

# The efficiency market hypothesis finance essay

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## **2. 1 Introduction**

Stock market is a central role in the relevant economy that mobilises and allocates financial resources and also, play a crucial role in pricing and allocation of capital. Thus, stock market provides a required fund for establishing, or expansion businesses. Furthermore, stock market encourages people to open a new channel of savings into business investment. If share prices are reflected all accurate and available information of the relevant firms, which firms will be able to make a profit or the right production, and investors are able to invest in the most appreciate firm. Therefore, the market can be considered as an efficient market. If stock price do not fully reflect all information, then, the opportunity of gain abnormal return is existence by collecting information. Moreover, Stock price and return under the Efficiency Market Hypothesis act as benchmarks for the cost of capital and returns on the investment projects (Green et al. (2000). Ngugi et al., (2005) argue that the efficiency market hypothesis (EMH) theory is presented in section 2. The relationship between stock market return and the volatility is provided in section 3. Section 4 reviews the empirical literature on weak form EMH. In section 5 concludes.

## **2. 2 Efficiency Market Hypothesis**

The efficiency market hypothesis (EMH) has received a huge attention and well studied over the past several decades. The "market efficiency" term is used to explain the relationship between information and the stock price in the capital market literature. It examines the degree of the available information which incorporated into stock prices. The market efficiency is an

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important concept to financial managers (in terms of an understanding of the mechanism of stock markets and also understanding their performance and contribution of the development in the relevant economy). This importance is " due to of 'net present value investment' criterion, timing of financing decisions, and mergers and acquisition as these assume existence of efficient markets" (Kanukuntla and Rao, 2003, Moustafa, 2004). If the stock market is efficient that the price will reflect the true values of the stock, then, the scarce saving will be efficiently allocated to productive investment and this investment will be benefit for both individual investors and the country's economy (Copeland and Weston, 1988: Moustafa, 2004). In addition, the EMH has important implications for both authorities and investors. For authorities and market regulator, when stock market is important for firms to raise capital and resources allocation to enhance economy. if stock market is inefficient, then the value of shares can be incorrect. Moreover, this inaccurate price could lead to delay or stop of any investment decisions which made by firms. Thus, this could involve interventions by government. However, the best police for authorities are reducing market interventions to the minimum level. An efficient market is which stock price adjusts rapidly when new information arrives and, thus, the current prices of stock fully reflect all available information. Hence, the investors do not have an incentive to trade in the acquisition of information. Then, there is no opportunity for making an abnormal profit which the cost of getting the information and trading equal zero (Elton and Gruber, 1995).

## **2. 2. 1 The Efficiency Market Hypothesis theory**

The idea of efficient market can be traced back to 1900. However, the term "efficiency" expressed for the first time in Fama (1965) paper. There are many definitions of EMH. For example, Fama, et al. (1969) define it as "An efficient market is a market that adjusts rapidly to new information".

Therefore the concept that the information is reflected in stock price is the main structure of EMH. There are three aspects of the efficiency of market:

### **Operational efficiency**

Under the operational efficiency, the participants (buyers and sellers) are able to achieve transactions at a minimum costs. In this manner, transaction cost should be determined in a competitive way. Operational efficiency deals with the accuracy and speed of transactions. High transaction costs involve price to be adjusted slowly (Obaidalla, 2001). The effect of transaction costs, Obaidallah (2001) argue that any regulation that reduces transaction costs, increases the availability and accuracy of information. Information processing by participants is a step in the direction of improving the allocative efficiency of the stock market. In addition, in operationally efficient stock market, the degree of liquidity is high and the condition of the market is orderly. Furthermore the organization and structure of market is productive. Regulations and enforcements procedures and designed according to conditions of competitive market (Iran stock market thesis). In addition, "thin trading" can affect operational efficiency particularly in emerging stock market. In this situation, if a certain stock has not been traded frequently for instance for two weeks, the current price is the price of two previous weeks time. thus, this price is two weeks old and hence may

not reflect the correct information. In the other words, the stock correct value will not be manifested without frequent trading. This condition leads to disequilibrium of stock prices (Iran Stock Marekt thesis).

### **Allocative efficiency**

Under the allocative efficiency, vast Funds can be provided for fast-growth industries and small amount of fund for slow growth. That, financial resurces are allocated to productive investment decisions in an optimal way and all market participants benefit. Furthermore, the allocative efficiency determined the stock priced based on the risk-adjusted rate of returns. In other words, in an allocatively efficient stock market the stocks are priced based on the risk of investment associated with them (Iranian stock market thesis).

### **Pricing efficiency**

In this efficiency, prices are quickly and accurately reflected all relevant information. This aspect of efficiency deals with the impact of the information on stock prices. Pricing efficiency is calleAlso, Malkiel (1992) defined efficiency of the markets as follows:" A capital market is said to be efficient if it fully and correctly reflects all relevant information in determining security prices. Formally, the market is said to be efficient with respect to some information set,  $\Omega_t$ , if security prices would be unaffected by revealing that information to all participants. Moreover, efficiency with respect to an information set,  $\Omega_t$ , implies that it is impossible to make economic profit by trading on the basis of  $\Omega_t$ ." (Timmermann and Granger (2004). Moreover, Fame (1970) defines an efficient market as a market in which prices always reflect the all available information. In accordance with <https://assignbuster.com/the-efficiency-market-hypothesis-finance-essay/>

the EMH, the stock price today incorporates all relevant information, So that. Investors can not earn abnormal profit by trading on available information. Price changes between and will occur because of the arrival of news or unanticipated events. Therefore, the stock price can be expressed as following equation: (2. 1) Where is the expected value of the stock price at time given all available information at time and is the forecast error, representing unanticipated news which is not available at time . News is random variables which is sometimes " good" and sometimes " bad". represented by the difference between and , should be zero on average and uncorrelated with any information available at the time the forecasts are made. This describes the rational expectations (RE) element of the EMH. Thus, (2. 2) The implication of Zero forecast errors is that the forecast of is unbiased. This is the property of orthogonality. That is, on average, the actual price is equal to expected price and represents the unexpected profit of loss between and . If is serially correlated ( ) the orthogonality property is violated, and is a first order autoregressive process represented by: where is a white noise ( the random element and independent of information at time t). The assumption of no serial correlation in is subsumed under the EMH assumption that news today should be of no use in forecasting tomorrow's stock price. The EMH/RE assumption places no restrictions on the form of the second and higher moments of the distribution of. That is, the variance of may be related to its past value (the variance of) without violating RE, (This is an ARCH process). (Cuthbertson and Nitzsche, 2004). Fama (1970) divided the EMH into three categories of efficiency depends on the degree of the relevant information; - the weak, semi-strong, and strong forms. The weak form of EMH assumes that stock price fully reflect all stock market

information contained the historical information includes the historical sequence of prices, rates of return, trading volume data, block trades and transactions by exchange specialists. Investors can not earn abnormal profits from trading strategies based on history of the price or returns. (Mishra, 2009). The semi-strong form of EMH means that stock price will adjust very quickly to all historical and publicly available information. Public information includes security market information, earnings and dividend announcements, price to earnings ratios, dividend yield ratios, price-book value ratios, stock splits, news about the economy and political. Investors, who all their decisions based on the public information, cannot make a profit above-average returns. The test of semi-strong form is a test of whether the strategy of adopting the new public information (announcement) quickly on the price will lead to excess profit. So, the semi strong form implies that the seller and buyer of stock reassess the value of stock after hearing the new public information (announcement). (Elton and Gruber, 1995). The strong form efficient market hypothesis (EMH) maintains that stock prices fully reflect all public and private information. That it includes weak form, semi-strong form plus any private information that can be obtained by agents, groups and it is not available for public. Figure 2. 1 show theses forms. However, Fama (1991) re-characterised the classification of EMH. The weak form of EMH test was changed to test the predictability of returns. Also, the semi-strong and strong form was changed to event studies or studies of announcements and private information tests respectively. In the 1960s and 1970s, evidence from the US and UK markets show evidence of weak-form EMH and other countries had less clear evidence. However, in the 1980s and 1990s, supporting evidence of the EMH was doubtful by overwhelming

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empirical evidence conducted against the EMH. This evidence was based upon a number of detected anomalies; such as the January effect, the holiday effect, the weekend effect, the small size effect, and volatility tests (Fama, 1991, Hwawini, 1994, and Io, 1997)" (Moustafa, 2004). Elton and Gruber (1995) state that it is required the accurately of prices which reflect fundamental information for the market to be efficient. However, the test of EMH is a test how fast the prices reflect available information, but do not test how accurately the prices reflect available information. In case of inefficiency markets, Fama (1970) concludes that inefficient market can be as results of transaction costs, unavailable information and investor inconsistency. Thus, three sufficient conditional can be impose in the market for a fair game. The first condition is the absence of truncations costs in trading securities and hence the information set is the same for all investors. Second, the full information should be available and free for all the participants. Third, all participants have homogeneous expectations and would come to the came conclusions for the same given information . However, these conditions are hardly to be applied in the real world. Thus, these conditions are sufficient but not necessary to achieve the efficient market. Moreover, Poterba and Summers (1988) explained that the stock market can be inefficient because returns are mean reverting. If returns follow a mean reverting process, then there exists a tendency for price level to return to its trend path over time, and investors may be able to forecast future returns by using information on past returns. This tends to make the markets inefficient". Mishre (2009) explain that the market inefficiency has several implications. First, the stock prices may not necessarily reflect the accurate value of stocks so the companies with low value may be able to mobilise a lot of capital, while

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companies with high accurate values may find it difficult to raise capital. Hence, this disrupts the investment scenario of the country as well as the total productivity. Second, market inefficiency may imply mean reversion of prices that may cause expected returns to vary. Third, market inefficiency may imply excess price volatility in the short run because prices change by more than value of the new information. Last, weak form market inefficiency may have the positive impact on the process of financial innovation.

## **2. 2. 2 EMH implications**

EMH assume that the abnormal profit is not practicable depending on the available information. This assumption has important implications for all market participants (market regulators, investors and firms). For the market regulators, In EMH, the current prices reflect all available information at any given point in time, so the prices should be at a correct value; therefore, there is no reason to be concerned about the fact that prices are too high or low. In inefficient market, regulator needs to ascertain how far the market is on average from efficiency, and then can impose appropriate policies to enhance efficiency of the market. For investors, under EMH, investors trust the market prices which reflect all available information at any point in time. There is no chance for investors to make above-average returns at a given risk. Investors can only obtain what they pay for (Clarke, et al., 2001). For example, a simple passive "buy and hold" investment strategy is enough for an efficient market. If an investor has a well-diversified portfolio, then he/she can hardly outperform the market via any active investment strategies, which are wasteful in EMH. (Ibn Rubbian, 2012). For the firms, under the EMH, stock market provide a correct information, such as the cost of equity,

for optimal resource allocation and raising capital for new investment projects of firms. Hence, the firms' investments projects do not be delays or stops in order to obtain for financing physical investment. Moreover, firms can be merger and acquisition in a fair way. Efficient market theory also implies tht firm conglomerate formation is not necessary. For example, if a firm can reduce risk of shareholders via conglomeration then shareholders can do via the constitution of a diversified portfolio of firms. This is a cheaper and more convenient as conglomeration can embedded with other costs and business integration risk. In inefficient market, the investment projects cannot be financed by investor easily.

### **2. 2. 3 Test of the Efficiency Market Hypothesis**

Testing of EMH can be done in different ways according to the forms of the efficiency under the test. In most cases, the weak form of EMH is tested at beginning as it is lowest level of the efficiency and then test the semi-strong and strong form of efficiency. In this thesis, we will focus on the test of the weak-form of efficiency as we consider a data from the emerging markets (Saudi Arabia). Test for weak form of market efficiencyThe weak form of EMH has been tested and analysed extensively in financial literature. This is done because the weak form is the lowest level of the efficiency and essential requirement for the other two forms. The random walk model (RWM) is used to test of weak form market efficiency. Fama (1990) reveal that when the current price fully reflect all available information, the successive price changes (returns) are independent and, further , identically distributed random variables over time , so that, the future price change cannot be predicted from historical price changes. Thus, the prices follow the random

walk. Moreover, under the walk random walk hypothesis, the weak form of EMH " lies in the presence of unexploited economic rents rather than requiring all individuals in a market to be rational and informed." Appiah-Kusi and Menyah, 2003; p: 249). The unpredictability of stock returns from historical returns has used heavily to test the weak form of EMH in empirical studies. The RWM and the weak form EMH were tested in both developed and developing countries. For example, Moustafa (2004) for the UAE; Butler and Malaikah (1992) for Saudi Arabian and Kuwait stock market; Siamon (2004) for component stock market of GCC countries among others. The random walk model can be given by

$$P_t = P_{t-1} + \epsilon_t$$

Where  $P_t$  is the stock price at time  $t$ ,  $P_{t-1}$  is a stock price at previous time (immediately preceding period) and  $\epsilon_t$  is a white noise error term (with zero mean and variance). To test the random walk hypothesis, the following equation can estimate by least squares

$$P_t = \alpha + \beta P_{t-1} + \epsilon_t$$

In the RW assumptions,  $\beta$  should be 1, the constant estimated should be insignificantly different from zero and the residual should be 0. If the residual is not 0, the implication is that the residual may be non-linear structure Alagidede and Panagiotidis (2009). However, there is evidence that volatility clustering, leptokurtosis and leverage effect are stylized properties of financial data that the linear model fail to capture. So, the mean equation of stock return can be described as

$$P_t = \alpha + \beta P_{t-1} + \epsilon_t$$

Where  $\epsilon_t$  is included to take into account the autocorrelation induced by nonsynchronous trading in the stocks is conditionally heteroscedastic where  $\epsilon_t$  is (with zero mean and unit variance ). The conditional variance develop according to the GARCH standard: (Alagidede and Panagiotidis (2009))(See the ARCH and GARCH section 3 Chapter 3 )However, Lim et al. (2008) argue that the conventional efficiency studies which are short-horizon return predictability, have a limitation for their focus

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on linear correlation of price changes. First, it is confirmation from empirical studies that thin trading would induce spurious autocorrelation in stock return that is not genuine the predictability. Second, a white noise process does not necessarily imply efficiency as returns series can be linearly uncorrelated and at the same time nonlinearly dependent". This development encourage researchers to re-examine the weak form market efficiency using statistical tests that are capable of detecting nonlinear patterns in financial time series( see Lim et al. (2008) Saadi et al.,(2006)). There are limits of work on testing the weak form of EMH where nonlinearities are taken into account. According to the conventional efficiency argue, the traditional efficiency studies usually assume market efficiency is a static characteristic that remains unchanged over different stage of market development. However, the empirical finding shows that the inefficiency stock market in full sample could be efficient in subsample and vice versa. Thus, a number of research have shifted from the traditional focus of absolute market efficient to tracking the degree of efficiency over time in emerging market (Lim et al., 2006). However, there is argument about that if the market follows the random walk hypothesis which means it is efficient leads to be the market unpredictable. Rockinger and Urga (2000) state that the market can be efficient and predictable in the same time and they demonstrate how that can be: First, a certain risk which is taken by investors to invest in financial market it explained by capital asset pricing model that the risk taking should be rewarded by a certain expected returns. Second, the market can be an illiquid so, if a piece of news hits the market, it may be incorporated into prices at different time periods, therefore, it may generate autocorrelation once that assets aggregate into a single index. In <https://assignbuster.com/the-efficiency-market-hypothesis-finance-essay/>

emerging markets, Abraham et al. (2002) state that infrequent trading is common problem and can affect the efficiency of stock markets, in order to solve this problem, there are many approaches such as the Stoll and Whaley (1990) approach which use the residuals from an ARMA(p, q) regression as a proxy for the true index and the Bassetr, France, and Pliska (1991) approach which use of a Kalman filter to estimate the distribution of the true index. The conventional test of EMH is developed for testing markets which have a high liquidity and rational investors whereas the emerging markets are described as low liquidity and thin trading (abuzarour, 2005). There are many work which have studied the impact of tin trading and explained its consequences ( see Abuzour , 2005). There are several statistical methods used to test the random walk hypothesis such as Serial correlation and runs tests, Lo-MacKinlay (1988) variance ratio (VR) test, Chow-Denning (1993) VR test, unit root test, ARIMA, GARCH, artificial neural network tests, and the bootstrap test (see Hoque, Kim and Pyun (2007)). However, the test of the RWM should be confirmed by the absence of both linear and non-linear dependence, since rejection of linear dependence does not imply independence but merely suggests a lack of autocorrelation (Al-Kazali, 2006)In brief discussion, the McLeod and Li test (linearity test) examines the autocorrelation function of the squares of the pre-whitened data and test if is non-zero for some k or not. This test can be considered as an LM test of ARCH effects. The LM test (Engle (1982) test - linearity test) is considered that is power against GARCH. The Tsay (1986) test (linearity test) looks for quadratic serial dependence in the series, and it is confirmed that is powerful against a TAR process. The BDS test (non-linearity test) is defined as a nonparametric test for serial independence depend on the correlation

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integral of the scalar series, Hinich Bivariate test (non-linearity test) supposes that the error is a realisation from a third-order stationary stochastic process and examines for serial independence using the sample bivariate covariances of the data (Panagiotidis, 2008)

### **Test of semi-strong form of market efficiency**

the semi-strong efficient market state that all available public information such as earnings and dividend announcements, and economic and political news should be reflected quickly in stock prices. Since such news is unpredictable, tests of semi-strong form are closely linked to investors' reaction to arrival of public information by event studies. In general, a typical event study can consist of four steps. Firstly, an event and the study period of the event should be defined. Secondly, stocks associated with the event are identified. Thirdly, the expected return for each of the stocks on the announcement date is estimated. Lastly, the excess or abnormal return for each stock, which is calculated based on the differential between expected and actual ones, can be performed and tested by statistical analyses. If the semi-strong efficient market holds, share prices are expected to react promptly and accurately to public news, therefore their actual returns and descriptive statistics such as standard deviations can be computed and compared to the expected ones. Note that even if actual returns exceed expected ones the market under investigation should still be valid for semi-strong market efficiency provided that such abnormal returns are within the announcement period (Ibn Rubi, 2012)

## **Test for Strong form of market efficiency**

Tests for strong form of market efficiency involve analysing whether investors can earn abnormal profits by trading on private, inside information. However, trading according to inside information is not allowed by law and no investor will admit he is trading according to inside information, which makes any empirical test of strong form impossible. Further, the stock market authority employees are not allowed to invest in the market or give any private information to any person or groups. However, any tests for strong form of market efficiency should always demonstrate that security markets are inefficient in the strong form.

## **2. 3 The relationship between stock market efficiency and stock market volatility**

Volatility of stock market refers to variations in the stock price in a certain time period. Stock market volatility is an expected response of stock prices to arrival new information (or unexpected events) (Ross 1989, Engle and Ng, 1993; Mitchell and Mulherin, 1994). In the efficient markets' literature there is an positive relationship between the arrival of good information and stock price volatility (see Ross, 1989). Also, under EMH, the stock prices react quickly and unbiased to the arrival of new information. Therefore, the increased stock market volatility is the result of improvements in informational efficiency of stock market. When the information flow increases, stock price moves more frequent and the market volatility will increases. It is worth noting that this information consists all available information for instance the financial information about firms and economical and political news. In this sense, Kalotychou and Staikouras (2009) argue

that volatility can form the basis for efficient price discovery in stock markets. In an efficient stock market, by definition a change in the available information changes the efficient equilibrium price. The stock prices adjust to the new information by moving to an appropriate equilibrium price level and they would be stable until realization of new information. In view of the instant response of stock prices to new information in the efficient market in weak form, this means that the volatility of stock markets may not be

## **2. 4 Empirical literature review**

Most studies in the empirical literature on efficiency of stock market test the weak or semi-strong form of EMH. There is generally little support in either developed or developing stock markets for the strong form of EMH.

Timmermann and Granger (2004) explained that the difficulty of acquire the private information in order to test and stated that " Strong form efficiency can be tested indirectly, e. g. by considering the performance of fund managers and testing if they manage to earn profit net of risk premia after accounting for the cost of acquiring private information" . Resulting of studies of semi strong form efficiency (using time series, cross sectional data or event studies) are mixed. Developing stock markets have not achieved this level of efficiency. However, event studies in developed market have consistently provided support for semi strong form efficiency. The result of most statistical test of time series data (predominantly involving autocorrelation tests) in developed and strongly developing stock markets consistent support the weak form level of efficiency ( Brown 2003). Rao and Shankaraiah (2003) tested the weak form of EMH of Bahrain stock market by using serial correlation tests and run test. Their sample study was two sets of



daily share price changes and percentage change in market returns, based on daily prices of individual firms and BSE Daily index over the period 1996-2000. Their result confirm that the Bahrain stock market is a weak-form of market efficiency. Abraham, Seyyed and Alsakran (2002) examine the random walk in three Gulf markets; namely Saudi Arabia, Kuwait and Bahrain, over the period 1992 to 1998 using the variance ratio test and the run test. The result show that the stock markets of Saudi Arabia and Bahrain are efficient, whereas, the Kuwait stock market is inefficient. Mishra et al (2009) employed the unit root tests to examine the efficiency of Indian stock market in the context of global financial crisis and they concluded that there is evidence of weak-form market inefficiency in India. Also, they examined the mean reversion implication of market inefficiency and suggested the existence of mean reversion illusion. Butler and Malaikah (1992) examined the stock returns in Saudi Arabia over the period 1986-1989 and Kuwait over the period 1985-1989 by applying autocorrelation and runs tests of serial independence. Their study showed that the Saudi Arabian stock market was significantly inefficient market and the mean autocorrelation coefficients of (-0.471) is different sign and large magnitude in comparison to autocorrelations reported in other stock market studies. In contract, the Kuwait is similar to other thinly traded stock market . Also, They explained that institutional factors in Saudi stock market are contributing to market inefficiency include illiquidity, market fragmentation, trading and reporting delays, and the absence of official market makers. Moustafa (2004) examined the United Arab Emirates (UAE) stock market over the period from October, 2002 through September 2003. His data consist of the daily prices of 43 stocks included in the Emirates market index. In order to test the stock

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market efficiency, he employ the nonparametric run to test for randomness when the returns of sample stocks do not follow the normal distribution. The results show that the returns of 40 stocks out of the 43 are random at a 5% level of significance. Therefore, the empirical result confirmed the weak-form of ENH of USA stock market. However, Moustfa (2004) argue that it prefer to use the individual stocks instead of stock indices especially in the case the thin market with a low trading because several researchers ( such as Fama (1965) and Poterba and Summers (1988)) pointed out that Stock index returns may show positive autocorrelation if some of the securities in the index trade infrequently. Al-Loughani (1995), using more robust statistical techniques on the Kuwait market index, concludes that the series exhibit stationarity but not random walk. Maghyereh (2003) examined the validity of the random walk model for Amman (Jordan) stock exchange using aggergate daily data. The result showed that the behaviour of the Amman stock exchange is inconsistent with the random walk model, so that, the Amman stock exchange is inefficient. AL-Khzali et al. (2006) investigated the random walk hypothesis in eight emerging market in the Middle East and North Africa (MENA) by using Wright's (2000) nonparametric variance-ratio (VR) test. The result confirmed the random walk hypothesis for the MENA markets: Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia and Tunisia over the period from October 1994 through December 20003. They used weekly data (Wednesday data) in order to avoid any possible day-of-the-week effect. This study suggested that the Wright's nonparametric (VR) test is appropriate for emerging stock market, and theCheng el at. (2009) examined the market returns in nine Middle Eastern and North African (MENA) financial markets (including Saudi Arabia) within the context of three variants of the capital

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asset pricing model: the static international CAPM; the constant-parameter intertemporal CAPM; and a Markov-switching intertemporal CAPM which allows for the degree of integration with international equity market to be time-varying. Their result showed that Israel and Turkey are most strongly integrated with world financial markets and there is primarily local pricing of risk and evidence of a positive risk-return trade-off in most of other MENA markets. Also, they found that there is substantial time variation in the weights on local and global pricing of risk for all of these markets. Asiri (2008) tested the weak form efficiency of Bahrain stock market. She used daily prices for all the listed companies in the Bahrain stock market over the period from June 1st, 1990 to December 31st 2000 and used all daily . this study employed the unit root tests (ADF), autoregressive integrated moving average (ARIMA), and exponential smoothing methods. The results showed that the random walk with no drift and trend could not reject for all daily stock prices and each individual sector. Also, the result of ARIMA and exponential smoothing tests supported the weak form efficiency of Bahrain Stock market. Simons and Laryea (2005) employ various tests to examine the weak form of the efficient market hypothesis for four African stock markets – Ghana, Mauritius, Egypt and South Africa. They showed that the south African Stock returns is independent and follow a random walk, hence, is weak form efficient, whereas the others are inefficient. Consequently, by using the Box-Jenkins method, they fitted an ARIMA model to the excess return data for Ghana, Mauritius and Egypt. The ARIMA models are then used to generate one-period ahead forecasts for the subsequent 12 periods for these three countries. The ARIMA forecasts in all three countries outperformed the naive model, confirming the initial inefficiency results from <https://assignbuster.com/the-efficiency-market-hypothesis-finance-essay/>

earlier tests. Rao and Shankariah (2003) analysed the GCC market efficiency and found that these markets were neither developed nor informationally efficient. Based on the Rao and Shankariah (2003) study, Simpson (2004) study examined the component stock markets of the GCC by using statistical tests of independence, and emphasised that they are inefficient, even at the weak-form of efficient market hypothesis. Also, he showed that the component markets of GCC are interdependence. Abdmoulah (2010) examined the weak form efficiency of 11 of Arab stock markets (include Saudi Arabia) using GARCH-M (1, 1) approach along with state-space time-varying parameters. The results showed that the 11 stock markets are not weak form efficiency. Onour (2009) examined the Saudi stock market. His study applied a -tatistical test (ADF and PP unit root tests and the stationarity test of KPSS) on individual, sectoral price indices, and the aggregate price index over period from March 1st 2003 to June 30th, 2006. The results revealed that the Saudi stock market is inefficiency. Smith and Ryoo (2003) examined the hypothesis that the stock market indices follow a random walk for five European emerging markets: Greece, Hungary, Poland, Portugal and Turkey using multiple variances ration test. The result shows that Istanbul stock market follow the random walk whereas, other four market reject the random walk hypothesis because of autocorrelation in returns. Aljanabi, Hatemi-j, and Irandoust (2010) investigated whether the Gulf Cooperation Council (GCC) stock markets are informationally efficient with regard to oil and gold price shocks during the period 2006-2008 using daily stock market index. They used a robust bootstrap simulation technique for entire GCC stock markets and found that the variables are not normally distributed and the volatility is time varying. Thus, they employed a method and testing

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technique which is robust to both non-normality and ARCH effect and found that the GCC stock markets are efficient with regard to gold and oil price indexes. Lagoarde-Segot and Lucey (2008) examined the efficiency of seven stock markets in Middle East North African (MENA). The results indicated a heterogeneous level of efficiency in the MENA stock market. Also, the results found that the efficiency seems to be affected by market depth and corporate governance factors. In contrast, the overall economic liberalization does not affect the efficiency. Cheong (2008) examined the weak form market efficiency of nine daily sectoral indices of Malaysian stock market over the period from 1996 to 2006 and employed the structural break unit root test and found that most of price indices characterized by mean-reverting (trend stationary) process that reject the random walk hypothesis. Also, the results were contrast with the traditional unit root test which ignored the economic crisis and currency control. In addition, the results explained that Asian crisis and currency control show instantaneous impact to the Malaysian stock market. Abuzarour (2005) examined the effect of infrequent trading on market efficiency and the random walk hypothesis for three emerging stock markets Jordan, Egypt, and Palestine by using the variance ration test and the nonparametric runs test over the period from 1992 to 2004. The results indicate that infrequent trading has a significant effect on the efficiency and liquidity of stock markets in the MENA region. Wang et al. (2010) tested the market efficiency hypothesis for the Shanghai stock market by using a multiracial detrende fluctuation analysis and used a daily closing price data of Shanghai Composite Index (SCI) from December 19th , 1990 to December 15th , 2008. The results show that Shanghi Stock overall become more efficient gradually. Lim at el.(2008) examined the weak

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form efficiency of 10 Asian emerging stock markets using a battery of nonlinearity test outlined in Patterson and Ashley (2000) over the period from January 1st, 1992 to December 31st, 2005 and found that all the returns series contained predictable nonlinearities. The study also examined sub-sample using the Hinich (1996) bicomrelation test and found that the 10 Asian series follow a pure noise process for long periods of time. " The exploratory investigation found that the cross-country difference in nonlinear departure from market efficiency can be explained by market size and trading activity, while the transient burst of nonlinear periods in each individual market can be attributed largely to the occurrence of economic and political events". Saadi et al. (2006) rejected the random walk hypothesis for the Tunisian stock market due to the substantial non-linear dependence. Applying Hsieh test, the result suggest that the source of nonlinearity structure is multiplicative which in turn implied a GARCH modeling. Rockinger and Urga (2000) developed a methodology based on a time-varying parameter model and test the autocorrelation of returns in emerging stock market (Czech, Hungarian, Polish, and Russian markets) over the period April 1994 through June 1999 and found that Hungarian market is weak form efficiency. The results for Czech and Polish market are convergence toward efficiency. In constant, the Russian market is inefficient. Alagidede and Panagiotidis (2009) examine the random walk hypothesis of stock return in seven African markets, Egypt, Kenya, Morocco, Nigeria, South Africa, Tunisia and Zimbabwe and the results of reject the null hypothesis which these markets are inefficient. However, they employ smooth transition and conditional volatility models to test the dynamics of the first two moments and examine the weak form of EMH and found there is no evidence

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to reject weak form efficiency for Morocco and Kenya whereas other markets seem to be inefficient. Panagiotidis, (2008) test the weak form EMH for Athens stock exchange after the adoption of the Euro currency by using alternative linear and non-linear models. This study estimate simple univariate linear models (RW and AR), various conditional volatility models (GARCH, EGARCH and TARCH) and error correction models (ECM, ACM, NECM). The overall result emphasis that the market is efficient in the period after the introduction of the Euro currency. Worthington and Higgs (2003a) investigate the weak form of Latin American stock market; namely Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela using daily return data for up to a fifteen-year period. They test for random walk hypothesis by using serial correlation and run test, Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) unit root tests and multiple variance ration (MVR) tests and find that all markets reject the random walk hypothesis which emphasis that the seven Latin American stock markets are inefficient. Also, Worthington and Higgs (2003b) examine the weak-form efficiency in European stock market using daily return data for twenty stock markets (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, Czech Republic, Hungary, Poland and Russia. They use a combination of serial correlation and run tests, Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and KPSS unit root tests and multiple variance ratio (MVR) tests. The results show that Germany, Ireland, Portugal, Sweden and the United Kingdom and Hungary follow a random walk. Appiah-Kusi and Menyah (2003) test the weak form of efficiency for 11 African stock markets (Egypt, Kenya, Nigeria, South Africa, <https://assignbuster.com/the-efficiency-market-hypothesis-finance-essay/>

Botswana, Ghana, Ivory Coast, Mauritius, Morocco and Swaziland) using weekly stock data. They use the asymmetric EGARCH-in-Mean model. They confirm that the returns in all 11 stock markets are nonlinear and find that Egypt, Kenya, Zimbabwe, Mauritius and Morocco are weak form efficiency whereas others are not efficient.

## **2. 2. Calendar effect**

The seasonality of the stock market returns, which is known as calendar anomalies (or effects), have received a huge attention over the years. The examples of calendar effect are the day-of-the week, month-of-the year, holiday and the intra-month effects. These researches provide evidence of existence of calendar anomalies in many stock market returns. Most of the work have been done in the developed countries ( Rozeff and Kinney (1976) and French (1980) for the U. S.; Mills and Coutts (1995) for the UK; Shalheim (1985) for Japan among others). Developing countries received some attention and there are a number of works have been done, for example, Gultekin and Gultekin (1993), Mills et al (2000) and Fountas and Segredakis (2002) among others.

### **2. 5. 1 The January Effect**

The January effect or the month-of-the year effect is one of the most common calendar effects beside the Monday effect. The January effect has been studied well (Cross, 1973; French, 1980; Gibbons and Hess, 1981; Tinic and West, 1984 among others). The January (month-of the year) effect in stock market returns shows that the stock return is significantly higher than other months and it is found in many countries. Rozeff and Kinney (1976) examine the January effect in the New York Stock Exchange (NYSE)

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over the period from 1904 to 1974 and find that the average return for January is higher than other months that it is 3.48% whereas the other months are only 0.42%. Kato and Shallheim (1985) examine the relationship between the size and the January effect in Tokyo stock exchange and confirm that there is a relationship among them. Gultekin and Gultekin (1983) investigate the January effect for sixteen developed countries and find an evidence of January effect in all the countries. However, the April effect is found for UK. Keim (1983) examine the seasonality of stock return along with the size effect and find that small firms returns are higher than large one in January. Brown et al. (1983) examine the seasonality of Australian stock market and find evidence of existence the December and January effect and July and August effect. Choudhary (2001) examine the month of the year effect and January effect in the UK, the US and Germany stock markets using non-linear GARCH models. He find that there is a month of the year effect in all the three markets and find also that there is a January effect in the UK and the USA only. Choudhry (2001) examine the month of the year effect in the UK, Germany, and USA using monthly data and employing MA(1)-GARCH(1, 1) and MA(1)-GJR(1, 1) models. He find significant positive returns in January and significant negative return in March and July for the UK, significant positive return in January, April and August for USA, and significant positive returns in February, August, September and December and significant negative returns in June and October for Germany. Arsad and Coutts (1997) Giovanis (2009) tests the month of the year effect in fifty five stock markets using GARCH models and finds mixed results. He finds the December has the highest returns in twenty stock markets, February in nine stock markets, January in seven stock

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markets and April in six stock markets. Floros (2008) examines the January effects on Athens stock exchange market and finds a significant negative return on June in three indices in Athens market. The reasons of month-of-the year effect (January effect) could be; tax-loss selling hypothesis, increase January cash flow; end of the year profit announcement; window dressing, the small firm effect, insider trading information, among others. (Mills et al. (2000); Choudhry (2001) Alagidede and Panagiotidis (2006)).

## **2. 5. 2 The day-of-the week effect:**

The day-of-the week effect states that the stock return in a certain day is significantly different than other days. Many empirical studies confirm the existence of the day of the week effect in many markets and show that Monday has a the lowest average return than others days and the Friday has the highest average return in many markets specially the developed markets. However, some studies show different day effect in different markets. (Cross, (1973); French (1980); Gibbons and Hess (1981); Kiem and Stambaugh (1984); Jaffe and Westerfield (1985) among others). The volatility of the seasonality in the stock market return is examined by using GARCH-family models and the result is inconclusive. In the literature, most western countries such as USA, UK and Canada, have a negative Monday return and positive, higher Friday return (French, 1980, Gibbons and Hess, 1981, Keim and Stambaugh, 1984; among others). In other marker, such as Australia, Singapore and Japan have a negative Tuesday returns (Jaffe and Westerfield, 1985; Alagidede and Panagiotidis, 2006; Agathee, 2008). Cross (1973) examined the S&P market over the period 1953-1970 and find that Friday returns are higher than Monday returns. ". Gibbons and Hess (1981) test the

day of the week effect on the New York Stock Exchange (NYSE) over the period from 1962 to 1987 and find that Monday return is negative (-33.5%) and positive returns on Wednesdays and Fridays. However, in order to make a complete analysis of calendar effect they state that "should model simultaneously the mean and variance of returns over different calendar periods for each stock using a GARCH-in-mean model, in order to ascertain whether higher returns can be explained on the basis of increased risk. Jaffe and Westerfield (1989) test the day of the week effect on the UK, Japan, Canada and Australia and find that Monday returns are lower on the UK and Canada whereas, Tuesdays are lower on the Japan and Australia. Boudreaux (1995) investigate the pattern of stock return in seven countries by using the Global stock indices and show that there is a positive effect for Denmark, Germany and Norway stock markets and a negative effect for Singapore and Malaysia. Athanassakos and Robinson (1994) investigate the day-of-the-week effect on the Toronto Stock Exchange and find that the Monday is statically significant negative effect, Tuesday is statistically insignificant positive effect and Friday is significant positive and the highest return of the week. Mills and Coutts (1995) examine the Calendar effects on the FTSE in the period between 1986 to 1992 and the results show that the calendar effect exist in the FTSE 100, Mid 250 and 350 indices. Tsiakas (2004) investigate the calendar effects on ten international stock indices and show calendar effect in return volatility is significantly higher than calendar effect in expected returned. Also, he find that Monday and September are the most significant effect in expect returns but, in volatility, he find that Monday, Friday, Holiday, June and October are most significant. Number of reasons that can explain the causes of the day-of-week effects and they can be;

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measurement errors, settlement procedures, attitudes of certain groups, investor behaviour. Also, the announcement of bad news usually done during weekend, then, the price will be affected on Monday Mills et al. (2000); Alagidede and Panagiotidis (2006) ).

### **2. 5. 3 Holiday effect**

The empirical studies show that the returns of stock market are higher in the prior to holidays and this phenomena is known as Holiday effect. Lakonishok and Smidt (1988) investigate the holiday effect in Dow Jones Industrial Average and find the average return is 0.22 percent, compared to regular return of 0.00094 percent. Ariel (1990) examines holiday effect on the US stock markets and finds that the stock returns are higher and positive. Cadsby and Ratner (1992) examined the pre-holiday effect along with the turn of the month effect on international markets and find that the pre-holiday effects are significant in Canada, Japan, Hong Kong and Australia.

### **2. 5. 4 Turn of the Month effect:**

Ariel (1987) investigate the turn of month effect in US stock markets and study this anomaly by considering last day of a month and the first three days of next month. The result show that in these days the returns are positive. Different studies in testing the turn of months were done by applying a different event window. Lakonishok and Smidt (1988) study Dow Jones Industrial average (DJIA) with different event window and find the event window that the last day of last month and first three days of current month (-1,+3) has a higher return. Evidence of existence of turn of month effect has been found in USA, Canada, UK and some other developed markets, however, the turn of month effect is not found in Japan, Hong Kong, <https://assignbuster.com/the-efficiency-market-hypothesis-finance-essay/>

Italy and France (Hensel and Ratner, 1992). Agarwal and Tondon, 1994) test the turn of month effect in eighteen markets and found evidence of this effect.

### **2. 5. 5 Month-of-the year moving calendar effect**

Many researchers have studied the Calendar effect based on Gregorian calendar. However, there are different calendars in different countries. These calendars may base on the religion or society. For example, Muslim countries follow the religious calendar which is called Hijri, which is the formal calendar in Saudi Arabia. The Ramadan effect (the Muslim holy it is the ninth month of Hijari (Lunar) calendar) is the effect of moving calendar events and is examined by few researchers ( Husain (1998) for Pakistan; Alper and Aroubd (2001) for Turkey and Seyyed et al. (2005) for Saudi Arabia). In the Ramadan month, the people are fasting from dawn to sunset. The environment during the month of Ramadan is different from other months. The economic activities are slow down and the working hours in public and private sectors are reduced. Also, at the end of the month of Ramadan there is a public holiday and Eid celebration. Hence, the stock market behaviour could be change during this month. Husain (1998) examine the Ramadan effect in Pakistani Stock market over the period from January, 1989 to December, 1993 by using GARCH models and find that the stock return volatility in Ramadan is lower and significant although the mean stock return in this month is insignificant

### **2. 5. 6 Empirical literature in emerging market**

Mills et al. (2000) investigate the calendar effect in Athens stock exchange over the period from October 1986 to April 1997 and find an evidence of

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existence of day-of-the week, month-of-the year, and holiday effects. The result confirms that the existence of relationship between average returns and the Kurtosis of returns and this found shows that the existence of calendar effect could not. Brooks and Persaud (2001) examine the day of the week effect on five South East Asian Stock markets and find that the Tuesdays returns are lowest than other days return on the Malaysian and Thailand stock exchange after taking in account the risk. Fountas and Segredakis (2002) test the seasonality of stock returns in eighteen emerging stock market over the period 1987-1995. The results show that there is evidence for seasonal effects; however, the evidence of January effect is quite small. Lim et al. (2010) investigate the Calendar effects in Malaysian stock market over the periods 2000 to 2006. They find that Monday has a negative return and it is the lowest in the market and Wednesday returns are the highest followed by Friday returns. They also reveal the negative Monday returns are clearly in the time of "bad news" and disappear in the time of "good news". Alagidede (2008) examines the day of the week in African Stock Market (namely; Egypt, Kenya, Tunisia, Morocco, Zimbabwe, South Africa and Nigeria) using daily data. He employs the OLS and GARCH models (both in mean returns and volatility-variance-returns) and the result shows that there is no evidence of day of the week effect in Kenya, Egypt, Morocco and Tunisia, and there is evidence of day of the week effect in Zimbabwe, Nigeria and South Africa. Chandra (2009) investigates the turn of month and the time of the month effects in India stock market over the period from April, 1998 to March, 2008. The result shows that there is evidence of turn of month and time of month effects in India stock market. However, in the Middle East region especially Saudi Arabia, there is a few of work have been

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done in the Stock market return patterns. To the best of our knowledge, there is no available study in the calendar effect in Saudi Stock market except the Seyyed et al (2005). Seyyed et al. (2005) examine the existence of Ramadan Month by using a GARCH models and data from Saudi Arabia over the Al-Saad and Moosa (2005) investigate the seasonality of the Kuwait Stock returns by using monthly data covering the period 1984 -2000, and the result reveal the existence of the of July effect which explains as a " summer holiday effect". Al-Loughani and Chappell (2001) examine the day-of-the week effect in Kuwait stock market over.

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