

**PE RATIOS, PEG RATIOS, AND PREDICTION OF RATE OF
EQUITY RETURNS: A CASE OF COMPANIES LISTED ON THE
NAIROBI SECURITY EXCHANGE**

BY

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DECLARATION

This Management Research project is my own original work and has not been presented for a degree in any other University.

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This Management Research project has been submitted for examination with my approval as student supervisor.

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DEDICATION

This management research project is dedicated to my wife Eunice Malesi, my mother Elisheba Luvisi and all my family members without whose sacrifice and understanding the work would not have been possible.

ABSTRACT

The stock market is a primary capital market through which companies and other institutions can raise funds by issuing shares or loan stock but is more important as a secondary market for existing securities. The Study thus sought to provide empirical evidence on whether the widely held beliefs of the predictability of the PEG and the PE ratios holds true in the emerging markets. It further aimed to test whether the correlations improves when both ratios are used in prediction of abnormal equity returns. Specific objective of the study was to investigate the relationship between price earnings ratios (PE) and stock returns establish any correlation existing between PEG and stock returns and to compare predictability power of PE and PEG on stock returns. The theories supporting these are Technical analysis theory and Market efficiency theory. The problem was studied using the causal research design. The population of interest in this study consisted of firms listed in the Nairobi Securities Exchange from which samples of seventeen companies were selected. Secondary data was collected from NSE. Regression model was used to analyse the data. Findings from the study revealed that strong correlation between PE and PEG ratios existed. It was determined that the two ratios cannot be reliably used to predict stock returns. R Square showed that 9% of the variations in stocks returns could be explained by the explanatory variables and 91% of the variations in stocks returns are unexplained and are taken by error term. The Beta-coefficient of PE ratio to Stock returns is 0.206 which is insignificant given a P-Value of 0.763 whereas the cut off P-Value is 0.05. This can be interpreted as an increase of 1 unit in PE will not significantly increase Stock returns. Similarly the Beta-coefficient of PEG to Stocks returns is 0.115 which is insignificant given a P-Value of 0.867 whereas the cut off P-Value is 0.05. This can also be interpreted as an increase of 1 unit in PEG will not significantly increase Stock returns. The Study agreed with other studies in developed stock markets and provided empirical evidence on widely held beliefs of the predictability of the PEG and the PE ratios in an emerging market. The findings of the study have considerable importance to directors of companies who wish to provide satisfactory returns to their shareholders.

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ABBREVIATION OF TERMS

ATC-Automated Trading System

CAPM-Capital Asset Pricing Model

CBK-Central Bank of Kenya

CDS-Central Depository Systems

CMA -Capital Market Authority

CVA -Cash Value Added

EMH -Efficient Market Hypothesis

EPS-Earnings per Share

KES-Kenya Shillings

NSE-Nairobi Securities Exchange

NYSE-New York Stock Exchange

PE- Price earning ratio

PEG - price earning growth ratio

RI - Stock Return

SPSS-Statistical Package for Social Science

SOS -Sum-of-Parts

USD-United State Dollar

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter discusses the background of the study, the concept of earnings and growth ratios as used in the prediction of implied rate of returns of stocks in general, it also looks at the Nairobi stock exchange history and development of relevance to the study together with the research objectives and questions. A research problem is identified and discussed. The chapter concludes with exposition of the value to which the study is expected to contribute to theory and practice.

1.1 Background of the Study

The stock market is a primary capital market through which companies and other institutions can raise funds by issuing shares or loan stock but is more important as a secondary market for existing securities. The stock markets have considerable importance to directors of companies who wish to provide satisfactory returns to their shareholders. The stock market provides a guide to the expectations of investors, both inside and outside the company. In addition stock market is valuable to institutions and private investors who wish to buy or sell securities.

The main objective of investors is to maximize their expected return due to reducing its related risks. The shareholders invest in stocks to either make money from revenue earnings in form of dividends or the capital gains when the share values appreciate in the market. From this objective the researchers and analysts are seeking performance

measurements which can predict a company's stock returns more proportionally. Accountants, researchers, financial analysts and other stakeholders in the financial sector investigate factors and criteria which can predict equity returns approximately and determine relative and incremental information content of them respectively (RezvanHejazi et al(2007)). Several measurements have been applied by various financial analysts and advisors in assessing the share performance.

When choosing an investment in securities, investors consider several factors from security or risk, liquidity, return, spreading risks and growth prospects. With respect to stock returns decisions, the funds are invested in stocks with the highest returns compatible with safety Geoffrey A. Hirt and Stanley B. Block (2005).

Basu (1977) was among the first researchers to suggest that the market price of a stock divided by its earnings (PE ratio) could be used to predict stock returns. More recent studies have included growth into PE resulting in forward PE and PEG ratios.

The predictive value of the financial ratios has been tested in several researches. Whether these ratios such as earnings ratio, and book to market, predict future stock returns has drawn much attention from practitioners and academicians alike. Empirical evidence generally suggests that financial ratios can predict future stock returns, especially in long horizons Fama & French (1988); Lewellen (2004) ; Latteu & Nieuwerburgh (2008) and others.

There are other competing ratios in use by analysts, investors and academicians for predicting the behavior and security valuations in financial markets. RejvanHejavi et al

studied the relation between cash value added (CVA) with an aim of finding any evidence on the association with stock returns. Xiaoquan Jiang & Bong-Soo Lee (2009) included book-to-market ratio in their decomposed model as they studied the predictive effectiveness of financial ratios on stock returns.

1.1.1 Price to Earnings ratio and the Price Earnings Growth ratio

An important assumption of ratio analysis is that significant differences in competing ratios such as PE and PEG exist. If for example they are the same, there would be little point in separately examining them. The share price of a company divided by its most recent 12-month earnings per share is called its price-to-earnings ratio (PE ratio). If this PE ratio is then divided by expected earnings growth going forward, the result is called the price earnings to growth ratio (PEG ratio). A lot of the information out there about how to determine a stock's proper ratios and use them to effectively value a stock discusses metrics like the stock's historic ratios, using them to compare industry ratios, or make statements like "a PEG below 1 is good" Investopedia (February 09 2013).

The price earnings ratio links the stock/share price of a company with the earnings per share (profit for the year divided by number of outstanding shares). It reflects how many times earnings investors are ready to pay for a share. So if the share price is Shs. 20 and earnings per share of Shs. 2, investors are ready to pay 10 times earnings. A stock with low P/E Ratio will have high Earnings Yield and vice-versa. Investors are normally better off buying a stock with a low P/E ratio than one with a high ratio, as they are getting more earnings for their investment.

In an efficient market, the share price should reflect a firm's future value and that greater value creation can indicate greater future dividends from the company. Theoretically, a higher P/E ratio reflect greater expected future gains because of perceived growth opportunities and/or some competitive advantages and/or lesser risk, but at the same time it indicates that the share price is relatively more expensive. It is possible that where markets are out of equilibrium, high P/E ratios may also reflect over-optimism and over-pricing; but a lower P/E ratio can reflect either poorer future opportunities or potentially a bargain if the market is over-pessimistic or if one believes the market is not taking into account potential restructuring or a takeover that would improve future prospects.

The PEG ratio was first developed by Mario Farina in the year 1969. This was mentioned in his book 'A Beginner's Guide to Successful Investing in The Stock Market'. However, in 1989, this was made popular by Peter Lynch in his book, 'One up On Wall Street', where he wrote that the PE ratio of a company which is priced fairly will equal its growth rate, which means that the PEG ratio will be equal to 1 for any company that is fairly priced. The PEG is commonly used for indicating the possible true value of a stock. Lynch (2000).

PEG is a widely employed indicator of a stock's possible true value. Similar to PE ratios, a lower PEG means that the stock is undervalued more Lynch (2000). It is favored by many over the PE ratio because it also accounts for growth. The PEG ratio of 1 is sometimes said to represent a fair trade-off between the values of cost and the values of growth, indicating that a stock is reasonably valued given the expected growth. A crude analysis suggests that companies with PEG values between 0 and 1 may provide higher

returns. Mario Farina in the year 1969 asserted that PEG Ratio can also be a negative number, for example, when earnings are expected to decline. This may be a bad signal, but not necessarily so. Under many circumstances a company will not grow earnings while its free cash flow improves substantially. Here, as in other cases, analyzing the components of PEG becomes paramount to a successful investment strategy.

The PEG ratio is commonly used and provided by various sources of financial and stock information. The PEG ratio, despite its wide use, is only a rule of thumb and has no accepted underlying mathematical basis Lynch (2000). The PEG ratio's validity at extremes in particular (when used, for example, with low-growth companies) is highly questionable. It is generally only applied to so-called growth companies (those growing earnings significantly faster than the market).

When the PEG is quoted in public sources it may not be clear whether the earnings used in calculating the PEG is the past year's EPS or the expected future year's EPS; it is considered preferable to use the expected future growth rate. It also appears that unrealistically high future growth rates (often as much as 5 years out, reduced to an annual rate) are sometimes used. The key is that management's expectations of future growth rates (communicated enthusiastically to analysts in quarterly earnings calls) can be set arbitrarily high; this is a self-serving ploy where the objectives are to keep themselves in office and to make the stock artificially attractive to investors. A prospective investor would probably be wise to check out the reasonableness of the future growth rate by checking to see exactly how much the most recent quarter's earnings have

grown, as a percentage, over the same quarter one year ago. Dividing this number into the future PE ratio can give a decidedly different and perhaps a more realistic PEG ratio.

1.1.2 Nairobi Securities Exchange

The Nairobi Securities Exchange comprises approximately 60 listed companies with a daily trading volume of over USD 5 million and a total market capitalization of approximately USD 15 billion. Aside from equities, Government and corporate bonds are also traded on the Nairobi Securities Exchange. Automated bond trading started in November 2009 with the KES 25 billion KenGen bond. Average bond daily trading is USD 60m.

The Nairobi Securities Exchange in 2006 introduced an Automated Trading System (ATS) which ensures that orders are matched automatically and are executed on a first come/first serve basis. The ATS has now been linked to the Central Bank of Kenya and the CDS thereby allowing electronic trading of Government bonds. Aggregate foreign ownership limit of NSE listed companies is 75%. Almost all NSE listed companies are open to additional foreign investment, including multinational subsidiaries. There are no foreign exchange controls in Kenya and also no capital gains tax. Dividend withholding tax for foreigners is a final 10%.

In July 2011, the Nairobi Stock Exchange Limited changed its name to the Nairobi Securities Exchange Limited. The change of name reflected the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt, derivatives and other

associated instruments. In the same year, the equity settlement cycle moved from the previous T+4 settlement cycles to the T+3 settlement cycle. This allowed investors who sell their shares, to get their money three (3) days after the sale of their shares. The buyers of these shares will have their CDS accounts credited immediately.

1.2 Research Problem

Numerous research presented on articles describe the pervasiveness of use of PE and PEG ratios for stock valuations and as a basis of stock recommendations: Brown, Siegel (2001). This argument is equally supported by a renowned stock analyst Peter Lynch (2000). The essence of the wide use of these ratios as a tool for predicting stock returns as well as a guide for sell or buy recommendations is that *ceteris paribus*, high(low) PEG implies that PE ratio is high(low) relative to the expected growth in earnings, suggesting that future prospects are expected to worsen (improve). This argument is based on the efficient market hypothesis (EMH). Empirical evidence generally suggests that financial ratios can predict future stock returns, especially in long horizons: Cochrane (2008). Ferreira and Santa-lara (2009) used sum-of parts (SOP) method to decompose stock returns into three financial ratios, the dividend yield, the earnings growth rate, and the growth rate in price earnings ratio and showed that the method worked in predicting stock returns on data from U.K and Japan where there is even stronger predictability in stock returns than in the US.

Efficient market hypothesis is however a condition not attained by all markets and thus it is imperative to establish whether the arguments on the predictability of these stock

returns hold true on specific markets. Researchers have endeavored to make comparisons between the PE and the PEG ratios for predicting implied rate of stock returns with the proponents of PEG arguing that the PEG ratio is an improvement over the PE ratio and that PEG provides a ranking that is superior to the ranking based on PE. Significant studies has been carried out in developed countries on these ratios and comparisons while not as much has been done in the security exchange markets of the developing countries especially in Africa. This leaves a question of whether the predictability of the PEG and the PE ratios holds true in the emerging markets and more specifically the Nairobi securities exchange. The Study thus seeks to provide empirical evidence on whether the widely held beliefs of the predictability of the PEG and the PE ratios holds true in the emerging markets. It will further test whether the correlations improves when both ratios are used in prediction of abnormal equity returns

1.3 Research Objectives

The objectives of the study will be as follows:

- i. To investigate the relationship between price earnings ratios (PE) and stock returns.
- ii. To establish any correlation existing between PEG and stock returns.
- iii. To compare predictability power of PE and PEG on stock returns.

1.4 Value of the Study

The main objective of investors is to maximize their expected return due to reducing its related risks. Therefore financial researchers and analysts are seeking a performance

measurement which can predict a company's stock return more proportionally. Accounting and finance professionals have long recognized that in the long run stock prices are roughly proportional to earnings and thus in the accounting literature the price (return).

This study will inform efforts of accounting and financial managers in helping them understand the factors and criteria which can predict stock returns approximately and determine relative and incremental information content of them respectively. The study shall also contribute to the body of knowledge about the Nairobi securities exchange relationships about the PE ratios, PEG ratios and stock returns and provide empirical evidence on the strength of relationships between these variables. Besides, this research is likely to elicit more research in this area of financial ratios and prediction of stock returns since less research has been done to provide evidence of the predictive value of ratios on stock returns among firms in the Nairobi securities exchange and financial markets in Africa.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter looks at the theoretical approaches to security analysis where the three theories i.e. fundamental, technical and random walk theories of security analysis are explained. Market efficiency is explained in relation to stock prices and the PE and PEG ratios are discussed together with the related literature on the ratios. At the end of the chapter a summary of the concepts and issues relating to previous research findings are presented.

2.2 Share Price Analysis

There are different views about the behavior of share price movements that attract different approaches by financial analysts in share analysis. The idea behind security analysis is to identify those securities that are mispriced. Most approaches to security analysis fall under either fundamental analysis or technical analysis (Sharpe 1999:12) as explained below:

The fundamental theory states that at any point in time a share has an intrinsic value which is the discounted value of the future cash receipts from the share. The expectation of the future receipts may relate to: past results of the company; ratio analysis of latest published accounts; future plans or expectation of the company possibly as a result of published statements e.g. the company reports; and influences affecting the economy or the industry as a whole; Geoffrey A. Hirt and Stanley B. Block (2005).

Technical analysis is a method of predicting price movements in the future market trends by studying charts of past market action which take into account price of instruments, volume of trading and, where applicable, open interest in the instrument; Geoffrey A. Hirt and Stanley (2005). The main feature of technical analysis is implementation of charts and study of trends to recognize signals of sell or buy. There is no precise theoretical justification of technical analysis, but there are several explanations why trends are observable. Grinblatt and Han (cited in Bodie et al 2008:273) concluded that trends are explained by the disposition effect that implies that losses are slowly realized by investors. Moreover, Malkiel (2007) mentions the crowd effect, i.e. profitable investment attracts more investors, so demand increases raising an equilibrium price. All those explanations are based on behavioral biases.

The main principles of the technical analysis originate from the Dow Theory those analyses general trends. Highlights of the Dow Theory are followings: averages take into account everything known; there are three markets trends: major or long-term movements in price, intermediate from 3 weeks to 3 month, and minor short-term price movements Edwards et al (2001). Edwards et al (2001) mentions the Dow Theory actually analyze the general market trends on which firms are commonly known to be highly dependent. Investors are exposed to risk every time they invest in a risky security, as it is quite hard to outperform the market. Furthermore Edwards (2008) contend that trading strategy can be self-destructive, as it is much harder to make profit from the signals when more and more people react on them. Besides, there are a lot of exceptions in the analysis, what doubt its reliability. One of them is the bear trap, a sharp rise in a price after a bear signal.

Malkiel, 2007) .It means that investors receive a bear signal or signal to sell securities, but the price unexpectedly goes up causing losses.

While both fundamental and technical analyses are intended for a forecast of future price, researchers and practitioners are divided into two fronts. Among Wall Street analysts the majority practices fundamental theory, whereas the role of chartists is becoming more significant, as more profound technical information is demanded by investors and researchers Bodie et.al (2008). Nevertheless, those methods are very different by principles, assumptions, and implementation. So the main difference lurks in the definition itself. First of all, technical analysis uses just past market information, whereas fundamental analysis predict future fundamental data using all information available. Besides, there are different assumptions underlying each analysis. Chartists believe that all fundamental information of a company is irrelevant, as it is already recognized by market, as well as “that the market is only 10% logical and 90% psychological (Malkiel, 2007). The implication is that the stock market performance depends on investors attitudes, opinion etc. Fundamentalists in their analysis are specialized by industries, whereas chartists apply the same techniques to any company.

Chartists are considered to be a short term traders, whereas fundamentalist are focused on the long term prospects. McDonald (2002) considers technical analysis to be better at predicting 6 months. Despite the wide range of discrepancies, there is small similarity. It is hidden in understanding the role of fundamental information in both analyses. Edwards et al (2001) does not agree with a firm’s fundamental information by technical analysis

acknowledging that the stock market trends are as well derived from statistics from which fundamental information is obtained. Both analyses should be seen from the perspective of the Efficient Market Hypothesis (EMH). According to Dyckman and Morse (1986), EMH is when “stock prices accurately reflect available information. If so, no amount of securities analysis can consistently yield above - normal returns and stock prices will adjust rapidly and appropriately to new information.”

The rate at which adjustments in stock markets appear is so fast that there are no possibilities to enjoy higher return. However, there are different forms of EMH that provide that fundamental analysis can still be appropriate. Weak form hypothesis implies that all past data is already reflected in prices (Bodie et. al 2008). So chartists using graphs that are based just on past information cannot outperform market, whereas fundamental analysts researching financial statements, news about companies still have opportunity to reap profit. Semi-strong and strong hypotheses, i.e. all publicly available information and even insiders information are already recognized by the market (Bodie et al, 2008:235) reject as fundamental as technical analysis.

There are thus two types of methods used to predict future price: technical and fundamental analysis. Fundamental analysis is based on the principle that required rate of return is equal to expected holding period of return. Both of the models have its implications and limitations. The second method is to use technical analysis, i.e. graphs to predict future prices. Studying trends plays a crucial role in this method. Both fundamental and technical analyses are based on different assumptions and principles, whereas their purpose is identical. Both analyses have their advantages and drawbacks.

2.3 Market Efficiency Theory

The idea of stock prices following a random walk is connected to that of the EMH. The assumption is that the investors would respond to the available market information immediately. Thus, prices always fully reflect the information available and no profit can be made from information based trading (Lo and MacKinley, 1999). Consequently investors will react randomly depending on the market price swings.

A random walk of stock prices does not imply that the stock market is efficient with rational investors. A random walk is defined by the fact that price changes are independent of each other (Brealey et al, 2005).

Capital market efficiency means that that the market price of a security represents the markets consensus estimates of the value of that security. If the market is efficient, it uses all the information available to it in setting a price. Investors who hold on to a security are doing so because their information leads them to think that their security is worth at least its current market price (James C.Van Horne, 2003)

An efficient market exists when security prices reflect all the available information available to the public about the economy, financial markets, and the specific company involved .The implication is that the market prices of individual securities adjust very rapidly to new information (James C.Van Horne, 2003). As a result, security prices are said to fluctuate randomly about their intrinsic values. New information can result in a change in the intrinsic values of a security, but subsequent security price movements will follow what is known as random walks.

2.4 Empirical Studies

2.4.1 Price-to- Earnings ratio

Basu (1977) was the first to suggest that the market price divided by its earnings per share could use to predict abnormal return. The academic literature searching for an answer to this central question has a long history, and indeed the PE effect was the earliest-described 'anomaly' even before CAPM itself was formulated by Sharpe W. in 1964. More work to suggest the effect of PE ratio was by Nicholson in 1960 who considered mainly industrial stocks over a period of five years. He found out that a portfolio of lowest PE stocks would deliver more to the investors than for the highest PE from that time several studies have undertaken by the researchers. Some of the research studies attempts to relate PE with stock returns while others focus on predictive value or usefulness of PE on rate of stock returns.

Empirical evidence generally suggests the financial ratios including PE can predict future stock returns, especially in the long-term. On contrast, short-term horizons returns and the growth of fundamentals are more difficult to predict. This is supported by the work of several researchers such as Lettau&Ludvigson (2005), Vuolteenaho and Lettau&Nieuwerburgh (2008), just to mention few recent researches.

As far as predictive value , PE ratios are concerned there is equally substantial work which has been done, Xiaoquan Jiang & Bong-Soo Lee asserts that in the absence of decomposition financial ratios find little predictive power in short term horizons. He goes ahead to say that when financial ratios are decompose based on Hordrick& Prescott method, stock returns and fundamentals are better than financial ratios lone. Basu (1975)

where the information content of P/E ratios were considered yielded results of significant interest. The reported that in accordance with price-ratio hypothesis, trading at different multiples was neither completely unbiased nor was the corrective actions necessarily timely; on average information that was implicit in PE ratios was not fully reflected in security prices in as rapid manner as was postulated by EMH Basu (1975).

Despite these disagreements a consensus view of a quarter- century of empirical work has been summarized in Cochrane's book "Asset pricing(2001),page 388 which is quoted as "returns are predictable in particular variables including the dividend/price ratio and term premium can in fact predict substantial of stock return variation. This phenomenon occurs over a business cycle and longer horizons.

Another important dimension of the studies is the question of size and its impact on predictability of the PE ratios on stock returns. Reinganum (1981)first noted the fact that small companies give better returns on average than larger companies, and he concluded that the PE effect was in fact due to a small-cap effect; low PE stocks only beat the market because small companies generally displayed low PE ratios. Basu (1983) criticized Reinganum's work on the grounds that he failed to adjust for risk, and this caused him to underestimate the earnings yield effect. He found the PE effect to be present in all five quintiles when dividing by market size, and indeed this effect was more marked in the high PE portfolios. The PE effect was only marginally significant for the largest firms. Overall Basu concluded that the effect of PE and size on returns,was rather more complicated than previously thought. Cook and Rozeff (1984) looked again at Basu's findings in a more comprehensive statistical treatment, researching NYSE stocks

from 1968 to 1981. They found that size and Earnings per Share are the main effects, but neither the size effect nor the earning per share effect subsumes the other. They suggested that both effects (at least) are at work, or that they are separate aspects of a single underlying effect.

Fuller, Huberts and Levinson (1993) did their best to disprove Ball's (1978) argument by including a wide variety of possible explanatory factors for the outperformance of low PE shares. They used a complex multi-factor model that allowed for systematic risk (beta), 55 industry classification factors and 13 other explanatory factors for 'risk' such as earnings variability, leverage and foreign income. They again found higher returns for low PE stocks from 1973-1990, but the factors included in the model did not account for the superior low PE returns.

In a comprehensive treatment of the subject of value versus glamour stocks, Lakonishok, Schleifer&Vishny (1994) defined value strategies as buying shares with low prices compared to some indicator of fundamental value such as earnings, book value, dividends or cash flow. They looked at stock prices between 1963 and 1990, and divided firms into 'value' or 'glamour' stocks on the basis of past growth in sales and expected future growth as implied by the then-current PE ratio. They found that the differences in expected future growth rates between the two types of share, as shown by PE ratios, were consistently overestimated by investors. Glamour stocks grew faster for the first couple of years but after that the growth rates of the two groups were essentially the same. Value strategies using both past low growth and low current multiples outperformed glamour strategies by an impressive 10-11% per year. Among the various measures of fundamental value, PE did not produce as large effect as Price-to-book value or price-to-

cash flow, possibly because “stocks with temporarily depressed earnings are lumped together with well-performing glamour stocks in the high expected growth earnings per share 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.” They argued that such strategies provide higher returns because they exploit the sub-optimal behavior of investors. They found little, if any, support for the view that value strategies were fundamentally riskier.

Value stocks outperformed glamour stocks quite consistently and did particularly well in 'bad' states of the world. Fama and French had already moved away from the simple CAPM position that beta can explain the differences in securities' returns, when in 1992 they found that company size and price-to-book value effects could explain it. In further work Fama and French by (1993 and 1996), they found that the value stock 'anomalies' could be successfully explained by a three-factor model involving excess return, size and book to market value. Unlike the CAPM, however, there was no theoretical underpinning offered as to why these factors should be important and not others.

A study by Dreman and Lufkin quoted in Dreman's 'Contrarian Investment Strategies' (1998) provided evidence of both size and PE effects, although the PE effect seemed more pronounced than the size effect. They divided companies on the Compustat tapes from 1970-1996 into both PE and market capitalization quintiles. Returns increased monotonically as the PE decreased and as the size decreased, giving, for example, 18.6% returns for companies in the low PE quintile with market capitalizations between \$100m and \$500m, compared to only 8.7% returns for companies larger than \$5bn in the highest PE quintile.

So many researchers have reported observing the PE effect, both in the US and around the world, that its existence seems undeniable. The debate now revolves around whether a real effect is being measured, or whether PE is a proxy for other factors. Lakonishok, Schleifer & Vishny (1994) argue that it is a real effect and explain it using psychological arguments, whereas Fama and French still maintain that a three-factor model can explain things satisfactorily. There is no previous academic research into whether knowledge of earnings of previous years will improve the ability of the PE ratio to predict future returns.

2.4.2 Price Earnings Growth ratio

There isn't as much previous research on PEG as there is for PE this being that PE is a traditional ratio for estimating stock returns. The PEG captures the comparison of the PE ratio and the earnings growth as a basis for stock recommendations. Lynch's (2000) argument a stock is fairly priced if its PEG ratio is equals to 1 and analysts would recommend holding the stock. A PEG greater or less than 1 would signal a buy or sell recommendation. The PEG ratio (which is the price-earnings [PE] ratio divided by the short-term earnings growth rate) has become a popular means of combining prices and forecasts of earnings and earnings growth into a ratio that is used as a basis for stock recommendations (implicitly for comparing expected rates of return). The advantage of PEG is that it clearly shows a company's probable growth in earnings

2.4.3 Price Earnings ratio and Price Earnings Growth ratio

Proponents of the PEG ratio argue that this ratio takes account of differences in short-run earnings growth and thus it provides a ranking that is superior to the ranking based on PE ratios. But even though the PEG ratio may provide an improvement over the PE ratio, it is arguably still too simplistic because it implicitly assumes that the short-run growth forecast also captures the long-run future. The PEG ratio is less appropriate for measuring companies without high growth. Large, well-established companies for instance, may offer dependable dividend income but little opportunity for growth.

A company's growth rate is an estimated. It is subject to the limitations of projecting future events. Future growth of a company can change due to any number of factors: market conditions, expansion setbacks, and hype of investors. Also, the convention that "PEG=1" is appropriate is somehow arbitrary and considered a rule-of-thumb metric. The simplicity and convenience of calculating PEG leaves out several important variables. First, the absolute company growth rate used in the PEG does not account for the overall growth rate of the economy, and hence an investor must compare a stock's PEG to average PEG's across its industry and the entire economy to get any accurate sense of how competitive a stock is for investment. A low (attractive) PEG in times of high growth in the entire economy may not be particularly impressive when compared to other stocks, and vice versa for high PEG's in periods of slow growth or recession. In addition, company growth rates that are much higher than the economy's growth rate are unstable and vulnerable to any problems the company may face that would prevent it from keeping its current rate. Therefore, a higher PEG stock with a steady, sustainable growth

rate (compared to the economy's growth) can often be a more attractive investment than a low PEG stock that may happen to just be on a short-term growth "streak". A sustained higher than economy growth rate over the years usually indicates a highly profitable company, but can also indicate a scam, especially if the growth is a flat percentage no matter how the rest of the economy fluctuates.

2.5 A Summary of the Concepts and Issues

The literature reviewed focuses on the issues of whether the PE ratio and the PEG ratios can be used to effectively predict stock returns. A good amount of work has gone into the question of the predictive value of the ratios in predicting the rate of stock returns and the models that can be used to best predict stock returns. There is a general agreement that firms with low PE tend to provide higher returns than those with high PE and that a PEG ratio of 1 is said to represent a fair trade-off between the values of cost and the values of growth indicating that a stock is reasonable valued given the expected growth. The question of firm size is also factored in the literature as a player in determining stock returns. The measurement issues arise as whether to use trailing or forward PE and how they can be combined with the stock analysis theories of fundamental or technical/chartists way of analyzing stocks.

I will thus combine the chartist and the fundamental approach to analyze the stock exchange securities, PE ratios, PEG ratios and develop a relationship between the ratios (if any).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter was to describe the methods that will be used in the collection of data pertinent in answering the research question. The chapter is divided into research design, population, sample design, data collection and data analysis.

3.2 Research Design

The problem was studied using the causal research design. A causal research explores the effects of one thing on another and more specifically, the effect of one variable on another. The research design attempts to explore cause and effects of relationships between two or more variables (Ader, Mellenberg and Hand, 2008). The research design was used to measure what impact a specific change has on existing norms and allow the prediction of hypothetical scenarios upon which to base findings.

3.3 Population

The population of interest in this study consisted of firms in the Nairobi Security Exchange from the 60 listed companies. This study covered a sample of seventeen quoted companies in the NSE to enable clear understanding all the companies in all the segments.

3.4 Data Collection

The listed companies in the Nairobi securities exchange which declared financial results over a five year period was included in this study. The period in this study was five years

i.e. 2008 – 2012 because this is current data that can give true picture of the current performance of a firm.

The secondary data from the Nairobi Securities Exchange database and the company libraries was used as the major source of data. The Nairobi Securities exchange keeps copies of financial statements of all quoted companies from the time they were quoted. Share prices was obtained from the daily price list schedules circulated by the Nairobi Securities Exchange handbooks. The data used was gathered from the financial statements of all the listed companies over a five year period. The data was collected on firm's earnings, market price per share and growth ratios was developed. The PE ratios and the PEG ratios form the independent variables and the stock return is the dependent variables of this research.

3.5 Data Analysis

PE ratio was calculated by dividing current price per share at the end of the fiscal year by EPS from the forms last published financial statement. Trailing PE was used together with the growth ratios of the stock returns. The statistical analysis was carried out majorly using Statistical Package for Social Sciences (SPSS) Software program so as to have a complete analysis on the movement of the stock prices. The Regression and correlation analysis was used to analyze the data.

$$R_{i,t} = B_0 + B_1 \Delta P/E_1 + B_{1\Delta} PEG_1 + \epsilon_1$$

Where

R_i – Stock Return

B- Coefficients

P/E –Price Earning Ratio

PEG- price earning growth ratio

The above models was used in regression analysis to develop a predictive model and test the variables significance in estimating stock returns. The test was considered at 5% level of significance for all the multipliers in the regression equation. Correlation coefficients were produced and coefficient of determination (r^2) to further provides statistical evidence to support the explanations.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter describes data analysis and presentation of results pertinent in answering the research question. The chapter is divided into descriptive statistics, correlation of variables, Regression analysis, Coefficient of determination and discussion of the findings.

4.2 PE ,PEG ,RI Descriptive Statistics

The descriptive statistics for the three variables have been obtained for empirical investigation and are presented in the Table 4.2. The variables are NStock Returns, P/E and PEG ratio.

Table 4.2 Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PE	80	-352.00	32.49	7.6775	41.20149
PEG	80	-27.312585	6336.000000	94.32155272	706.926213946
RI	80	-.86267	2.08861	.0343683	0.51914641
Valid N (listwise)	80				

Table 4.2 shows that Stock returns (RI) had Mean of 0.034 and Standard deviation of 0.5191 which is significantly high reflecting significant variability in Stocks Returns.

PE mean is 7.678 and standard deviation 41.202 implying that there is significant variability in PE. PEG mean is 94.322 and standard deviation is 706.92 meaning there is

high variability in PEG. The data represented by the range that is Maximum and Minimum statistics indicates that all the variables had significantly changed in magnitude over the period of study.

4.3 Correlation of variables: PE ,PEG ,RI

Table 4.3 Correlations of variables

		PE	PEG	RI
PE	Pearson Correlation	1	-.986**	.093
	Sig. (2-tailed)		.000	.410
	N	80	80	80
PEG	Pearson Correlation	-.986**	1	-.089
	Sig. (2-tailed)	.000		.433
	N	80	80	80
RI	Pearson Correlation	.093	-.089	1
	Sig. (2-tailed)	.410	.433	
	N	80	80	80

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4.3 shows correlation of the Stock returns (RI) with the PE and PEG. Price Earning Ratio correlation of .093 indicates there is a low correlation between PE and Stocks returns PEG ratio correlation was -.089 showing that PEG rate had low negative correlation with Stocks Return. There was high negative correlation between PE and P/EG -.986**.

4.4 Regression Analysis: PE, PEG, RI

Table 4.4 Regression analysis

	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.095 ^a	.009	-.017	.52345027

a. Predictors: (Constant), PEG, PE

R Square is a statistic that gives some information about the goodness of fit of a model. In regression the R Square coefficient of determination is a statistical measure of how well the regression line approximates the real data points. An R Square of 1.0 indicates that the regression line perfectly fits the data. The range of R Square is from 0 to 1. In table 4.4 the R Square of 9% is measured. It means that only 9% of the variations in stocks returns have been explained by the explanatory variables and 91% of the variations in stocks returns are unexplained and are taken by error term. Conclusion is that the regression model for the problem did not have a good fit.

Table 4.5: Anova

ANOVA^b

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.194	2	.097	.353	.704 ^a
	Residual	21.098	77	.274		
	Total	21.292	79			

a. Predictors: (Constant), PEG, PE

b. Dependent Variable: RI

Table 4.5 shows the ANOVA which examines the difference in the mean value of the dependent variable i.e. RI associated with the effect of the controlled independent variables. Results show that there is insignificant relation between variables.

Table 4.6 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	P-Value
		B	Std. Error	Beta		Sig.
1	(Constant)	.006	.127		.051	.960
	PE	.003	.009	.206	.303	.763
	PEG	8.417E-5	.000	.115	.168	.867

a. Dependent Variable: RI

The Beta-coefficient of PE ratio to Stock returns is 0.206 which is insignificant given a P-Value of 0.763 whereas the cut off P-Value is 0.05. This can be interpreted as an increase of 1 unit in PE will not significantly increase Stock returns. Similarly the Beta-coefficient of PEG to Stocks returns is 0.115 which is insignificant given a P-Value of 0.867 whereas the cut off P-Value is 0.05. This can also be interpreted as an increase of 1 unit in PEG will not significantly increase Stock returns.

4.5 Discussion of Findings

Table 4.2 shows that Stock returns (RI) had Mean of 0.034 and Standard deviation of 0.52 which is significantly high reflecting significant variability in Stocks Returns. PE mean is 7.67 and standard deviation 41.20 implying that there is significant variability in PE. PEG mean is 94.32 and standard deviation is 706.92 meaning there is high variability in PEG. The data represented by the range that is Maximum and Minimum

statistics indicates that all the variables had significantly changed in magnitude over the period of study

Table 4.3 shows correlation of the Stock returns (RI) with the P/E and PEG. Price Earning Ratio correlation of .093 indicates there is a low correlation between PE and Stocks returns PEG ratio correlation was -.089 showing that PEG rate had low negative correlation with Stocks Return. There was high negative correlation between PE and PEG $-.986^{**}$. R Square is a statistic that gives some information about the goodness of fit of a model. In regression the R Square coefficient of determination is a statistical measure of how well the regression line approximates the real data points. An R Square of 1.0 indicates that the regression line perfectly fits the data. The range of R Square is from 0 to 1. In table 4.4 The R Square of 9% measured. It means that only 9% of the variations in stocks returns have been explained by the explanatory variables and 91% of the variations in stocks returns are unexplained and are taken by error term. Conclusion is that the regression model for the problem did not have a good fit. The Beta-coefficient of PE ratio to Stock returns is 0.206 which is insignificant given a P-Value of 0.763 whereas the cut off P-Value is 0.05. This can be interpreted as an increase of 1 unit in PE will not significantly increase Stock returns. Similarly the Beta-coefficient of PEG to Stocks returns is 0.115 which is insignificant given a P-Value of 0.867 whereas the cut off P-Value is 0.05. This can also be interpreted as an increase of 1 unit in PEG will not significantly increase Stock returns.

The Study agreed with other studies in developed stock markets and provided empirical evidence on widely held beliefs of the predictability of the PEG and the PE ratios in an

emerging market. The Findings of the study have considerable importance to directors of companies who wish to provide satisfactory returns to their shareholders

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

This chapter specifically describes conclusions and recommendations of the study. The chapter is divided into conclusion of the study, recommendation of the study, limitation of the study, and arrears of further research.

5.2 Conclusions of the study.

The results shows there was lowcorrelation between PE and Stock returns there also existed a lowcorrelation between PEG and Stock returns. Price Earnings Ratio correlation of .093 indicates there was a low correlation between PE and Stocks returns. Price Earning growth ratio correlation was -.089 showing that PEG rate had low negative correlation with Stocks Return. There was also high negative correlation between PE and PEG -.986*.The regression coefficient of determination of R Square of 9 %measured the strength of correlation. It also means that only 9% of the variations in stocks returns have been explained by the explanatory variables and 91% of the variations in stocks returns are unexplained and are taken by error term. Conclusion is that the regression model for the problem did not have a good fit. The Beta-coefficient of PE ratio to Stock returns is 0.206 which is insignificant given a P-Value of 0.763 whereas the cut off P-Value is 0.05 .This can be interpreted as an increase of 1 unit in PE will not significantly increase Stock returns. Similarly the Beta-coefficient of PEG to Stocks returns is 0.115 which is insignificant given a P-Value of 0.867 whereas the cut off P-Value is 0.05. This can also

be interpreted as an increase of 1 unit in PEG will not significantly increase Stock returns.

5.3 Recommendation of the study

Information on stock returns can be very useful to investors, how to predict stock returns remains a challenge to many investors as many investors are not sure which method to use. Results from this study shows that PE and PEG ratios can be used to predict stock returns as from the study 9% of changes in stock returns can be predicted using these ratios. The Study agreed with other studies in developed stock markets and provided empirical evidence on widely held beliefs of the predictability of the PEG and the PE ratios in an emerging market.

The Findings of the study have considerable importance to directors of companies who wish to provide satisfactory returns to their shareholders.

5.4 Limitation of the Study

The study only used PE/ PEG Ratio to predict changes in stock market returns. Changes in Stock returns may have occurred due to numerous factors not captured in the model. Both ratio PE and PEG used historical data to predict stock this may be misleading as historical data may not hold in the future. This ratios only provided information on financial performance however they did not capture non financial information factors which maybe useful to investors.

5.5 Suggestion for Further Study

The Findings of the study have considerable importance to directors of companies who wish to provide satisfactory returns to their shareholders. It is important that further study is conducted using other variables that are not financial in nature in comparison to this ratios. It also important to conduct a study to establish why the Kenyan stocks market is not efficient as shown from this study.

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APPENDIX I: LISTED COMPANIES AT NSE

AGRICULTURAL

Eaagads Ltd

Kapchorua Tea Co. Ltd

Kakuzi

Limuru Tea Co. Ltd

Rea Vipingo Plantations Ltd

Sasini Ltd

Williamson Tea Kenya Ltd

COMMERCIAL AND SERVICES

Express Ltd

Kenya Airways Ltd

Nation Media Group

Standard Group Ltd

TPS Eastern Africa (Serena) Ltd

Scangroup Ltd

Uchumi Supermarket Ltd

Hutchings Biemer Ltd

Longhorn Kenya Ltd

TELECOMMUNICATION AND TECHNOLOGY

AccessKenya Group Ltd

Safaricom Ltd

AUTOMOBILES AND ACCESSORIES

Car and General (K) Ltd

CMC Holdings Ltd

Sameer Africa Ltd

Marshalls (E.A.) Ltd

BANKING

Barclays Bank Ltd

CFC Stanbic Holdings Ltd

I&M Holdings Ltd

Diamond Trust Bank Kenya Ltd

Housing Finance Co Ltd

Kenya Commercial Bank Ltd

National Bank of Kenya Ltd

NIC Bank Ltd Ord 5.00

Standard Chartered Bank Ltd

Equity Bank Ltd

The Co-operative Bank of Kenya Ltd

INSURANCE

Jubilee Holdings Ltd

Pan Africa Insurance Holdings Ltd

Kenya Re-Insurance Corporation Ltd

CFC Insurance Holdings

British-American Investments Company (Kenya) Ltd.

CIC Insurance Group Ltd

INVESTMENT

Olympia Capital Holdings ltd

Centum Investment Co Ltd

Trans-Century Ltd

MANUFACTURING AND ALLIED

B.O.C Kenya Ltd

British American Tobacco Kenya Ltd

Carbacid Investments Ltd

East African Breweries Ltd

Mumias Sugar Co. Ltd

Unga Group Ltd

Eveready East Africa Ltd

Kenya Orchards Ltd

MANUFACTURING AND ALLIED

A.Baumann CO Ltd

CONSTRUCTION AND ALLIED

Athi River Mining

Bamburi Cement Ltd

Crown Berger Ltd

E.A.Cables Ltd

E.A.Portland Cement Ltd

ENERGY AND PETROLEUM

KenolKobil Ltd

Total Kenya Ltd

KenGen Ltd

Kenya Power & Lighting Co Ltd

APPENDIX II: RESEARCH DATA

COMPANY	YEAR	MPS1	MPS0	P/E	EPS 1	PEG	RI
Access Kenya	2012	4.41	4.93			4.630435	-0.04462
Access Kenya	2011	4.93	12.87	6.39	0.69	-0.7888	-0.61694
Access Kenya	2010	12.87	19.49	9.86	0.5	6336	-0.33966
Access Kenya	2009	19.49	19.92	-352	-0.04	35.38056	-0.00653
Access Kenya	2008	19.92	23.25	27.1	0.72	19.51021	-0.12602
MUMIAS	2012	6.1	7.15	21.08	0.94	3.793016	-0.07692
MUMIAS	2011	7.15	12.85	4.64	1.26	5.769903	-0.40467
MUMIAS	2010	12.85	6	5.66	1.03	9.404762	1.208333
MUMIAS	2009	6	12.7	12.5	1.05	5.7	-0.49606
MUMIAS	2008	12.7	26.6	5.7	0.79	55.3257	-0.50752
EABL	2012	227	193	16.01	0.79	11.66863	0.221503
EABL	2011	193	181	16.87	13.46	20.21787	0.114641
EABL	2010	181	151	20.73	9.31	19.12747	0.256623
EABL	2009	151	199	19.94	9.08	19.01228	-0.20075
EABL	2008	199	154	17.34	8.71	24.93057	0.344481
CENTUM	2012	13.05	21.5	20.83	9.55	15.45642	-0.39302
CENTUM	2011	21.5	15.6	7.3	1.79	2.977124	0.378205
CENTUM	2010	15.6	10.25	5.67	3.79	2.245628	0.521951
CENTUM	2009	10.25	25	7.84	1.99	49.89474	-0.59
CENTUM	2008	25	26.75	18	0.57	24.19297	-0.0486
BAT	2012	493	246	18.83	1.58	14.30138	1.136179
BAT	2011	246	270	15.1	32.71	4.505907	0.024074

BAT	2010	270	178	7.9	30.98	12.79762	0.615169
BAT	2009	178	131	15.3	17.67	13.80244	0.471374
BAT	2008	131	139	12	14.78	6.277765	0.048561
BOC	2012	99.5	100	7.7	17	7.504095	0.05
BOC	2011	100	132	9.84	10.11	6.824591	-0.19091
BOC	2010	132	150	12.96	7.71	63.05941	-0.05733
BOC	2009	150	160	32.49	4.06	24.77764	-0.02
BOC	2008	160	160	19.03	7.88	20.81706	0.0425
SAFARIKOM	2012	3.2	3.8	15.59	10.26	10.45688	-0.1
SAFARIKOM	2011	3.8	5.55	10.14	0.32	13.3	-0.27928
SAFARIKOM	2010	5.55	3	11.55	0.33	10.03053	0.916667
SAFARIKOM	2009	3	3.6	14.66	0.38	15.33269	-0.13889
SAFARIKOM	2008	3.6	3.6	11.39	0.26	10.39	0.013889
KAKUZI	2012	72	69.5	10.39	0.35	0	0.089928
KAKUZI	2011	69.5	81.5	3.72	0	16.28412	-0.10123
KAKUZI	2010	81.5	31.75	2.48	1.36	0.83953	1.645669
KAKUZI	2009	31.75	23	5.1	8.93	4.618776	0.489565
KAKUZI	2008	23	36.25	1.84	1.47	6.599512	-0.33793
EA CABLES	2012	11.7	10.55	2.49	3.69	3.41301	0.203791
EA CABLES	2011	10.55	16.25	5.67	2.06	6.223226	-0.32
EA CABLES	2010	16.25	20.25	8.48	1.24	28.71868	-0.14815
EA CABLES	2009	20.25	26.25	17.9	0.91	21.72363	-0.19048
EA CABLES	2008	26.25	42	13.85	1.46	10.33598	-0.35119
KENGEN	2012	8.6	13.55	11.49	2.29	4.972656	-0.32103

KENGEN	2011	13.55	17.1	6.7	1.28	22.45979	-0.17836
KENGEN	2010	17.1	14.55	14.32	0.95	7.217181	0.209622
KENGEN	2009	14.55	24.5	11.44	1.49	44.04894	-0.38571
KENGEN	2008	24.5	26	15.45	0.94	3.781455	-0.02308
KENYA AIRWAYS	2012	13.95	32.25	9.13	2.68	8.255778	-0.54233
KENYA AIRWAYS	2011	32.25	60	3.88	3.6	2.423773	-0.4375
KENYA AIRWAYS	2010	60	19.75	4.21	7.66	-27.3126	2.088608
KENYA AIRWAYS	2009	19.75	52	13.61	4.41	2.20626	-0.60096
KENYA AIRWAYS	2008	52	95	-2.33	-8.85	0.821241	-0.43421
NATION MEDIA	2012	222	140	6.2	8.38	6.65816	0.657143
NATION MEDIA	2011	140	167	13.89	15.98	23.36308	-0.11377
NATION MEDIA	2010	167	118	18.28	7.66	13.67937	0.483051
NATION MEDIA	2009	118	95	17.06	9.79	34.81233	0.3
NATION MEDIA	2008	95	326	15.04	7.85	6.581838	-0.69172

EQUITY	2012	19.25	16.4	7.92	18.17	5.049387	0.25
EQUITY	2011	16.4	26.75	5.9	3.26	4.067527	-0.35701
EQUITY	2010	26.75	14.34	5.88	2.79	8.204456	0.921199
EQUITY	2009	14.34	17.6	13.89	1.93	116.2526	-0.1625
EQUITY	2008	17.6	150	12.55	1.14	8.240284	-0.86267
HOUSIING FINANCE	2012	15.45	12.4	16.67	10.56	4.024845	0.358871
HOUSIING FINANCE	2011	12.4	26.5	4.8	3.22	2.805	-0.48679
HOUSIING FINANCE	2010	26.5	18	4.59	2.7	9.928	0.511111
HOUSIING FINANCE	2009	18	19.4	16.06	1.65	13.6701	-0.04639
HOUSIING FINANCE	2008	19.4	45.75	17.65	1.02	19.89671	-0.5694
BAMBURI	2012	185	125	24.56	0.79	17.30587	0.564
BAMBURI	2011	125	187	15.21	12.7	8.392595	-0.27807
BAMBURI	2010	187	156	8.65	14.45	17.43144	0.253205
BAMBURI	2009	156	165	13.34	14.02	4.083275	0.012121
BAMBURI	2008	165	196	8.52	18.32	22.47096	-0.12755
ARM	2012	44.5	158	18.79	8.78	81.50036	-0.71519
ARM	2011	158	183	17.69	2.52	12.72145	-0.12568
ARM	2010	183	111	13.6	11.61	10.12221	0.664414
ARM	2009	111	90.5	16.86	10.86	13.26877	0.243094

ARM	2008	90.5	93	17.03	6.52	14.93516	-0.01344
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Source Research data: NSE