks containing announcement of dividend omission in an attempt to find whether L&R positive dividend yield coefficient is driven by tax-effects or information effects as claimed by Miller and Scholes. They showed a positive and statistically significant yield coefficient as stocks offering higher returns during ex-dividend period only. This was a clear evidence of time series return variation rejecting Miller and Scholes's conjecture that information induced biases are responsible for positive yield coefficient. The ordinary least square point estimate of this yield coefficient was (0.246) for weekly data identical to the L&R experiment using monthly data. Furthermore, K&M repeated the L&R experiment using quarterly data to test for cross sectional return variation. The mean quarterly dividend yield of prior calendar year was assumed equal for expected quarterly dividends. They documented an insignificant dividend yield coefficient. In short, the outcome was higher stock returns during ex-dividend period but unrelated to the dividend yield.

Later studies gave considerable attention to asset pricing anomalies and omitted risk factors to examine whether yield-effect is due to tax-effect or it is a proxy for other anomalies or risk factors (non-tax factors). One of the earlier asset pricing anomalies documented in empirical finance literature such as size effect by Banz (1981) and Reinganum (1983) or new issue puzzle of Loughran and Ritter (1995) or earning to price effect of Basu (1977) or momentum anomaly (Debondt and Thaler, 1985; Jegadeesh and Titman, 1993; Fama and French, 1996) and calendar anomaly (Keim, 1983; Reinganum, 1983). Another potential problem in interpreting the positive yield coefficient as a tax-effect can be if some omitted risk factors, other than beta, are linearly related to dividend yield other than taxes.

Blume (1980), for the period 1936-1976 the cross-sectional regression revealed a U-shaped (non-linear) relationship between dividend yield and risk-adjusted returns where zero-yield stocks earned superior returns than dividend paying firms and high yielding stocks earn superior risk-adjusted returns than low yielding stocks. He also used long-term dividend yield definition and divided the amount of dividend paid in prior 12 months with beginning of the sample period stock price i.e. Pt-13 instead of using current price P t-1 to calculate anticipated dividend yield. Blume used Sharpe-Litner model to calculate risk-adjusted returns, where returns are the sole function of beta. The results revealed that dividend yield might proxy for some omitted variable in the model as Sharpe-Litner model is too restrictive and held responsible this reason for monotonic relationship between yield and return.

Gordon and Bradford (1980) conducted a detailed investigation of time series return variation of relative dividend and capital gain pricing. They used monthly returns data for the sample period between 1926 and 1978 of US stocks. The sample period was further divided into five year sub sample periods to check relative pricing overtime. The results of different equilibrium pricing models showed the dividend valuation follow a countercyclical pattern (opposite of business cycle) and are not stable over time. It is low during expansion and high during recession. Their results indicated that dividend yield and systematic risk factors might be correlated.

Poterba and Summers (1984) studied the effect of two major changes in the UK tax regime. One in year 1965, when for the very first time government introduced taxes on capital gains and second in year 1973, when government allowed tax credit on dividend income already paid on corporate profit against Advanced Corporation Tax (ACT) under an integrated corporate tax system. The tax credit reduced the overall tax burden on dividend income as compared to equivalent capital gain. The daily and monthly data analyzed during the period 1955-1981 showed a significant effect on share prices due to change in dividend taxation and exhibited a positive relationship between the market prices and dividend yield[13].

Keim (1985) investigated the relationship between risk-adjusted stock returns and long-run dividend yield to determine whether this relationship is due to tax-effect or anomaly effect i.e. size. He employed Sharpe-Lintner CAPM and used a sample of US firms ranging from 429 in year 1931 and 1289 in year 1978. The sample was divided into six dividend yield portfolios. The first group of portfolio contained all zero dividend firms and the other five contained firms ranging from low to high dividend yield. Keim documented a non-linear relation between long run returns and yield occurring in the month of January. Moreover, the yield coefficient was found to be positive and significant after the impact of stock returns seasonality and firm size were tested on dividend yield

[12] This experimental design can even result in the rejection of a true tax-effect hypothesis. For example, despite the fact that tax related premium is spread evenly throughout the year but classifying stock as zero dividend yield two third of the time the resulting yield coefficient might become insignificant

[13] During regime I (1955-1965) and regime II (1965-1973) tax burden reduced from 0.5 to 0.3 and between regime II (1965-1973) and regime III (1973-1981) it reduced further from 0.4 to -0.2. Only the second change was found to be significant suggesting the introduction of ACT had an effect on dividend valuation whereas the introduction of capital gain has no effect.

and risk-adjusted returns. Keim attributed this non-linear relationship between returns and dividend yield to January seasonal for small stocks. The dividend yields exhibited significant January seasonal than other months even after controlling for firm size suggesting tax differential may not be solely responsible for yield-effect. His evidences also indicated that different yielding stocks have different risk characteristics as, low and zero-dividend paying stocks possessed higher betas than high-yielding stocks.

However, Christie (1990) found that during 1930s the US stocks with a value below two dollars were responsible for the anomalous zero yield-effect. Christie documented zero-yield stocks realizing low returns as compared to dividend paying firms when the zero yield stocks returns were benchmarked against dividend paying firms having same market capitalization over the period 1945-1986. Though his results indicated a positive association between returns and dividend yields but attributed this yield-effect to market overvaluing the prospects of zero yield stocks, rather the tax-effect.

Chen, Grundy and Stambaugh (1990) thoroughly investigated this issue and showed that the relationship of returns and dividend yield is sensitive to risk/return measurement methods. They categorized all dividend paying stocks (excluding zero-yield stocks) into 20 portfolios arranged on the basis of size and yield thus forming a pooled cross-section. While, using time series regression methodology and incorporating a single risk factor, the model exhibited positive yield/return relation. However, when two risk factors were included in the model the positive yield/return relation disappeared suggesting that risk measures and dividend yield are cross sectional correlated. Furthermore, when risk measures were allowed to vary the yield coefficient was positive but insignificant. Chen et al, showed that time varying risk premium can explain the positive relation between dividend yield and portfolios' returns whereas tax penalty may not be a reliable reason of this relationship.

Fama and French (1993) checked whether size and book to market risk factors reasonably explain the returns besides market factor. They not only formed the portfolios on the basis of size and book to market variable but they also tested the explanatory power of these risk factors on portfolios formed on the basis of other variables such as earning to price ratio (E/P) and dividend price ratio (D/P) for the time period from (1963-1991). The average returns of D/P portfolios showed a U-shaped pattern consistent with Keim's (1983) results. The dividend yield and average returns showed a positive relationship when one factor Sharpe-Litner model was used suggesting a tax-effect. This effect disappeared when Fama and French three factors model was used.

Naranjo et al. (1998) investigated whether the yield effect exists or whether it can be explained by taxes or non-tax factors such as previously documented anomalies in finance literature or risk. They employed current measure of annualized dividend yield definition (recently declared dividend and last share price), used equally weighted portfolios and adjusted risk through Fama-French (1996) three factors asset pricing model[14]. They also conducted additional robustness tests using five macroeconomic risk factors (anomalies) previously used in asset pricing literature[15]. A comprehensive empirical investigation of yield-effect was executed either yield-effect is proxy for previously documented return anomalies or it is due to taxes. They documented the yield-effect for the period 1963-1994 but the magnitude of yield-effect was too large to be interpreted as tax-effect or explained by any other previous anomalies. Interestingly, zero yield stocks and smaller market capitalization stocks were found mainly driving this effect.

In another study, Morgan and Thomas (1998) examined yield-return relationship using UK data for the period 1975-1993. Under 1973 tax imputation system in UK the dividend income is less taxed relative to capital gain reverse of those in the US. Therefore, in the case of UK the tax based hypothesis would predict an inverse relationship between dividend yield and risk-adjusted stock returns, an opposite of one observed in US. Following the methodology of Keim (1985) they found a positive relationship between dividend yield and risk-adjusted returns besides also suggested a non-linear relation between risk-adjusted returns and dividend yield thus rejected the tax based explanation. The results were robust while controlling for seasonality and firm size. The research study suggested that a market where dividend signaling and slow price reaction to those signals coexist might explain that high dividend paying stocks will produce high returns. Though, this hypothesis was not directly tested

[14] Fama-French three factors include excess return on board market portfolio (MKT), the difference between returns of small stock and large stock portfolio (SMB) and the difference between returns of high book to market and low book to market equity stocks portfolio (HML), as Fama-French (1996) argued above three factors capable of capturing much of cross-sectional return variations of portfolios arranged by ratio of book value to market value of common stock, size, past sales growth and earning to price ratio.

[15] Macroeconomic risk factors include term structure premium (TERM), default premium (PREM), unanticipated inflation (UI) and growth rate in monthly industrial production (GIP) and other anomalies include performance after newly issued stocks, earning to price effect(E/P), cash-flow to price effect(CF/P), book to market effect (B/M) and five year sales growth rank effect. Implied tax rate from municipal bond market were also used as a proxy for tax environment to check yield-effect.

in the research study.

In a series of papers, Sialm (2005, 2006 and 2009) demonstrated some new evidences about the relationship among dividend, taxes, stock valuation and stock returns. Sialm computed effective tax rate, a direct estimate of tax burden on equity securities for investors, rather than using dividend yield as a proxy utilizing both cross-sectional and time series variations in tax burden to test whether the different equity securities' tax burden effect the stock returns and stock valuation. Sialm (2005) investigated whether asset prices capitalizes dividend and capital gain tax burdens using a direct measure of tax burden and exploiting the time series variation in effective tax rate during the period 1917-2004. He found a statistically significant and inverse relationship between asset valuation and effective tax rate after data was adjusted for various macro-economic variables. Besides, the test of tax capitalization also demonstrated positive association between taxes and stock returns suggesting investors are compensated with higher before tax returns for larger taxes.

Sialm (2006) empirically tested whether before tax equity returns depend on effective tax rates of different equity securities incorporating both time series and cross-sectional variations in tax burden over the period 1927-2004. The results showed positive association between average returns and effective tax rate after controlling for book to market, size and momentum effect. Mark M. Carhart (1997) four factors model was used in addition to CAMP and Fama and French model showing that it is the effective tax burden or tax yield responsible for higher expected returns not the dividend yield which might capture additional risk or mispricing biases, not captured by common factors of Carhart. Thus, the positive and significant association between tax yields and returns supported the tax hypothesis.

Sialm (2009) analyzed the effect of changes in investment tax rates over US security prices for the period 1913 – 2006. For this purpose he performed two empirical tests. The results of first test showed significant and negative relationship between effective tax rate and equity valuation, consistent with tax-capitalization hypothesis, after the time series relation between effective tax rate and equity valuation was investigated. The negative relation remained robust using other proxies for tax burden, controlling for macroeconomic variables and sub-period samples. Second test empirically investigated the cross-sectional relation between tax burden and risk-adjusted returns of stock portfolios following the Brennan (1970) model. He found a positive relation between tax burden (composed of dividend yield of stock and equity investor average dividend and capital gain tax rate) and risk-adjusted returns. The results remained robust for various measures of effective tax rate, over sub-period samples and multifactor pricing models to adjust main risk factors identified in finance literature[16].

Lemmon and Nguyen (2008) examined whether a yield-return relationship exist in the Hong Kong stock market where neither the dividend income nor capital gains are levied with taxes. They found a positive dividend yield effect for the sample period covering years from 1973 to 2005. The returns were risk-adjusted using CAPM and Fama and French (1993) model. The reported dividend yield coefficient was (1.996) and (2.025) when abnormal returns using CAPM and abnormal returns through Fama-French were regressed on annual averages dividend yield in a pooled regression. The findings showed that the magnitude of dividend yield was too large suggesting there are (unknown) non-tax factors responsible for a positive yield-return relationship in Hong Kong market. The results were also robust in different time period sub-samples and large and small size firms sub-samples.

Park and Kim (2010) examined the Korean stock market, for a possible positive yield-return relationship, having different institutional features as compare to US and other countries. In Korea, most of the firms pay dividend once in a year and a flat tax rate is levied on dividend income whereas, capital gains are tax exempted. Besides, their ex-dividend day and year end happen together. Using the date for the time period 2000-2008 they reported a positive yield-return relationship while employing after-dividend-tax returns. The returns were risk-adjusted using CAPM and Fama-French (1993) three factor model. The evidence suggested that non-tax factors prevail responsible for the yield-effect. The yield-return relationship was also examined in all months, which was observed in all months except January which was also persistent for small and large size firms. They also examined whether abnormal prices on ex-dividend day are responsible for yield-effect. The results showed no effect of excess returns around ex-dividend day on dividend yield.

3. Research Design and Methodology

The current study explores the difference in average returns across stocks having different dividend yield. To determine whether the higher dividend yield paying firms produces high risk-adjusted returns, after controlling for Fama and French (1993) risk factors, the sample data is classified into portfolios ranking from low dividend yield

[16] These factor pricing models included one factor CAPM model, three factor Fama-French (1993) model and four factor Mark M. Carhart (1997) model

firm to high dividend yield firms for the period spanning over 2003-2012.
This section detail with sampling and data collection method, provides description of variables incorporated, while later sections explain the theoretical framework, procedure of applying CAPM and Fama and French (1993) three factor standard methodology to calculate risk-adjusted return.

3.1. Sample Selection and data collection method

The scope of present study is to test the association between dividend yield and equity returns and gather empirical evidence from Pakistani stock markets such as KSE. The population includes common stocks listed on KSE. At the moment, 651 firms are listed on KSE.
The issue under investigation requires inclusion of only those companies which are paying dividend annually so based on this characteristic purposive sampling is used to address the research question. This study takes into account only those non-financial firms listed on KSE that are paying dividend relatively on stable and regular basis throughout the sample period spanning over 2003-2012. Prior research studies show that a firm having an established track record of dividend payment is important as it helps capturing the dividend yield effect more accurately. They provided evidence that dividend omission or initiation is followed by abnormal low and abnormal high returns respectively in years after the omission or initiation is made (Christie, 1990; Michealy, Thaler and Womack, 1995; Naranjo et al., 1998). It is assumed that all sampled non-financial firms are paying taxable dividend. Moreover, firms whose dividend amount, share price data and other variables data is not available are excluded. The data used in the present study for the purpose of variables' construction includes daily share prices, annual data of cash dividend, number of outstanding shares, the 12-month T-bill rates, book value of equity, market value of equity and KSE-100 index.
This study uses lesser number of portfolios compared to other similar studies as the dividend paying criteria minimizes the number of sampled firms selected each year. Initially, 125 dividend paying firms are selected altogether. Later on the number of dividend paying firms varies each year as zero dividend paying firms are excluded. The sample firms ranges from 96 (minimum) to 123 (maximum) throughout the sample period. The sample firms are classified into five dividend yield portfolios ranking from lowest dividend yield stocks portfolio to highest dividend yield stock portfolio. These portfolios are the quintiles ranked on the basis of lagged dividend yield and rebalanced annually.

Table 3.1: Year-wise number of firms in the sample

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
All Firms	123	114	121	107	107	99	96	110	116
Lowest	25	23	24	22	22	20	19	22	23
2	24	23	24	21	21	20	19	22	23
3	25	22	24	21	21	19	19	22	23
4	24	23	24	21	21	20	19	22	23
Highest	25	23	25	22	22	20	20	22	24

The stock returns are calculated on a monthly frequency. For this purpose, the secondary data of monthly share prices of sample firms is collected from the website of business recorder for the sample period (2003-2012)[17]. Whereas, the dividend yield is calculated taking into account the annualized "total amount of dividend" for each firm as available in the financial statement of companies available at the sites of SBP and KSE. Only annual dividend data is available therefore long term definition of dividend yield is used for analysis as short term definition of dividend yield requires either monthly or quarterly dividend paid amount which is unavailable. In order to obtain risk-adjusted returns few other variables i.e. market returns (Rm), risk free rate (Rf) are calculated on monthly frequency whereas, size and book to market (B/M) ratios are calculated on annual frequency. These

[17] http://www.brecorder.com/

variables are further used to calculate market factor, size factor and value factor to apply CAPM and Fama and French (1993) three factor model and to obtain the risk-adjusted returns. The data of 12-month T-bill rates used as a proxy for risk-free rate is collected from the SBP website[18]. The data of KSE-100 index used as a proxy for market returns is collected from the KSE website[19]. While, the data of number of outstanding shares and book value of equity are collected from the financial statements of companies available at the sites of SBP and KSE.

3.2. Variables Incorporated

The present study attempts to gather empirical evidence from Pakistani stock markets through testing the association between dividend yield and risk-adjusted returns. In order to obtain risk-adjusted returns to apply CAPM and Fama and French (1993) three factor model three independent variables that is market risk premium, size premium and value premium needs to be calculated. Size and B/M ratios are calculated at annual frequency only to sort KSE listed stocks in order to obtain size and value premium variables. Market returns (RM) and risk-free rate (Rf) are calculated on monthly frequency to obtain market risk premium. The average portfolio returns (R*k*) are required to obtain the dependent variable that is excess returns of dividend yield portfolios. Dividend yield is required to sort stocks into portfolios. The current study calculates the monthly share returns using the monthly share prices of the firms for the period 2003-2012 employing logarithmic approach. Empirically, logarithmic returns are more expected to decrease the problem of non-normality in the date (Strong, 1992). The monthly share returns are calculated only in terms of share prices, incorporating only capital gain, and not including the dividend amount. The study concentrates only on share prices as to calculate the share returns, the method of calculation adopted by previous studies (Naranjo, et al., 1998; Sialm, 2006; Lemmon and Nguyen, 2008; Park and Kim, 2010) to facilitate the comparability. The formula to calculate logarithmic monthly share returns is as follows:

$$Stock\ Returns\ (Ri) = \ln(\frac{Pit}{Pit-1})$$

Where,
Ln is the natural log
Pit is the current month stock price of i^{th} firm
Pit-1 is the previous month price of a stock of i^{th} firm

3.3. Market Returns

The market returns (RM) are calculated using KSE 100 Index as a proxy. The formula to calculate Rm is as follows:

Market Returns (RM) = Ln $(KSE100\ Index)^{t}$ / $(KSE100\ Index)^{t-1}$

Where,
Ln represents the natural log
$(KSE\ 100\ index)^{t}$ is the current period market return
$(KSE\ 100\ Index)^{t-1}$ is the previous period market return

3.4. Dividend Yield

According to the tax-effect hypothesis, the empirical estimation of dividend yield on stock returns in the current study is tested by relating the dividend yields of stocks with their risk-adjusted returns. In order to calculate dividend yield the long term dividend yield definition is employed as the amount of dividend paid by the companies is available at annual frequency. It is calculated as a ratio of dividend per share at the end of the year to the share price at the end of the year. Dividend yield is one of the profitability ratios which show what portion out of the market price of a share is paid by the company annually in the form of dividend to its stockholders. The following formula of dividend yield is employed in this study.

$$(Dividend\ Yield)\ = \frac{(Anuual\ dividend\ per\ share))}{(Share\ price\ at\ the\ end\ of\ the\ year)}$$

Stattman (1980), Rosenberg, Reid and Lanstein (1985) documented that book to market equity ratio i.e. B/M effect, strongly influences the average US stock returns in a positive direction. Later, Chan, et al. (1991) also found a similar positive association between B/M values and Japanese stock market average returns. B/M effect is a ratio

[18] http://www.sbp.org.pk/
[19] http://www.kse.com.pk/

comparing the book value of a common stock to its market value. There existed a positive relationship between the book value/the market value of equity of the firms and the average stock returns.

It is evident through literature that high B/M ratio firms (value stock) have produced higher average returns as compare to low B/M ratio firms (growth stock) after stock returns are adjusted for risk. High book to market equity firms have higher average returns as they have more risk, evident from their beta, as compared to low book to market equity firms. Fama and French (1995) and Drew and Veeraraghan (2002) found that those firms which are consistently facing financial distress have high B/M ratio consequently their returns are high having higher risk. On the other hand, firms having low B/M ratio are consistently profitable therefore they have low returns due to low risk.

B/M ratio is a good measure to judge the performance of a firm and also making comparison with its competitors. B/M reflects whether the value of firm's stock is undervalued or overvalued in the market. High B/M ratio indicates a good investment opportunity for investors. B/M ratio in this study is calculated as:

$$Book\ to\ Market\ Ratio = \frac{Total\ Book\ value\ of\ \ common\ equity}{Market\ Value\ of\ common\ equity}$$

Where,

Total book value of common equity = Total value of Stock holder equity

Market value of common equity = Number of outstanding shares × current share price

3.6. Dependent Variable - Actual Returns or Excess Returns

The excess return on a k^{th} dividend yield portfolio at time *t (Rkt-Rft)* is obtained as a difference between the average return of portfolio *k* at year *t* denoted by *Rkt* and 12 month T-bill rate denoted by *Rft*.

3.7. Independent variables - Market Risk Premium

The excess return on a broad market portfolio over and above the risk free rate *(Rmt-Rft*) is referred as market risk premium *(MKT)*. It is the return which investor expects against each additional unit of risk. *MKT* is an important concept to understand as investors are interested to find out whether the investment in financial products is worth taking that can have risk. When supply and demand are in equilibrium there is no need for the premium to be paid. As the demand increases, the prices of the said asset also increase as the supply cannot meet the demand. The premium is the difference in prices. The current study follows the Fama and French (1993) method to calculate the *MKT*.

Market Risk Premium = (Expected return on broad market portfolio – Risk-free rate)

3.8. Capital Asset Pricing Model (CAPM)

CAPM is an extension of Modern Portfolio Theory (MPT) developed by Harry Markowitz (1959). The theory emphasized that CAPM shows a linear relationship between the expected returns on asset and market beta or systematic risk and market beta explained all variations in cross section returns. The change (increase or decrease) in market beta brings a change (increase or decrease) in expected returns and captures all variation in cross-sectional expected returns. In other words, market portfolio is mean variance efficient.

CAPM model

$$Ri = Rf\ +\ \beta i(RM - Rf) \qquad i = 1 \dots \dots \dots . N \qquad \text{Eq (1)}$$

Ri is the return on stock i , *Rf* is a risk-free rate as having zero market beta and zero correlation with market returns. βi is the beta coefficient (denoting systematic risk) of asset *i* and $RM - Rf$ is the risk premium per unit of beta on a broad market portfolio.

Where,

$$\beta i = \frac{cov(Ri, RM)}{variance\ (RM)}$$

Market beta of asset *i* is expressed as a ratio between the expected returns on, covariance of asset *i* (Ri) as well as market portfolio(RM) and variance of market returns. When investors are risk averse, stocks having higher market beta have high risk thus higher expected returns than low market beta stocks. If CAPM works then from the known values of market returns (*RM*), risk- free rate (*Rf*) and market beta β*i* the expected return on stock can be predicted.

The model in equation (1) can also be written as:

$(Ri - Rf) = \alpha + \beta i(RM - Rf) + e \qquad i = 1 \ldots\ldots\ldots N$ Eq (2)

CAPM suggests that if actual risk premium $(Ri - Rf)$ on a given security i and the expected risk premium $\beta i(RM - Rf)$ are same then the value of α = 0 and the model correctly predicts the given security risk premium.

3.9. Fama and French (1993) Three Factor Model

Eugene Fama and Kenneth French (1993) presented a three factor model to explain the variation in stock or portfolio returns. It is a model that extends on the traditional CAPM through adding the size and book to market factors besides market risk factor of CAPM. Fama and French (1993) introduced size and book to market factors to measure the underlying common variation in stock returns or portfolios, arising due to size (small caps) and book to market (value stocks) variables. They measured the size factor, as capturing the difference between the portfolios' returns of small size firms and large size firms, also termed as Small minus Big (SMB). On the other hand, value factor was measured by capturing the difference between the portfolios' returns of high book to market ratio firms and low book to market ratio firms, also termed as High minus Low (HML).

They presented the following model:

$Rt - Rft = \alpha + \beta 1\ (MKTt) + \beta 2(SMBt) + \beta 3(HMLt) + \varepsilon t$ Eq (3)

Where

Rt, stock returns for a time period t,

Rft is the risk-free rate for the time period t,

MKT is the excess returns on the broad market portfolio or market risk premium,

SMB is the difference between the portfolios' returns of small size firms and large size firms also called size premium,

Fama and French (1992) showed that book to market variable has more explanatory power than size. Therefore, Fama and French (1993) used three book to market groups and only two size groups. In the present study the empirical estimation of dividend yield on stock returns in KSE is tested by relating the dividend yields with their risk-adjusted returns, motivated by the theoretical model of Brennan (1970). In order to test the dividend yield effect in KSE, the present study attempts to analyze the relationship between dividend yield and risk-adjusted returns. For this purpose, the selected sample of non-financial firms listed on KSE is divided into portfolios each year on the basis of their lagged dividend yield and rebalanced annually. The firms are classified into five dividend yield (quintiles) portfolios each year then the equally weighted returns of firms in each portfolio are calculated.

To examine the relationship between dividend yield and risk-adjusted returns there is a need to control the risk adequately. For this purpose CAPM and three factor Fama and French (1993) are employed to control for risk. The following regressions are run for each of five portfolios.

$(Rkt - Rft) = \alpha k + \beta 1kt(MKTt - Rft) + ekt$ Eq (1)

$(Rkt - Rft) = \alpha k + \beta 1kt(MKTt - Rft) + \beta 2kt(SMBt) + \beta 3kt(HMLt) + ekt$ Eq (2)

Rkt is equally weighted returns of *kth* dividend yield portfolio at time period t,

R*ft* is 12-month T-bill rate used as a proxy for a risk free rate.

βkt are the beta coefficient (denoting risk) of *kth* portfolio.

$MKTt - Rft$ is the market excess return on a broad market portfolio (such as KSE-100 index),

*SMB*t is the difference between the average returns of small and large size stocks,

HMLt is the difference between the average returns of high and low book to market stocks, as defined in Fama and French (1993).

4. Statistical Analysis and Results

In this study, the sampled firms are sorted into portfolios on the basis of lagged dividend yield and are rebalanced annually at the end of December. At first, the average raw returns of each dividend yield portfolio are compared against the average portfolio dividend yield to check the positive association between yield and return. Secondly, to adjust the stock returns for risk, Fama and French three risk factors i.e. MKT, SMB and HML are calculated each month and used as independent variables. The excess returns also calculated on monthly basis of each dividend yield portfolio are used as a dependent variable. The dependent and independent variables are updated every month

for each year. In this sections, the descriptive statistics of five portfolios/quintiles sorted on dividend yield are presented and discussed. Further, the association between dividend yield and risk-adjusted returns is examined and findings are reported.

To investigate the dividend yield effect in KSE the average monthly returns of five portfolios are analyzed against their respective dividend yield. The equally-weighted average monthly return, their respective standard deviation, average dividend yield, average market value and average book to market value calculated for each portfolio are reported in table 4.1.

Table 4.1 Descriptive Statistics of Dividend Yield Quintiles

Dividend-Yield	Monthly Returns	Portfolio	Annual Dividend Yield	Market Capitalization	Book value/ Market value
Portfolios	Mean	Std. Dev.	Mean	Mean (Rs. million)	Mean
Quintile 1 (Lowest)	-0.50%	1.93%	2.53%	10429.22	1.36
Quintile 2	0.23%	1.94%	3.74%	10900.17	0.98
Quintile 3	0.44%	1.88%	4.51%	8377.69	0.96
Quintile 4	0.67%	1.92%	7.12%	17428.75	1.04
Quintile 5 (Highest)	1.14%	1.71%	9.40%	19545.63	1.13

The portfolios are formed on lagged dividend yield basis. The mean and the standard deviation of monthly portfolio returns are presented in percentage term for the period January 2004 to December 2012 (108 months). The annual dividend yield, market capitalization and book to market values are calculated as the simple average of these variables in each respective portfolio. The yield is presented in percentage term whereas market capitalization and book to market values are reported in millions of rupees.

Table 4.1 shows that the portfolio returns are increasing along with dividend yield. The findings are similar to Keim (1985), Fama and French (1993), Naranjo et al. (1998), Sialm (2009) for the US stock market, Thomas and Morgan (1998) for the UK stock market, Lemmon and Nguyen (2008) for the Hong Kong stock market and Park and Kim (2010) for the Korean market suggesting that higher dividend yielding firms tend to have higher returns. The average annual dividend yield ranges from 2.53 to 9.40 percent. The standard deviation of quintile 1 and 2 are high as compared to other quintiles indicating low yield stocks are more risky than high yield stocks. The firms' size for the most part is increasing with dividend yield except for the firms in quintile 3. The highest market value stocks are in the highest yield portfolio suggesting that firms paying more dividends are larger firms. This finding is in contrast with the results reported in studies by Keim (1985), Naranjo et al. (1998), Thomas and Morgan (1998), Lemmon and Nguyen (2008) and Park and Kim (2012) where the stocks in highest dividend paying portfolio has the smallest market size. The average B/M ratio in quintile 1, 4 and 5 shows that stocks contained in these portfolios are undervalued whereas, the stocks in quintile 2 and 3 are overvalued.

Therefore, before running the simple and multiple regression models, few diagnostic tests are performed on data to check for stationarity, multicollinearity, autocorrelation and heteroscedasticity. Firstly, the time series of dependent variable i.e. portfolio monthly excess returns as well as the time series of independent variable i.e. MKT, SMB and HML are checked for stationarity within each portfolio using the Augmented Dicky Fuller (ADF) test against the hypothesis that there is a unit root problem.

Table 4.2 Results of Augmented Dicky Fuller Test for checking Stationarity

Portfolios	**Dependent Variable**	**Rho**	**Tau statistics**	**P-value**
Quintile 1	(Rk-Rf)	-1.20208	-3.9598	0.00164

(Lowest)				
Quintile 2	(Rk-Rf)	-0.98518	-3.33531	0.01341
Quintile 3	(Rk-Rf)	-1.14263	-3.43023	0.00999
Quintile 4	(Rk-Rf)	-1.59314	-4.34595	0.00036
Quintile 5 (Highest)	(Rk-Rf)	-1.66914	-3.60705	0.00566
For All Portfolios	**Independent Variable**	**Rho**	**Tau statistics**	**P-value**
ADF Test on original Series	MKT	-6.19068	-4.58581	0.00013
	SMB	-5.70033	-4.16784	0.00074
	HML	-6.13081	-3.59449	0.00589

The results of table 4.2 show the series of dependent variable i.e. excess returns (Rk-Rf) for five quintiles are stationary. As p-value indicates the results are significant and there is no unit root problem in the data. Whereas, the series of independent variables i.e. (MKT), (SMB) and (HML) are also stationary as reflected by their p-values. The results are significant and there is no unit root problem.

In order to achieve reliable results another assumption of multiple linear regression is that there should not be high correlation among variables. Therefore, to detect the problem of multicollinearity the independent variables are checked for correlation. The techniques of Variance Inflation Factor (VIF) and Correlation matrix are used to detect whether there is a problem of multicollinearity. The results of correlation matrix and VIF are shown below;

Table 4.3 Correlation Matrix for all Portfolios (show p-values with these correlations)

	MKT	SMB	HML
MKT	1	-0.1879	0.1093
SMB	-0.1879	1	-0.1272
HML	0.1093	-0.1272	1

Table 4.3 show the correlation among three independent variables used in the regression. The problem of multicollinearity exists when the correlation coefficient is more than 0.6. The results of correlation matrix show that the variables are not highly collinear and the correlation coefficients of the three variables are much below than 0.6. Another test i.e. VIF is used to confirm the results of correlation matrix. The results are displayed in table 4.4 below;

Table 4.4 Variance Inflation Factors for all portfolios

Variable	VIF
MKT	1.045
SMB	1.049
HML	1.024

The results of VIF, above in table 4.4 confirms the findings of correlation matrix that there is no presence of multicollinearity among independent variables. The VIF must be greater than 10 for a variable creating a problem of multicollinearity in data (Gujrati, 2003). The results show that none of the variable has a VIF more than 1.5 confirming that there is no problem of multicollinearity in data.

4.1. CAPM and Fama and French Time series Regression (OLS)

In order to test the dividend yield effect in KSE, the present study attempts to analyze the relationship between dividend yield and risk-adjusted returns. CAPM and Fama and French (1993) three factor model is used to control for risk. The following table presents the results of OLS regression estimates based on CAPM and Fama and

French model run for each of five portfolios.

Table 4.5**:** CAPM and Fama-French Three Factor OLS Regressions for Five Dividend Yield Portfolios

CAPM: $(Rkt - Rft) = \alpha k + \beta 1kt(MKTt - Rft) + ekt\ (a)$
Fama-French: $(Rkt - Rft) = \alpha k + \beta 1kt(MKTt - Rft) + \beta 2kt(SMBt) + \beta 3kt(HMLt) + ekt$ (b)
P-values are in parentheses at 5% significance level

	Regression (a)			**Regression (b)**				
Dividend Yield Portfolios	**Intercept (α)**	**MKT (β_1)**	**R^2**	**Intercept (α)**	**MKT (β_1)**	**SMB (β_2)**	**HML (β_3)**	**R^2**
Lowest (Q1)	-0.0153	0.385		-0.020	0.400	0.191	-0.043	
t-value	-.3.259	6.529		-3.249	6.714	1.339	-0.374	
P-value	0.002	0.000	0.29	0.002	0.000	0.184	0.709	0.31
Quintile 2	-.0.0008	0.436		-0.010	0.439	0.113	0.093	
t-value	-1.792	7.411		-1.583	7.182	0.777	0.798	
p-value	0.076	3.187	0.34	0.117	0.000	0.439	0.427	0.35
Quintile 3	-0.006	0.432		-0.008	0.438	0.115	0.042	
t-value	-1.482	7.885		-1.362	7.775	0.855	0.394	
p-value	0.141	0.000	0.37	0.176	0.000	0.395	0.695	0.38
Quintile 4	-0.006	0.596		-0.009	0.608	0.132	-0.042	
t-value	-1.192	9.987		-1.401	9.833	0.897	-0.355	
p-value	0.236	0.000	0.48	0.164	0.000	0.372	0.723	0.49
Highest (Q5)	0.0006	0.547		0.004	0.534	-0.035	0.162	
t-value	0.162	11.302		0.801	10.777	-0.295	1.703	
p-value	0.872	0.000	0.55	0.425	0.000	0.768	0.092	0.56

Dividend yield	**Breusch-Godfrey test for Autocorrelation**		**Breusch-Pagan test for Heteroscedasticity**		**Normality of residual**	
Portfolios	**CAPM**	**Fama-French**	**CAPM**	**Fama-French**	**CAPM**	**Fama-French**
Qunitile 1 (Lowest)	LMF 5.5054 (0.0208907)	LMF 4.77603 (0.031193)	LM 14.3597 (0.00015)	LM 32.1826 (4.79e-007)	37.9327 (5.7945e-009)	36.5581 (1.15217e-008)
Quintile 2	LMF 2.1204 (0.14842)	LMF 1.90682 (0.170395)	LM 30.0329 (4.24783e-008)	LM 69.1809 (6.39193e-015)	75.7267 (3.59882e-017)	61.9907 (3.45852e-014)

Quintile 3	LMF 1.32815 (0.2518)	LMF 0.881779 (0.349977)	LM 3.53589 (0.06005)	LM 9.00647 (0.02920)	13.545 (0.001145)	12.8121 (0.001652)
Quintile 4	LMF 2.75529 (0.100005)	LMF 3.17909 (0.0776204)	LM 0.38928 (0.5327)	LM 12.1159 (0.006997)	24.3728 (5.09929e-006)	24.6972 (4.33581e-006)
Quintile 5 (Highest)	LMF 5.84705 (0.0173766)	LMF 7.59983 (0.0069394)	LM 0.03160 (0.85890)	LM 5.50433 (0.13838)	29.4793 3.96875e-007	26.8467 (1.48015e-006)

Table 4.5 reports the results of CAPM and Fama and French (1993) cross sectional regression run for each of five portfolios. The results of Breusch-Godfrey test for autocorrelation shows that there is a problem of autocorrelation in quintile 1 and 5 for both CAPM and Fama-French data series. The test significance value is (0.021), (0.031) and (0.018), (0.007) respectively that is less than 5% level of significance which leads to the rejection of null hypothesis (error is not auto correlated). The results of Breusch-Pagan test for heteroscedasticity shows that Lagrange Multiplier test significance values for quintile 1,2 for CAPM data set and quintile 1,2,3 and 4 for Fama-French data set is less than 5% level of significance leading to the rejection of null hypothesis (heteroscedasticity not present) showing the problem of heteroscedasticity. Moreover, the residuals are not normally distributed for all five quintiles as shown by the p-value of Jarque Bara test that is less than 5% significance level rejecting the null hypothesis (error is normally distributed).

The results of various diagnostic tests reveals that the assumption of OLS regression are not met as the error should be normally distributed with zero mean i.e. no autocorrelation and constant variance i.e. homoscedastic otherwise heteroscedasticity effects finding and chances of type 1 error increases (Gujrati, 2003). There is a presence of autocorrelation in two of the quintiles, the error are heteroscedastic and non-normal residuals making the finding of the model unreliable and the validity of the model questionable. Therefore, for the quintiles showing the problem of heteroscedasticity the regression is estimated in Generalized Least Square (GLS) setting to mitigate the heteroscedasticity problem. Prior studies support the use of GLS method to provide reliable estimates when errors are not homoscedastic (Gujrati, 2003; Goyal, 2012). Besides, Cochrane-Orcutt procedure is applied to reduce/eliminate the autocorrelation of the error terms present in any quintile.

4.2. CAPM and Fama-French Time series Regression (GLS)

CAPM and Fama-French heteroscedasticity corrected model (GLS) is run for quintile 1 and 2 using CAPM and for quintile 1,2,3,4 using Fama-French. Cochrane-Orcutt procedure is applied to quintile 5, while using both CAPM and Fama-French models, showing autocorrelation problem. Portfolio excess returns are regressed against the MKT for CAPM and in a separate setting the portfolio excess returns are regressed against MKT along with SMB and HML for the application of Fama-French model. The following table presents the results of heteroscedastic corrected model (GLS) and Cochrane-Orcutt model for autocorrelation.

Table 4.6 CAPM and Fama-French Three Factor GLS Regression for Five Dividend Yield Portfolios

	Regression (a)			**Regression (b)**				
Dividend Yield Portfolios	**Intercept (α)**	**MKT (β_1)**	**R^2**	**Intercept (α)**	**MKT (β_1)**	**SMB (β_2)**	**HML (β_3)**	**R^2**
Lowest	-0.0147***	0.5663***		-0.0201***	0.5571***	0.1998**	-0.0374	
t-value	-3.858	9.738	0.48	-3.9130	9.3630	2.0930	-0.3940	0.48

P-value	0.0002	2.83e-016		0.00017	0.00001	0.03885	0.69438		
Quintile 2	-.0.0078*	0.5816***		-0.0095**	0.5032***	0.1702	0.2441***		
t-value	-1.932	8.579		-2.0365	6.5941	1.1719	2.6550		
p-value	0.0561	1.05e-013	0.42	0.04432	0.00001	0.24401	0.00922	0.35	
Quintile 3	-0.006	0.432***		-0.0097***	0.6109***	0.1435	0.0317		
t-value	-1.482	7.885		-1.9887	9.2127	1.0937	0.2822		
p-value	0.141	0.000	0.37	0.0494	0.00001	0.27670	0.77838	0.47	
Quintile 4	-0.006	0.596***		-0.0112*	0.7691***	0.1611	-0.0501		
t-value	-1.192	9.987		-1.7843	11.7735	1.3765	-0.4652		
p-value	0.236	0.000	0.48	0.07738	0.00001	0.17170	0.64277	0.59	
Highest	0.0010	0.5370***		0.004	0.5199***	-0.0260	0.1952**		
t-value	0.2060	11.08		0.6704	10.6404	-0.2249	2.1641		
p-value	0.8372	3.42e-019	0.57	0.50413	0.00001	0.82254	0.03284	0.59	

*****, **, * shows the significance of a variable at 1%, 5% and 10% respectively.**

In table 4.6 the results of regression estimates of CAPM and Fama-French model for five dividend yield sorted portfolios are reported. The R-square or the explanatory power of CAPM ranges from 0.37-0.57% whereas the explanatory power of Fama-French ranges from 0.35-0.59%. The difference between the R-squares of the two models shows that the variations in KSE stocks are largely explained by market risk factor. The other two factors i.e. size premium and value premium do not have much additional explanatory power as the difference is too little between the R-square of the two models. Low value of R-square indicate that the selected independent variables explain less amount of variations in firms' stock returns and there are other factors (external factors and firm specific factors) responsible for stock variation of KSE listed firms.

The intercept term of all of the portfolios is close to zero while using the one-factor CAPM. There is an increasing pattern in the one-factor intercept terms from the lowest to highest dividend yield portfolios indicating there might be a yield-effect due to taxes (tax penalty on dividend). Nevertheless this effect does not survive while running the Fama and French regression model. The three-factor intercept terms are close to zero and show no relationship with dividend yield portfolios. The intercept terms for all quintiles are negative and small (almost zero) except the highest dividend yield portfolio where intercept term is positive and higher than the other four portfolios using both CAPM and Fama-French model. The intercept terms of quintile 1 and 2 are statistically significant at 1% and 10% level of significance respectively, using the CAPM. Whereas, using the Fama-French model the intercept terms for quintile 1, 2, 3 and 4 are significant (at different levels of significance).

Looking at the intercept terms almost all, except lowest and highest quintiles intercept term, are insignificant at 5% level of significance using both CAPM and Fama-French model. As it is suggesting that there is no evidence against Ho: $\alpha = 0$ and lowest yielding stocks and highest yielding stocks may have other explanatory factors than the standard risk controls.

Table 4.6 also shows that market risk premium brings a strong significant positive change on portfolio excess returns ranging from 43-60% using CAPM. Similarly, using the Fama-French model, market risk premium have significant positive affect on portfolio excess returns by 50-70%. Other than market risk premium the two other variables i.e. size and value premium have insignificant positive relationship with portfolio excess returns for most of the quintiles. The findings are implying that as compare to size and book to market risk factors, the market risk factor is explaining/capturing most of the variations in portfolio excess returns of KSE listed stocks.

4. Conclusion

The results of examining the association between dividend yield and the stock returns of KSE listed non-financial firms show that there exists a positive relationship between dividend yield and raw return (average of individual stock returns in a particular portfolio) of five dividend yield sorted portfolios/quintiles. But the relationship does not persist between dividend yield and portfolio risk-adjusted returns using CAPM and Fama-French models. The intercepts of both the models for all quintiles except the lowest and highest are zero as most of them are insignificant, showing no pattern along with dividend yield. While comparing the R-square of both the models there is a little difference between the two results. Out of the three risk factors applied, only market risk factor captures and explains most of the variation in dividend yield portfolio returns, applying both CAPM and Fama and French three factor model. This finding indicates the presence of market risk factor for dividend paying firms as it is significant while applying both the models. Size and value premium are insignificant for most of the quintiles which suggests that these two premiums are not priced by the investors. Thus, the results are not showing any sign of tax-effect in KSE stock market i.e. investors requiring higher returns against tax penalty on dividend.

The overall results about examining the yield-return relationship have encouraging effect on meeting the objective of the study. The preseant study calculates equally weighted portfolio returns, forms equally weighted yield portfolios and employ static betas to capture the variation in stock returns arising due to three risk factor namely market risk premium, size and value premium. Most of the studies, except few, conducted in developed and emerging stock markets have calculated value-weighted portfolio returns and factor loadings to capture the sensitivity of returns towards various risk factors. Fama and French (1993) formed value weighted yield portfolios. Naranjo et al. (1998) used equally weighted portfolios and stressed that value weighting of yield portfolio is important as their results were contrasting to those of Fama and French (1993). The review of these studies and comparsion of resutls reveal that these factors must be checked in future research work as they may be responsible for our contrasting results with those of developed and emerging stock markets research studies. The next chapter,outlines a brief review of the present study, discusses conclusions and provide recommendations for future researches.

References

Allen, F., & Michaely, R., (2003). Payout Policy. *Handbook of Economics of Finance,* North-Holland, Amsterdam : Elsevier Science, 1, 337-430.

Al-Malkawi, H. N., Rafferty, M., & Pillai, R. (2010). Dividend policy: a review of theories and empirical evidence. *International Bulletin of Business Administration*, 9(9), 171-200.

Annual Report, Karachi Stock Exchange (2013).

Baker, H. K., Farrelly, G. E., and Edelman, R.B. (1985). A survey of management views on dividend policy. *Financial Management*, 14(3), 78-84.

Baker, M., & Wurgler, J. (2004). A catering theory of dividends. *Journal of Finance,* 3(59),1125–1165.

Bandhari, L. C. (1988). Debt/equity ratio and expected common stock returns: empirical evidence. *Journal of Finance*, 43(2), 507-528.

Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of Financial Economics,* 9 (1), 3-18.

Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios: A test of the efficient market hypothesis. *Journal of Finance*, 32 (3), 663-882.

Bhattacharya, S. (1979). Imperfect information, dividend policy and the bird-in-the-hand fallacy. *Bell Journal of Economics,* 10(1), 259-70.

Bhattacharya, S. (1980). Non dissipative signaling structures and dividend policy. *The quarterly journal of Economics*, 95, 1-24.

Black, F. (1972). Capital market equilibrium with restricted borrowing. *The Journal of Business,* 45(3), 444-455.

Black, F., & Scholes, M. S. (1974). The effects of dividend yield and dividend policy on common stock prices and returns. *Journal of Financial Economics*, 1, 1-22.

Blume, M. E. (1980). Stock returns and dividend yields: some more evidence. *Review of Economics and Statistics*, 62, 567-577.

Brav, A., Graham, J.R., Harvey, C.R., and Michaely, R. (2005). Payout policy in the 21st century. *Journal of Financial Economics*, 77(3), 483-527.

Brennan, M. J. (1970). Taxes, market valuation and corporate financial policy. *National Tax Journal*, 23, 417-427.

Brooks. C. (2008). Classical linear regression model assumptions and diagnostic tests, *Introductory Econometrics for Finance.* Cambridge University Press, 129-205.

Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance*, 52(1), 57–82.

Chan, L. K., Hamao, Y., & Lakonishok, J. (1991). Fundamentals and stock returns in Japan. *Journal of Finance*, 46, 1739–1789.

Chen, N., Grundy, B., & Stambaugh, R. (1990). Changing risk, changing risk premiums, and dividend yield effects. *The Journal of Business*, *63*(1), 51-70.

Christie, W. G. (1990). Dividend yield and expected returns: The zero-dividend puzzle. *Journal of Financial Economics*, 28(1), 95-125.

DeBondt, W., & Thaler, R. (1985). Does the market overreact? *Journal of Finance*, 40(3), 793-805.

Fama, E.F., & French,K.R., (1996). Multifactor explanations of asset pricing anomalies. *Journal of Finance*, 51, 55-83.

Fama, E.F., & French,K.R. (1992). The cross section of expected stock returns. *Journal of Finance*, 47(2), 427-465.

Fama, E.F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.

Farrar, D. E., & Selwyn, L. L. (1967). Taxes, corporate financial policy and return to investors. *National Tax Journal*, 20, 444-454.

Farre-Mensa, J., Michealy, R., & Schmalz, M. C., (2014). Payout policy. *Annual Review of Financial Economics*, 6, 75-134.

Gelman, A., & Hill, J. (2007). *Data analysis using regression and multilevel hierarchical models* (Vol. 1). Cambridge: Cambridge University Press.

Gordon, M. J. (1959). Dividends, earnings, and stock prices. *Review of Economics and Statistics*, 41, 99-105.

Gordon, M. J., & Shapiro, E. (1956). Capital equipment analysis: The required rate of profit. *Management Science*, 3(1), 102-110.

Gordon, R., & Bradford, D. (1980). Taxation and the stock market valuation of capital gains and dividends. *Journal of Public Economics*, 14, 109–136.

Graham, J. R. (2003). Taxes and corporate finance: A review. *Review of Financial Studies*, 16(4), 1075-1129.

Income tax ordinance 2001, (2011-2012), First Schedule, Division III (1).

Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *Journal of Finance*, 48 (1), 65-91.

Jensen, M. C. (1986). The agency cost of free cash flow, corporate finance and takeover. *American Economic Review*, 76, 323-329.

Kalay, A., & Lemmon, M. (2008). Payout policy. *Handbook of Corporate Finance: Empirical Corporate Finance*, North-Holland, Amsterdam: Elsevier, 2, 3-50.

Kalay, A., & Michaely, R. (2000). Dividends and taxes: a re-examination. *Financial Management*, 29(2), 55–75.

Kaleem, A., and Salahuddin, C. (2006). Impact of dividend announcement on common stock prices at Lahore stock exchange (Pakistan). *South Asian Journal of Management*, 13(2), 86-99.

Keim, D. B. (1983). Size-related anomalies and stock return seasonality: Further empirical evidence. *Journal of Financial Economics*, 12, 13-32.

Keim, D. B. (1985). Dividend yields and stock returns: Implications of abnormal January returns. *Journal of Financial Economics*, 14, 473-489.

Kothari, S. P., Shaken, J., & Sloan, R.G. (1995). Another look at the cross-section of expected stock returns. *Journal of Finance*, 50(1), 185-224.

Lasfer, M.A. (1995). Ex-day behaviour: Tax or short-term trading effects. *Journal of Finance*, 50, 875-897.

Lemmon, M. L., & Nguyen, T. L. (2008). Dividend yields and stock returns: Evidence from a country without

taxes. Available at SSRN 1108874.
Levis, M. (1989). Stock market anomalies: A re-assessment based on the UK evidence. *Journal of Banking and Finance*, 13, 675-696.
Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings and taxes. *American Economics Review*, 46(2), 97-113.
Lintner, J. (1965). The valuation of risky assets and selection of risky investment in stock portfolios and capital budgets. *Review of Economics and Statistics*, 47(1), 13-37.
Lintner, J. (1962). Dividends, earnings, leverage, stock prices and supply of capital to corporations. *The Review of Economics and Statistics*, 64, 243-269.
Litzenberger, R. H., & Ramaswamy, K. (1979). The effect of personal taxes and dividends on capital asset prices. *Journal of Financial Economics*, 7, 163-195.
Litzenberger, R. H., & Ramaswamy, K. (1982). The effects of dividends on common stock prices: tax effects or information effects?. *Journal of Finance*, 37, 429-443.
Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *Journal of Finance*, 50(1), 23-51.
Lumley. T., Diehr, P., Emerson, S., and Chen, L. (2002). The importance of the normality assumption in large public health data sets. *Annual Review Public Health*, 23, 151-169.
McCluskey, T., Burton, B. M., Power, D. M., and Sinclair, C.D. (2006). Evidence on the Irish stock markets reaction to dividend announcements. *Applied Financial Economics*, 16(8), 617-28.
Michaely, R., Thaler, R. H., & Womack, K. L. (1995). Price reactions to dividend initiations and omissions: Overreaction or drift?. *The Journal of Finance*, *50*(2), 573-608.
Miller, M. H., & Modigliani, F. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, 48, 261-297.
Miller, M. H., & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *The Journal of Business*, 34(4), 411-33.
Miller, M. H., & Modigliani, F. (1963). Corporate income tax and the cost of capital. *American Economic Review*, 53, 433-443.
Miller, M. H., & Scholes, M. S. (1982). Dividends and taxes: Some empirical evidence. *The Journal of Political Economy*, 1118-1141.
Morgan, G., & Thomas, S. (1998). Taxes, dividend yields and returns in the UK equity market. *Journal of Banking & Finance*, 22, 405-423.
Naranjo, A., Nimalendran, M., & Ryngaert, M. (1998). Stock returns, dividend yields, and taxes. *Journal of Finance*, 53(6), 2029–2057.
Park, J., & Kim, M. (2010). Dividend yields and stock returns: Evidence from the Korean stock market. *Asia-Pacific Journal of Financial Studies*, 39, 736-751.
Pettit, R. (1972). Dividend announcements, security performance and capital market efficiency. *Journal of Finance*, 27, 993-1007.
Poterba, J.M. & Summers, L.H. (1984). New evidence that taxes affect the valuation of dividends. *The Journal of Finance*, 39(5), 1397-1415.
Reinganum, M. R. (1983). The anomalous stock market behavior of small firms in January: Empirical tests for tax-loss selling effects. *Journal of Financial Economics*, 12, 89−104.
Reinganum, M.R., & Shapiro, E. (1987). Taxes and stock return seasonality: Evidence from the London stock exchange. *Journal of Business*, 60, 281-295.
Rosenberg, B., Reid, K., & Lanstein, R. (1985). Persuasive evidence of market inefficiency. *Journal of Portfolio Management*, 11, 9–17.
Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*. Harlow, Essex: England, Prentice Hall.
Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19 (3), 425-442.
Shefrin, H. M., & Statman, M. (1984). Explaining investor preference for cash dividends. *Journal of Financial Economics*, 13(2), 253-282.
Sialm, C. (2005). Tax changes and asset pricing: Time-series evidence (No. w11756). *National Bureau of Economic Research*.

Sialm, C. (2006). Investment taxes and equity returns (No.w12146). *National Bureau of Economic Research*.
Sialm, C. (2009). Tax changes and asset prices. *American Economic Review*. 99, 1356-1383.
Stattman, D. (1980). Book values and stock returns. *Chicago MBA: A Journal of Selected Papers,* 4, 25–45.
Walter, J. (1963). Dividend policy: it's influence on the value of the enterprise. *The Journal of Finance*, 18(2), 280-291.