An empirical study of the Stock Price movements with their Financial Fundamentals: A study of the IT & ITES Firms

Abstract

A basic tenet of security valuation is that the intrinsic value is equal to the discounted value of its expected future cash distributed, predominantly, in the form of cash dividends. Yet, it is well established by various studies, that variability in the cash distributions as well as the expected returns thereof account for less than fifty percent of observed variations in the stock prices. The remaining variation remains a subject of intense academic debate. With the efficient market theorists espousing the time-varying risk, Value and Behavioral theorists attributing issues with respect to utility and risk appetite of investors as well as the risk attitude, One aspect least disputed is the importance and significance of the fundamentals of the stock in attributing the sustainability of the price returns.

This study examines the impact of the fundamentals of twenty IT and ITEs stocks over a five year period. The twenty stocks together had a market capitalization of over Rs 605,000 crores as of 31st March 2019, and with a book value of assets that aggregated over Rs 147,000 crores. This represented a significant value of the market capitalization of the respective indices be it the NSE or the BSE.

The purpose of the study is to examine the fundamentals of the stocks represented by their financial performance ratios and relating this with the stock market performance. Apart from the trend in the ratios exhibited by these stocks, a regression analysis was performed with the stock returns with various fundamental financial variables. The net profit change, dividend payout and dividend yield reflected significant coefficients on a relative scale in explaining part of the variations in the stock returns. It must be stated that the period of the study evidenced a significant level of buoyancy in the stock market and coupled with an economic recession, the findings with respect to the fundamentals and the stock returns may have been impacted.

In the area of equity analysis, research in finance has not been entirely successful from the point of view of divergent academic views on valuation and stock performance. Equity analysis or fundamental analysis was once the mainstream of finance. With seminal research and enormous steps for instance taken in pricing derivatives on the equity, techniques per se to value equities have not generated many models. This has not advanced much beyond applying

the dividend discount model and its variants or the asset pricing models like the Capital Asset Pricing Model. Further these are, often used as, models of risk and the expected return, not models that instruct how to value equities. Real option analysis has been applied to equity valuation, but the measurement problems are significant.

Despite these research efforts, accounting researchers in what has been referred to as accounting-based valuation research has made some progress. That is not unusual. Since equity analysis is largely an analysis of information, and accountants provide the data and deal with information about firms. Traditional fundamental analysis (before modern finance) was very much grounded in the financial statements. Graham, Dodd and Cottle' s Security Analysis (1962), pioneering effort, is not the security analysis of modern finance texts (that involves the analysis of prices, beta estimation, and asset allocation), but rather security analysis that analyzes the fundamentals associated with equity through the financial statements.

However, the financial statement measures were linked to equity value in an adhoc way, so little guidance was given for understanding the implications of a particular ratio a profit margin or an inventory turnover, for example— on the equity value. Nor was a comprehensive scheme advanced for " identifying, analyzing and summarizing" financial statement information in order to draw a conclusion as to what the statements, as a whole, say about equity value. The emphasis of the accounting data available in Financial Statements could at best be described to measure the performance from an investor's perspective that is restricted to measuring the returns on equity or the capital employed by the business. Despite these inherent limitations, research on the equity markets have proceeded unabated and rightly to so, in order to discern the variables that could be isolated that could have an impact on the value.

1.2 Purpose of the study

It is universally stated that Equity value or that matter any asset value is determined by "future earnings power" , but there is no explicit justification for using future earnings as a valuation attribute, nor is there explicit development of the forecasting of this earnings power.

A considerable amount of accounting research in the years since Graham, Dodd and Cottle has been involved in examining how financial statements inform about equity value.

The whole endeavor of " capital markets research" deals with the " information content" provided and this is used to determine the value .The Literature summarized in Brown (1993) focuses on forecasting earnings, often with valuation from the financial statements for determining stock prices. The extensive research done on the "time-series-of-earnings" in mind generated a number of studies such as Lipe (1986),Ou(1990),Ou and Penman (1989), Lev and Thiagarajan (1993) and Fairfield et al (1996), to name just a few, that has examined the role of particular financial statement components and ratios used in forecasting.

1.3 Problem Statement

 It is also fair to say that these researches has been conducted without much structure. Nor has it produced many innovations for practice. Interesting, robust empirical correlations have been documented, but the research has not produced a convincing financial statement analysis for equity valuation. Indeed the standard textbook schemes for analyzing statements, such as the DuPont scheme, rarely appear in academic research.

Drawing on various research studies on accounting-based valuation, this study ventures to produce a structural approach to financial statement analysis for equity valuation. The structure will not only identify relevant ratios, but also provide a way of organizing the analysis task. The result would therefore be a fundamental analysis that is very much grounded in the financial statements; indeed, fundamental analysis is cast as a matter of appropriate financial statement analysis.

This structural approach contrasts to the purely empirical approach in Ou and Penman (1989). That paper identified ratios that predicted earnings changes in the data; no thought was given to the identification. The approach will also contrasts to that in Lev and Thiagarajan (1993) who defer to "expert judgment" and identify ratios that analysts actually use in practice

Valuation involves forecasting payoffs. An equity valuation model that specifies what is to be forecasted guides forecasting. So, for example, the dividend discount model directs the analyst to forecast dividends. Because it focuses on accrual-accounting financial statements, the residual income valuation model, revived through the work of Ohlson (1995) and Feltham and Ohlson (1995), serves as an analytical device to organize thinking about forecasting and analyzing financial statements for forecasting. This model is a statement of how book value and forecasted earnings relate to forecasted dividends and thus to value.

The ratio analysis in this study follows from the recognition of standard accounting relationship that determine how components of the financial statements relate to earnings and book values.

This study carries the various research not only to the level of a product design but also would test the impact of these fundamentals in the way they depict their stock market trend and behaviour. The study is restricted to the stocks listed in the Indian stock market and further restricted to the IT and ITES stocks. These stocks put together has the highest market capitalization amongst the various sectoral stocks in the market indices[1]

1.4 Objectives of the study

The objectives of the study are:
1. To examine the fundamentals of the IT &ITES stocks reflected by their financial statements to isolate the ratios that indicate predictive behaviour on market performance.
2. To analyze the stock performance of these stocks based on their risk and returns.
3. To analyze the relationship between stock market behaviour and the financial variables that reflect changes.
4. To explore the specific fundamental financial indicators that can help model a stock performance behaviour.

1.5 Research Questions

1. What are the specific financial fundamentals of the stock that have a bearing on performance ?
2. What are the factors that reflect the risk return behaviour of stocks?
3. What are the performance indicators that have a bearing on stock market behaviour?
4. Are there specific fundamentals that indicate stock market performance in the short and medium term?

1.6 Limitations of the study

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[1]As reported in the websites of the stock exchanges www.bseindia.com and www.nseindia.comthat the market capitalization is over Rs 800K Lakh Crores(OneCrore = Ten Million)

The research had some limitations, which are as follows:

- It was limited to only IT sector and only CNX 100 stocks. Hence the findings would be restrictive to this sector only

- Keeping in view the objectives some of the study methodologies adopted by researches outside Indian markets have been considered and replicated in the Indian context.

- The research was restricted to fundamental analysis at the firm level and macro level fundamentals has not been considered.

- The duration of the study is only for a period of five years.

- The period of the study was particularly buoyant as far as the stock market movements were considered and with some extraordinary drops in the share price index was witnessed, which could have impacted the findings.

- Both the IT and the ITES companies were grouped under the same sector.

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LITERATURE REVIEW

2.1 Introduction

Various academic studies have conducted over the years to examine and analyze the performance of the security market and to determine the stock price behavior. Fundamental analysts believe that they can create opportunities by isolating and quantifying information about the markets, the industries and also the firms. Technical analysts however are essentially short run forecasters whose predominant focus is on observing the trend to isolate short-term capital gains or losses.

Fundamental analysis was first formally argued and presented by Graham and Dodd (1934) and in their study they analyzed stock values using the PE, Book Values and the EPS ratios. The relationship of stock price and the fundamental factors was also strengthened as a basis of their study by Gordon and Shapiro (1956) who presented an argument of the stock prices using the dividend, and discounting its worth to the present. On the other hand purists who support the technical analysis, Schwager (2009) argued that a fundamental analyst examines the intrinsic value of the stocks and are looking at total returns over a relatively longer period of time, while the technical analysts look at the short run, and that such methods are inadequate. From the technical analyst's perspective, market conditions are perceived to be inefficient and that analysts should deal with market reactions and therefore investors would not always buy on good earnings reports and always sell on some bad news.

This study is on analyzing the fundamentals of the firm and excludes other macro and market related variables. The literature review in this section examines various conceptual, contextual and empirical studies done with respect to the stock market valuations using the fundamental indicators at the firm level.

This section begins with a brief history of the Indian stock market and overview of the Information technology sector in the context of the study, a brief on the conceptual underpinnings of fundamental analysis followed by various empirical studies carried out in this area of research.

2.2 Brief History of the Indian Stock Market [2]

The origin of the stock market in India can be traced to the end of the 18th Century when long-term negotiable securities were first issued. From a pragmatic perspective, however, the real start happened only in the middle of the 19th century after the enactment of the Companies Act of 1850, which introduced the features of a limited liability and thus began the investor interest in corporate securities. The first attempt was the development of the native stock- brokers association in the then Bombay in 1875, perhaps, the pre-curser to the present day Bombay stock exchange. This followed by the formation of the exchanges in Ahmedabad (1894) and the then Madras (1937). In addition many smaller exchanges began mushrooming in various other capitals and cities within the states. Post independence the stock exchanges continued to flourish with some very active regional stock exchanges. The post liberalization witnessed a dwindling in the activities of the regional stock exchanges and the formation of the National Stock Exchange.

The stock market in India is not unregulated. The history of this would begin with the Capital Issues (Control) Act of 1947. Under the CCI of 1947 any firm intending to issue securities needed to obtain a prior approval from the CCI. The CCI used to decide the amount, type and the price of the issue. The CCI was repealed in 1992 as a part of the process of liberalization of the securities market. The Securities Contract Regulation Act was promulgated in 1956 in order to exercise direct and indirect control over all aspects of the securities trading. The regulation laid down the provisions for the running of the stock exchanges in India and the powers of forming or creating a separate body for regulating the stock market. Based on this, the Securities Exchange Board of India (SEBI) was formed in 1992. The act provided the SEBI with regulatory jurisdiction over corporate in the issuance of capital and transfer of securities. The formation of SEBI was followed by the Depositories Act of 1996,in order to aid the formation of depositories to dematerialize securities thereby facilitating the electronic trading.

2.3 Fundamental Analysis an Overview

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[2]This section has been adapted from the various reports and articles published in the website to the stock exchanges www.bseindia.com ,www.nseindia.com and www.sebi.in

At its core, fundamental analysis is a research work where an investor searches for the outperforming stocks of companies by finding out the company's earnings, balance sheet, management and other factors, which have a direct impact on profit and growth of the company. Fundamental analysis (Alexander et al 2009) is also a tool to determine a security's value by focusing on underlying factors that affect a company's actual business and its future prospects. In a broader sense it is used for the economic well being of a financial well-being.

Fundamental Analysis can therefore highlight the following points such as, Growth in company's revenue, Profit margins, Efficiency and Liquidity, Strength and standing in the market and Debt capacity and solvency, to indicate a few dimensions.

Fundamental analysis is the discipline (Barua et al 2009) that tries to make sense of price movements in the light of economic data and news flow many other aspects of economics including politics, financial law, social attitudes, in addition to the many other aspects of human life. In analyzing price action, there are two main kinds of analysis. Those who concentrate on price action, and ignore most other factors choose to direct their efforts at perfecting their skills at technical analysis (Kevin 2010), while traders who prefer to study the economic events that cause the market action mostly focus their efforts in studying fundamental analysis. Many traders combine the information provided by these two types of analysis to generate trading signals. Others concentrate on one aspect of analysis and exclude the other from their calculations, and it is fair to say that either approach can be valid depending on the circumstances.

Fundamental analysis thus aims to establish a cause and effect relationship between market movements and economic developments Ranganathan et al (2009). In that sense, it is different from technical analysis, which regards the price action as the beginning and end of trading. While technical analysts generally argue that the price action reflects all information available to the market, fundamental analysts seek to identify imbalances and "errors" in the market that may offer profit opportunities.

Unlike the technical trader, the fundamental trader is always skeptical of the price action, and seeks alternative explanations to the "wisdom of the market" in evaluating price trends. Fundamental analysis can and often does indeed warn us on possible errors in market attitudes

to economic realities, there's no indication that the correction will happen anytime soon. Similarly, bubbles and market extremes often cause analysts to rationalize the unhealthy positioning of the market, invalidating the healthy advantage of skepticism inherent in the fundamental approach. The greatest benefit derived from study of fundamental analysis is the ability to understand the causes that drive the market action.

By understanding market dynamics, we can be confident in maintaining a position as long as the cause that triggered the trade exists. A thorough grasp of fundamental analysis also ensures that we do not lose our composure in the face of

market volatility. Those who employ fundamental studies in gauging the price action are confident that they are on the tracks of the greatest geniuses of stock trading. All those who successfully made millions or billions in this business were users of fundamental analysis; and there is no reason to doubt that if we were to use the same methods we can achieve the similar, if not the same results with them.

Fundamental Stock Analysis is typically more closely tied to buy and hold investors (Reilly 2004), whereby day traders use solely technical analysis and most swing traders use both fundamental and technical stock analysis. Technical analysis is specifically important for swing traders with a very short time horizon (that is, a couple of days or just a few weeks). Most swing trading software uses only technical analysis but the Stock and neural network uses a blended custom recipe of both technical and fundamentals.

Many rightly believe at the time of buying shares, investors are buying a proportional share in a business. As a consequence, to figure out how much the stock is worth one should determine how much the business is worth. Investors generally do this by assessing the company's financials in terms of per-share values in order to calculate how much the proportional share of the business is worth. This is known as "fundamental" analysis by some, and most who use it view it as the only kind of rational stock analysis.

Although analyzing a business might seem like a straightforward activity, there are many flavours of fundamental analysis. Investors often create oppositions and subcategories in order to better understand their specific investing philosophy. In the end, most investors come up with an approach that is a blend of a number of different approaches. Many of the distinctions are more academic inventions than actual practical differences. For instance, value and growth

have been codified by economists who study the stock market, even though market practitioners do not find these labels to be quite as useful.

The author viewed as providing the foundation for modern value investing is Benjamin Graham, whose 1934 book Security Analysis (co-written with David Dodd) is still widely acclaimed and used even today.   Value investors tend to have very strict, absolute rules governing how they purchase a company's stock. These rules are usually based on relationships between the current market price of the company and certain business fundamentals. A few examples include, Price/earnings ratios (P/E), and Dividend yields above a certain absolute limit, Book value per share relative to the share price, Total sales at a certain level relative to the company's market capitalization of market value

Growth investing is the idea that one should buy stock in companies whose potential for growth in sales and earnings is excellent. Growth investors tend to focus more on the company's value as an ongoing concern Barua(2009). Many plan to hold these stocks for long periods of time, although this is not always the case. At a certain point, "growth" as a label is as dysfunctional as "value," given that very few people want to buy companies that are not growing.
Growth investors look at the underlying quality of the business and the rate at which it is growing in order to analyze whether to buy it. Excited by new companies, new industries, and new markets, growth investors normally buy companies that they believe are capable of increasing sales, earnings, and other important business metrics by a minimum amount each year. Growth is often discussed in opposition to value, but sometimes the lines between the two approaches become quite fuzzy in practice.

Although today common stocks are widely purchased by people who expect the shares to increase in value, there are still many people who buy stocks primarily because of the stream of dividends they generate. Called income investors, these individuals often entirely forego companies whose shares have the possibility of capital appreciation for high-yielding dividend-paying companies in slow-growth industries. These investors focus on companies that pay high dividends like utilities and real estate investment trusts (REITs), although many times they may invest in companies undergoing significant business problems whose share prices have sunk so low that the dividend yield is consequently very high.

Most investors today use a hybrid of value, growth, and GARP approaches. These investors are looking for high-quality businesses selling for "reasonable" prices. Although they do not have any shorthand rules for what kind of numerical relationships there should be between the share price and business fundamentals, they do share a similar philosophy of looking at the company's valuation and at the inherent quality of the company as measured quantitatively by concepts like Return on Equity (ROE). Many of them describe themselves as value investors, although they concentrate much more on the value of the company as an ongoing concern rather than on liquidation value.

The world according to GARP is an acronym for growth at a reasonable price. The world according to GARP investors combines the value and growth approaches and adds a numerical slant. Practitioners look for companies with solid growth prospects and current share prices that do not reflect the intrinsic value of the business, getting a "double play" as earnings increase and the price/earnings (P/E) ratios at which those earnings are valued increase as well. One of the most common GARP approaches is to buy stocks when the P/E ratio is lower than the rate at which earnings per share can grow in the future. As the company's earnings per share grow, the P/E of the company will fall if the share price remains constant. Since fast-growing companies normally can sustain high P/Es, the GARP investor is buying a company that will be cheap tomorrow if the growth occurs as expected. If the growth does not come, however, the GARP investor's perceived bargain can disappear very quickly.

Table 1.1 is a tabulated summary of all the financial ratios used in the fundamental score indicator. The table displays the formula, a quick description of the ratio and how it is used to analyze a company.

Fundamental Ratios

Ratio	Calculation	Description
Quick Ratio	[Cash + Marketable Securities + Receivables] -------------------------------- Current Liabilities	Used to determine liquidity strength of a company. The higher the ratio, the more likely the company will be able to pay current liabilities.

Ratio	Calculation	Description
Debt To Equity Ratio	$$\frac{\text{Total Debt}}{\text{Total Equity}}$$	Solvency ratio used to determine the amount of leverage a company has or its use of debt financing. The lower the ratio, the better.
Operating Profit Margin	$$\frac{\text{Operating Income}}{\text{Total Revenue}}$$	Profitability ratio that measures the ability of a company to keep expenses low in order to retain as much of its revenue generated as profit. The higher the ratio, the better.
Return on Assets	$$\frac{\text{Net Income}}{\text{Average Total Assets}}$$	Profitability ratio that measures the ability of a company to use its assets efficiently in order to generate net income. The higher the ratio, the better.
Return on Equity	$$\frac{\text{Net Income}}{\text{Average Total Equity}}$$	Profitability ratio that measures the ability of a company to use its equity efficiently in order to generate net income. The higher the ratio, the better.
Price to Earnings Ratio	$$\frac{\text{Price}}{\text{Earnings (TTM)}}$$	Valuation ratio that divides market price per share by earnings per share for the last 12 months. Used to determine if stock price is overvalued or undervalued.
Price to Book Value Ratio	$$\frac{\text{Price}}{\text{Tangible Book Value}}$$	Valuation ratio that divides market price per share by tangible book value. Used to determine if stock price is overvalued or undervalued.
EPS Growth	$$\frac{\text{EPS - EPS 1 Period Ago}}{\text{EPS}}$$	EPS is used to determine recent growth of the company.

Table 2.1 : Tabulated Ratios used for the Fundamental Analysis

Fundamental analysis is the process of looking at a business at the basic or fundamental financial level. This type of analysis examines key ratios of a business to determine its financial health and gives you an idea of the value its stock.

Many investors use fundamental analysis alone or in combination with other tools to evaluate stocks for investment purposes. The goal is to determine the current worth and, more importantly, how the market values the stock.

This article focuses on the key tools of fundamental analysis and what they tell you. Even if you don't plan to do in-depth fundamental analysis yourself, it will help you follow stocks more closely if you understand the key ratios and terms.

2.4 Earnings

It's all about earnings. When you come to the bottom line, that's what investors want to know. How much money is the company making and how much is it going to make in the future.

Earnings are profits. It may be complicated to calculate, but that's what buying a company is about. Increasing earnings generally leads to a higher stock price and, in some cases, a regular dividend.

When earnings fall short, the market may hammer the stock. Every quarter, companies report earnings. Analysts follow major companies closely and if they fall short of projected earnings, sound the alarm. For more information on earnings, see my article: It's the Earnings.

While earnings are important, by themselves they don't tell you anything about how the market values the stock. To begin building a picture of how the stock is valued you need to use some fundamental analysis tools. These ratios are easy to calculate, but one can find most of them already done on sites like cnn.money.com or MSN MoneyCentral.com for most global companies and in various websites such as www.moneycontrol.com and in line databases provided by CMIE-Prowess or Capitalline.

2.6 Fundamental Analysis Tools[3]

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[3]This section has been adapted from a number of Finance text Books and predominately from Walsh, Ciaran, "Key Management Ratios", Prentice Hall – Pearson Education Ltd, 3rd Edition, 2003

These are the most popular tools of fundamental analysis. They focus on earnings, growth, and value in the market. For convenience, they have been broken them into separate sections. Each section discusses the related ratios.

The sections are:

1. Earnings per Share – EPS
2. Price to Earnings Ratio – P/E
3. Projected Earning Growth – PEG
4. Price to Sales – P/S
5. Price to Book – P/B
6. Dividend Payout Ratio
7. Dividend Yield
8. Book Value
9. Return on Equity

2.4.1 Earnings per Share

One of the challenges of evaluating stocks is establishing an "apples to apples" comparison. What this means is setting up a comparison that is meaningful so that the results help you make an investment decision. Similarly, comparing the earnings of one company to another really doesn't make any sense, if you think about it. Using the raw numbers ignores the fact that the two companies undoubtedly have a different number of outstanding shares.

For example, companies A and B both earn Rs.100, but company A has 10 shares outstanding, while company B has 50 shares outstanding. Which company's stock would be of interest to an investor, would this be the absolute earnings which is the same?

It would therefore make more sense to look at earnings per share (EPS) for use as a comparison tool. One can calculate the earnings per share by taking the net earnings and divide by the outstanding shares.

EPS = Net Earnings / Outstanding Shares

Using our example above, Company A had earnings of $100 and 10 shares outstanding, which equals an EPS of 10 (Rs100 / 10 = 10). Company B had earnings of Rs100 and 50 shares outstanding, which equals an EPS of 2 (Rs100 / 50 = 2).

So, one could go buy Company A with an EPS of 10? Maybe, but not just on the basis of its EPS. The EPS is helpful in comparing one company to another, assuming they are in the same industry, but it doesn't tell you whether it's a good stock to buy or what the market thinks of it. For that information, one need to look at some ratios.

Before moving on, one should note that there are three types of EPS numbers:

- Trailing EPS – last year's numbers and the only actual EPS
- Current EPS – this year's numbers, which are still projections
- Forward EPS – future numbers, which are obviously projections

2.4.2 Price to Earnings Ratio

If there is one number that investors look at, more any other is the Price to Earnings Ratio (P/E). The P/E is one of those numbers that investors throw around with great authority. The P/E looks at the relationship between the stock price and the company's earnings. The P/E is the most popular metric of stock analysis, although it is far from the only one you should consider.

One can calculate the P/E by taking the share price and dividing it by the company's EPS.

P/E = Stock Price / EPS

For example, a company with a share price of Rs.40 and an EPS of 8 would have a P/E of 5 (Rs. 40 / 8 = 5).

What does P/E highlight? The P/E gives you an idea of what the market is willing to pay for the company's earnings. The higher the P/E the more the market is willing to pay for the company's earnings. Some investors read a high P/E as an overpriced stock and that may be the case, however it can also indicate the market has high hopes for this stock's future and has bid up the price.

Conversely, a low P/E may indicate a "vote of no confidence" by the market or it could mean this is a sleeper that the market has overlooked. Known as value stocks, many investors made their fortunes spotting these "diamonds in the rough" before the rest of the market discovered their true worth.

What is therefore the "right" P/E? There is no correct answer to this question, because part of the answer depends on an investor's willingness to pay for the earnings. The more investors are willing to pay, which means they believe the company has good long term prospects over and above its current position, the higher the "right" P/E is for that particular stock in the decision-making process. Another investor may not see the same value and think your "right" P/E is all wrong.

2.4.3 The Price Earning Growth Ratio

In the section on Price to Earnings Ratio or P/E, it was stated that this number gave the investor an idea of what value the market place on a company's earnings. The P/E is the most popular way to compare the relative value of stocks based on earnings because one can calculate it by taking the current price of the stock and divide it by the Earnings Per Share (EPS). This tells, perhaps with some inherent limitation, whether a stock's price is high or low relative to its earnings.

Some investors may consider a company with a high P/E overpriced and they may be correct. A high P/E may be a signal that traders have pushed a stock's price beyond the point where any reasonable near term growth is probable. However, a high P/E may also be a strong vote

of confidence that the company still has strong growth prospects in the future, which should mean an even higher stock price.

Because the market is usually more concerned about the future than the present, it is always looking for some way to project out. Another ratio investors can use, that will help look at future earnings growth is called the PEG ratio. The PEG factors in projected earnings growth rates to the P/E for another number to remember.

One can therefore calculate the PEG by taking the P/E and dividing it by the projected growth in earnings.

PEG = P/E / (projected growth in earnings)

For example, a stock with a P/E of 30 and projected earning growth next year of 15% would have a PEG of 2 (30 / 15 = 2).

What does the "2" mean? Like all ratios, it simply indicates a relationship. In this case, the lower the number the less you pay for each unit of future earnings growth. So even a stock with a high P/E, but high projected earning growth may be a good value.

Looking at the opposite situation; a low P/E stock with low or no projected earnings growth, you see that what looks like a value may not work out that way. For example, a stock with a P/E of 8 and flat earnings growth equals a PEG of 8. This could prove to be an expensive investment.

A few important things to remember about PEG:

- It is about year-to-year earnings growth
- It relies on projections, which may not always be accurate

2.4.4 Price to Sales Ratio

A number of tools are available to an investor when it comes to evaluating companies with earnings. The first three sections listed, in particular deal with earnings directly. One can add the two others on dividends and the one on return on equity to the list as specific to companies that are or have made money in the past. Does that mean companies that don't have any earnings are bad investments? Not necessarily, but one should approach companies with no history of actually making money with caution. The Internet boom of the late 1990s was a classic example of hundreds of companies coming to the market with no history of earning – some of them didn't even have products yet and went public with stocks being traded at artificially high values.

One ratio used is the Price to Sales or P/S ratio. This metric looks at the current stock price relative to the total sales per share. One can calculate the P/S by dividing the market cap of the stock by the total revenues of the company. One can also calculate the P/S by dividing the current stock price by the sales per share.

P/S = Market Cap / Revenues

or

P/S = Stock Price / Sales Price per Share

Much like P/E, the P/S number reflects the value placed on sales by the market. The lower the P/S, the better the value, at least that's the conventional wisdom. However, this is definitely not a number an investor would want to use in isolation. When dealing with a young company, there are many questions to answer and the P/S supplies just one answer.

2.4.5 Price to Book Ratio

Investors looking at growth stocks aren't the only ones trolling the markets. A quiet group called value investors go about their business looking for companies that the market has passed by.

Some of these investors become quite wealthy finding sleepers, holding on to them for the long term as the companies go about their business without much attention from the market, until one day they pop up on the screen, and some analyst "discovers" them and bids up the stock. Meanwhile, the value investor pockets a hefty profit. Value investors look for some other indicators besides earnings growth and so on. One of the metrics they look for is the Price to Book ratio or P/B. This measurement looks at the value the market places on the book value of the company.

One can calculate the P/B by taking the current price per share and dividing by the book value per share.

P/B = Share Price / Book Value per Share

Like the P/E, the lower the P/B, the better the value. Value investors would use a low P/B is stock screens, for instance, to identify potential candidates.

2.4.6 Dividend Payout Ratio

The Dividend Payout Ratio (DPR) is one of those numbers, that is often used with little understanding of its merit. It almost seems like a measurement invented because it looked like it was important, but nobody can really agree on why. The DPR (it usually doesn't even warrant a capitalized abbreviation) measures what a company's pays out to investors in the form of dividends.

One calculate the DPR by dividing the annual dividends per share by the Earnings per Share.

DPR = Dividends per Share / EPS

For example, if a company paid out Re1 per share in annual dividends and had Rs. 3 in EPS, the DPR would be 33%. (Re.1 / Rs.3 = 33%)

The real question is whether 33% is good or bad and that is subject to interpretation. Growing companies will typically retain more profits to fund growth and pay lower or no dividends. Companies that pay higher dividends may be in mature industries where there is little room for

growth and paying higher dividends is the best use of profits (utilities used to fall into this group, although in recent years many of them have been diversifying). Either way, an investor must view the whole DPR issue in the context of the company and its industry. By itself, it conveys very little.

2.4.7 Dividend Yield

Not all of the tools of fundamental analysis work for every investor on every stock. If one was are looking for high growth technology stocks, they are unlikely to turn up in any stock screens one runs through looking for dividend paying characteristics. However, if as a value investor or looking for dividend income then there are a couple of measurements that are specific. For dividend investors, one of the telling metrics is Dividend Yield.

This measurement informs what percentage return a company pays out to shareholders in the form of dividends. Older, well-established companies tend to payout a higher percentage then do younger companies and their dividend history can be more consistent.

One calculate the Dividend Yield by taking the annual dividend per share and divide by the stock's price.

Dividend Yield = annual dividend per share / stock's price per share

For example, if a company's annual dividend is Rs. 1.50 and the stock trades at Rs.25, the Dividend Yield is 6%. (Rs1.50 / Rs.25 = 0.06)

2.4.8 Book Value

How much is a company worth and is that value reflected in the stock price? There are several ways to define a company's worth or value. One of the ways of defining value is market cap or how much money would be needed to buy every single share of stock at the current price.

Another way to determine a company's value is to go to the balance statement and look at the Book Value. The Book Value is simply the company's assets less its outside liabilities.

Book Value = Assets –Outside Liabilities

In other words, if one wanted to close the company, how much would be left after the settlement of all the outstanding obligations by selling off all the assets. A company that is a viable growing business will always be worth more than its book value for its ability to generate earnings and growth. Book value appeals more to value investors who look at the relationship to the stock's price by using the Price to Book ratio. To compare companies, one should convert to book value per share, which is simply the book value divided by outstanding shares.

2.4.9 Return on Equity

Return on Equity (ROE) is one measure of how efficiently a company uses its assets to produce earnings. One can calculate the ROE by dividing Net Income by Book Value. A healthy company may produce an ROE in the 13% to 15% range. Like all metrics, compare companies in the same industry to get a better picture.

While ROE is a useful measure, it does have some flaws that can give you an incorrect picture, so never rely on it alone. For example, if a company carries a large debt and raises funds through borrowing rather than issuing stock it will reduce its book value. A lower book value means you're dividing by a smaller number so the ROE is artificially higher. There are other situations such as taking write-downs, stock buy backs, or any other accounting slight of hand that reduces book value, which will produce a higher ROE without improving profits.

It may also be more meaningful to look at the ROE over a period of the past five years, rather than one year to average out any abnormal numbers.

Given that one must look at the total picture, ROE is a useful tool in identifying companies with a competitive advantage. All other things roughly equal, the company that can consistently squeeze out more profits with their assets, will be a better investment in the long run

2.5 Fundamentals and Risk

When one refers to the fundamentals, the study should co-exist and examine the stock performance based on risk and return. The required return, which is also referred to as the cost

of capital, is the return, which the investor demands to compensate for the risk he bears after making an investment. Both asset pricing models like CAPM and fundamental analysis aim to determine what the returns would be. But it also rejoins the earlier active investing analysis that determines the expected return. This analysis involves reverse engineering- namely what is the expected return to buying at the current market price? , given the forecasts of profitability and growth, The comparison of this implied expected return with the required return could indicate a buy, sell, or hold position.

The distribution of returns is a possible outcome and the probability of outcome, which the investor faces and this is referred to as the distribution of returns. Risk models typically characterize return distributions in terms of Probability Distribution that are familiar in statistical analysis. A probability distribution assigns to each possible outcome a probability, the chance of getting that outcome. The average of all outcomes, weighted by their probabilities, is the mean of the distribution, or the expected outcome. The investor is seen as having an expected return but also is aware of the probabilities of getting outcomes different from the expected return.

An asset pricing model translates the features of the return distribution into a risk premium, and this calculates a required return. The Capital Asset Pricing Model (CAPM) recognized the diversification property of portfolios. The risk premium for an investment in this case is identified by a premium for the systematic risk of the market portfolio and by an investment's sensitivity to that risk, that is the investment's beta. However, CAPM assumes a return to follow a normal distribution. Warren Buffett[4] , the renowned fundamental investor, claimed that the CAPM is "seductively precise." It gives a good estimation but it has some significant problems, which are, CAPM requires estimates of Betas, but these have typical estimation errors.The market risk premium is sometimes based on an assumption and the estimation of WACC need be accurate. Weighted average cost of capital (WACC) calculation for the firm is considered.

WACC = Total debt % x Interest on debt % (1-T) + total equity % x Cost of equity

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[4]Quotes here have been extracted or adapted from various internet related sources which may not be authenticated. However, considering the significance of these statements, if made, they have been included here.

This WACC requires a measure of the equity cost of capital as an input. This is often estimated from market prices using the CAPM without reference to fundamentals, producing the reservations that Buffett expresses. In valuation one must try to estimate the fundamental value to assess whether the market price is a reasonable one. Residual earnings are driven by both ROCE and growth in investment, so ROCE risk is compounded by the risk that common equity will not increase as expected. For a given financial leverage, growth in common equity is driven by growth in net operating assets. So uncertainty about whether the firm can grow investment in net operating assets is an additional aspect of operating risk. That is, uncertainty about a firm's investment opportunities adds to risk.

Warren Buffett has another observation that if the price of the stock drops more than market, it has a high Beta and would therefore be a high risk. The chance of making an abnormal return could increase, and in this case paying attention to fundamentals makes the investor more secure, not less secure. This the more a stock has "deviated from its fundamentals," the more likely is the "return to fundamentals" and the less risky is the investment in the stock.

Therefore many analysts believe that the risk cannot be appreciated without an understanding the fundamentals. Since the risk is generated by the firm and to understand the risk it is necessary to understand those fundamentals rather than estimating risk only with beta based on market price.

Growth in net operating assets is driven by sales. For a given asset turnover, the amount of net operating assets to be put in place is determined by sales, so growth risk is driven by the risk of sales not growing as expected. Indeed sales risk is viewed as the foremost business risk, affecting both the growth in net operating assets and the RNOA. The reduction in the sales does not reduce the net operating asset. Because net operating assets are inflexible hence it will reduce RNOA residual earnings as asset turnovers decrease. If net operating assets are flexible, a sales decline will reduce residual earnings through the reduction in net operating assets.

2.6 Prior research, related to the conceptual and empirical framework of this study

This section includes articles related to the concepts, meaning, scenario and applications of share price and its trends. This also includes a partial narration of various theories regarding the efficient market theory and its assumptions.

2.6.1 Firm Characteristics and Stock Return

In a published article, "Firm Characteristics and Stock Return", the authors, Chaopricha, et al (2007) attempted to examine what determinates of the returns of stock and the relationship between firm characteristics and stock

returns. The authors have cited the work of Banz (1981), Basu (1983) and Kein (1983), who have all observed that large size firms gave lesser yield when compared with the average, small- size firms that provided higher yields demonstrating that they were less riskier than large size. Size of the firm , which is also known as Market Value of Equity or Market capitalization, is the motive for these studies to suggest that size and fundamentally strong firms may be correlated. The authors have also quoted the works of Reignanum (1982) and Lob (1991) which detect that the small- size firms earn significantly than the large-size firms. The results of these studies are therefore more divergent in the context of size.

2.6.2 Abnormal returns as a fundamental analysis strategy

This paper by Jeffery et al (1997) examined whether the application of the basic concepts of fundamental analysis can yield significant abnormal returns. This question was motivated by growing evidence in the accounting and finance literature that prices fail to reflect immediately publicly available information, especially earnings news (Bernard and Thomas 1989, Sloan 1996).

The exploitation of such "market mispricing" is often cited as a justification for engaging in fundamental analysis – a practice that relies heavily on the analysis of current and past financial statement data to identify when underlying firm value differs from prevailing market prices. The studies cited in this context were Lev and Thiagarajan (LT) (1993) and Abarbanell and Bushee (AB) (1997).

The studies by Lev, introduced several empirical proxies, referred to as fundamental signals, that reflect relationship in current accounting data that are purported to predict future earning changes. The collection of the signals, which includes information about changes in inventory, accounts receivables, gross margins, selling expenses, capital expenditures, effective tax rates, inventory methods, audit qualifications and labor forces sales productivity, is formulated to represent traditional rules of fundamental analysis to predict future firm performance. They have also demonstrated the value relevance of these signals by showing that they are significantly associated, in the directions predicted, with stock returns calculated contemporaneous with the disclosure of the signals.

Abarbanell and Bushee et al (1997) on the other hand tested whether the signals' associated with contemporaneous returns can be explained by their ability to predict future earnings – an underlying premise of fundamental analysis. The study also presented that many of the fundamental signals are associated with subsequent actual earnings changes. The study further showed that analysts' revisions of earnings forecasts subsequent to the signals' disclosure under-react to information in the signals leading to predictable forecast errors. Analyst under-reaction suggests the possibility that contemporaneous stock price adjustment to the information in the signals may not be complete. This study has also that suggested investment strategies based on fundamental analysis could yield abnormal return as earnings are realized in the future if contemporaneous stock price reactions to the signals are incomplete.

This study contributed to the work that attempted to describe how current and past outputs of financials reporting systems translate into firm value. The relationship between fundamental signals and contemporaneous price changes suggest that detailed information captured by accounting provides value relevant information. The mere association between accounting information and contemporaneous prices, however, is not sufficient to pronounce the market efficient with respect to this information.

2.6.3 Using Fundamental Analysis to Assess Earnings Quality

Financial statement analysis encompasses more than a computer generated analysis of quantitative financial statement data. A number of accountants and analysts have developed reputation as practitioners of fundamental analysis, and have espoused the usefulness of

fundamental analysis in detecting overvalued stocks. Unfortunately there are no studies that investigate the claims of fundamental analysis to uncover operational problems that may be masked by aggressive accounting practices. A key reason for this is the absence of public record of dated investment recommendations generated by analysts relying exclusively upon fundamental analysis.

The study by Patricia et al (2000) contributes to the research in this area by investigating the analytical ability of the principals associated with Center for Financial Research and analysis (CFRA). According to CFRA analysts, the recommendations are based on information disclosed in publicly available data. CFRA analysts claim that the mechanical and textual analyses of financial disclosures enable them to detect poor earnings quality in identified firms.

This study also tests the claims of CFRA analysts by examining operating performance and market returns of firms in the period subsequent to their identification in a research report. This study present two types of evidence consistent with the claims that fundamental analysis can be used to detect overpricing attributable to aggressive accounting.

First, a document that financial performance deteriorates significantly in the year following the CFRA report. The median percentage change in ROA decreases by 3 percentage points in the four quarters after the CFRA report compares to the four quarters before the CFRA report.

Second, negative abnormal returns of approximately one percent over a two-day announcement period around the CFRA publication dates and a negative abnormal returns of approximately ten percent over the year following publication of the CFRA research report was observed.

Prior research on the information content of investment advice has most often focused on the information content of analysts' recommendations by testing for price reactions to those recommendations. The author recommends some of these studies and these include (Foster (1987), (1979(; Bjerring et al. (1983); Lee (1986); Desai and Jain (1995); Womack (1996)). Such research has investigated the payoffs to the use of investment advice, but provides no evidence on the usefulness of fundamental analysis to detect poor earnings quality. Desai and Jain (1995) have in their study reported that investors do not benefit from using the investment advice from another source.

2.6.4 Stock prices movement: Fundamental vs. investor recognition

A basic tenet of security valuation Richardson (2011) is that the intrinsic value of a security is equal to the discounted value of its expected future cash distributions. Yet, it is well established that variability in cash distributions and expectations thereof account for less than half the variation in observed security prices. Efficient market aficionados attribute it to time-varying risk.

The objective of this paper was to establish the importance of investor recognition in explaining variation in stock prices. The results highlighted the importance of investor recognition in explaining variation in stock prices, expected returns and corporate investing and financing activities.

Investor recognition and stock prices and the theoretical linkage between investor recognition and stock return was developed by Merton (1987). Merton began with the standard asset pricing theory and then introduced the additional assumptions that "not all investors know about all the securities". Stating that some securities are known to many investors, while others are known to relatively few investors. This assumption is consistent with observed investor behavior. Behavioural finance research also documents that investors are more likely to hold "attention grabbing" stocks, such as those of firms that currently have popular products and services.

In standard asset pricing models, such as the capital asset pricing model, all investors hold all securities and expected returns (prices) are increasing (decreasing) in the sensitivity of the securities to common factor risk. This equilibrium arises because common factor risk is the only source of risk that must be borne by investors and hence the only source of risk that is priced.

Introducing the assumption that not all investors know about all securities makes the standard equilibrium unattainable. Instead, securities that are known to relatively few investors must trade at a relatively lower price in order for markets to clear. Intuitively investors in these "neglected" securities must hold large undiversified positions and so will require an expected return premium to compensate for the associated risk. Thus neglected securities will trade at a lower price and offer higher expected return that their well-recognized counterparts and this

effect will be particularly pronounced for securities with high risk. Merton's analysis therefore leads to the some key predictions, namely that Security prices are increasing in investor recognition, Expected return are decreasing in investor recognition, the above relations are stronger for securities with greater risk.

The first prediction implies that a security experiencing increasing investor recognition will experience contemporaneously positive stock returns. This is because an increase in investor recognition causes the security's expected return to fall and hence its stock price to rise. These predictions assume that the aggregate size of a security issue is held constant.

The Merton (1987) study also indicated that firms are more likely to issue new securities and make new investments when investor recognition is relatively high. This is because higher investor recognition leads to lower expected stock return, which in turn translates to lower cost of capital for underlying firms.

Data Analysis
3.0 Fundamental Ratio Analysis

3.1.1Revenue Growth[5]

Average 5 year sales growth		
Growth	No. of IT companies	No. in %
0-20%	9	45%
20%-40%	8	40%
>40%	3	15%
	20	100%

Table : 4.1   5 Year Average Revenue Growth Rate

The mean revenue growth rate for all the firms in the sample for the five year period was 21.78% with a standard deviation relatively high 14.30 %.The coefficient of variation being approximately 68%. The relatively high standard deviation is reflected in the highest growth rate amongst the companies being 56% with the lowest a negative 5.35%. Nearly 50% of the sample firms had evidenced a negative growth rate in at least one out of the five years, with only ,two firms (10%) with a negative growth rate for three out of the five years. That apart

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[5] Refer Appendix 1 for the detailed computation.

FY 2010 was the worst year for most of the firms , with an average growth rate 9.21%, Eight (40%) firms had shown a negative growth rate. 85% of the firms had an average growth rate less than 40% , with 40% of the firms in the range 20 to 40%. Only 3 firms had an average growth rate of 40% , however their growth was not consistent during the period, except for the initial years namely the FY 2008 and 2009.

What emerges from the analysis is that the IT firms in the sample have evidenced a relatively high average growth rate year on year, though the growth rate being volatile and not consistent across the cross section of the companies. It would therefore be reasonable to conclude that the industry as such had a reasonably high growth rate, when the twenty companies considered

3.1.2 Net profit Margin and Net Profit changes[6]

Net profit Ratio		
Profit	No. of IT companies	No. in %
5%-15%	9	45%
15%-25%	8	40%
>25%	3	15%
	20	100%

Table 4.2 : 5 –Year Average Net Profit Ratio

The mean net profit ratio for the five year period for all the firms in the sample was 16.57% with a standard deviation of 6.48%. The maximum reported was 31.8% as against a minimum if 7.9%. All the companies has a positive net profit ratio in all the years baring one, which has a negative 35.79% in the financial year 2011. 85% (17 firms) had a net profit ratio less than 25% with nearly 40% in the range 15% - 25% which reflected the average for all the firms put together. If one related the sales growth rate in Table 4.1 with that of the net profit ratio it is evident that firms exhibiting a negative growth rate have continued to maintain a positive net profit ratio. However, performing a correlation analysis between a sales growth rate and the net profit ratio was a low 0.058 which did not support any direction with respect to growth rate and net profit (refer appendix table 100)

However, if the net profit ratio change over the five year period was correlated with the sales growth, the co-efficient was 0 .056. the correlation here is also low, however, if compare with the net profit ratio , this exhibit a relatively high correlation. These correlates can perhaps

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[6] Refer Appendix II for the detailed computation

indicate that the direction of growth rate in revenues has a positive (though marginal) impact on the net profit change.

3.1.3 Gross profit Margin[7]

Average Gross profit Ratio		
Average Gross profit Ratio	No. of IT companies	No. in %
10% - 20%	8	40%
20%-30%	6	30%
30%-40%	6	30%
	20	100%

Table 4.3: 5 year Average Gross Profit Ratio

The gross profit ratio computed in table 4.4 has been estimated, given its influence on the net profit ratio (Table 4.2). The average gross profit ratio for all the firms was 24.91% with a standard deviation of 9.14%. This when compared with net profit average of 16.57% highlighted in Table 4.2, indicated an average spread of about 8.35%. The spread is not too significant as most of the IT firms has a low leverage ratio (which will be examined later) and did benefit from a tax holiday. Thus with low or negligible interest burden and low taxes, the spread would be low as compared to many other industries. If the gross profit ratio was correlated with the growth rate of the firms, the coefficient was 0.196 as compared to the correlation between net profit and growth which was 0.056. The analysis indicates that the revenue growth rate has a higher relationship on the gross profit ratio as compared to the net profit ratio. Since a comparison is inter-firm, the gross profit is a relatively better measure as compared to the net profit, when relating the impact of revenue growth on this variable.

3.1.4   Net Sales to Assets

Net sales to Asset ratio		
	No. of IT companies	No. in %
<1	7	35%
1-1.6	6	30%
>1.6	7	35%
	20	100%

Table 4.4 : 5 year Average Net Asset Turnover Ratio

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[7] Refer Appendix III for the detailed computation

The average total assets for the firm was Rs. 6316 Cr. for the five year period and when compared to the average net sales figure of Rs. 7662 Cr. this by itself indicated a very low average asset turnover ratio. A cursory analysis of the composition of the assets indicates that on an average 70%-80% is in fixed asset predominantly land and building. When the asset turnover ratio is compared across the cross section of firms in the sample over the five year period, the mean ratio was 1.22. When this turnover ratio was correlated with the sale growth ratio during the period, it indicated a low negative .05 which did not indicate any significance. It must be stated that the sample IT companies had reported significant portion of their revenue in foreign currency. So the sales growth could have a significant impact on the translation exposures faced by this study. This ratio as a part of the fundamental analysis may not throw much light on the performance.

3.1.5   Return on Equity (ROE)[8]

ROE		
ROE	No. of IT companies	No. in %
0.0-0.12	3	15%
0.12- 0.17	2	10%
0.17-0.22	7	35%
0.22-0.27	5	25%
0.27-0.32	3	15%
	20	100

Table 4.5: 5 year Average Return on Equity (ROE)

The average return on equity was 22% with the highest averaging 39% and the lowest 11%. The standard deviation is low 7%. This average was maintained year on year for the five year period. With a relatively high net profit ratio and as highlighted earlier most of these IT firms were low leveraged with an average Debt-equity of .18 (refer Appendix table on Debt-equity – write the table no.). The an overall average of 22%, 75% of the sample firms had a ROE close to the mean. This more or less substantiate the contention given that most of the firms had near consistent ROE year on year for the period surveyed

3.1.6   Earnings per Share (EPS)[9]

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[8] Refer Appendix IV for the detailed computation
[9] Refer Appendix V for the detailed computation

EPS		
EPS	No. of IT companies	No. in %
0-15	4	20%
15-30	6	30%
30-45	5	25%
>45	5	25%
	20	100%

Table 4.6: 5 year Average Earnings per share (EPS)

In order to understand the components of the return on equity ratio, the analysis of the EPS indicated that the average EPS for all the firms stood at 36.72, with a maximum of 101 as compared to a low of 5.72. The EPS was more or less maintained year on year at the same level. Prima facie no dilution in the EPS was apparent as a consequence of an increase in the share outstanding of these firms. 50% of the sample firms (10) had an EPS greater than 30 during the period with another 30% in the range 15-30. The consistency in the maintenance of EPS was more or less maintained for majority of the firms.

3.1.7 Dividend per Share (DPS) and Payout Ratio[10]

DPS= DIV/no of shares		
Growth	No. of IT companies	No. in %
0-3	7	35%
3 - 6.	6	30%
6-9.	3	15%
>9	4	20%
	20	100%

Table 4.7: 5 year Average Dividend per Share (DPS)

The average Dividend per share for all the firms put together was 7.1 against a maximum of 37.5. Only one firm in the sample did not pay any dividend during the five year period. 35% of the sample companies (7 firms) had a DPS greater than the mean. The DPS indicated a growth over the years and the average growth rate was maintained at 20%. When the analysis done on the DPS is compared with the preceding analysis on EPS a natural comparison would be the payout ratio. The average payout ratio for all the dividend paying companies was 25%. This was more or less maintained year on year except in 2012 where the payout had increased by approximately 9%.

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[10] Refer Appendix VI for the detailed computation

If the analysis of the EPS and the payout ratio is compared, a near consistent EPS and a marginal increase in the payout ratio perhaps is indicative of the firms maintaining a near consistent DPS.

Nearly 60% of the firms surveyed had maintained an average payout ratio greater than 20%.

A correlation analysis between the net profit and the DPS indicated a coefficient of 0.42. On a relative basis compared to correlates of the other fundamentals, this was high. Comparing the correlation between the payout and the net profit ratio indicated a very low co-efficient of 0.02. A partial explanation of a relatively high DPS correlation with that of payout could be because companies may be targeting a fixed payout ratio irrespective of the profitability or at best altering the payout to maintain a target DPS.

3.1.8   Change in Stock Return[11]

% change in Stock return		
Growth	No. of IT companies	No. in %
<0	6	30%
0-15	5	25%
15-30	4	20%
>30	5	25%
	20	100%

Table 4.8 (a): 5 year Average Stock Return

Price/EPS		
PE	No. of IT companies	No. in %
0-10.	5	25%
10-20.	10	50%
>20	5	25%
	20	100%

Table 4.8 (b): 5 year Average Dividend Yield

All the 20 firms surveyed were listed either in the BSE or NSE. A cursory glance at the shares indicated reasonable trading activities in the stock exchange where they were listed. The mean return for all the firms put together was 15% with a high standard deviation of 23%. 6 firms (30%) had a negative return with45% of firm having in excess of 15% . The market during this period was very buoyant, the average YOY return was a negative 8% for three out of the

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[11] Refer Appendix VII for the detailed computation

five years, if compared with that of the market, the IT stocks in general exhibited a relatively higher return as compared to the index returns.

If the performance of the stock return is compared with the earnings depicted by the firms a relatively measure would be the price earning multiple. The average PE multiple was 17 as compared to the high of 64 with a low of two. 75% of the sample firms had a PE in excess of 10. The mean PE year on year was not consistent and evidenced an 18% drop from an average high of 32 in FY 2008 as compared to 14 in 2012.

As highlighted earlier in this section, the analysis of the market did indicate a high degree of volatility in the PE multiple. This is apparent since the average EPS was more or less consistent as analyzed in Table 4.7

3.1.9 Price to Book Ratio(P/BV)[12]

Price/BV		
	No. of IT companies	No. in %
<2	5	25%
2-2.8	5	25%
2.8-3.6	4	20%
>3.6	6	30%
	20	100%

Table 4.9: 5 year Price to Book Ratio

The firms surveyed are from the IT/ITES sector which is predominantly into services with little or no manufacturing. The predominant expense in the cost of sales estimation, is the employee cost which when compared across a cross-section of firms surveyed ranged between 25%-30% of the revenues. Thus,these firms revenue and the consequent value could be dominated by intangible assets[13]. As a result the book value may not reflect the true worth of these firms. Irrespective, in order to permit a valuation comparison, the price to Book ratio and been analyzed with a purely academic perspective.

The price to book ratio on an average was 3 time with a high of 6 and a low of .27. the year on year book ratio was more or less same. 75% of the sample firms had an average price to book ratio greater than 2. The low ratio is perhaps indicative of a relatively high book value experienced by this firms. An examination of the net worth of these firms indicated that over

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[12] Refer Appendix VIII for the detailed computation

[13] Only one firm (Infosys) amongst the 20 surveyed had valued its intangible assets using the LEV and Schwartz Model

85% of the net worth was on account of the reserves. Further, with a relatively high profitability based on an average net profit ratio of little over 16% and with an average retention ratio of 75% (average payout 25%). The year on year growth in reserves was about 15%. Thus the book value on an average remain high and with the market remaining volatile in this phase, the price to book ratio perhaps is low relative to its true valuation.

3.2 Market Risk Analysis[14]

Beta range	Frequency	%
.6-1	4	20%
>1 -1.4	13	65%
>1.4	3	15%
Total	20	100%

Table 4.10: Systematic Risk : Beta of the stocks

The analysis done in tables 4.1 – 4.9 focused on the fundamental variables which looked at the fundamental financial variables of the firms from the point of view of performance and returns. The relationship between the fundamentals was at best compared with the market based on the returns evidenced by the stock price. However, ignoring the risks of the stocks, could provide a one sided view of the performance measures done. Table 4.10 examines the market risk (systematic risk) of the stocks by estimating the regression coefficient namely the beta of the stock. The analyzed table indicates that nearly 65% of the sample firms had a beta in the range 1 – 1.4. The highest beta was 1.59 and the lowest0.66. As highlighted in the earlier sections, the market during the period of the study exhibited high volatility and hence the relatively high beta shown by the majority of these firms could be symptomatic of this phenomenal.

Further in order to examine both the market and firm related risk. The total risk of the stock represented by the variance was bifurcated based on its systematic risk and the unsystematic risk. What was considered here was the coefficient of determination (R square) from the regression analysis done. The coefficient of determination was taken as a proxy for quantum of systematic risk and the remainder the unsystematic risk. The analysis of this is shown in tables 4.11 and 4.12

Systematic Risk frequency

Range	Frequency	%
<25%	6	30%

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[14]   Refer Appendix IX to XIV for the detailed computation

25%-35%	6	30%
>35%	8	40%
	20	100%

Table 4.11: Systematic Risk Bifurcated from the Total Risk

Unsystematic Risk frequency

Range	Frequency	%
44%-59%	7	35%
59%-74%	7	35%
74%-89%	6	30%
	20	100%

Table 4.12: Unsystematic Risk Bifurcated from the Total Risk

The analysis of the Tables 4.11 and 4.12 together indicated that the Unsystematic or the firm related risk was dominant for the firms under study. 70% (14 Firms) showed a systematic risk greater than 25% while, 75% of the firms (15 Firms) had an Unsystematic risk greater than 59%. It must be highlighted that the Coefficient of determination (R^2) was low for the firms at an average 45%, which indicated the extent of the explanatory power of the market in depicting the stock movements.

Company name	Beta	Mean Return	Unsystematic Risk
CMC Ltd	1.20	36.82%	57%
CORE Education & Tec	1.59	14.27%	68%
Educomp Solutions Ltd.	0.99	57.69%	75%
Financial Technologies	1.30	-11.47%	75%
HCL Technologies	1.20	-19.42%	44%
Hexaware Technologies Ltd.	1.24	16.77%	68%
Info Edge (India) Ltd.	0.85	31.23%	76%
Infosys Ltd.	0.66	-2.27%	66%
KPIT Infosystem Ltd.	1.34	14.63%	74%
MindTree Ltd.	1.15	12.05%	54%
MphasiS Ltd.	1.17	-0.79%	55%
NIIT Technologies Ltd.	1.33	31.63%	60%
Oracle Financial	1.10	7.52%	67%
Polaris India Ltd.	1.27	16.10%	66%
Rolta India Ltd.	1.18	17.93%	74%
Tata Consultancy Services	0.86	-20.67%	50%
Tech Mahendra Ltd.	1.43	29.04%	54%
Vakrangee Software Ltd.	1.59	-5.85%	68%
Wipro Ltd	0.94	66.15%	52%
Eclerx Services Ltd.	1.06	13.69%	86%

Table 4.13: Correlation between the Beta and Unsystematic Risk with the Actual Return of the Stocks

In order to further analyse the risks bifurcated as the systematic (market) and the unsystematic (other than the market, perhaps firm related), a correlation was performed on the respective risks with that of the actual returns evidenced by the stocks during the period of study. The correlation between the Market Risk, namely the Beta of the stock and the actual returns was a negative 0.099 as compared to the unsystematic risk which had a positive coefficient of 0.19. The coefficients were not too significant to draw any specific conclusion with respect to the risk-returns evidenced by the stocks examined in the study. However, though not substantiated with clear evidence based on the statistical analysis done, the dominance of the unsystematic risks of the stock appears more discernable.

3.3 Stock Returns and the relationship with the Fundamentals

This section examines the relationships of the stock returns with that of selected fundamental financial variables of the firms. The fundamental financial variables considered as independent variables in the regression, consequently done , are as follows:

a) The EPS
b) The PE
c) The Dividend Payout
d) ROE
e) The Net Profit change
f) The Net Asset Turnover
g) The Revenue growth rate

Summary output	
Regression Statistics	
Multiple R	0.771671526
R Square	0.595476944
Adjusted R Square	0.309882083
Standard Error	0.210695617
Observations	19

Table: 4.14: Regression Summary Output: Stock
Return with seven independent variables

		Coefficients
	Intercept	0
EPS	77.518	0.001366474

PE	9.198380871	-0.005030124
DP	0.21386421	0.286190279
ROE	2.116529009	-0.000553853
NP change	0.095413794	0.178387798
Asset/sales	2.044816802	0.012095544
sales/growth	7.961956918	0.003917326

Table4.15 : Regression Coefficients : Seven independent variables

The regression summary statistics is provided in Table 4.14 which indicated a coefficient of determination unadjusted at 59.5% and an adjusted R^2 of 30.9% given the multiple independent variables in the regression equation. Despite a not too significant R^2 the regression coefficients derived from the regression analysis is shown in Table 4.15. All the coefficients were low and not too significant, however , it must be stated that the PE and the ROE had negative coefficients , albeit , at the lower end of the scale. The variable that had an influence on the stock returns appeared to be the net profit change.

A multi co-linearity test performed on the independent variables to test their dependency amongst each other using both the adjusted and the unadjusted R^2 indicated a Variance Inflation Factor of less than 10, indicating a not too high a dependency amongst the seven independent variables. Despite this, a correlation was done between the independent variables and the results have been presented in a correlation matrix table shown in Table 4.16.

Correlation Matrix

	EPS	PE	DP	ROE	NP change	Asset/sales	sales/growth
EPS	1	-0.007	-0.219	0.609	-0.352	-0.111	-0.416
PE	-0.007	1	-0.062	0.021	0.538	-0.170	-0.352
DP	-0.219	-0.062	1	0.057	0.054	0.369	0.178
ROE	**0.609**	0.021	0.057	1	-0.385	-0.134	-0.253
NP change	-0.352	**0.538**	0.054	-0.385	1	0.428	0.195
Asset/sales	-0.111	-0.170	0.369	-0.134	0.428	1	-0.052
sales/growth	-0.416	-0.352	0.178	-0.253	0.195	-0.052	1

Table 4.16 : Correlation Matrix : Seven independent variables

Based on the analysis of the matrix table the correlation between the ROE and EPS (0.61) and that of PE and net profit change (0.53) indicated a relatively high correlation and accordingly, despite a low VIF factor highlighted earlier, two variables were removed, namely ROE and net profit change and a regression was performed with the remaining 5 variables. The regression

statistics in the form of a summary output is shown in table 4.17 and the coefficients shown in table 4.18

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.663181879
R Square	0.439810204
Adjusted R Square	0.224352591
Standard Error	0.20106528
Observations	19

Table 4.17: Regression Summary Output

		Coefficients	Standard Error
	Intercept	-0.425514019	0.23828334
EPS	77.518	0.001262168	0.00211705
PE	9.198380871	0.003711023	0.00408904
DP	0.21386421	0.11688815	0.27987057
A/S	2.044816802	0.186416209	0.10611798
S/G	7.961956918	0.009332816	0.0039907

Table 4.18: Regression Coefficients: Stock Return with Five Independent variables

As a consequence of the new regression, the R square dropped. However, the coefficients namely the payout and the asset to sale ratio reflected a higher value. Despite a low R square, the regression analysis indicated that the influencing independent variable would be the payout ratio. Thus in conclusion, if we compare the two regressions performed, the net profit change and the dividend payout reflected a higher explanatory influence on the stock price movements.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.665805
R Square	0.443297
Adjusted R Square	0.244474
Standard Error	0.198123
Observations	20

Table 4.19: Regression Summary Output of Stock returns with Five independent variables

	Coefficients	Standard Error
Intercept	-0.27298	0.19802
EPS	0.00257	0.002366

PB-Avg	-0.0329	0.04109
DP	0.157852	0.280189
Net Asset/Sales - Avg	0.187206	0.093746
Sales to Growth-Avg	0.007578	0.00356

Table 4.20: Regression Coefficients: Five Independent Variables

Based on academic literature on various researches done with respect to the impact of the fundamentals of the firms on their stock behavior, a new regression analysis was performed which was similar to the earlier analysis done except the inclusion of the price to book variable. The rationale attributed the inclusion of this new variable is because the numerator of the ratio considered the price and the denominator the fundamentals. The analysis did not provide any significant findings except for highlighting the influence of dividend payout and the turnover ratio influencing the price movements.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.746656
R Square	0.557496
Adjusted R Square	0.399458
Standard Error	0.176637
Observations	20

Table 4.21: Regression Output Summary: Stock Return with 5 independent variables: including Dividend Yield

	Coefficients	Standard Error
Intercept	-0.26465	0.164745
EPS	0.001801	0.001714
Div Yield	2.48043	1.179876
DP-Avg	-0.00846	0.250245
Net Asset/Sales - Avg	0.165164	0.08412
Sales to Growth-Avg	0.003371	0.003784

Table 4.22 : Regression Coefficients of Five independent variables including Dividend Yield

Further to the academic research done another regression was performed substituting the book value with the dividend yield. The regression statistics did not provide anything substantial. However, the dividend yield along with the asset turnover provided a better explanatory power.

Further the Price to book ratio and the PE ratio was compared with a dummy variable wherein the price change at the close of the survey period was compared with the price change in the middle and if the change was positive, 1 was assigned and 0 for negative. The results did not

provide anything substantial as confirmed by various research studies and in this study with a very low R square marginally over 5%. No significant relationship could be established.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.230328
R Square	0.053051
Adjusted R Square	-0.1245
Standard Error	0.241708
Observations	20

Table 4.23: Regression Output Summary

	Coefficients	Standard Error
Intercept	0.262883	0.198935
PB-Avg	-0.0307	0.039487
PE - Avg	-0.00185	0.004374
Dummy variable	0.018912	0.138923

Table 4.24: Regression Coefficients with two variables and a dummy variable

3.4 Summary of the chapter

This section had analyzed the fundamental ratios of the 20 IT stocks and also compared the relationship if any, amongst them. Further, the risk associated with these stocks namely the systematic and the unsystematic was done and related this to the actual returns of the stocks evidenced during the period of the study. Further, in accordance with various academic literature, a regression analysis was performed with the stock price movements and various fundamental variables of the firm surveyed.

Conclusions

The analysis on the influence of the fundamentals of the 20 firms surveyed has provided some convergent and divergent views based on previous academic research. These have been covered in the literature review chapter. FAMA (1970) established the lack of correlation due to market efficiency issues. Freeman et. al (1982) investigated the book return in forecasting the changes in income. Ou and Penman (1989) had conducted a series of fairly strong academic researched in forecasting incomes based on financial ratios. BelKaoui (1997) examined the relationship between financial ratios and stock values. The methodology adopted in the study is in line with these studies done. However, very few studies have been done relating the predictive abilities of the fundamentals for stock market performance. It must be stated that the period of the study was a challenging phase for the stock market in India, with the stock market being highly volatile. Further, the recessionary economy had impacted or slowed the growth rate of most of the firms particularly during the last two years of the study period. So the fundamentals had a number of macro economic factors impacting them. Further, the sector chosen namely the IT sector is predominantly a service sector whose revenue growth is heavenly dependent on the growth of the industry sector. A major customer vertical providing the segment revenue for these firms, was the banking and insurance. These two sectors had very low growth and profitability concerns post the financial crises that impacted the whole world.

With the globalization increasing technological opportunities with easier access to near accurate data, the impact of changes can be almost instantaneous. This is one of the presumptions this study considered that investors are rational and have access to reported information. One of the constraints in the fundamental analysis which was observed in this study is that the fundamental data with respect to the stocks was obtained from the annual report, while the stock information was available daily. It is true that most stock market regulated companies have to provide their financial data periodically and in an efficient market this gets captured.

Despite these external limitations, based on the analysis done, the following recommendations emerge.

4.0 Recommendations

The stock selection process requires both the breadth of enquiry as well as depth of analysis. As performed in the study, a range of actively traded sectoral, namely the IT and ITES, stocks were examined under various financial and market dimensions.

The findings of the study provide some recommendations that can be directed to various audiences that can be categorized as under:

    a)   The investor and the Financial Market Analysts

    b)   The Company

    c)   The Regulator

4.1 Investor and the Analyst

- The findings of the study suggest foremost to focus on the profitability ratios of the firms and in particular the gross profit and the changes in the gross profit, Penman (2000). Growth in revenues , per se, was not an adequate indicator as a fundamental for performance. The findings did indicate that consistency in the profitability was a key indicator and did provide some indication of performance.

- Both Dividend payout and Dividend yield was a useful measure to indicate firms performance in the stock in particular that evidenced reasonable performance. The findings indicated that

- Efficiency reflected by the asset turnover ratio was also a useful indicator which perhaps provided an indicator of growth. It must be clarified that the choice of the asset should be determined by the nature of the industry which in this case was only the fixed assets while in others could current assets as well.

4.2 The Company

- The importance of maintaining consistent profitability was one of the findings from the study. Companies that reflected volatility in the earnings had an impact on their stock market performance. Apart from profitability the payout and yield had an important impact on firms stock market behavior. Companies need to constantly review their dividend policies based on this light.

4.3 The Regulator

- Currently companies are mandated to provide brief summaries of quarterly statements along with their annual numbers. A review need to be done as to the extent of the information disclosed. For instance, include certain efficiency measures such as the turnover ratios and their profitability change in percentage terms.

4.4 Scope for future research

- The study is limited to only one sector names the IT/ITES. The same study can be extended to a cross-section of industries.

- This study is for a five year period and had witnessed stock market volatility to a large extend. It would be useful to conduct a study on a longer period and segregate the years based on the bulling or the bearish phase of the market and to examine the impact of fundamentals during these phases

- The revenues of a majority of the IT firms , had a relatively high component of income from foreign currencies. The impact of the Forexchanges , particularly the depreciation and appreciation of the rupee could be considered as one variable when examining the impact of the fundamentals on the IT firm stock price movements.

- The analysis of the fundamental relies only on the year end reported financial statements. Since companies that are listed in India are mandated to provide quarterly financial statements. However, these financial statements are not exhaustive. Despite this, it would be useful to perform a study based on quarterly financial statements with the stock price movements.

- The impact of bonus issues and stock splits, share repurchase as well as new issues has been considered only to adjust the stock prices. It would be useful to extend the study as to the impact of these events along with the fundamentals on stock prices.

- This study confines itself only to firm level financial information. Extending and including macro level indicators would be useful.

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