

Efficient Market Hypothesis

11

This Module Includes:

11.1 Definition

11.2 Forms of Market Efficiency

11.3 Implications

Efficient Market Hypothesis

SLOB Mapped against the Module

To equip oneself with the knowledge of application of various techniques in security evaluation, building a portfolio, measuring its performance and making revisions to optimise the returns. (CMLO 3a)

Module Learning Objectives:

After studying this module, the students will be able to -

- ✦ Understand the concept of efficient markets.
- ✦ Appreciate various forms of market efficiency.
- ✦ Understand the implications of market efficiency.

Eugene Fama, a Noble Laureate in 2013, first introduced the concept of ‘efficient’ capital market and observed that tremendous competition in the capital market leads to ‘fair pricing’ of debt and equity securities. Before Mr. Fama, **Mr. Maurice Kendall**, a noted statistician first observed that the movement of stock and commodity price changes are independent and not at all related to the previous price changes. Put differently, successive price changes are independent of one another. It means that stock price changes are at random which states that price changes are independent and normally distributed. This is the famous **random walk theory**.

The empirical evidences are in favour of existence of random walk theory. What is the economic process that produces a random walk? They all concluded that randomness of stock prices was the result of an efficient market. They also discovered the following links:

- (a) Information is the key to the determination of stock prices and therefore is the central issue.
- (b) All known information, including past information such as last quarter’s earnings or last year’s results as well as all current information or event that have been announced but are still forthcoming such as stock split, etc.
- (c) Current price changes have no relation to previous price changes.
- (d) New information can’t predict in advance so future forecast also can’t predict in advance, so theory of ‘random walk’ exists.
- (e) It is believed that due to severe competition amongst investors and particularly institutional investors all available information will reflect instantly into stock prices. The stock price thus reflects the intrinsic value.

11.1.1 Efficient Market

Efficient market is defined as one in which the prices of all securities quickly and fully reflect all available information about the financial assets. This concept postulates that investor will assimilate all relevant information into prices in making their buy and sell decisions. The important question arises, since on average investors are clearly not fully informed about all security and perhaps not about even a single security, how could the market reach a state in which the prices of all securities fully reflect all information that is both relevant and available? The answer to this question is that prices are not established by the consensus of all investors. Prices are set by these marginal investors who actively trade in stock.

The concept that markets are efficient does not claim, or require, a perfect adjustment in price following the new information. Rather the correct statement involved with this concept is that the adjustment in prices resulting trade information is “unbiased” (this means that the expected value of the adjustment error is zero). The new price does not have to be the new equilibrium price, but only an unbiased estimate of the final equilibrium price that will be established after investors have fully assessed the input of the information.

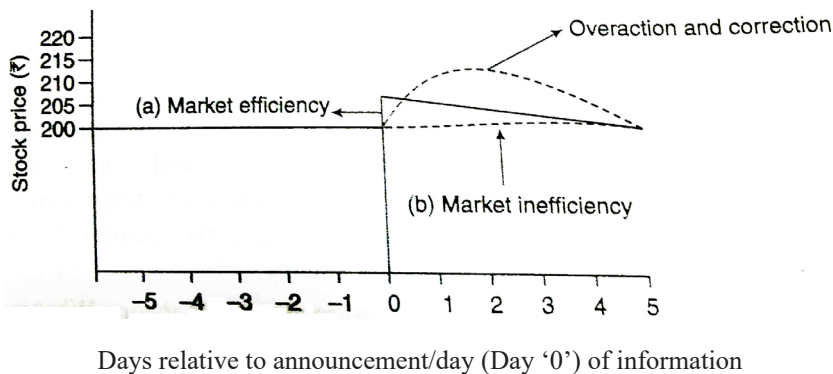


Figure 11.1: The adjustment of stock prices to information: (a) If market is efficient (b) One possibility if the market is inefficient.

Figure 11.1 indicates the market efficiency for one company for which a significant event occurs that has an effect on its expected profitability. The stock is trading at ₹200 on the announcement date of the significant event—Day “0” in figure 11.1 is the announcement date for the event. If the market is fully efficient, the price of a stock always reflects all available information. Investors will very quickly adjust a stock’s price to its intrinsic (fair) value. Assume that the new fair value for the stock is ₹205. In an efficient market, an immediate increase in the price of the stock to ₹205 will occur, as represented by the solid line in Figure 11.1. Since, in our example, no additional new information occurs, the price of the stock will continue at ₹205.

If the market adjustment process is inefficient, a lag in the adjustment of the stock prices to the new information will occur and is presented by the dotted line. The price eventually adjusts to the new fair value of ₹205 as brokerage houses disseminate the new information and investors revise their estimates of the stock’s fair value. Please note that the time it would take is just an assumption.

11.1.2 Efficient Market Hypothesis

The share prices appear to follow a random walk is an interesting result and proving it or attempting to disprove it occupied many researchers. But what remained to be shown was why share prices followed a random walk. There was plenty of evidence, but the formal theory was missing. What was needed a model of share price behavior to explain the random walk. This gap was filled by a more general model based on the concept of efficiency of the markets in which shares are traded is the efficient market hypothesis (EMH). The EMH is a theory that capital markets operate to a high degree of perfection. Its roots lie in the random walk hypothesis, which postulates the share price changes are of a random, rather than correlated, nature. The EMH put forth the argument that, since the market efficiently prices all the stocks on an ongoing basis, any opportunities for excess returns derived from fundamental or technical analysis will be almost immediately used away by the market participants. The EMH theorists assume that efficient capital markets exist – markets with a large number of rational investors and speculators who are trying to maximize profits by predicting future earnings, dividends, and value of shares. Here, it is assumed, information is known freely to all investors, spontaneously transmitted to the markets to establish share prices. The price established tends to be fair price. As the market is efficient, the adjustment process tend to allow prices to vary randomly around the competitive norms. As new information is learnt, prices

move, and because of the adjustment process, the movement will be up and down depending upon the stimulus. As investors or speculators over react the adjustment process becomes random in character. Whenever any new event occurs, it too is transmitted to a market place that has no memory – one where each price is independent of the previous one. This theory suggests that chartists are wrong.

Characteristics of Efficient Market

An efficient market for securities possessing the following characteristics:

- (a) Timely and accurate information on the price and volume of past transactions and on prevailing supply and demand.
- (b) Liquidity, meaning an asset can be sold or bought quickly at a price close to the price of the previous transaction assuming no new information has been received.
- (c) Low transaction cost, meaning that all aspects of the transaction entail low costs, including the cost of reaching the market, the actual brokerage cost involved in the transaction and the cost of transferring the security.
- (d) Quick adjustment of prices of securities to the new information.

Assumption of EMH

The basic assumption is that in an efficient capital market, prices of traded securities always fully reflect all publicly available information concerning the securities. For market efficiency there are three conditions:

- (a) all available information is costless to all market participant's;
- (b) there is no transaction costs; and
- (c) all investors take similar views on the implications of available information for current prices and distribution of future prices of each security.

11.1.3 Fair Game Concept

It can be seen from the EMH that the ability of investors to pick winners and make excess returns using new information is directly related to the speed and efficiency of a market at absorbing that information. So, efficiency can be considered in terms of the 'fair game' concept. A market can be regarded as efficient with respect to particular set of information if investors using that information are faced with fair game, that is, they receive on average the return expected for the risk involved and make no consistent abnormal returns. The fair game for investors is an outcome of a market being efficient. If a market is efficient, then investing is a fair game. This fair game concept is useful in that it allows the different levels of the EMH to be tested.

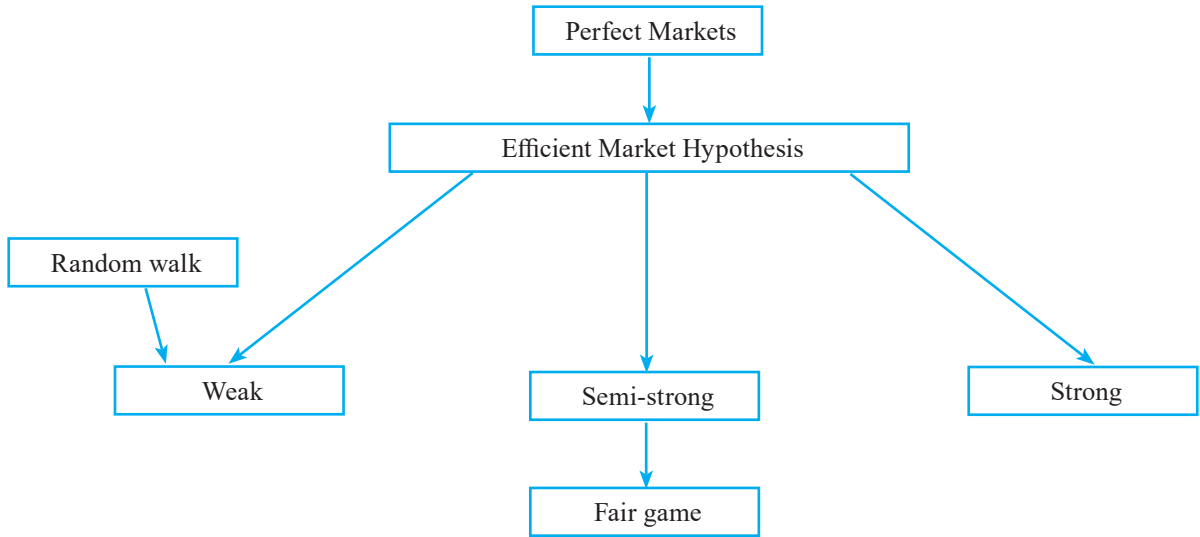


Figure 11.2: Efficient Market Hypothesis

It is seen from figure 11.2 that EMH is a more comprehensive model of share price behavior than random walk theory, referring not just to past share price movements but to all information pertaining to the share. It is a model which helps us to understand how markets operate in practice and how closely they approximate to theoretically perfect markets.

Forms of the Efficient Market Hypothesis

Fama (1970) decided to define different market in terms of their level of efficiency, where the level reflected the type or scope of information which was quickly and fully reflected in price. He defined three levels of efficiency, each level designed to correspond with the different types of ‘picking winners’ investment strategies which were used in practice to try to achieve excessive returns.

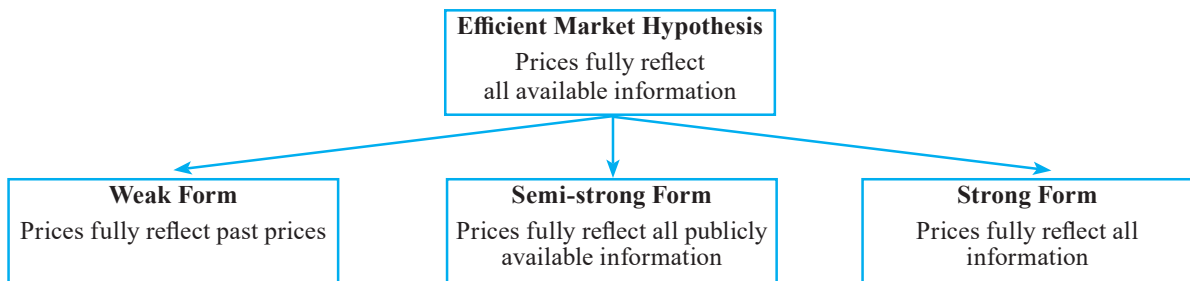


Figure 11.3: shows the three different ‘strengths’ of the EMH corresponding to different levels of efficiency

- ⊙ **Weak Form** – In the weak form of efficiency, each share price is assumed to reflect fully the information content of all past share prices.
- ⊙ **Semi-strong Form** – In the semi-strong form, the information impounded is assumed to include not only that given by all past share prices which are of course public knowledge, but all publicly available information relevant to the share value. This includes, for example, company announcements, brokers reports, industry forecasts and company accounts.
- ⊙ **Strong Form** – The strong form of the EMH requires all known information to be impounded in the current share price, whether publicly and generally available or not. The strong form will thus include what is known as ‘insider’ information, for example details of an impending takeovers bid known only to senior management of both parties to the bid.

11.2.1 Weak-form Hypothesis

The weak-form hypothesis asserts that stock prices already reflect all information that can be derived by examining market trading data such as the history of past services, trading volume or short interest. This version of the hypothesis implies that trend analysis is fruitless. Past stock price data are publicly available and virtually free of cost to obtain. The weak-form hypothesis holds that if such data ever conveyed reliable signals about future performance, all investors already would have learned to exploit the signals. Ultimately, the signals lose their value as they become widely known because a buy signal, for instance, would result in an immediate price increase.

11.2.2 Semi-Strong Evidence

Weak-form tests of both the statistical and the trading rule types are numerous and almost unanimous in their findings (after necessary corrections and adjustments have been made). Semi-strong tests, on the other hand, are also numerous but more diverse in their findings. Although most of these studies support the proposition that the market adjusts to new public information very rapidly, some do not.

Semi-strong form tests are tests of the speed of price adjustments of publicly available information. The question is whether investors can use publicly available information to earn excess returns after proper adjustments. As noted earlier, **Fama** has changed the traditional notion of semi-strong-form efficiencies to studies of announcements of various types, which involves event studies.

This empirical research often involves an event study, which means that a company's stock returns are examined to determine the impact of a particular event on the stock price. This methodology uses an index model of stock returns. An index model states that security returns are determined by a market factor (index) and a unique company factor.

Company unique returns are the residual error terms representing the difference between the security's actual return and that given by the index model. In other words after adjusting for what the company's return should have been given the index model, any remaining portion of the actual return is an abnormal return representing the impact of a particular event.

$$\text{Abnormal return, } AR_{it} = R_{it} - ER_{it}$$

where AR_{it} = abnormal rate of return for security 'i' during the period 't'

R_{it} = actual rate of return on security 'i' during the period 't'

$E(R_{it})$ = expected rate of return for security 'i' during the period 't' based on market model relationship.

The cumulative abnormal return (CAR) is the sum of the individual returns over the period of time under examination and is calculate as

$$CAR_i = \sum_{t=1}^n AR_{it}$$

where CAR_i = the cumulative abnormal return for stock 'i'

Response of a Stock Price to the Announcement of a Stock Split: Fama, Fisher, Jensen and Roll (1969) were the first to employ this methodology. They used monthly data to study the reaction of stock prices to the event of a stock split. They studied most of the splits that occurred on the New York Stock Exchange between 1929 and 1959.

Why should the stock price react to a split when the split does nothing more than divide the corporate pie up into more pieces? If the stock splits two for one, shouldn't the price of each share halve? Why should there be any effect on the rate of return, adjusted for the split?

It was the observation that stocks witnessed good rally of around 25-30% within a span of two months before the actual split took place. The stock split is considered as a leading indicator in the world of future market prediction. Stock split leads to advance rally in the stocks since upon stock split the tradability in the stock increases.

The evidence indicates that new issues purchased at their offering price yield abnormal returns to the fortunate investors who are allowed to buy the initial offering. This is attributed to underpricing by the underwriters. Investors buying shortly after the initial offering, however, are not able to earn abnormal profits, because price adjusts very quickly to the true values.

Reactions to Economic News and World Events: Investors are constantly given a wide range of information concerning both large-scale events and items about particular companies. Each of these types of announcements has been examined for the effects on stock prices.

One form of announcements involves economic news, such as money supply, real economic activity, inflation and RBI monetary policy. A study of these announcements found no impact on stock prices that lasted beyond the announcement day. Even an analysis of hourly stock price reactions to surprise announcements of money supply and industrial production found that any impact was accounted for within one hour. A study of public takeover rumours found that the market is efficient at responding to published takeover rumours. Excess returns could not be earned on average by buying or selling rumoured takeover targets at the time the rumour appeared. No significant excess returns occurred on the day takeover appeared in well-established financial magazine, although a positive cumulative excess returns of approximately 7% occurs in the calendar month before the rumour appears in the newspaper.

Announcements of Accounting Changes: Numerous studies have analysed the impact of announcements of accounting changes on stock prices. In efficient markets, security prices should react quickly and predictably to announcement of accounting changes that affect the economic value of the firm. An accounting change that affects reported earnings but has no economic significance should not affect stock prices. For example, when a firm changes its depreciation accounting method for reporting purposes from written down value method to straight line, the firm experience an increase in reported earnings, but there is no economic consequence. An analysis of stock price movements surrounding this specific accounting change supported EMH because there were no positive price changes following the change. In fact, there were some negative price changes because firms making such an accounting change are typically performing poorly.

Exchange Listing: A significant economic event for a firm is listing its stock on a national exchange like NSE or BSE. Such a listing is expected to increase the market liquidity of the stock and add to its prestige. An important question is: Can an investor derive abnormal returns from investing in the stock when a new listing is announced or around the time of the actual listing? The result regarding abnormal returns from such investing were mixed. All the studies agreed that (1) the stock prices increased before any listing announcements and (2) stock prices consistently declined after the actual listing. The crucial question is: What happens between the announcement of the application for listing and the actual listing (a period to 4 to 6 weeks)? A study by McConnel and Sanger points towards profit opportunities immediately after the announcement that a firm is applying for listing and there is the possibility of excess returns from price declines after the actual listing. Finally, studies that have examined the impact of listing on the risk of the securities found no significant change in systematic risk or the firm's cost of equity.

In summary, because listing studies provide evidence of short-run profit opportunities for investors using public information, these studies would not support the semi-strong form EMH.

Price-earnings Ratios: Several studies beginning with Basu (1977) have examined the relationship between the historical price-earnings (P/E) ratios for stocks and the returns on the stocks. Some have suggested that low P/E stocks will outperform high P/E stocks because growth companies enjoy high P/E ratios, but the market tends to overestimate the growth potential and thus overvalues these growth companies, while undervaluing low growth firms with low P/E ratios. A relationship between the historical P/E ratios and subsequent risk adjusted market performance would constitute evidence against semi-strong EMH, because it would imply that investors could use publicly available information regarding P/E ratios to predict future abnormal returns.

Performance measures that consider both return and risk indicated that low P/E ratio stocks experienced superior risk-adjusted results relative to the market, whereas high P/E ratio stocks had significantly inferior risk-adjusted results. Subsequent analysis concluded that publicly available P/E ratios possess valuable information regarding future returns, which is inconsistent with semi-strong efficiency.

The Size Effect: Banz (1981) examined the impact of size (measured by total market value) on the risk adjusted rate of return. The risk-adjusted returns for extended periods (20 to 35 years) indicated that the small firms consistently experienced significantly larger risk adjusted returns than the larger firms. Reninganum (1981) contended that it was the size, not the P/E ratio, that caused the results discussed in the prior subsection, but this contention was disputed by Basu (1983). In summary, firm size is a major efficient market anomaly. The two strongest explanations are higher risk measurements due to infrequent trading and the higher transaction costs. Depending on the frequency of trading, these two factors may account for much of the differential. Keim (1983) also related it to seasonality. These results indicate that the size effect must be considered in any event study that considers long time periods and contains a sample of firms with significantly different market values.

11.2.3 Strong-Form Evidence

The strong form of the EMH states that the stock prices quickly adjust to reflect all information including private information. Thus, no group of investors has information that allows them to earn abnormal profits consistently, even those investors with monopolistic access to information. Note that investors are prohibited not from possessing monopolistic information but from profiting the use of such information. Thus, it is an important point in light of the studies of insider trading reported as follows.

One way to test strong form efficiency is to examine the performance of groups presumed to have access to ‘true’ non-public information. If such groups can consistently earn above-average risk-adjusted returns, at least an extreme version of the strong form will not be supported. We will consider, corporate insiders, a group that presumably falls into that category of having monopolistic access to information.

Another aspect of the strong form is the ability of any investor to earn excess returns as a results of using information in a superior manner. In other words, can an investor or group of investors, use the value of the information contained in an announcement to earn excess return? If not, the market is strong form efficient. This aspect of the strong form has been examined in several ways, including analyzing the returns of the professional money managers such as these of mutual funds and pension funds and examining the value of what security analysts do.

11.2.4 Corporate Insiders

Insider trading is the trading of a public company’s stock or other securities (such as bond or stock options) by individuals with access to non-public information about the company. A corporate insider is an officer, director or major stockholder of a corporation who might be expected to have valuable inside information. In USA, the Securities and Exchange Commission (SEC) requires insiders (officers, directors and owners of more than 10% of a company’s stock) to report their monthly purchase and sale transactions to the SEC by the tenth of the next month. This information is made public in the SEC’s monthly publication, official summary of Security Transaction and Holdings (official summary).

Information is often said to be the most famous commodity on Wall Street and even Dalal Street and the competition for it is intense. Sometimes the quest for a competitive advantage can tip over into a search for illegal inside information. In 2011, Raj Rajaratnam, the head of the Galleon Group hedge fund which once managed \$6.5 billion was convicted on insider trading charges for soliciting tips from a network of corporate insiders and traders.

Insider Trading in India – Rules made by SEBI

Only relevant portions are mentioned as follows:

- (a) An insider means a person who is (i) a connected person or (ii) in possession of having access to unpublished price sensitive information.
- (b) An insider should not communicate/provide/allow access to any price sensitive information relating to a company, its listed/proposed to be listed securities to any person including other obligations
- (c) Every promoter, key managerial personnel and director of a listed company should disclose his holding of securities of the company. Every person on appointment as a key managerial personnel/director or upon becoming a promoter should disclose his holdings as on the date of appointment/becoming a promoter to the company within seven days
- (d) Every promoter, employee, director should disclose to the company the number of such securities acquired or disposed of within two trading days of the transaction if the value of the securities traded, over any calendar quarter, aggregate to a traded value in excess of ₹10 lakh or a SEBI-specified value. Every company should notify the particulars of such trading to the concerned stock exchange within two trading days of receipt of the disclosure or from becoming aware of such information.

11.2.7.1 Portfolio Management with Superior Analysts

A portfolio manager with access to superior analysts who have unique insights and analytical ability should follow their recommendations. The superior analysts should be encouraged to concentrate their efforts in mid-cap and small-cap stocks that possess the liquidity required by institutional portfolio managers. But because these stocks typically do not receive the attention given by the top tier stocks, the markets for these neglected stocks may be less efficient than the market for large well-known stocks that are being analyzed by numerous analysts.

Recall that capital market is expected to be efficient because many investors receive new information and analyze its effect on security values. If the number of analysts following a stock differ, one could conceive of differences in the efficiency of the market. New information on top tier stocks is well publicized and rigorously analyzed so the price of these securities should adjust rapidly to reflect the new information. In contrast, mid-cap and small-cap stocks receive less publicity and fewer analysts follow these firms, so prices may differ from intrinsic value for one of the two reasons. First, because of less publicity, there is less information available on these firms. Second, there are fewer analysts following these firms so the adjustment to the new information is slowed. Therefore, the possibility of finding temporarily undervalued securities among these neglected stocks is greater. Again, in line with the cross-section study results, these superior analysts should pay particular attention to B/V to M/V ratio, to the size of stocks being analyzed, and to the monetary policy environment.

11.2.7.2 Portfolio Management Without Superior Analysts

A portfolio manager (or investor) who does not have access to superior analysts should proceed as follows:

- (a) Determine and quantify the risk preferences.
- (b) Construct the appropriate risk portfolio by dividing the total portfolio between risk free assets and a risky asset portfolio.
- (c) Diversify completely on a global basis to eliminate all unsystematic risks.
- (d) Maintain the specified risk level by rebalancing when necessary.
- (e) Minimize total transaction costs.

11.2.8 Book-Market Value Ratio

This ratio relates the book value (BV) of a firm's equity to the market value (MV) of its equity. Rosenberg, Reid and Lanstein (1985) found a significant relationship between current values for this ratio and future stock returns and contended that such a relationship between available public information on the BV/MV ratio and future returns was evidence against the EMH.

11.2.9 The Rationale and Use of Index Funds and Exchange Traded Funds

Efficient capital markets and a lack of superior analysts imply that many portfolios should be managed passively to match the performance of the aggregate market, minimizing the costs of research and trading. In response to this demand, several institutions have introduced index funds, which are security portfolios designed to duplicate the composition and performance of a selected market index series.

When financial planners want a given asset class in their portfolios, they often use index funds or ETFs to fulfill this need. Index funds or ETFs are less costly in terms of research and commissions, and they, generally provide the same or better performance than the majority of the active portfolio managers. An innovation suggested by Amolt, Hsu and West (2008) is to weigh the stocks in an index based on fundamentals such as earnings, cash flow, and/or dividends rather than market values.

11.2.10 Some Conclusions about Market Efficiency

Considering the evidence of market efficiency discussed previously what conclusions can be drawn? In reality, no definitive conclusion about the market efficiency can be drawn. The evidence in support of market efficiency has convinced many market observers because of the large amount of research done over the years by investigators. And almost certainly the widespread availability of information and data on the internet along with the numerous investment tools provide there has made the market even more efficient. It is the belief by many technicians and fundamentalists that they can really outperform the market considering over the cost element.

Some anomalies do exist and the reasons why these anomalies exist remain unsettled. The quantity and quality of the research in this area has undermined the extreme view that the market is so perfectly efficient that no opportunities for excess returns could possibly exist. The anomalies that have been reported are not conclusive proof of market inefficiencies. It may be that better testing procedures and/or better data may explain some of those anomalies away. Eugena Fama, a long time proponent of market efficiency, argues that the evidence on anomalies does not disprove the efficient market proposition. He believes that many of the studies showing anomalies contain statistical problems. He also believe that over-reaction and under reaction are about equally likely to be found which suggests that markets are efficient because this behaviour can be attributable to chance.

The Efficient Markets Hypothesis (EMH) is an investment theory primarily derived from concepts attributed to Eugene Fama's research, "Efficient Capital Markets: A Review of Theory and Empirical Work."

Fama put forth the basic idea that it is virtually impossible to consistently "beat the market" – to make investment returns that outperform the overall market average as reflected by major stock indexes such as the S&P 500 Index. Fama's investment theory – which carries essentially the same implication for investors as the Random Walk Theory – is based on a number of assumptions about securities markets and how they function. The assumptions include the one idea critical to the validity of the efficient markets hypothesis: the belief that all information relevant to stock prices is freely and widely available, "universally shared" among all investors.

As there are always a large number of both buyers and sellers in the market, price movements always occur efficiently (i.e., in a timely, up-to-date manner). Thus, stocks are always trading at their current fair market value. The efficient market hypothesis is associated with the idea of a "random walk," which is a term loosely used in the finance literature to characterize a price series where all subsequent price changes represent random departures from previous prices. The logic of the random walk idea is that if the flow of information is unimpeded and information is immediately reflected in stock prices, then tomorrow's price change will reflect only tomorrow's news and will be independent of the price changes today, but news is by definition unpredictable and, thus, resulting price changes must be unpredictable and random. As a result, prices fully reflect all known information, and even uninformed investors buying a diversified portfolio at the tableau of prices given by the market will obtain a rate of return as generous as that achieved by the experts.

The major conclusion of the theory is that since stocks always trade at their fair market value, then it is virtually impossible to either buy undervalued stocks at a bargain or sell overvalued stocks for extra profits. Neither expert stock analysis nor carefully implemented market timing strategies can hope to average doing any better than the performance of the overall market. If that's true, then the only way investors can generate superior returns is by taking on much greater risk.

Exercise

Theoretical Questions

Multiple Choice Questions

1. Which of the following statement defines an efficient market?
 - (a) Information is fully reflected in the stock prices
 - (b) The stock exchange is fully automated
 - (c) The market is monitored by the regulatory authorities
 - (d) Free entry and exit of investors
2. In a weakly efficient market, the stock price reflects
 - (a) The company's financial performance
 - (b) The past price of the scrip
 - (c) The demand for the scrip
 - (d) The past price and traded volume
3. In the strong form of efficient market
 - (a) All available information is reflected in prices
 - (b) All published information is reflected in prices
 - (c) Stock price reflects past price
 - (d) All information including insider information is reflected in prices
4. If markets are efficient, the security price provides
 - (a) Inadequate return for taking up risk
 - (b) Normal return for the level of risk taken
 - (c) High return for the level of risk taken
 - (d) Both (b) and (c)
5. A run in the stock price is
 - (a) A sequence of either a fall or rise in stock prices
 - (b) An uninterrupted sequence of either a rise or fall in stock prices
 - (c) An alternate sequence of stock price and volume movements
 - (d) A sequence of fall in price
6. The efficient market hypothesis suggests that investors should
 - (a) Adopt an active portfolio management strategy
 - (b) Adopt a passive portfolio management strategy
 - (c) Use technical analysis as the basis for investment decisions
 - (d) Use fundamental analysis as the basis for investment decisions

7. The small-firm-in-January effect refers to the phenomenon that portfolios of small-firm stocks (compared to portfolios of large firm stocks) have
 - (a) A tendency to underperform the stock market
 - (b) High returns in December and January
 - (c) Abnormal positive returns, primarily in January
 - (d) Returns in January that are positively correlated with return in December
8. In an efficient market, portfolio management:
 - (a) Plays an important role in terms of diversification and risk management
 - (b) Is relevant only for high tax bracket investors
 - (c) Is relevant only in the management of bond portfolios
 - (d) Does not require emphasis on diversification
9. Which of the following most appears to contradict the proposition that the stock market is weakly efficient? Explain.
 - (a) Over 25% of mutual funds outperform the market on average
 - (b) Insiders earn abnormal trading profits
 - (c) Every January, the stock market earns abnormal return
 - (d) Over 50% mutual funds outperformed the market on average
10. Which of the following sources of market inefficiency would be most easily exploited?
 - (a) A stock price drops suddenly due to a large sale by an institution
 - (b) A stock is overpriced because traders are restricted from short sales
 - (c) Stocks are overvalued because investors are exuberant over increased productivity in the economy
 - (d) None of the above
11. Which of the following statements are true if the efficient market hypothesis holds?
 - (a) It implies that future events can be forecast with perfect accuracy
 - (b) It implies that prices reflect all available information
 - (c) It implies that security prices change for no discernible reason
 - (d) It implies that prices do not fluctuate
12. Which of the following would be a viable way to earn abnormally high trading profits if markets are semi strong form efficient?
 - (a) Buy shares in companies with low P/E ratios
 - (b) Buy shares in companies with recent above average price changes
 - (c) Buy shares in companies with recent below average price changes
 - (d) Buy shares in companies for which you have advance knowledge of an improvement in the management team

Answer:

1	2	3	4	5	6	7	8	9	10	11	12
a	d	d	b	b	b	c	a	c	a	b	d

State True or False

1. According to EMH, the stock price moves in trend
2. If the changes in stock prices are not affected by the previous changes in stock prices, then the auto correlation is zero
3. The NSE has carried out auto correlation test on NSE S & P Nifty Index
4. One of the statements given below provides evidence for the semi-strong efficient form of the market the size effect
5. A mutual fund portfolio manager decides on the asset allocation
6. The semi-strong form of the efficient market hypothesis asserts that stock prices fully reflect all publicly available information
7. Assume that a company announces an unexpectedly large cash dividend to its shareholders. In an efficient market without information leakage, one might expect no abnormal price change before or after the announcement
8. Low P/E stocks tend to have positive abnormal returns over the long run provide evidence against the semi-strong form of the efficient market theory
9. According to the efficient market hypothesis high beta stocks are consistently overpriced
10. A 'random walk' occurs when future price changes are uncorrelated with past price changes

Answer:

1	2	3	4	5	6	7	8	9	10
False	True	True	False	False	True	False	True	False	True

Fill in the blanks

1. The book to market effect refers to the finding that firms with high ratios of book value to market value tend to have annual returns _____ returns for firms with lower ratios
2. If stock returns exhibit positive but small serial correlation, this means that _____ returns tend to follow _____ returns
3. Empirical findings generally show that a typical common stock mutual fund has a _____
4. The _____ form of the efficient market hypothesis implies that there is little or nothing to be gained from technical analysis
5. Empirical study of a strong form EMH indicates that _____ are generally able to achieve superior returns
6. Proposed explanations of market anomalies, such as the P/E effect and the small-firm effect, include all of the following, except _____

Answer:

1	Greater than	2	Positive, Positive
3	Zero alpha	4	Weak form
5	Company insiders	6	These effects demonstrate effective commercial activity

Short Essay Type Questions

1. What is meant by an efficient market?
2. Define and discuss the weak-form EMH. Describe the two sets of tests used to examine the weak-form EMH.
3. What is meant by the term abnormal rate of return?
4. Assume you want to test the EMH by comparing alternative trading rules to a buy and hold policy. Discuss the three common mistakes that can bias the results against the EMH.
5. Describe the results of a study that supported the semi-strong form EMH. Discuss the nature of the test and specifically why the results support the hypothesis.

Essay Type Questions

1. For many of the EMH tests, it is really a test of a “joint hypothesis.” Discuss what is meant by this concept. What are the joint hypotheses being tested?
2. Describe the results of a study that did support the strong-form EMH. Discuss the test involved and specifically why these results support the hypothesis.
3. What advice would you give to your superior analysts in terms of the set of firms to analyze and variables that should be considered in the analysis? Discuss your reasoning for this advice.

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