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## **IN DEFENSE OF TECHNICAL ANALYSIS OF STOCK MARKET BEHAVIOUR**

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### **ABSTRACT**

Adherents of efficient market theory have historically dismissed technical analysis because of its perceived inconsistency, with their theory. They tend to give support to fundamental analysis as an alternative tool for analyzing stock market behaviour. This paper shows that there is actually no disagreement between efficient market theory and technical analysis at least from empirical studies and that both can co-exist. It provides a theoretical framework to rationalize the use of technical analysis and brought out the shortcomings of fundamental analysis which its supporters (the academics) have consistently ignored.

### **INTRODUCTION**

Security markets exist in order to bring together buyers and sellers of securities. They are therefore mechanisms created to facilitate the exchange of financial assets. There are many ways of distinguishing security markets. One way is: whether or not the securities are being offered for sale by the issuer. In this regards, we talk of primary and secondary markets. Another way of distinguishing between security markets considers the life span of financial assets. In this connection, we have money markets typically for financial assets that have life span of one year or less and capital markets for financial assets that have life span greater than one year. Analyzing security provides a standard for helping an investors whether a particular stock is undervalued, fairly priced or over priced. Infact, analyzing market behaviour dates back to the 1800s when there was no such thing as industry or company analysis (Gitman and Joehnk, 1990 and 1996). Detailed financial information was not made available to shareholders, let alone the general public. There were no industry figures, balance sheets or income statement to study, no sales forecast to make and no earnings per share data or price earnings multiples. The only thing investors could study was the market itself. Some analysts used detailed charts in an attempt to monitor what large market operations were doing. These charts were intended to show when major buyers were moving into or out of particular stocks and to provide information that could be used to make profitable but-and-sell decisions. The charts centered on stock price movements because it was believed that these movements produced certain "formations" that indicated when the time was right to buy or sell a particular stock.

However, modern investment management has developed several tools for analyzing market behaviour. These myriads of tools can broadly be categorized into two major approaches namely: fundamental analysis and technical analysis. Technical analysis involves a study of the various forces at work in the market place that operate in such a way as to have effect on price movement of stock. On the other hand fundamental analysis applied present value principles to the valuation of corporate stock using dividends, earnings, assets and interest to judge whether a stock is really worth its

current price. Despite the popularity of technical analysis among practitioners, academics have historically dismissed technical analysis because it is inconsistent with one of the most fundamental themes in traditional finance: the theory of market efficiency. The theory of market efficiency, precisely its semi strong form states that all publicly available information must be reflected in security prices. They contend that if markets are indeed efficient, then technical analysis which relies heavily on publicly available past price and volume data cannot predict future prices despite analysis claim.

Thus, the traditional academic wisdom and investment community practices seem to be clearly at odds. This has led to the on-going debate in investment community as to the relevance or otherwise of technical analysis. This paper lends support to technical analysis by bringing out how technical analysis can overcome the shortcomings in fundamental analysis which seems to be favoured by "apostles" of efficient market.

## **THEORETICAL FRAMEWORK**

The theoretical framework for this study is drawn from two basic theories namely: Security Valuation theory and technical analysis theory.

### **Security Valuation Theory**

Generally, it is expected that an asset should provide a stream of returns during the holding period. This stream of returns can be converted to a value by discounting it at the required rate of return. Thus this process of valuation requires estimate of the stream of expected returns and the required rate of return. Specifically, share valuation theory seeks to address fundamental questions as: Does a "true" value exist for a company's share? For instance, is it meaningful to talk about a particular company's share as being under or overvalued? Is it possible to calculate what a share price is worth? Opinions on these questions vary but can all be characterized within two limiting cases. (Samuels and Wilkes, 1982). At one extreme is the belief that prices are determined by a rational process, that there is some true value for a company share and that this is based on the economic value of the company. Accordingly, the price of the share depends on the value of the company, which in the case of a "going concern" is based on the prospective earnings of the company. Given that earnings of a company after prior claims have been met belong to the shareholders and the number of such shareholders is known, then the value per share can be ascertained.

The other extreme view is that it makes no sense to talk about a "true value" for a company's share; that there is no such thing as an inherent value. Therefore, share prices are what they are only because of what purchasers and sellers expected them to be. To this end, prices are determined by anticipatory and speculative factors and the expected earnings of a company are only one of the many factors, which influence investors. Undoubtedly, such speculative pressure will cause the share price to rise and fall and the day to day price movement may well follow a random path both because hunches may be irrational and because information which gives rise to speculation comes to the market at irregular intervals.

It is interesting to note that while the price on any one day may not be the same as the "true value" daily prices would be expected either to fluctuate about the true value or to

move towards this value overtime. Therefore, in the long run, the theory of share valuation suggests that the actual price will move towards the true value so the investor will make gain. This according to Samuels and Wilkes (1982) seems a sound investment policy; but how long does the investor have to wait for the actual price to rise to the true value? If this is a matter of two or more years, the investors might not be interested. In summary, both theories of share price determination given above may provide a useful insight. The "true value" approach may not explain the share price on a particular day, but it indicates the direction in which the share price will move in the long run. The price on any particular day can be explained by the other theory, which states that price is determined by supply and demand on that particular day and the demand on that day in turn can depend on uninformed investors perhaps acting on a bunch. This phenomenon underlies the "random walk" movements in share prices, which has been observed by so many researchers on the subject.

Furthermore, it must be stated that it is because of uncertainty about when actual price will approach the true value that analysts have become slightly less enthusiastic about the undervalue share approach to investment. Many of them have therefore changed the emphasis of their research either towards forecasting the turning points in share price movement or to selecting a balance portfolio of investments and holding on to these. The turning points idea is that all shares will change direction more or less at the same time, so that the important factor to be determined is when the turn will come. In a market fall, some shares will fall less than others and in a market rise some will rise faster than others, so it is also important to be able to identify these shares.

### **Technical Analysis Theory**

One of the plausible ideas that several technical analysts have suggested to rationalize what they do is based on the widely accepted economic premise that prices are determined by supply and demand. It is therefore founded on economic theory of the market. To this end, technical analysis tends to gauge the mood of the market by studying changes in markets prices, the volume of trading and investor attitudes. Technicians are not concerned with a firm's dividend or profit projections. Infact they need not even know the name of the company or its line of business. It is just sufficient to know whether investors are buying or selling (Garry Smith, 1990). Technical analysis is based on a number of basic assumptions as identified by Francis (1988) Hirt and Block (1999) and Reilly (1994). They are:

- 1) Market value is determined solely by the interaction of supply and demand
- 2) Supply and demand is governed by numerous factors, both rational and irrational.
- 3) Aside from the effects of minor fluctuations in the market, stock prices tend to move in trends that persist for appreciable lengths of time.
- 4) Reversals of trends are caused by shifts in demand and supply.
- 5) Shifts in supply and demand no matter why they occur can be detected sooner or later in charts of market actions.
- 6) Some chart patterns tends to recur and these recurring patterns can be used to forecast price movements.

From these assumptions, it can be established that past trends of market movement can be used to forecast or understand the future. The market technicians generally assume that there is a lag between the time he perceives a change in the value of a security and when the investing public ultimately assesses this change. The technical approach to investment therefore is essentially a reflection of the idea that the stock market moves in trends which are determined by the changing attitudes of investors to a variety of economic, monetary, political and psychological forces. The art of technical analysis is to identify changes in such trends at any early stage and to maintain an investment posture until a reversal of that trend is indicated (Zvi, Alex and Alan, 1998). It must be noted that technicians do not necessarily deny the value of fundamental information. They believe stock prices eventually 'close in on' their fundamental values. However, they maintain that shifts in market fundamental can be discerned before the impact of those shifts is fully reflected in prices. As the market adjusts to a new equilibrium, astute traders can exploit these price trends. Also that market fundamentals can be natured by irrational factors. More or less, random fluctuations in price will accompany any underlying trends. If these fluctuations dissipate slowly, they can be taken advantage of for abnormal profits.

Another facets, though rather subtle version of technical analysis holds that there are patterns in stock prices that can be explained, but that once investors identify and attempt to profit from these patterns, their trading activity affect prices, thereby altering price patterns. The implication of this is that the patterns that characterize market prices will be constantly evolving and only the best analyst who can identify new patterns earliest will be rewarded. The notion of evolving patterns is consistent with almost but not quite efficient market. It allows for the possibility of temporarily unexploited profit opportunities, but it also view market participants as aggressively exploiting those opportunities once they are uncovered. Thus, the market is continually groping toward full efficiency, but it is never quite there. In the light of the apparent conflict between academics and technical practitioners, several researches have been undertaken on technical analysis. Some have found results consistent with the practitioners view by providing evidence that technical analysis can predict prior movements or by developing models of (inefficient) markets in which investors benefit from conditioning on historical information. Along this line, Neftci (1991), Brock, Lakonishok and LeBaron (1992), Neftci and Policano (1984), Neely, Weller and Dittman (1997) and Lo, Mamaysky and Wang (2000) tested different technical trading rules and found evidence consistent with technical analysis providing incremental information beyond that already incorporated into the current price. Also Treynor and Ferguson (1985) and Brown and Jennings (1982) examined settings in which privately informed investors use past prices to determine whether their information has been revealed to the market or to learn about the private signals of other traders. They found that past prices when combined with other non-price information could indeed be helpful in achieving unusual profit.

Similarly Blume, Easley and O' Hara (1994) demonstrated that volume may provide relevant information if prices do not react immediately to new information while Kavajecz and Odders-white (2002) showed that technical analysis and market efficiency can co-exist when they considered the link between technical analysis measures (of support and resistance level and moving average indicators) and the amount of liquidity on limit order books. Specifically, they showed that technical analysis support and resistance levels are

co-integrated with limit prices having high cumulative depth. Even after controlling for both the co-integrating relations and the state of trading environment, their results showed that technical analysis support and resistance levels still have significant ability to explain limit prices with high cumulative depths. Their study also showed that moving average indicators explains changes in the relative position of cumulative depth on the limit order book even after controlling for the co-integrating relations as well as other trading environment factors. These studies represents crucial step towards reconciling the long standing disagreement between practitioners and academics about the value of technical analysis and demonstrated that technical analysis can be useful even in an efficient market scenario.

On the other hand, there have also been results demonstrating empirically that technical analysis does not predict future prices thus consistent with market efficiency. Along this line, we have the works of Allen and Karjalainen (1999) and Ratner and Leal (1999) who found little support for technical trading rules that they examined. Fama and Blume (1966), Ready (1997) and Bessembinder and Chan (1998) in Kavajecz and Odders-white (2002) shows that transaction costs offset the benefits of technical analysis found by Alexander (1961) and Brock et al (1992). Furthermore, Jensen and Bennington (1970), Sullivan, Timmermann and White (1999) and Jagadeesh (2000) warn that data snooping and survivorship biases can be severe when evaluating technical rules, which can lead researchers to falsely conclude that technical trading strategies can predict future price movements, (Kavajecz and Odders-White, 2002) Additionally, numerous tests of efficient market hypothesis have been conducted and a relatively great proportion found support for efficiency. The implication of such support for efficiency market is that technical analysis does not have much value.

Clearly therefore, the challenges thrown to technical analysis by its opponents are principally in two areas. First, some of its basic assumptions have been challenged and secondly some of its trading rules and their long run usefulness have also been challenged to the extent that they say many technical rules price patterns have become self-fulfilling prophecies. Given the mixed evidence, it is perhaps not surprising that academics have yet to agree on one of the two views or line of thoughts explained above.

### **Rationalizing Technical Analysis**

Despite the challenges to technical analysis, its practitioners have claimed several merits for their system. Accordingly, attempt is hereby made to provide a theoretical rationalization of technical analysis. Such an exercise will highlight the inherent weakness of fundamental analysis. Recall that fundamental analysis believe that at anytime, there is a basic intrinsic value for the aggregate stock market, various industries, or individual securities and that these values depend on underlying economic factors. Therefore, the intrinsic value of an investment asset at a point in time is determined by examining the variables that determine value such as current and future earnings, interest rates and risk variables. If the prevailing market price differs from the intrinsic value by enough margins to cover transaction costs, appropriate action should be taken. A buy action will be taken if the market price is substantially below the intrinsic value while a sell action is necessary if it is above (Reilly, 1994). Determination of the intrinsic value of a stock requires that the fundamental analyst must go through the valuation process. Such process normally

involves the study of the macro-economy to establish the general economic influences on various industries and firms. Fiscal and monetary policies and other economy-aggregates as inflation are given serious consideration. Thereafter, the analyst will study different industries to establish how they react to economic changes at different points in the business cycle. Finally, after determining that an industry's outlook is good, the analyst now compares individual firm's performance within the entire industry using financial ratios and cashflows values. It is by going through these steps that the fundamental analyst selects stocks for investment. Though, the fundamental analysis process looks thorough and elaborate suggesting that it will always leads to the selection of high performing stocks, it is however freighted with a lot of difficulties. These difficulties are normally avoided in the use to technical analysis.

Accordingly, the first justification for technical analysis is that it is founded on the economic framework of analysing the market. In economic theory, the market brings together buyers (demands) and sellers (supply). Their actions determine the market price. This is true for all markets whether they be commodity market, labour market or market for financial assets. The attitude of both parties must eventually come to the fore in the market place. Since technical analysis study the market in terms of actual actions of participants (and not the predicted/perceived behaviour of participants before getting to the market place) its technique can therefore produce better results. Morealso, the technique is consistent with the age long economic theory of the market. At least, economic theory is yet to refute the fact that price is determined by demand and supply.

Secondly, advocates of fundamental analysis have claimed that their approach can enable them earn superior return. This, however, can only be true if they obtain new information before other investors and process it correctly and quickly. But the vast majority of investors cannot consistently get new information before others and process it correctly and quickly. Even professional money managers with highly trained professional who work full time at investment management cannot consistently derive information that will enable them derive above-average return as reported by Sharpe (1966), Jensen (1968), Klemkosky (1977) and Henriksson (1984).

A third justification for technical analysis is that it is not heavily dependent on financial accounting statements; the chief source of information about the past performance of a firm or industry. This is what the fundamental analysts evaluate to help project future return and risk characteristics for industries and individual securities. Several problems with accounting statements have been observed. The principal ones are:

- i) They do not contain a great deal of information needed by security analysis such as details on sales and general expenses or sales and earnings by product line and customers (Reilly, 1994).
- ii) Financial accounting statements are prepared according to statutory requirements. The content, scope and style of presentation are as statutorily defined. But then, the statute normally has several interests to serve with accounting information. The users, most times, have peculiar and divergent needs. In the bid to make it useful to all parties, it end up lacking details and focus; thus not complete or sufficient for rigorous economic/financial analysis and decision. As a result, security analysts can only get fractional information from accounting statements.

- iii) Outside statutory regulation, accounting statements are also governed by concepts, conventions and standards. These being general guide to financial reporting leave wide a gap from which firms can make choice. This has led to firms, even within the same industry, having different accounting policies.

Accordingly, firms may choose among several procedures for reporting expenses, assets or liabilities and these alternatives procedures can produce vastly different values for expenses, income, return on assets and return on equity. For instance it has been observed that different methods of stock valuation abound and are permissible. These different methods will produce different values for closing stock, which will affect the value of cost of sales and eventually profit. As a result, ratios based on earnings/profit calculated from such statement will vary. An analyst will therefore have difficulty analyzing the same firm on the different accounting methods, different firms in the same industry and much more firms in different industries

- iv) Many psychological factors and other non-quantitative variables such as employee loyalty and investors attitude toward an industry do not appear in financial statements. But these factors do affect the price of stock.

Against these backdrops, technicians are suspicious of financial statements and so it is considered advantageous not to depend on them. Instead, it seems better to depend on trading information derived from the stock market itself. A final justification for technical analysis is its ideal timing of transactions. Assuming a fundamental analyst determines that a given security is under-or-over valued a longtime before other investors. Then, he must proceed to determine when to make the purchase or sale. Ideally, the highest return would come from making the transactions just immediately before the change in market value occurs. Now if a fundamental analyst based on his analysis in says the month of June, expects a firm to report substantially higher earnings in say October. Although he could buy the stock in June, he would be better off waiting until about September to buy the stock so that funds would not be tied up for an extra three months. Now because most technicians do not invest until the move to the new equilibrium is underway, it can be argued that they are more likely to experience ideal timing compared to the fundamental analyst.

## **CONCLUSION**

The apparent conflict between technical analysis as practiced by investment community and academic theory of market efficiency is a long standing puzzle in the finance/investment literature. This paper reviewed some empirical studies that have attempted to show that technical analysis and market efficiency can coexist. It went further to provide a theoretical justification for the use of technical analysis as a way of lending support to the technique. This we hope will contribute towards building a solid theoretical framework for technical analysis.

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