CAN HIGH PRICE EARNINGS RATIO ACT AS AN INDICATOR OF THE COMING BEAR MARKET IN THE MALAYSIA?

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Abstract

This paper explores the capability of value investing strategy on the prediction of stock performance, but with regards to the fall in stock prices in Malaysia. The methodology employed is based mostly on fundamental analysis and financial markets theory. This is in line with the methods commonly used by investment analysts in all brokerage houses to evaluate shares. Based on the literature review done, the PE ratio could have been employed to build successful investment strategies in predicting stock market highs. This study explores whether this approach could be regressed and work as an indicator for forecasting of future stock market lows. To testify the hypothesis, a regression and correlation analysis is used. This study observes the development of the Malaysian stock market index, the Kuala Lumpur Composite Index (KLCI) and its PE ratio between 1994 and 2010, a time period that involves notable financial crisis such as the 1997/98 Asian financial crisis and the global financial crisis of late. Although the notions that high levels of PE Ratio could have resulted in the fall of stock market returns in the Malaysia context is rejected in this study, the results show that PE ratio is still a useful predictor of the performance of KLCI. Lastly, this research suggests the other way around, which is high level of PE ratio may precede a rise in future stock performance in the KLCI.

Keywords: PE ratio, stock performance, bear market, value investing strategy

Background

The global financial crisis, which was triggered by the housing bubble in the United States (US) in 2006, has resulted in disastrous impacts on the world economies and financial markets. Corporate bankruptcies and defaults more than doubled in 2009 from an already bad 2008 year. All industries were hit hard, especially retail, chemicals, autos, and financial. As lenders tightened restrictions on borrowers, thousands of firms could not avoid bankruptcy. Even the economies of China, Japan, and South Korea stalled as demand for their goods from the United States (US) and Europe dried up. China's annual growth slowed from 13% in 2007 to 9% in 2008 and then 5% for 2009. Consumer confidence indexes were falling all over the world as were housing prices.

Nine of the 10 stocks in the Standards & Poor's (S&P) 1500 lost value in 2008. The NASDAQ composite index fell 40.5% in 2008, its worst year ever. S&P 500 stocks lost 38.5% of their value in 2008, the worst year since 1937. The Dow Jones Industrial Average lost 33.8% of its value on 2008, the worst loss since 1931 as shareholders lost US$6.8 trillion in wealth. Only three S&P 500 stocks rose in 2008: Family Dollar up 38%, making it the best performer in the S&P 500; Wal-Mart Stores up 18%; and McDonald's up nearly 6%. The biggest decliner on the Dow in 2008 was General Motors (GM), whose stock fell 87%. Citigroup lost 77% of its stock value in 2008. Even General Electric (GE) lost 56% of its value. Fannie Mae and Freddie Mac each slid 98% as did Fleetwood Enterprises, which makes recreational vehicles. And losses were also extensive worldwide. For instance, Vanguard's Europe/ Pacific Index, composed of stocks firms based on those continents, fell 43% in 2008 (David, 2010).

Researchers, economists and financial analysts alike have been trying to address the sources that give rise to the crisis, ways to overcome them, and precede them. In particular, they attempt to develop a general model that would be able to explain and could replicate an economic environment before, during and even after the crisis. Nonetheless, none of them have been able to provide an adequate and concrete answer (Vorek, 2009). In view of the intensity of the global financial crisis, it would be essential to explore if there exist any precise indicators that may spot the thread of these adverse market conditions. Notably, the financial markets are usually the first negatively affected, which in turn, could well anticipate recessions in the coming future. Hence, studies on the predictions of the performance and fluctuations of the financial markets would be essential to anticipate any possible economic crisis in the future.

So the main issue revolves around the failure of most researchers, economists and financial analysts to predict a fall in the stock market or financial crisis in advance. Judging by the intensity of the global financial crisis of late, this research directs to the well established investment strategy developed from Benjamin Graham and David Dodd in the classic text Security Analysis (1934), which is value investing theory. This paper aims to explore its potential reverse application in forecast stock markets fall beforehand. To recap, the main concept behind value investing theory entails buying securities whose shares seemed undervalued by some of its fundamentals (Graham & Dodd, 1934). According to the classic text Security Analysis (1934), these securities might have been traded at discounts to their respective earnings multiples, sales and book value. The authors went on to state that the spirit of value investing is simply purchasing stocks at less than their intrinsic or fair value, which is the discounted value of all of their future distributions.   One of the investment strategies is originated from undervalued basic fundamental variables that are expected to determine the price of the securities. This is common among stocks traded at low multiples of their book value (Price to Book Value), sales (Price to Sales), cash flow (Price to Cash Flow) and PE.

Hence, this paper is aimed to further explore the capability of value investing strategy on the prediction of stock performance, but with regards to the fall in stock prices in Malaysia. It is worth noting here that the Malaysia stock market, which is an emerging market at this point in time, is differentiated from developed markets with regards to its inherent dynamics and heterogeneous nature. It has also been shown that emerging markets, which included Malaysia, were not really incorporated with the developed markets as substantiated by the low correlation with the rest of the world and even among them. In addition, these markets tend to be more volatile than the developed markets (Bekaert et al., 1998). Therefore, a study on the emerging markets such as Malaysia would also prove beneficial for a globally diversified portfolio investor in terms of market timing and country selection.

Objectives

The objectives of this study are:

(1) To investigate the capability of average PE ratios to forecast future stock market returns in the Malaysia equity market.
(2) To test whether high PE ratios could predict the future declines in stock market performance in the Kuala Lumpur Composite Index (KLCI).
(3) To discover whether the PE ratio would serve as a parameter of the coming bear market in the Malaysia equity market.

Scope of the Study

The scope of this research is focused on the capability of PE ratios to predict future stock market returns. In particular, the research is limited to the Malaysia equity market only. The Malaysia stock market, which is an emerging market at this point in time, was chosen as the research object in this study as it was differentiated from developed markets with regards to its inherent dynamics and heterogeneous nature. It has also been shown that emerging markets, which included Malaysia, were not really incorporated with the developed markets as substantiated by the low correlation with the rest of the world and even among them. In addition, these markets tend to be more volatile than the developed markets (Bekaert et al., 1998). Therefore, a study on the emerging markets such as Malaysia would also prove beneficial for a globally diversified portfolio investor in terms of market timing and country selection. But it is worth noting that this research has focused on only one emerging market, which is Malaysia, mainly due to the time constraints.

The study will focus exclusively on the development of the Malaysian stock market index, which is the KLCI between 1994 and 2010. Prior to the year 2009, the KLCI is basically a capitalization weighted index that maps approximately the top 100 companies listed on the Malaysia bourse. It is chosen as the sample of this study as it is generally regarded as the accepted parameter for the Malaysian economy as it maps the most liquid equity stocks in the market. On July 6, 2009, the KLCI was transformed into the FTSE Bursa Malaysia KLCI (FBM KLCI). One of the major features is that the FBM KLCI will be leaner and more robust, consisting of the 30 largest eligible companies by market capitalization instead of the current 100 stocks in the KLCI. Despite the change, the KLCI will still continue to be the bellwether index for the Malaysian stock market, as it had been since its creation in April 1986.

Lastly, the time period between 1994 and 2010 was chosen as it involved four major financial markets downturns. Such time period would provide a better avenue for the researcher to analyze and study the development of the KLCI and its PE ratio during the four major financial markets downturns. The first is related to the Asian economic crisis in 1997; the second occurred in 2001, when the dotcom bubble in the US burst, and the last two happened in 2008, which were pretty much connected to the general March election in Malaysia and the late US subprime mortgage crisis, respectively.

Literature Review

Efficient Markets and Fundamental Analysis

It is essential to explore the implication of efficient capital markets on fundamental analysis before this research dives into the literature of value investing theory. The results of numerous studies on efficient capital markets have indicated that the capital markets are efficient in accordance to abundant sets of information. Simultaneously, the increasing number of researches and studies had revealed a considerable number of cases in which the market in fact does not adjust swiftly to public information (Reilly & Brown, 1997). Given these mixed results regarding the existence of efficient capital markets, it is very important to consider the implications of this contrasting evidence of market efficiency.

Efficient Markets Hypotheses

To begin with, this paper will explore the concept of the efficient market hypotheses and its related researches and studies. Put it simply, security prices would adjust swiftly to the dissemination of new information in an efficient capital market. Henceforth, all the information about the securities would be fairly reflected in their current market price. In Fama's (1970) classic article, the efficient market hypothesis (EMH) can be further categorized into three sub hypotheses based on the information set concerned. They are weak form EMH, semi strong form EMH and strong form EMH.

(1) The weak form EMH is built on the notions that all security market information, such as the historical rates of return and trading volume data, are fully reflected in the current stock market prices. Among other market generated information are block trades and odd lot transactions. Basically, this hypothesis suggests no relationship exists between these market data and future rates of return.

(2) On the other hand, the semi strong form EMH implies that all public information, consisting of both market and non-market information are fully reflected in the current stock market price. Non market information ranges from dividend announcements to political news. Henceforth, securities transaction decisions made after the new information went public would not result in above average rate of returns for investors.

(3) Lastly, the strong form EMH contends that both public and private information are fully incorporated in the current stock market prices. Thus, there is no way for any kind of investors to consistently beat the market and earn above average risk adjusted rates of return. This hypothesis is based on the notion that the market is perfect in which all information is made available to everyone at the same time without cost.

Implications of Efficient Capital Markets on Fundamental Analysis

As mentioned earlier, the fundamental analysis camp stands on the ground that every individual stocks, industries and even the aggregate stock market has its respective intrinsic value based on the current underlying economic factors. Henceforth, to determine the intrinsic value of an investment asset, a fundamental analyst would examine and analyze the all the related variables that would have an impact on the price of the asset. These variables range from the current market interest rates, political risk and the investment's future earnings capability. If there exists a gap between the intrinsic value of the securities and its prevailing market price, investors should take the appropriate action provided the gap is large enough to offset transaction cost. The appropriate action involved buying the security if the intrinsic value is higher than its market price and sell if it is lower. Nevertheless, investors would eventually recognize the gap between the security's intrinsic value and its relative market price and subsequently correct it (Reilly & Brown, 1997). This hypothesis runs contrary to the concept of EMH, particular the semi strong form EMH.

Indeed, Peavy and Goodman (1983) discovered that the risk adjusted returns for stocks in the highest PE ratio quintile were relative inferior that those in the lowest quintile. Basu (1977) also found that a relationship exists between historical PE ratios and the subsequent risk adjusted stock market performance. Such relationship runs against the semi strong form EMH as it suggests that investors could employ publicly available PE ratios to forecast future rates of return. Based on these empirical studies, this paper strives to explore the other side of the relation between PE ratios and stocks performance: if high PE ratios precede a fall in stock prices and if PE ratios could serve as a warnings sign of the coming bear market.

Value Investing Theory

To recap (no pun intended), the main concept behind value investing theory entails buying securities whose shares seemed undervalued by some of its fundamentals (Graham & Dodd, 1934). According to the classic text Security Analysis (1934), these securities might have been traded at discounts to their respective earnings multiples, sales and book value. But what makes an investors value oriented?

The features of value investing are best illustrated by the thought process of a value stock manager (Reilly & Brown, 1997). For instance, PE ratio for any firm is expressed as follow:

PE Ratio = (Current Price per Share)/ (Earnings per Share)

It is worth noting that earnings per share (EPS) can either be current earnings or future earnings forecast of the firm. In general, value oriented investor tends to direct his or her attention on certain facet of the above equation in making investment decisions. In particular, he or she would:

(1) Concentrate on the price component of the whole equation, which is the numerator. The price of the stock must be seemingly "cheap" enough as compared with its peers for the investors.
(2) Partly ignore the stock's current earnings and its subsequent growth drivers; and
(3) Assume the PE ratio is trading well below its mean average and the market will soon "correct" the gap by pushing the price of stock up without any changes in earnings.

Simply put, a value oriented investors would converge his or her attention on the price of the stock in the hope of future market correction, and perhaps, better company's fundamentals (Reilly & Brown, 1997).

The idea behind value investing may seem simple, but categorizing individual securities, industries and even the aggregate stock markets into the value category is harder than it may seem. Most analysts and researchers depend on more easily available financial information such as PE ratios, EPS growth rate and dividend yields to evaluate a security holding position as in-depth security valuations are too time consuming to fabricate. Basically, value stocks are those that are relatively cheap, for instance having low PE ratio with high yield coupled with modest growth potentials. The challenge for value investors is then to determine which securities have fundamentally sound business that can be acquired cheaply (Reilly & Brown, 1997).

Studies have found that value oriented portfolio management is more likely to result in superior returns. In particular, a study by Capaul, Wrowley and Sharpe (1993) discovered that global value shares had outperformed global growth stocks by an average 3.3% per year over a 10 year period ended June 1992. The research focuses on the performance of value and growth portfolios as being classified by relative PB ratios in six countries, which are Japan, France, Germany, the US, Switzerland and the United Kingdom (UK). It is also found that value stocks had outperformed its growth counterparts in each of the six countries under study. The difference between growth and value stocks is that the former is more expensive, having incorporated its better growth potentials such as tech stocks. As opposed with the value oriented camp, growth investors are more inclined to focus on the current and future earnings capabilities of the firms or markets, with less attention paid to share valuation.

Based on previous studies, it can be tempting to reckon that value oriented investment strategy is clearly superior to its growth counterparts. However, this phenomenon does not always happen from one investment period to another. Even so, it would be interesting to further explore the capability of value investing strategy on forecasting future stock performance judging by its superiority.

Relative Valuation Techniques

Under the value oriented investment camp, it is feasible to uncover an economic entity's value, such as a firm, industry and even the whole market by using relative valuation techniques. These techniques entail investors to compare the stock, industry and even the aggregate market to their peers, but on the preconceived notion of a number of relative ratios that compare their prices to relevant variables that affect their value such as book value, cash flow and earnings (Reilly & Brown, 1997). This section will explore the PE ratio, which is also known as the earnings multiplier model. This paper narrowed its scope down to PE ratio due to its popularity as compared with other relative valuation ratios. Also, the relationship between PE ratio and the dividend discount model will be looked into to explore the variables that affect the PE ratio.

Earnings Multiplier Model

As mentioned earlier, many investors prefer to estimate the value of common stock using an earnings multiplier model. This is in line with the methods commonly used by investment analysts in all brokerage houses to evaluate shares too. Shamsher and Annuar (1997) suggested that analysts used a combination of methods to assess the value of shares, and in particular, the focus is on traditional fundamental analysis.

The journal also indicated that analysts use a three-year earnings forecast period, while they also prefer accrual earnings to cash flows, and use a variety of information sources. The emphasis is on financial information from audited financial statements, substantiated by qualitative information gathered through company visits by analysts. Although the findings are inconclusive regarding the most common methods used for share price valuation, the professional preference is for the earnings multiplier approach.

According to Reilly and Brown (1997), it is the basic idea that the value of any investment is the present value of its future returns that drives the popular usage of the earnings multiplier model to estimate stock prices. In terms of common stocks, the net earnings of the firm are the returns that investors are entitled to. Hence, one possible way investors could derive value of the stock is by determining how much they are willing to pay for a dollar of expected earnings. As shown earlier, earnings multiplier = price/ earnings per share = current market price/ expected 12-month earnings. This equation reveals the current investors' sentiment towards the value of the stocks. Investors must determine if the current PE ratio of the stock is attractive enough, that is, is it too high or low as compared with the PE ratio for its peers, industry or even aggregate market.

To answer this question the factors that influence the earnings multiplier over time must be considered. The variables that determine the value of PE ratios can be derived from the infinite period dividend discount model.

$$P = D1/k - g$$

If both sides of the equation are divided by E1, which is the expected earnings during the next 12 months, the result will be

$$P/E1 = (D/E1)/ (k-g)$$

Henceforth, the determinants of the PE ratio can be listed as follow:

1. The expected growth rate of dividends for the stock (g)
2. The estimated required rate of return on the stock (k)
3. The expected dividend payout ratio (dividends divided by earnings)

Basically, as the investing public is willing to pay more for the stock's earnings, its PE ratio increases. An increase in both market price and earnings per share would also drive PE ratio up. Nonetheless, the increase in market price must exceed the growth in earnings per share to drive the PE ratio up. In addition, a decline in earnings per share while market price remains unchanged would push the PE ratio up. It would remain unchanged should the growth in earnings per share and stock price is the same.

On the contrary, PE ratio drops if investors' willingness to pay for the stock falls or when the market price paid rises in slower rate than the earnings per share. Table 1 sums up the analysis of the movement of PE ratio.

PE ratio	Price	Earnings per share	Movements
Up	Up	Down	Market price rises despite fall in earnings. Investors do not take into account the fall in earnings in the stock price.
Up	Down	Down greater	Market price declines in a slower rate than the fall in earnings. Investors do not take into account the full impact of the fall in earnings into the stock price.
Up	Stable	Down	The stock price remains stable despite a drop in earnings. Investors do not reflect the fall in earnings into the stock price.
Up	Up greater	Up	The growth of market price is larger than the increase in earnings per share, leading to higher PE ratio. The securities may be overvalued or investors have high expectations on the future growth of the stock.
Up	Up	Stable	PE ratio rises due to an increase in stock price, while earnings per share remain stable. Investors are paying higher price a share of the company's earnings.

Table 1: PE ratios' movement analysis (adapted from Vorek, 2009)

From the analysis, stocks with high PE ratio would thus include those tech stocks in the 1990s while companies with operating in the sunset industry or with limited growth (e.g., timber stocks) would possess lower PE ratio. In addition, so called "neglected companies" or smaller companies might also have lower PE ratios. This is attributable to the lag of coverage by analysts or simply, analyzing them would not be efficient. In general, smaller firms do not provide adequate information that permits reasonable analysis. However, such phenomenon is not valid for market indices (Vorek, 2009).

All in all, real life investment strategies are built on picking stocks with low PE ratio. This includes estimating the intrinsic or fair value of a security and comparing with the prevailing parameters (Vorek, 2009). Such strategies are strongly correlated with the low PE anomaly mentioned earlier in this chapter. Indeed, as the result of Basu (1977) research showed, the historic verification of low PE strategy has validated low PE anomaly that promised higher average returns. Dreman (1982) validated the low PE strategy on a sample of historic data consisting of 1,250 stocks in the period between 1968 and 1977. Bleiberg (1989) verification research, which was based on the data between 1938 and 1989, had also resulted in similar outcomes.

Research Gaps

According to the literature review and the outcomes of empirical studies done by other researchers, the PE ratio could have been employed to build successful investment strategies in predicting stock market highs. Could this approach be regressed and work as an indicator for forecasting of future stock market lows? In particular, could high level PE ratio forecast future falls in stock markets return? This study will observe the development of the KLCI between 2005 and 2009, which is just before the start of the housing bubble in the US that subsequently triggered the global financial crisis. This paper seeks to describe the dependency of annualized return of the KLCI on the level of PE in investment horizon under study. It is also worth noting that previous studies on PE ratios focused mostly on the developed markets. Hence, another research gap is identified and a study on the emerging markets such as Malaysia would prove beneficial for a globally diversified portfolio investor in terms of market timing and country selection.
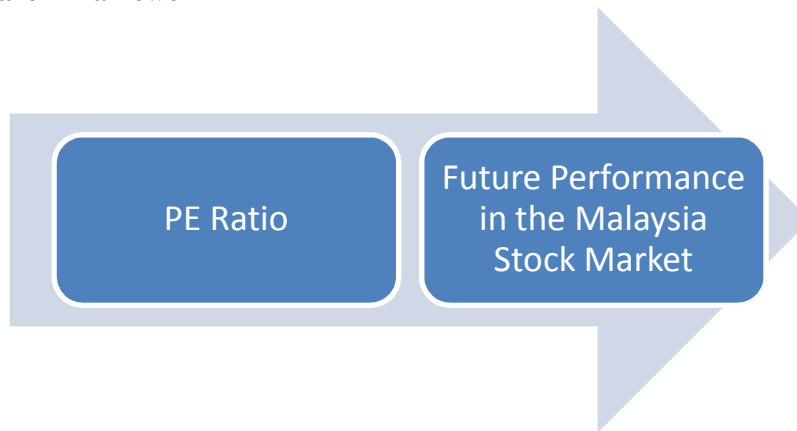
Research Framework

Figure 1: Research framework

Sample

The study will focus exclusively on the development of the Malaysian stock market index, which is the KLCI between 1994 and 2010. Prior to the year 2009, the KLCI is basically a capitalization weighted index that maps approximately the top 100 companies (Appendix 1) listed on the Malaysia bourse. It is chosen as the sample of this study as it is generally regarded as the accepted parameter for the Malaysian economy as it maps the most liquid equity stocks in the market.

On July 6, 2009, the KLCI was transformed into the FTSE Bursa Malaysia KLCI (FBM KLCI) (Appendix 2). One of the major features is that the FBM KLCI will be leaner and more robust, consisting of the 30 largest eligible companies by market capitalization instead of the current 100 stocks in the KLCI. Despite the change, the KLCI will still continue to be the bellwether index for the Malaysian stock market, as it had been since its creation in April 1986.

The time period between 1994 and 2010 was chosen as it involved four major financial markets downturns. Such time period would provide better avenue for the researcher to analyze and study the development of the KLCI and its PE ratio during the four major financial markets downturns. The first is related to the Asian economic crisis in 1997; the second occurred in 2001, when the dotcom bubble in the US burst, and the last two happened in 2008, which were pretty much connected to the general March election in Malaysia and the late US subprime mortgage crisis, respectively.

Findings and Interpretation

The Analysis of the Performance of KLCI and PE Ratio from 1994 to 2010

The following charts (figure 3 and 4) illustrate the development of the KLCI and PE ratio between 1994 and 2009. In the period, there were four major financial markets downturns. The first is related to the Asian economic crisis in 1997; the second occurred in 2001, when the dotcom bubble in the US burst, and the last two happened in 2008, which were pretty much connected to the general March election in Malaysia and the late US subprime mortgage crisis, respectively.
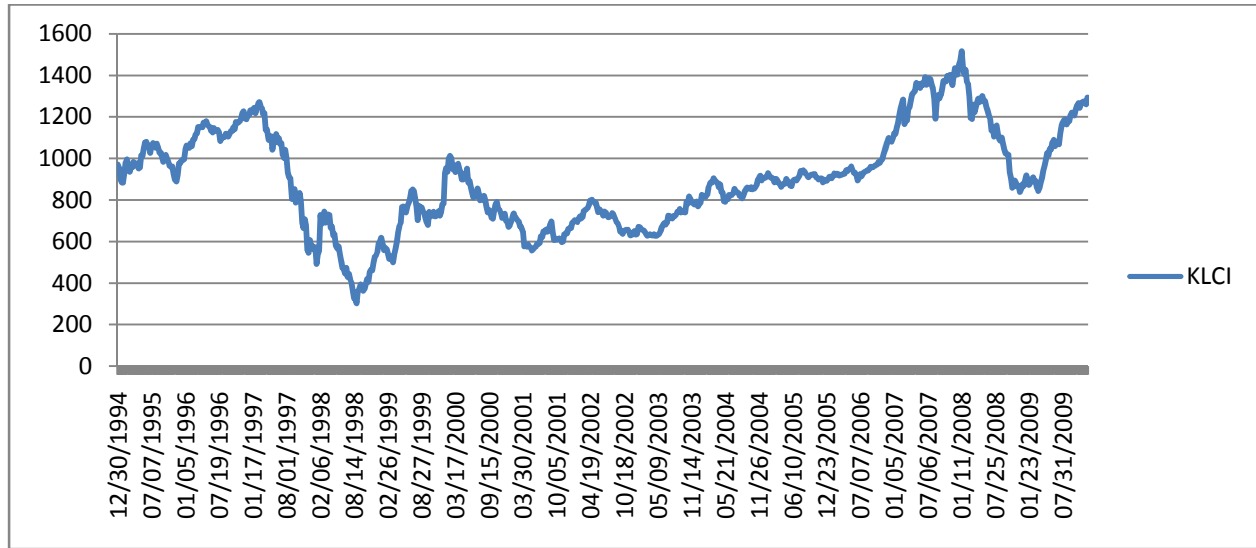
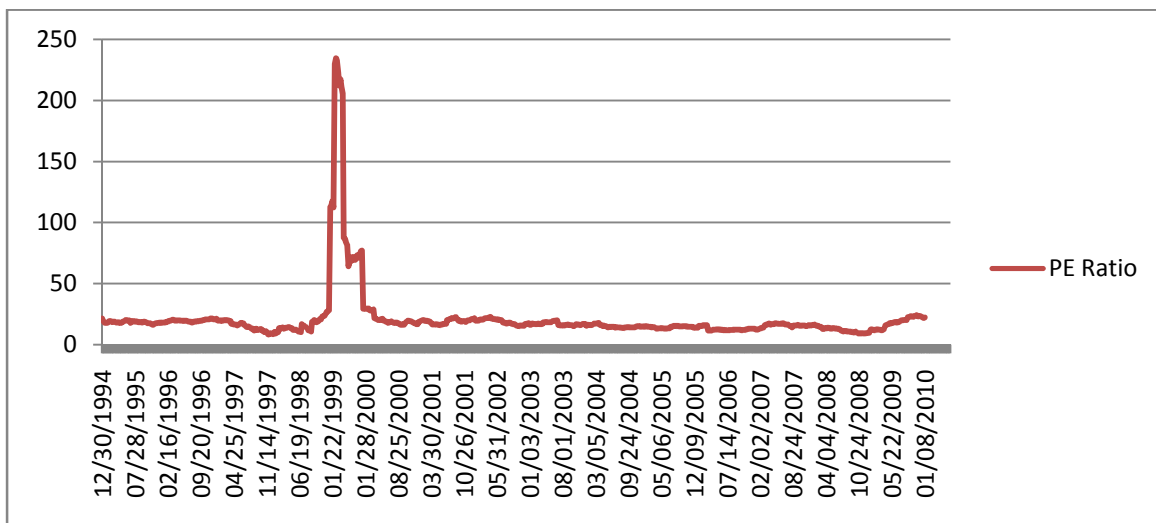Figure 3: The development of KLCI from 1994 to 2009.

Figure 4: The development of PE Ratio from 1994 to 2010.

As the chart (figure 3) shows, the KLCI is very volatile. The KLCI plummeted from the first quarter of 1997 until a year later in tandem with the Asian financial crisis that started in the middle of 1997. Since then, the KLCI index has been fluctuating greatly from 1997 throughout the first quarter of 2000. The volatility of the KLCI during this period of time could be well associated with the government's move of pegging the Ringgit at a fixed rate against the US dollar.

The government's initiative might have been seen as effective judging by the stability of the performance of the KLCI from the second quarter of 1999 through the second half of 2000. Nevertheless, the KLCI plunged again in the second half of 2000 mainly due to the burst of dotcom bubble in the US. This period also witnessed the departure of some multinational companies with the Multimedia Super Corridor (MSC) status from Malaysia. But since then, the price of KLCI has been performing relatively stable until the year 2008. The KLCI fell due to unanticipated slight majority win by the National Coalition during the general March election. The performance of the KLCI continued to fluctuate vigorously in conjunction with the US subprime mortgage crisis that eventually became the global financial crisis of late.

On the other hand, the other chart (figure 4) also shows that the PE ratio is a relatively stable as compared with the performance of the KLCI. The PE ratio of the stock index historically ebbed and flowed around its long-term mean average. It had only posted significant highs and sudden drops in prior and after the Asian economic crisis. Notably, the PE ratio fell to its year lows of approximately eight to nine times in 1997 as investors' sentiment was affected by the uncertainty of market valuations.

Linear Regression Analysis

Back to answering the main question of this research, which is whether PE ratio could forecast the future fall in stock price? To answer this question, the correlation and regression analysis has been employed. The data of the annualized return of KLCI and PE ratio between 1994 and 2010 with a total number of 15 observations were graphed in a scatter plot (Appendix 3) to determine whether there exists a possible linear relationship. The result seems to show a somewhat linear pattern with a positive slope.

Table 2: The correlations between KLCI annualized returns and PE ratios.

		KLCI Annualized Return	PE Ratio
KLCI Annualized Return	Pearson Correlation	1	.521[*]
	Sig. (2-tailed)		.047
	N	15	15
PE Ratio	Pearson Correlation	.521[*]	1
	Sig. (2-tailed)	.047	
	N	15	15

*. Correlation is significant at the 0.05 level (2-tailed).

The correlation coefficient is 0.521 (Table 2). This value of *r* reckons a fair positive linear correlation since the value is positive and close to 1. Since the value of *r* reckons a fair positive linear correlation, the data points should be clustered to each other. Henceforth, linear regression analysis is possible since there emerges a fair positive linear correlation between the annualized return of KLCI and PE ratio.

Table 3: Coefficients between KLCI annualized returns and PE ratios from 1994 to 2010.

	Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B	
Model	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1 (Constant)	.019	.065		.290	.776	-.122	.160
PE Ratio	.171	.078	.521	2.199	.047	.003	.339

a. Dependent Variable: KLCI Annualized Return

In terms of the regression equation (Table 3), it stood at KCLI = 0.019 + 0.171(PE Ratio). On the other hand, the coefficient of determination (Table 4) is 0.271; thus, up to 27.1% of the variation in the performance of KCLI is explained by PE Ratio. Simply put, the regression equation seems to be of some use for making predictions since the value of R Square is not too far from 1.

Table 4: Coefficient of determination, R Square.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.521[a]	.271	.215	.24379

a. Predictors: (Constant), PE Ratio

b. Dependent Variable: KLCI Annualized Return

In order to determine if it is reasonable to consider that the assumptions for regression analysis done earlier are met by the variables in questions, residual plots are created.

Table 5: The residual statistic Table.

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-.1144	.3925	.0583	.14326	15
Std. Predicted Value	-1.206	2.333	.000	1.000	15
Standard Error of Predicted Value	.063	.165	.084	.030	15
Adjusted Predicted Value	-.1151	.7364	.0781	.20341	15
Residual	-.45460	.26209	.00000	.23492	15
Std. Residual	-1.865	1.075	.000	.964	15
Stud. Residual	-2.286	1.113	-.034	1.091	15
Deleted Residual	-.75519	.28081	-.01981	.30897	15
Stud. Deleted Residual	-2.840	1.124	-.100	1.223	15
Mahal. Distance	.000	5.441	.933	1.518	15
Cook's Distance	.000	2.185	.196	.556	15
Centered Leverage Value	.000	.389	.067	.108	15

a. Dependent Variable: KLCI Annualized Return

As the charts show (Appendix 4,5 and 6), the residual plot illustrates a random disperse of points with a constant spread. The same goes for the standardized residual plot, but with no values beyond the ±2 standard deviation reference lines. In the meantime, the normal probability plot of regression standardized residual illustrates the points close to the diagonal line. Hence, the residuals seem to be roughly distributed. This supports the notions that the regression analysis done earlier is met by the variables in questions.

Table 6: Summary Result of F-Test.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.287	1	.287	4.835	.047[a]
	Residual	.773	13	.059		
	Total	1.060	14			

a. Predictors: (Constant), PE Ratio

b. Dependent Variable: KLCI Annualized Return

From the regression analysis, it might be able to determine whether it is suffice to say that the slope of regression line is not 0 at 10% significance level, therefore, if that PE ratio is useful in predicting the performance of KLCI index. The null hypothesis of PE ratio as not a useful predictor of KLCI index would be rejected if p-value ≤ 0.05. And since the p-value is equal to 0.047, the null hypothesis could be rejected. In other words, there exists adequate evidence to suggest the slope of the regression is not zero at the 0.05% significance level. Hence, PE ratio maybe of some use in predicting the performance KLCI index (Table 6).

Lastly, it might be concluded that the research has a 95% confident level that the slope of the regression line would fell between 0.003 and 0.339. Put it another way, it can be 95% confident to say that for every single increase in PE ratio, the KLCI index would rise somewhere between 0.003 and 0.339 point.

Conclusion

Although the results show that PE ratio is a useful predictor of the performance of KLCI, it does not affirm the notions that high levels of PE Ratio could have resulted in the fall of stock market returns in the Malaysia context. A linear positive slope exists between the annualized return of the KLCI and PE ratio, thus suggesting that an increase in PE ratio could have led to a subsequent rise in the KLCI. These findings run contrary to the historical results that low PE ratios have always been followed by higher stock market performance in the short and long term such as those studies done by Dreman (1982) and Basu (1977). Nevertheless, the findings of this paper is consistent with Vorek (2009)'s studies that found a positive relationship between PX Index, which is the index of major 50 stocks that trade on the Prague Stock Exchange in Czech Republic, and its PE ratio between 2001 and 2008.

In short, the findings in this research may prove that history may no longer be a true guide as fundamental changes in the economy nowadays may result in equity becoming more attractive to the investing public, henceforth, justifying its higher PE ratio. This is evident in the sense that the historical relationship projected by the Campbell-Shiller (1998) study had been signaling slower long term stock price growth since 1997. The Rolph-Shen (1999) research had also been pointing to slower short-term stock price growth since 1998. Nonetheless, the stock market index nowadays is trading much higher than a decade earlier. So does this indicate that the historical standing that low PE ratio would precede a rise in stock price has been rendered outdated?

This may be true due to the lesser risks, faster earnings growth and lower costs involved in trading and investing in stock nowadays. All of these factors could lead to higher PE ratios in the long run. Obviously, if companies' earnings are expected to grow faster than it used to be, it is only normal that the investing public is wiling to pay more, subsequently increasing the PE ratio. Indeed, many analysts believe the world is now experiencing a new economy whereby globalization and technological advancement have allowed the economy to grow faster than previously (Shen, 2000). Subsequently, the faster economic growth would translate into faster earnings growth among companies worldwide. Indeed, the growth in gross domestic product (GDP) in Malaysia averaged about 5.6% from 2006 to 2009 versus some 3.2% from 2002 to 2004.

In addition, equities or stocks could have been perceived as less risky as compared to the past, thus, resulting in higher PE ratio and subsequently higher share prices. As a well known financial guru put it, since the average PE ratio of 14 times had discounted in the Great Depression, we would have learnt nothing about how to better manage the economy if we were to go back to PE ratio of 14 times (Siegel, 2000). Moreover, the investing public may possess a better knowledge of investing in stocks due to the advent of technology that have widened the access of information and dissemination speed worldwide. Lastly, the costs involved in trading stocks have fallen dramatically due to the advent of technology. Such reduction can lead to higher PE ratios in namely two ways. First, the net profit gained by investors would have increased even though the gross profit remains unchanged. This would subsequently raise investors demand for equities, resulting in higher PE ratios. Second, lower transaction cost allows investors to diversify and increase their stock portfolios more easily. Indeed, a study by Rea and Reid (1998) found that the average annual fees for stock funds had dropped 0.76% from 1980 to 1997.

Simply put, the findings of this research coupled with the arguments may have render the historical standing that low PE ratio would precede a rise in stock price as outdated, and a high PE ratio may precede a rise in stock returns in the foreseeable future.

Discussion and Conclusion

The capability of PE ratios to forecast stock market returns in Malaysia

To recap, the first research objective was to investigate the capability of PE ratios to forecast future stock market returns in the Malaysia equity market. The objective was met. The output from the correlation analysis showed that the correlation coefficient is 0.521. This value of *r* reckons a fair positive linear correlation since the value is positive and close to 1. Moreover, there emerges a fair positive linear correlation between the annualized return of KLCI and PE ratio from 1994 to 2010.

From the regression analysis, the coefficient of determination stood at 0.271; thus, up to 27.1% of the variation in the performance of KCLI is explained by PE Ratio. Simply put, the regression equation seems to be of some use for making predictions since the value of R Square is not too far from 1. The null hypothesis of PE ratio as not a useful predictor of KLCI index was also rejected. In other words, there exists adequate evidence to suggest the slope of the regression is not zero at the 0.05% significance level. Hence, PE ratio maybe of some use in predicting the performance KLCI index.

The relationship between high PE ratios and future stocks declines in the KLCI

Although the results show that PE ratio is a useful predictor of the performance of KLCI, it does not affirm the notions that high levels of PE Ratio could have resulted in the fall of stock market returns in the Malaysia context. A linear positive slope exists between the annualized return of the KLCI and PE ratio, thus suggesting that an increase in PE ratio could have led to a subsequent rise in the KLCI. In particular, the output from the regression analysis showed a 95% confident level that the slope of the regression line would fell between 0.003 and 0.339. Put it another way, it can be 95% confident to say that for every single increase in PE ratio, the KLCI index would rise somewhere between 0.003 and 0.339 point.

These findings run contrary to the assumptions made earlier in this research; that is high PE ratios could have been followed by low stock market performance in the short and long term in the KLCI. Nevertheless, the findings of this paper is consistent with Vorek (2009)'s studies that found a positive relationship between PX Index, which is the index of major 50 stocks that trade on the Prague Stock Exchange in Czech Republic, and its PE ratio between 2001 and 2008.

The potential of PE ratios in indicating a coming bear market in Malaysia

Although the findings of this research coupled with the arguments may have render the assumption that high PE ratio would precede a decline in stock price as invalid, it does not deny the capability of PE ratios to forecast future stock market returns in the Malaysia equity market. In particular, the correlation and regression showed that a linear positive slope exists between the annualized return of the KLCI and PE ratio, thus suggesting that an increase in PE ratio could have led to a subsequent rise in the KLCI. In this case, a decline in PE ratio could have resulted in a subsequent fall in the KLCI, henceforth, serving as an indicator of the coming bear market in Malaysia.

In sum, the hypothesis that high levels of PE ratios will lead to future decline in stock market performance in the KLCI has been rejected. The findings from this paper suggest the other way around, which is high levels of PE ratios may precede a rise in future stock performance in the KLCI.

Limitations and Recommendations for Future Research

This study has tested only on whether PE ratios could act as an indicator of economic recessions and unfavorable market conditions in the coming future. In addition, this paper is confined to explore only the relationship between high PE ratios and future stock declines. Lastly, the researcher has specifically investigated the capability of PE ratios to predict future stock performance only in the Malaysian context. It is strongly recommended that other relative ratios such as PB ratios and PEG ratios be included in future studies to explore whether there is any other indicator of economic recessions and adverse market condition in the future. Moreover, future researchers could expand the time horizon of the performance of KLCI and PE ratios to testify whether the relationship between the two variables is again positive or negative. The research findings obtained could have been more credible as compared to the ones generated from this paper. Finally, future researchers could have investigated the capability of PE ratios to forecast future stock performance in other emerging markets such as Indonesia and Thailand. Such findings could have been extremely beneficial in the further refinement of the study and literature of PE ratios to predict future stock market performance in the emerging markets, which is still lacking at this point in time.

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Appendices

Appendix 1: KLCI 100 Companies List (Source: Bursa Malaysia)

No.	Stock Name	Stock Long Name
1	AFFIN	Affin Holdings Bhd
2	AFG	Alliance Financial Group Bhd
3	AIRASIA	AirAsia Bhd
4	AIRPORT	Malaysia Airport Holdings Bhd
5	AMMB	AMMB Holdings Bhd
6	ANNJOO	Ann Joo Resources Bhd
7	ASTRO	Astro All Asia Networks PLC
8	BAT	British American Tobacco (M)
9	BERNAS	Padiberas Nasional Bhd
10	BJTOTO	Berjaya Sports Toto Bhd
11	BRDB	Bandar Raya Developments Bhd
12	BSTEAD	Boustead Holdings Bhd
13	BURSA	Bursa Malaysia Bhd
14	CARLSBG	Carlsberg Brewery Malaysia Bhd
15	COMMERZ	Bumiputra-Commerce Holdings
16	DIALOG	Dialog Group Bhd
17	DIGI	DiGi.com Bhd
18	DRBHCOM	DRB-Hicome Bhd
19	EONCAP	Eon Capital Bhd
20	GAMUDA	Gamuda Bhd
21	GENTING	Genting Bhd
22	GUOCO	Guocoland (Malaysia) Bhd
23	HAPSENG	Hap Seng Consolidated Bhd
24	HLBANK	Hong Leong Bank Bhd
25	IGB	IGB Corporation Bhd
26	IJM	IJM Corporation Bhd
27	IOICORP	IOI Corporation Bhd
28	KENCANA	Kencana Petroleum Bhd
29	KFC	KFC Holdings Bhd
30	KINSTEL	Kinsteel Bhd
31	KLCCP	KLCC Property Holdings Bhd
32	KLK	Kuala Lumpur Kepong Bhd
33	KNM	KNM Group Bhd
34	KPS	Kumpulan Peransang Selangor
35	KULIM	Kulim (M) Bhd
36	KURASIA	Kurnia Asia Bhd
37	LANDMRK	Landmarks Bhd
38	LINGUI	Lingui Development Bhd
39	LIODIV	Lion Diversified Holdings Bhd
40	LIONIND	Lion Industries Corporation
41	LITRAK	Lingkaran Trans Kota Holdings
42	LMCEMNT	Lafarge Malayan Cement Bhd
43	MAHSING	Mah Sing Group Bhd
44	MAS	Malaysian Airline System Bhd
45	MAYBANK	Malayan Banking Bhd
46	MAYBULK	Malaysian Bulk Carriers Bhd
47	MEDIA	Media Prima Bhd
48	MEDIAC	Media Chinese International LT
49	MISC	MISC Bhd

50	MISC-01	MISC Bhd-Foreign
51	MKLAND	MK Land Holdings Bhd
52	MMCCORP	MMC Corporation Bhd
53	MPHB	Multi-Purpose Holdings Bhd
54	MPI	Malaysian Pacific Industries
55	MRCB	Malaysian Resources Corp
56	MUHIBAH	Muhibbah Engineering (M) Bhd
57	MULPHA	Mulpha International Bhd
58	ORIENT	Oriental Holdings Bhd
59	OSK	OSK Holdings Bhd
60	PBBANK	Public Bank Bhd
61	PBBANK-01	Public Bank Bhd-Foreign
62	PELIKAN	Pelikan Int. Corporation Bhd
63	PETDAG	Petronas Dagangan Bhd
64	PETGAS	Petronas Gas Bhd
65	PETRA	Petra Perdana Bhd
66	PLUS	Plus Expressways Bhd
67	POS	Pos Malaysia Bhd
68	PPB	PPB Group Bhd
69	PROTON	Proton Holdings Bhd
70	PUNCAK	Puncak Niaga Holdings Bhd
71	RHBCAP	RHB Capital Bhd
72	SAPCRES	SapuraCrest Petroleum Bhd
73	SARAWAK	Sarawak Energy Bhd
74	SCOMI	Scomi Group Bhd
75	SHELL	Shell Refining CO (F.O.M) Bhd
76	SIME	Sime Darby Bhd
77	SPB	Selangore Properties Bhd
78	SPSETIA	SP Setia Bhd
79	STAR	Star Publications (M) Bhd
80	SUNCITY	Sunway City Bhd
81	SUNRISE	Sunrise Bhd
82	SURIA	Suria Capital Holdings Bhd
83	TA	TA Enterprise Bhd
84	TAANN	TA Ann Holdings
85	TANJONG	Tanjong Public Limited Company
86	TCHONG	Tan Chong Motor Holdings Bhd
87	TENAGA	Tenaga Nasional Bhd
88	TITAN	Titan Chemicals Corp Bhd
89	TM	Telekom Malaysia Bhd
90	TMI	TM International Bhd
91	TOPGLOV	Top Glove Corporation Bhd
92	TSH	TSH Resources Bhd
93	TWSPLNT	Tradewinds Plantation Bhd
94	UCHITEC	UCHI Technologies Bhd
95	UMW	UWM Holdings Bhd
96	UNISEM	Unisem (M) Bhd
97	WASEONG	Wah Seong Corporation Bhd
98	WCT	WCT Bhd
99	WTK	WTK Holdings Bhd
100	YNHPROP	YNH Property Bhd
101	YTL	YTL Corporation Bhd
102	ZELAN	Zelan Bhd

Appendix 2: FBM KLCI 30 Companies List (Source: Bursa Malaysia)

| No.	Stock Name	Stock Long Name
1	AMMB	AMMB Holdings Bhd
2	BCHB	Bumiputra Commerce Holdings Bhd
3	HLBANK	Hong Leong Bank Bhd
4	MAYBANK	Malayan Banking Bhd
5	PBBANK	Public Bank Bhd
6	RHBCAP	RHB Capital Bhd
7	IOICORP	IOI Corporation Bhd
8	KLK	Kuala Lumpur Kepong Bhd
9	PPB	PPB Group Bhd
10	SIME	Sime Darby Bhd
11	AXIATA	Axiata Bhd
12	DIGI	DiGi.com Bhd
13	TM	Telekom Malaysia Bhd
14	GENTING	Genting Bhd
15	RESORT	Resort World Bhd
16	BJTOTO	Berjaya Sports Toto Bhd
17	PETDAG	Petronas Dagangan Bhd
18	PETGAS	Petronas Gas Bhd
19	MMC	MMC Corporation Bhd
20	TNB	Tenaga Nasional Bhd
21	YTLP	YTL Power Bhd
22	YTL	YTL Corporation Bhd
23	TANJONG	Tanjong Public Limited Company
24	ASTRO	Astro All Asia Network PLC
25	BAT	British American Tobacco (M) Bhd
26	PARKSON	Parkson Holdings Bhd
27	UMW	UMW Holdings Bhd
28	MAS	Malaysian Airline System Bhd
29	MISC	MISC Bhd
30	PLUS	Plus Expressway Bhd

Appendix 3

The linear positive slope between KLCI annualized returns and PE ratios from 1994 to 2010
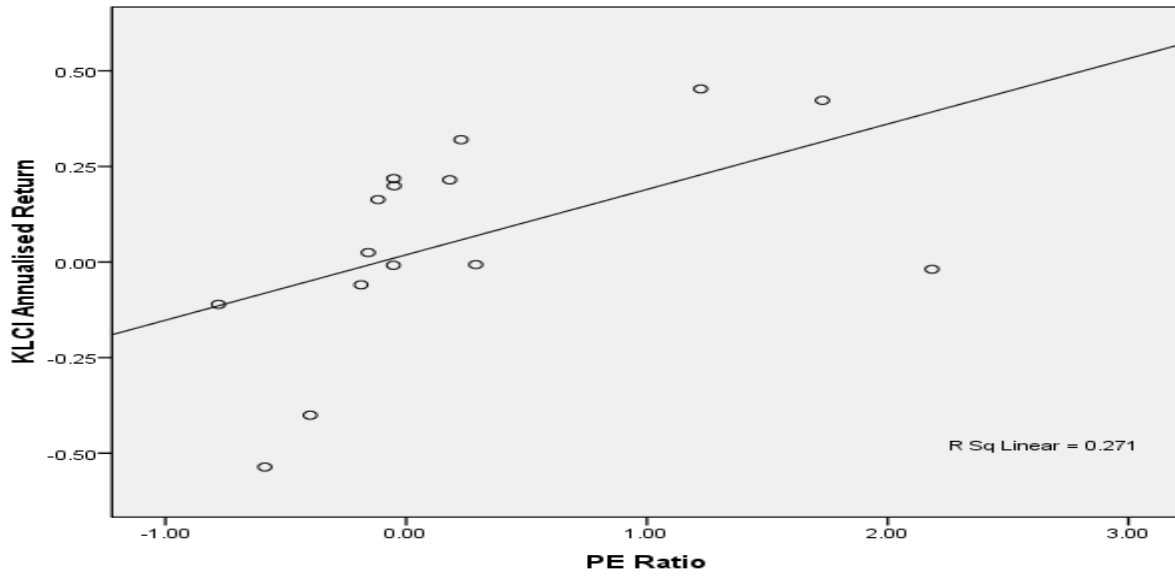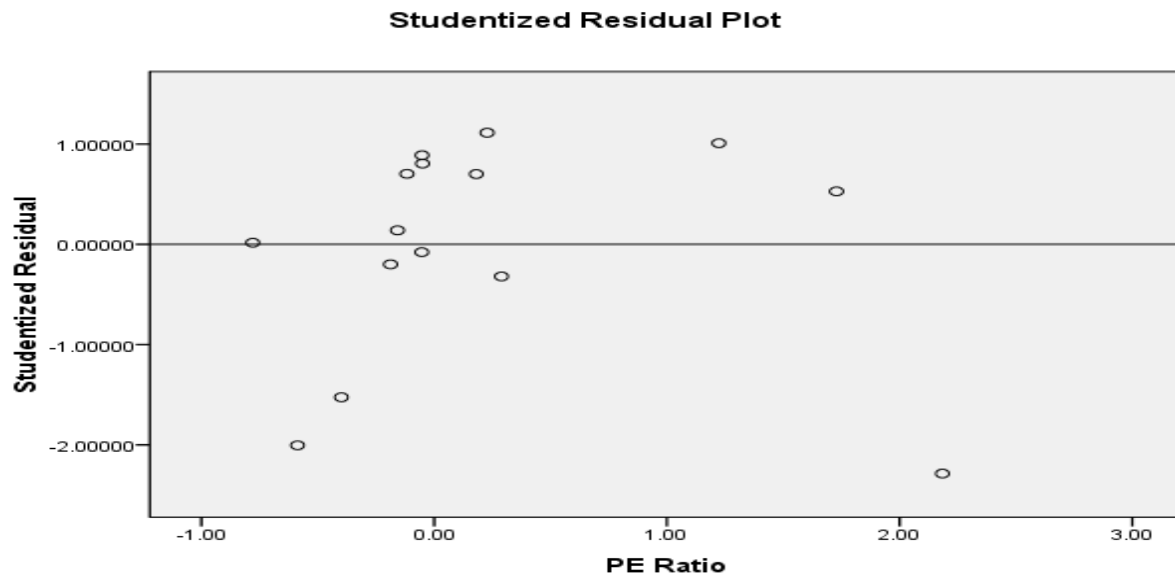

Appendix 4

Residual Plot.

Residual Plot
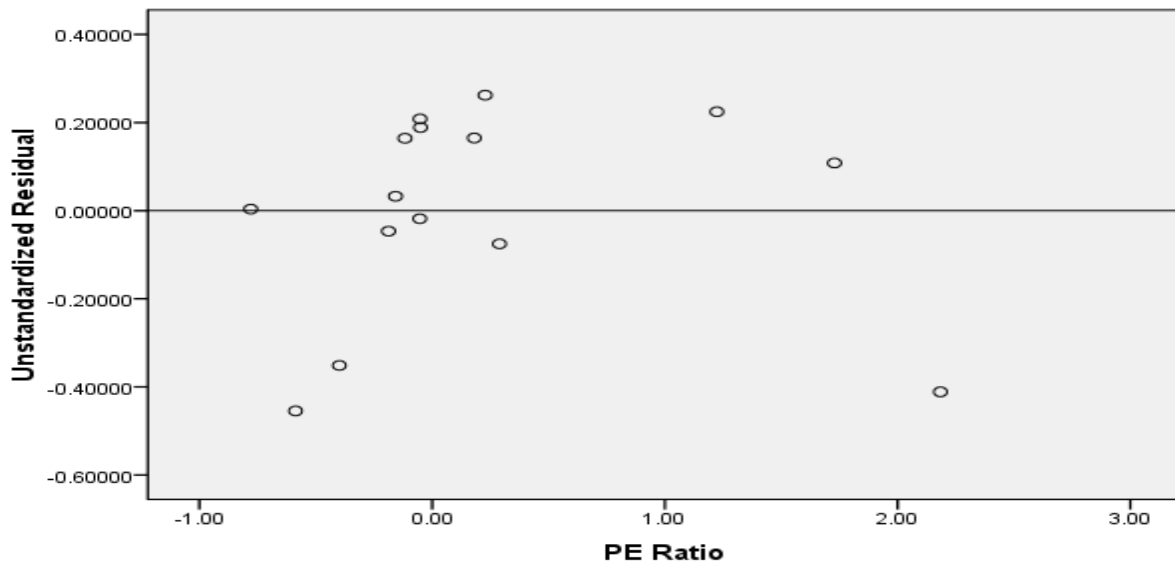
Appendix 5

Studentized residual plot.

Studentized Residual Plot

Appendix 6

The normal probability plot of the residuals.

Normal P-P Plot of Regression Standardized Residual