

# Relationship between price earning ratio and stock returns



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There have been a large number of literatures during the past years on price earnings and stock return. The existing literatures propose different theories to how the price earning ratio may affect the performance of a company and also the factors that may influence it.

## **Price-Earning Ratio**

There are several measures to determine the valuation of a security. Most often, the measures are determined by comparing the security's price to different fundamentals such as earnings and dividends. One of the most respected stock valuation measures is the Price Earning ratio, which compare the price of the security to the company's earnings.

Graham (1933) was the first to introduce the concept of the price earning ratio as a measure of performance of the stock market and the application of the P/E ratio was based on the idea that earning are related to value. Basu (1977) identified P/E ratio as predictor of subsequent performance and in <https://assignbuster.com/relationship-between-price-earning-ratio-and-stock-returns/>

particular high P/E firms underperformed and low P/E firms outperformed. The study done by Basu (1977) also state that P/E ratio, due to exaggerated investor expectations, may be indicators of future investment performance and he also validated Nicholson's results which state that low companies having low P/E ratios on average subsequently yield higher returns than high P/E companies.

Gonedes and Dopuch (1974) declared that price models are conceptually inferior to return models under the presence of under-developed theories of valuation. Additionally Christie (1987) argues that price models present more econometric problems than return models. On the contrary there is a majority of studies that declare the superiority of the price model on explaining the return-earnings relation such as Bowen (1981), Olsen (1985), Landsman (1986), Barth et. al (1990, 1992) Barth (1991).

However, the P/E ratio as it is commonly used is the result of network of influences, similar to the way in which a company's share price is influenced not only by idiosyncratic factors particular to that company, but also by movement in prices on markets as a whole, and the sector in which the company operates. Four main influences on a company's P/E ratio have been identified:

The year - the average market P/E varies year by year, as the overall level of investor confidence changes

The sector in which the company operates.

The size of the company - there is a close positive relationship between a company's market capitalisation and the P/E accorded.

Idiosyncratic effects. Companies examined in the same year, operating in the same sector and of similar size nevertheless have different P/E's.

Idiosyncratic effects, that do not affect any other company account for this.

## **Stock returns**

The CAPM developed by Sharpe (1964), Lintner (1965) and Mossin (1966) has been the most widely accepted among the many models developed to explain the relationship between expected returns and risk. According to the CAPM, the market can only compensate the investors for bearing systematic risk or common risk, which is measured by the asset's beta. The beta measures the contribution of the risky asset to the riskiness of the entire efficient portfolio. The relationship between the expected return and risk can be expressed in CAPM model:

$$E(R_i) = R_f + \hat{\beta}_i(E(R_m) - R_f)$$

Where

$E(R_i)$  = the expected return on the  $i$ th risky asset

$R_f$  = the expected return on a risk-free asset

$E(R_m)$  = the expected return on the market portfolio

$\hat{\beta}_i$  = beta coefficient of the  $i$ th risky asset

The establishment of the CAPM are based on the following assumptions:

Investors are risk averse. Therefore investors prefer the highest expected return for a given standard deviation and the lowest standard deviation for a given expected return.

The returns from investment are normally distributed. Therefore two parameters, the expected return and the standard deviation, are sufficient to describe the distribution of returns.

All investors have a common single-period time horizon for their investment decision making.

All investors can borrow and lend unlimited amount of money at a given risk-free rate.

All investors have the same estimates of the expected return on each asset, the variance of return for each asset, and also the covariance between returns for each pair of assets.

All assets are traded in the perfect markets; that is, all assets are marketable, there are no transaction costs or taxes, and all investors are price takers.

The CAPM is challenged by the evidences on anomalies in stock returns. The CAPM says that all diversifiable risks will not be compensated and the only relevant risk is the market risk. Therefore, besides the market factor, no other factors should systematically affect the stock returns. The firm specific factors are capture by the error term, which is random. But the findings of the anomalies such as size, book-to-market equity and earning-to-price ratio

suggest that investors can earn abnormal returns based on these trading rules. This may imply that the CAPM is mis-specified.

Many empirical studies have been conducted and it has been found that stock returns are affected by some factors such as:

### **Book-to-Market Equity effect**

Rosenberg, Reid and Lanstein (1985) and Stattman (1980) found that there is a positive relationship between stock returns and book-to-market equity. By the means of the time-series regression, the t-statistics obtained clearly show a positive result for their hypothesis.

In study of Lakonishok, Scheifer and Vishny (1994), all the stock in the US market was divided into ten deciles portfolios from 1968 to 1989 based on the book-to-market equity (BM) ratio. The results show that the average annual returns for deciles with the highest BM was 10.5 percent higher than the lowest BM deciles.

### **Size effect**

The size effect is among the most prominent phenomena identified. Banz (1981) documents that there is size effect in the US stock market, using a test period from 1963 to 1975. The result of this study shows that small firms (measured by market value) on the average earn higher risk-adjusted returns than big firms.

### **Seasonal effect**

Another evidence of the existence of the anomalies is the seasonal effect. In certain period of the year, stock returns are found to be higher as compared

to the rest on the calendar year. The most common example of the seasonal effect is the January effect where stocks repeatedly earn higher returns in the month of January than the rest of the months in the year. The seasonal effect is also found in countries including Japan, Australia and Canada documented by Officer (1975), Berges (1984) and Jaffe & Westerfield (1985) respectively.

Many researches illustrate the relationship between the price earning ratio and the stock return of a company. Lakonishok, Scheifer and Vishny (1994) implemented P/E ratio as an expected future earnings growth indicator, in an excessive cross-sectional analysis. They proved that investors tend to favour stocks with exceptional past and current performance “glamour stocks” as they believe that past success will continue in the future, that is, they attribute the extra returns from value shares to psychological factors affecting market participants. According to Burgstahler and Dichev (1997), when the earnings to book value ratio is high, earnings are a more important determinant of equity value and vice versa. Moreover, Kormedi and Lipe (1987) and Collins and Kothari (1989) among other, identified that the earnings persistence is one of the major determinant of the magnitude of the earnings-return relation.

## **EMPIRICAL REVIEW**

Several papers examined the ability of price and return models (along with some alternative forms) to accommodate the return-earnings relationship.

An important ratio for the more low-risk, defensive investor was introduced by Graham and Dodd in 1933. They introduced the Earnings/Price ratio which is simply the Price/Earnings Ratio but flipped around as a benchmark for <https://assignbuster.com/relationship-between-price-earning-ratio-and-stock-returns/>

equity valuation. After the 1929 stock market crash, they recommend the investors that rather by trying to guess what the future bring, they should concentrate on other factors such as the company's past earnings or the value of its assets. According to Graham and Dodd, a company with strong profits and a relatively low stock price was probably undervalued. Also the fact that each share is value a number of times its current earnings became commonly satisfactory as a specific P/E level enables financial investors to make their buy/sell decision. The authors specified that P/E ratio, which is calculated by current fundamentals, never provide an exact appraisal for stocks. As a conclusion, P/E ratio was first regarded as a rough benchmark for selective stock investment and a tool for applying specific financial strategies so that in the long term, above-market returns can be generated.

One of the first works showing the effect of the Price Earnings ratio was done by Nicholson (1960). The first study was based on a sample of 100 stocks which were mainly from industrial issues of trust investment quality and the stock was taken from the period 1939-1959. The stocks were arranged into groups of five according to their P/E ration in ascending order and were rebalanced every five years. The author found out that the twenty lowest multiple stocks had larger price gains as compared to the twenty highest multiple stocks. Those with the lowest P/E would deliver 14.7 times its original investment after the 20-year period, whereas the portfolio with the highest P/E stocks only earned 4.7 times its initial investment. Eight years later, Nicholson (1968) conducted another study where he looked at the earnings of 189 companies between 1937 and 1962. By dividing companies into groups of five, he found out that the average return for companies with



a P/E ratio below ten was 12.7% per annum as compared to companies with a P/E ratio above twenty which had an average return of 7.97% per annum.

Another studies done by Basu's papers (1977) confirmed the results of Nicholson. The author tried to find the relationship between the investment performance of common stocks and their P/E ratio. He studied the price performance of NYSE industrial firms from 1957 to 1971. Two or more portfolios will be computed whereby risk-return relationship is weighted against each other and their performance is measured in pre-determined terms. Price to earnings ratio for every sample was calculated and they were ranked. Five portfolios were formed according to their P/E ratio. Considering the inter-quartile range, dispersion of the P/E ratio over the 14 years period can be noted where the low portfolio earned a return of 16.3% per annum compared to 9.3% for the high portfolio. Later researches (Jaffe, Keim and Westerfield (1989) and Fama and French (1992)) supported the effectiveness that stocks with low P/E ratios produce higher returns.

However a possible rejection of Nicholson and Basu's studies on the Price Earnings ratio was made by Ball (1978). He conceded the apparent of such effects and argued that abnormal returns could not be produced on the basis of information available in the public area as they are of little or zero costs. Other reasons that could account for this irregularity are the systematic experimental error, transaction and processing costs and failure of Sharpe's two parameter CAPM model.

Beaver and Morse (1978) found out that when combining stocks into portfolios based on their price to earnings ratio, the differences among the

portfolio continued up to the 14 years and that growth is not able to explain the existence of these little differences. In the years in which the portfolios are created, the price earnings are negatively correlated with earnings growth but positively correlated with earning growth in the next year implying that investors are considering only short-live distortions. In the study, the correlation of earnings growth in 1957 is negative 0.28 and the median correlation over the 19 years is negative 0.28. This is due to investors' belief that earnings have been affected by temporary, random events or accounting management policies (rate of inflation, change in accounting treatment), firms which have low earning growth tend to have a high P/E ratio in the same year. As the portfolio are formed on the basis of ratio of price to realised earnings, stocks with transitory earnings will be grouped together meaning portfolio with the highest P/E ratio will be likely to include firms with negative transitory elements, that is, realized earnings are lower than the expected earnings. In the next year, while investors' expectations are confirmed and earning growth increases, there is a positive correlation between P/E ration and earning growth. The author concluded that differences in accounting methods are the most evident explanation in differences in the P/E ratio rather than risk and growth.

Studies that relate to accounting and price data normally derived the accounting measures from the COMPUSTAT database and for the quality returns they use CRSP data. However some difficulties may arise when using the COMPUSTAT database and Branz and Breen (1986) explained on the two possible problems that may crop up, that is, the ex-post-selection bias and the look-ahead bias. The ex-post-selection meant that companies which have

merged, gone bankrupt or otherwise disappeared are no more included in the COMPUSTAT database and also new companies appeared with a full accounting history which does not exist before. The look-ahead bias resulted because of a dating problem where investors would not have access to portfolios that were formed at the end of the year and they had to wait several months before having access to it. Branz and Breen eliminated these factors by collecting certain COMPUSTAT items on a monthly basis that contain information on companies that was available to the investors and which also include all companies that had gone bankrupt, merged or disappeared on the COMPUSTAT. They concluded that even though the size effect was present, the Price Earning ratio was no more important as it is the data biases that had generated the evident P/E effect.

Alford (1992) studied the accuracy of the valuation of the price to earning ratio when comparable firms are selected on the basis of industry, risk and earning growth. Alford (1992) used a sample of NYSE, ASE and OTC firms for the years 1978, 1982 and 1986 to analyse the accuracy of the price earning valuation. Each of the selected comparable firm's predicted stock price is compared to its actual price and the author found that the price to earning ratio is an accurate measure of equity valuation. The findings of his research concluded that much of the diversity of P/E is attributed to the variety in the level of risk and earning growth of the individual firm. In addition, the industry factor appears to be a good proxy for risk and earning growth related to the P/E ratios. Alford (1992) showed that the use of the industry P/E multiplied by the firm's earnings per share (EPS) was proved to be an accurate estimator of its equity. The assessment of the accuracy of the P/E

estimator was made under the efficient market hypothesis. In an efficient market, the market price changes randomly to reflect all new information. Thus, it can be used to test the accuracy of the theoretical price that Alford (1992) calculated, using P/E ratio. However this condition might not hold for different market.

Value strategies have been defined by Iakonishok, Schleifer and Vishny (1994) as the buying of stocks whose price are low as compared to other indicators of fundamental values such as earnings, dividends, historical prices, book asset or other measures of value in a comprehensive treatment of the issue of value strategies versus glamour stocks. They collected and studied stock prices between the periods 1963 to 1990. Firms are then classified into 'value' or 'glamour' stocks based on their past growth in sales and expected future growth as implied by the then-current P/E ratio. Differences in the expected future growth rates between the 'value' and 'glamour' stocks were found and as shown by the P/E ratio, investors were always overestimating them. For the first couple of years, the glamour stocks grew more quickly but afterwards the growth rates for the two types of stocks were almost identical. Glamour strategies were outperformed by 10-11% per year by the value strategies which used both past low growth and low multiples. Thus, glamour stock became overestimated, failed to meet investor's expectation and were gradually abandoned. " Stocks with temporarily depressed earnings are lumped together with well-performing glamour stocks in the high expected growth/low E/P category. These stocks with depressed earnings do not experience the same degree of poor future stock performance as the glamour stocks, perhaps because they are less

overpriced by the market” is the possible reason why the P/E did not produce a large effect as the other measures of fundamental value such as price-to-book value or price-to-cash flow. Lakonishok, Schleifer and Vishny (1994) argued that such strategies offer higher return because they take advantage of investors’ sub-optimal behaviour. They came across little, if any, support that the value strategies were riskier and also found that the value stocks performed better than the glamour stocks.

As a conclusion we can say that there has been much research that has been done on the price earnings ratio. Also many studies have been done throughout the world on different stock exchange market such as the Athens Stock Exchange (ASE). These studies concentrate on the impact of the price earning ratio on the stock returns and it has been seen that price earning ratio do affect the stock returns, for example, Basu (1977) confirmed that stocks with low P/E ratio produce higher returns. However these researches had focus mainly on the empirical review rather than the theoretical review and this is the reason why we concentrate more on the empirical review.