The Study to Check the Applicability of Arnott and Asness Model on KSE 100 Index from 2005-2015

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Abstract

The purpose of this research is to find out the impact of dividend payments on the earnings of companies listed on Pakistan Stock Exchange. The sample includes firm listed on the Karachi Stock Exchange 100 index for a time period of 2005-2015. The model was applied where they refuted the conventional theory that said dividend payments do not affect future earnings of the company, on the aggregate U.S. Market (S&P 500). Our variables include size, return of asset, payout ratio, leverage taken by the company, earnings over price, past earnings growth, exchange rate and annual growth.

This study holds importance in respect to finding out whether our results will vary after applying the model studied in the developed economy or it holds same results in the developing economies. One important insight that we aim to find out is whether companies, in order to maximize shareholder’s wealth, should pay dividend or retain it back for further reinvestments.

Keywords: Dividend payments; Earnings growth; Earnings yield; Annual growth

Introduction

Market observers are often seen with the view that companies that pay lower dividends tend to have higher earnings growth. However, this has been negated by many researchers along the lines of Dividend Irrelevant theorem. The debate is often there whether investors should invest in companies with dividend payments or in those that do not pay dividends. Researchers have carried in depth studies regarding this and have come up with varying results in different markets. Miller and Modigliani [1,2] suggested that dividend have no impact on the value of the company whereas Gordon and Lintner suggested that dividends play an integral part in valuing a company. Arnott and Asness [1] used the Gordon growth model which is as follows:

\[ E = (D/P) + g \]

Gordon suggested that this can be substituted with this:-

\[ E = (D/E)^* (E/P) + g \]

He said that as companies were trading at a very high P/E hence, it is important that they will be offset by lower D/P which was not the case in US market hence this task of offsetting was alone left to "g" only. Arnott and Asness [1] used this model as a basis and tested this on the US equity market to find out whether dividend policy has an impact on the future growth of the company's earnings. They found a positive relation between the dividend policy and the earnings of the market. Going forward in 2006, Zhou and Roland [3] extended this research on the individual companies listed on the S&P 500 index over a span of 50 years and applied several variables on the companies to find whether dividend payments have an impact on the future earnings of the company. They again found a positive relation between dividend payments of companies with respect to their earnings.

The aim of this study is to test the model given by Arnott and Asness [1] on the Pakistani Equity Market of KSE - 100 index over a span of 11 years from 2005-2015 and see that the model when applied in developing country's market will yield same results or it will vary as the base model has been applied in the developed market.

Dividend payments play an integral part for an investor to make decision about their investment plans. On the other hand company's management has to be very efficient in making their dividend payments as their aim is to maximize shareholder's wealth without affecting the company's growth as well. Hence, the debate always goes on; “Whether companies should pay dividends or retain it back for the company's efficient growth”.

This paper will focus on studying the growth patterns of companies listed on KSE 100 over a span of 11 years and deduce whether dividend paying companies grow faster and efficiently or companies who do not pay dividends grow faster in the Pakistani market.

Literature Review

Dividends can either be in the form of cash outlays or in the form of capital gains, this decision depends on management of the company to either pay dividend in the form of cash outlays or in the form of capital gains as per the investor's preference which is as per the company's reputation in the market. However, the management holds the view that if they pay out high dividends they will be left with less retained earnings, which is the lowest source of cost of capital and vice versa. Hence, higher dividend payout ratio will result in lower retained earning increasing their cost of capital which will be need to be met with either higher interest rates through debt financing or higher required rate of return through equity financing [4] Agency Theory.
Most companies pay dividends because people value dividend paying companies higher than non-dividend paying companies and they prefer dividend gain rather than capital gain only because of the matter fact that capital gain is something that is very difficult to forecast accurately also companies prefer to pay dividend because of market inefficiency which is regarded as investors sentiments by Ben David [5].

Arnott and Asness and Miller Modigliani [1,2]

Miller and Modigliani [2] Dividend Irrelevance Theorem predicts that dividend payments do not impact the valuation of a company as investor gains are nullified when dividends are announced which result in lowering the prices. However, this theory was challenged by Gordon [6] when they introduced the Bird in the hand theory stating that dividends play an integral part in valuation of a company as investors tend to be more interested in dividend payments as compared to only capital gains. This has led to two major areas of dividend payment debate namely: Dividend Irrelevance Theorem and Dividend Relevance Theory.

Arnott and Asness [1] observed that instead of E/P offsetting low dividend payout ratio it was left entirely on growth to balance the return. This contradicted the conventional theory. Some infer this as a progressive extension of Miller and Modigliani [2], who believed price should not change signifying no change in E/P and since the current earnings do not change as well, it’s again left upon growth to balance the equation. Many observers on the basis of this would assume a perfect negative relationship between the payout and growth.

This theory however, is based on assumptions like: Investment policy for the firm remains constant by the amount of dividends paid, information is equal and shared and dividends do not seek to deliver the private information of the manager, tax treatment is same for retained as well as distributed income, managers seek to work in the best interest of the shareholders, markets are priced efficiently.

When these assumptions of perfection is relaxed, potential behavioral or information based explanations arise to enlighten how market's payout ratios are related to expect future earnings growth. Many scholars like Arnott [1] in their paper states that high dividend leads to a high earnings growth and companies which have a low dividend yield leads to a low earnings growth but there is a second school of thought believing the complete opposite, many financial analyst believe that high dividend is because of high earnings growth rather than vice versa. Many companies increase their dividends when their earnings increases so earning growth cannot be impacted by dividend policy.

Rationale behind Arnott and Asness

According to Arnott and Asness [1] dividend payout ratio could be used to determine/forecast the future earnings growth [7]. Their theory, differing from conventional wisdom, suggested that higher payout ratio boils down to a greater growth of real earnings than low distributions leading to slow growth.

They debated that, a combination of high P/E and low payout does not necessarily mean a higher return in future. Earlier, researches from Keim [8], Christie [9] have confirmed the positive relationship between Dividend yields (DPS/Share Price) and return, Fama and French [10] have reported a positive relation between earnings yield (EPS/Price) to return.

Arnott and Asness [1] further applied Gordon's constant growth valuation model (1962) to aggregate market:-

\[ R = \frac{D}{p} + g = (1) \]

\[ R = \frac{D}{E/E + P + g} \]

Breaking down, the dividend yield into dividend payout (D/E) and Earnings yield (E/P) helps understanding the relationship further. Under Miller and Modigliani [2] and Vivian [11], the keeping the earnings constant means no significant impact on earnings yield and keeping the return constant translates to the fact that a low payout would mean increase in the expected growth of the dividend. This strengthens the idea that higher retained earnings lead to higher growth in future. Conventional wisdom, suggesting the idea that higher retention ratio would translate into reaping of more positive NPV capital projects. This belief was negated by Arnott and Asness [1] who could not substantiate the theory with the U.S data from 1871-2001. However, the results were the opposite, low payout was strongly correlated to low 10 year real earnings growth. The correlation was positive when tested on a 5 year data as opposed to 10 years. The reversion to the mean for earnings, earnings yield and bond yield curve were kept constant. This contradicted the theory that was believed earlier.

Other performance factors

Gordon furthermore studied this area and suggested that the only way to offset payout ratio is through growth element of companies. Baker [12] found that management and corporations view dividend policy as a very difficult task "It is like a puzzle with pieces that just don't fit together". Kent debated that higher dividend payout leads to higher growth in company's earnings while many contradict this theory. Kent surveyed the determinants of dividend policy and found several internal like anticipated level of future earnings, past dividends, cash availability and concerns about increasing maintaining the stock price in addition to external factors like shareholding pattern of directors in the company, the interest of the management etc.

Benartz and Michaely [13] conducted a study to find out whether dividend changed does really have an impact on the future earnings. They found out that companies that might have higher dividend payments might enjoy higher earnings only for a year as compared to those companies that might have lower dividends but will enjoy higher earnings in the long run. The only strong finding of their research was that companies that cut dividends are likely to experience a growth in future earnings. They concluded their paper on the finding that when firms increase their dividends they do so on the basis on current earnings which happens to grow but is indifferent to the future earnings and do not predict anything about future earnings. Many researchers like Rehman [14] suggest that dividend is one of the factors of firm performance and growth, Gulay [15] and Ardekani [16] indicates a positive relationship between dividend announcement and price volatility. Companies paying out more dividends have higher volumes of shares traded and higher share price.

Research objectives

The objective of this study is to test the applicability of Arnott and Asness [1] Model on the KSE - 100 index from 2005-2015 and find out:

Dividend paying companies tend to have higher earnings

Non-Dividend Paying Companies tend to have higher earnings
Hypothesis

: Size #
: ROA#
: E /P#
: PEG#
: AG#

Research Methodology

Population of the study

PSX-100 index was considered for this study as the companies in the index represent all the sectors in Pakistan stock exchange and the results can be generalized for all the companies listed in PSX.

Sample size and sample methodology

We have taken a sample size of 100 firms listed on KSE 100 from the period 2005-2015. For the companies data to be included in our research they need to have been listed on KSE from the period 2005-2015.

A criterion for dividing PSX 100 index companies into dividend and non-dividend paying is given below:

Companies that have not paid dividend for more than 5 years or have paid discretely.

Retention ratio is more than 60%.

Listed in 100 index for at least 10 years from 2005-2015.

Research tool

Eviews 8 was used to test the Multivariate regression to test the validity of the model which is as follows:

=+Payout+size+ROA+E/P+LEV+-, +, +e

Using this theory as the basis we are using several factors like ROA, EPS, size of a company, payout ratio, leverage of a company and past earning growth of every company over the last Ten years and see whether companies with dividend payouts have impacted the growth or not. A quantitative study will be conducted where we will be testing PSX 100 over a period of 11 years.

Subsequently we are using Arnott and Asness [1] approach to measure the future earnings growth with some addition of variables which are mentioned in the formula below:

Explanation of framework and definition of variables

Where,

*EG=earnings growth, measured as compounded annual earnings for common shareholders growth.

Payout=dividend payout, measured as Year0 dividends divided by Year 0 earnings which shows how much a company pay dividend.

Size=market value or capitalization of a company in PSX 100 index.

ROA=return on assets, measures the company return with the help of assets over a period.

LEV=leverage, measured as the book value of debt to total assets.

i earnings yield, measured as earnings for Year 0 divided by the end-of-year market value of equity.

PEG–t, 0=past earnings growth, measured as compounded annual earnings growth from year –t to Year 0 (the basic procedure was the same as for the EG variable).

AG=compounded annual growth in total assets.

*Note: Earnings growth is a dependent variable.

Results

Multivariate regression is run on the equation to check the impact of payout on the earnings growth of companies from 2005-2010.

Theoretical analysis

Payout: The result of our findings for payout of 922 observations companies has been insignificant as the probability is 0.4164 for non-dividend companies and 0.6800 for dividend paying companies as shown in Table 1 meant that in KSE 100 index payout doesn’t have a significant impact on the earnings of the company. Hence, the model of Arnott and Asness [1] extended by Zhou P and Ruland [3] is not applicable in Pakistani market due to different factors that prevail in developing markets which unlike are different from the developed market of US where the model was initially tested. Moreover, companies in Pakistan have not been paying a very high dividend in
the past couple of years and only few companies have given dividend mounting to more than 40% of earnings.

Table 1: Meant that in KSE 100 index payout doesn't have a significant impact on the earnings of the company.

Return on Assets

ROA tells us that what earnings have been generated from the invested capital i.e. assets. The assets of the company are financed both by debt or equity. The ROA of a company will give investors an idea of how effectively the company has been converting the money to invest into net income. The higher the ROA number, the better, because the company is earning more money on its investment on assets. Return of assets (ROA) proved to be significant for both the categories as the statistical results showed significance probability for both non dividend and dividend paying companies that turned out to be 0.0000 as shown in Table 2. This can be attributed to the fact that when companies are not paying dividends they are retaining it back and investing it wisely in expanding their businesses and buying new assets thus increasing its assets base. This effective utilization of funds helps in increasing their earnings significantly for the succeeding years which increases its ROA. Also, the companies that have been paying dividends are using their retained earnings effectively for reinvesting in the business in efficient projects which has helped in increasing their earnings tremendously.

Table 2: Statistical results showed significance probability for both non dividend and dividend paying companies.

Size

The size of a company proved to be insignificant for both non-dividend and dividend paying companies, probability for non-dividend paying companies turned out to be 0.0810 while for dividend paying it was 0.647. Investors’ confidence resulting in less demand for their shares that results in low prices and decreased size.

Leverage

Leverage of the companies proved to be insignificant for both categories as for non-dividend paying companies probability turned out to be 0.2014 while for dividend paying companies probability was 0.2477 Table 4. Although the theory suggests that leverage and earnings growth have an inverse relationship as high leverage would result in higher finance cost, resulting in lower earnings, but in our study the result is opposite mainly because most of the companies in PSX 100 Index are shariah compliant stocks and according to shariah compliant requirements companies could only have debt to asset ratio of maximum 37% which suggest that companies can't take much debt so leverage ratio in our sample is on the lower side thus there is no impact of leverage on earnings growth for both non dividend and dividend paying companies in PSX 100 INDEX.

Table 4: Leverage of the companies proved to be insignificant for both categories as for non-dividend paying companies.

Annual growth

The annual growth is in the form of change in assets from the preceding year and has been highly significant for dividend paying companies. The result has been 0.1904 for non-dividend paying companies while for dividend paying companies it is 0.0000 as shown in Table 5. The reason for such behavior can be attributed to the fact that when companies are paying dividends they have been investing their remaining earnings back in the companies in the form of buying more assets or investing in efficient projects to expand their businesses and thus this has increased their annual growth year on year basis. Once a company starts paying dividend there is extra pressure on the company thus more people would be interested to invest in the company which could increase the price thus increasing the size while on the other hand non dividend paying companies fail to acquire
companies while from 2005-2007 and fallen in 2008 when the market crashed [41]. It companies.

2005-2015. Hence total companies were 84 and observations tested or retaining would increase the growth rate [44-46]

Earnings growth refers to the net income or net loss that a company makes during one fiscal year. It is a dependent variable which is being tested by seven variables in the equation to test which variable impacts earnings growth or not. The earnings for companies have increased from 2005-2007 and fallen in 2008 when the market crashed [41]. However, gained momentum in 2012 onwards and has been on the increasing trend since then. The earnings growth has not been impacted by the payout which was the result in the base study. However, it has been affected by earnings yield, annual growth in assets and return on assets [42,43].

Summary and Conclusion

From decades dividend policy is considered to be a puzzle with several pieces still missing; despite several theories proposed by well-known researchers, arguments, and models devised by analyst and researchers this debate still not rest as behaviors of investors and nature of industries varies from country to country so it is very difficult to analyze whether paying dividend causes a higher growth in earnings or retaining would increase the growth rate [44-46].

The main aim of our study was to find out whether the model used in U.S. hold true in Pakistani Equity market or not. We used companies of PSX 100 index which were constantly present from 2005-2015. Hence total companies were 84 and observations tested were 922 [47]. After conducting several tests on the stability of data we get to a result that dividend payout does not impact on long term earnings growth which was not in favor of the study done by Arnott and Asness [1]. One of the reasons could be that this model was tested initially in developed countries which have different dynamics than Pakistan where mostly investors focus on capital gains than the dividend and they don't tend to keep the shares for a long time. Hence, here companies tend to invest more in assets than giving dividend to shareholders which can be depicted in our statistical results of both dividend and non-dividend companies, where earnings growth had a positive relationship and impact with return on assets. This can also be evident from the balance sheets of various companies which mostly show an upward trend in assets. Our statistical results proved payout to be insignificant for both dividend paying and non-dividend paying companies whereas annual growth in assets and earnings yield proved to be significant for dividend paying companies and return on assets proving significant for both dividend paying and non-dividend paying companies [48]. Hence, we can say that firms in Pakistan have been investing efficiently in projects or such assets that have resulted in higher earnings for the companies in the long run.

References