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# An Alternative Approach in Evaluating Rational Speculative Bubbles in Stock Exchange

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**Abstract**
The forming of explosive bubbles in stock prices is one of the destructive and devastating factors in capital market. Considering the strategic importance of economic and financial these markets, one of the important issues in economics and financial management literature, to diagnosis and to assessment of the existence of price bubbles in the stock markets. Various techniques have been used in assessing the existence of bubbles, but the duration dependence test in comparison with other methods, from academics and researchers have gained greater acceptance. It should be noted that confidence to the results of duration dependence tests, it depends on the quality and accuracy of inputs. Excess positive and negative returns are the inputs of duration dependence tests. So selecting the appropriate method for determining the excess returns is of major importance. This article is intended to describe an alternative approach to determine the excess positive and negative returns, based on the concepts of market efficiency (EMH) and its assumptions, and also the relation between the efficient market hypothesis and capital asset pricing model (CAPM).
**Keywords**: Efficient market hypothesis (EMH), Capital asset pricing model (CAPM), rational speculative bubbles, Duration dependence test, Stock exchange.

## 1. Introduction

Stock markets have a vital and effective role in achieving to economic growth because they provide required financial resources for manufacturing goods and services (Heibati et al, 2008). When the stock market is efficient, stock prices provide a true signal based on the optimal allocation of resources. But when widely the disruption and distraction occur in the market, mobilizing and allocating the financial resources in the country is faced with serious problems. One of the destructive and devastating factors of the capital market is the price explosive bubbles that burst sooner or later and can cause asset prices to fall downhill (Mokhtar et al, 2006 ). According to standard financial asset pricing theory, the intrinsic value of securities is defined as the present value of future cash flows associated with those securities. Consistent divergence in real stock prices to their fundamental values can be defined by rational expectations bubbles in stock prices (Haque, et al, 2008). An important feature of rational speculative bubbles, is, that although investors understand that stock prices exceed their fundamental values, but they believe likely that the bubble continues to grow and leads to a higher return. Therefore, probability of higher yields can compensate probability of fall for them. This explains to staying in the market, despite more than its valuation (Mokhtar et al, 2006; Zhao 2007). As long as everyone involved in speculative activities believes that receives more profit, rational speculative bubbles likely will be created in the stock market (Zhao 2007). One of the important theoretical issues in economics and financial management literature is to diagnosis and to assessment of the existence of price bubbles in the stock market (Soltani 2007). In the past two decades, many studies for testing speculative bubbles in stock prices have been done, and different results are obtained. For example, West (1987) and Rappoport and White (1993) found evidence of bubbles, while the Diba and Grossman (1988) and Dezhbakhsh and Demirguckunt (1990) results that support an absence of bubbles in stock prices achieved (Wu, Xiao 2008). Moreover, in some studies, despite being the same interval of time and place, there are contradictions in the results. One major reason for this contradiction can be seen in the different tests and approaches. Various techniques have been used to assess the presence of bubbles. Perhaps, the primary techniques include test for excess volatility that by Friedman (1953); Baumol (1957); Kohn (1978); and Shiller (1981) have been used. Other techniques that have been used by Hardouvelis (1988), Rappoport and White (1993) were tests for bubble premiums. Non-stationary test and co integration test that developed by Diba and Grossman (1988) also gained importance in recent years. But these techniques have been criticized for low power in forecasting and their limitations in the study of speculative bubbles.

Currently, the duration dependence models as the most important techniques for the study of speculative bubbles are created. Compared with many traditional tests that look for correlations, and the deviation and kurtosis in a statistical chart to identify bubbles, the duration dependence models that have been developed by Thorley by McQueen (1994) have more power of discrimination in inherent nonlinearity test due to the presence of bubbles (Bhaduri 2012). Obviously, the degree of confidence in the results of duration dependence tests depends on the quality and accuracy of input. Excess positive and negative returns are the inputs of duration dependence test. So, to select the appropriate method for determining the excess return is major importance.

This article is intended to describe an alternative approach to asses the presence of rational speculative

 

bubbles in stock markets, based on the concepts of market efficiency (EMH) and its assumptions, and also the relation between the efficient market hypothesis and capital asset pricing model (CAPM). Therefore, in the next sections to explain the principles underlying this approach and to describe more details of the proposed approach and its benefits will be presented.

## 2. Efficient Market Hypothesis

On the history of the efficient market hypothesis, Fama in his Ph.D. thesis in 1965 defined the "efficient market" for the first time. He acknowledged that in an efficient market, on average, the full impact of the new information on the intrinsic value will immediately be reflected in actual prices (Clarke et al, 1999). Fama in practical and specific analysis of stock markets prices concluded that stock prices follow a “random walk”. In an efficient market, at any point of time, the real price of a security would be a good estimation of its intrinsic value. In other words, not only efficiency means that stock prices are random walk, but also they are wandering around the intrinsic value (Guerrien, Gun 2011). It is generally believed that the securities markets to reflect information about individual stocks and about the stock market as a whole are efficient. The accepted view was that when information growth, news quickly spread and participates in stock prices, without delay (Malkiel 2003). So, to profit from anticipated price changes is very difficult and unlikely. The main driving force behind price changes is to obtain new information. If the prices be compatible quickly with new information and on average, unbiased, it is said market is efficient. As a result, recent prices of securities, in any point of time, they reflect all available information. Thus there is no reason to believe that prices are too high or too low. Before an investor has enough time to trade and to profit from a part of new information, prices of securities are compatible (Palan 2004). A key reason for the existence of an efficient market is that the strong competition among investors there is for profiting through any new information. Ability to identify the higher and lower priced stocks intrinsic value is very valuable. As a result, many people spend a considerable amount of time and their resources in an effort to discover the wrong stocks priced (Clarke et al, 1999).

According to the efficient market hypothesis definition, an efficient market can exist if the following conditions must prevail: (a) a large number of rational investors who are seeking to profit maximization, actively participate in the market, securities are valued as rational, (b) If the number of investors are not rational, the irrational trades will be canceled by any other person or arbitrage exclude their affect without their affecting on prices, (c) the information is free of charge and available for participants in a wide range, almost at the same time. Investors quickly and fully react to new information, causing the stock prices are fully compatible adaptive (Yalcin 2010). In financial and economic theory, a distinction between three forms of market efficiency has been created. Basic distinction is that the word "all available information" means (Palan 2004):

(1) The weak form of market: it clears that the recent stock price reflects all historical information. It’s impossible for anyone using historical data to predict future prices and to obtain unusual profits (Khan, Ikram 2010). In other words, a weak form of efficient market, claims that the recent price only incorporate information on past prices fully (Clarke et al, 1999), and thus, technical analysis would not be helpful in the market, therefore, do not exist this phenomenon, such as Back to price and momentum (Talangi 2002).

(2) Semi-strong form of efficient market, stipulates that not only the current stock price absorbs historical information but also information that are available to the public absorbs. So new information can not be used by anyone for their unusual return (Khan, Ikram 2010). General information do not include only past prices but the reported data in company financial statements (annual reports, the leading case ...), Earnings and dividends ads, combined proposals advertised, competitors financial condition, expectations related to macroeconomic factors (such as inflation, unemployment) are also included (Clarke et al, 1999).

(3) Strong form of efficient market makes it clear that the recent stock prices reflect all available information, whether public or private, and no one can acquire abnormal returns using internal or confidential information (Jensen 2002). In other words, strong form of efficient market, argues that the management of a company (internals) is not able regularly to gain the profit thorough buying the company’s stock by using shared information, Ten minutes before decision making. Similarly, the members of company research office don’t able to acquire profit through the related information to new random discovery that has been completed by them, one half ago.

 

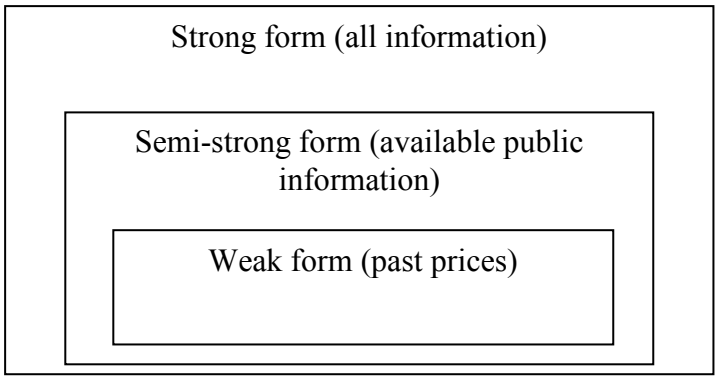


Figure1. Three different forms of efficient market (Yalcin 2010)

Efficient Market Hypothesis is one of the most important paradigms in modern finance that has been widely accepted (Palan 2004). This hypothesis is an investment theory that is ubiquitous in theoretical finance (Khan, Ikram 2010). Efficient market hypothesis has been widely tested with data on a wide variety of markets, with few exceptions, has been found compatible: America and the New York Stock Exchange, Australian, British and German stock markets, various commodity markets, government and corporate bonds.

In financial literature, accounting and uncertain economies, the efficient market hypothesis is accepted as a fact of life and researcher who means to behavior of a model in a manner that violates the efficient market hypothesis, faces with a difficult task to justify (Jensen 2002). Speaking highly of the efficient market hypothesis is wrong but, in the spirit deeply is true and correct. On the one hand, science is searching for the best hypothesis and so when a faulty assumption to be replaced by a better theory, criticism is only a limited value (Sewell 2011). Despite exceptions, it is viewed highly; efficient market hypothesis is still the dominant paradigm of legislative organization and markets (Yalcin 2010).

## 3. CAPM: Supporter pricing model of efficient market hypothesis (EMH)

An efficient performance of stock market pricing mechanism is guiding force for linking the savings to profitable investments Thus; it facilitates the optimal allocation of capital. This means that pricing mechanism will display, Critical investment opportunities for potential investors, through to ensure a good return on investment. . So, in the stock market, pricing has been assess important issue and it has been a subject of extensive and focused research (Javed 2000).

With Fama, Lintner and Sharp (1964) provided a testable conditional capital asset pricing model (CAPM) which was describing the mechanism of capital asset pricing ,statistically (Talangi 2002: Akintoye 2008).

Sharp-Lintner model is a generalization of mean - variance model portfolio of Markowitz (1959) and Tobin (1958) that are made Based on the expected utility model of Newman and Morgan Stern (1953). Markowitz mean - variance analysis is related to how the investor should allocate his/her wealth among different available assets in the market, So that in a period to maximize her/his utility. Sharp-Lintner asset pricing model then uses the characteristics of the consumer in decision making to allocate wealth to a balanced conclusion between risk and expected return of the portfolio and assets.

In development of conditional capital asset pricing model (CAPM), the simplifying assumptions about the real world is used to define the relationship between risk and return that will determine the price of securities. These assumptions are as follows: (a) all investors are risk-averse individuals who maximize their expected utility at the end of investing period. (b) Investors are price makers and have similar expectations about asset returns that are normally distributed shared. (C) There is a risk-free asset so investor may borrow or lend unlimited amounts at the risk-free rate. (d) The quantity of assets are fixed and all assets are liquid able and fully are distributed. (e) Asset markets are no sensitive and information is costless and simultaneously available to investors and (f) market imperfections such as taxes, regulations or other restrictions do not exist for Sale (Javed 2000; Zivot 2000).

CAPM says a simple linear equilibrium for pricing of an asset (Ra) and can be extended to the value of portfolio's return against expected risk:

$E(R_a) = R_f + \beta_a (E(R_m - R_f))$

E (Ra): Stock expected return

$R_f$: free-risk return rate

E (Rm): expected return on the market

β: a measure of systematic risk

 

Beta is the covariance between stock returns and market returns that is divided into on market returns:
$\beta = Cov_{i,m} / \delta_m$

The model suggests if the observed prices of asset be similar with prices obtained using a model, asset is priced correctly (Zivot 2000: Russell et al, 2008: Herekar 2006). Since the advent of CAPM in early 1960, it was one of the most challenging topics in financial economics. . In its simplest form, CAPM predicts that the expected return of an asset over the risk-free rate of return is associated with systematic risk (non-diversity) linearly, which is measured by beta of assets. Most managers who want to take responsibility for a project should align their decision partly, according to CAPM. . Because the model provides a way for a company to calculate the return on that investment, the applicant shall (Michailidis et al, 2006).

In fact, one of the great efforts was developing and opening of the capital asset pricing model (CAPM) for providing a practical basis for pricing the asset that were appreciated (Russell et al, 2008). Although empirical tests of the CAPM are not completely resisted, but CAPM still widely is used in the investment community, because that gives perspective and also because its accuracy is sufficient for many applications (Palan 2004). CAPM is still widely in applications such as estimating the cost of capital for firms and evaluating the performance of managed portfolios are used. In fact, CAPM is often the only asset pricing model which is taught in these courses. Attraction of the CAPM is that the optimal and robust predictions about how to measure risk and the relation between risk and expected return presents emotionally and intuitively (Fama, French 2004).

CAPM allows to investors to price the securities in efficient markets. In addition, numerous studies have been developed based on the CAPM that result in asset pricing models. Most of these studies were presented evidence which consistent with the efficient market hypothesis, as defined in 1970 by Fama (Palan 2004). Efficient markets hypothesis (EMH) and CAPM are compatible in nature and are related to each other so that the CAPM provides a means for testing the EMH (Talanghi 2002).

## 4. Market efficiency and rational bubble

There are three assumptions underlying the efficient market hypothesis. First, investors are rational: This means that they price securities according to their fundamental values. When investors learn about securities, reflect that knowledge in security price, immediately. Second, some investors might be irrational, but their investment activities are in the random state and not related together. Therefore, their position overrides another without affecting on price. The logic behind this assumption is that investors' trading activities are weakly correlated with each other. Third, if they are highly correlated with each other, meaning that they do not cancel their irrational activities, a number of professional arbitrage at this time, eliminate their activities and profit in this way. In a short statement, the efficient market hypothesis says the current prices of securities are close to fundamental values because rational investors and activities relating to buying and selling stocks over or under priced by arbitrage (Yalcin 2010).

The main role of stock markets is to absorb and redirect stray and scattered savings and liquidity to the optimal paths, so that the bulk of the funds will attract the projects and most profitable activities (Samadi et al, 2007). In a specific efficiency, rare ideally savings are allocated to productive investments that way everyone gets rewarded. In an efficient securities market; it makes sure that all participants are money takers (Jaradet 2009).

Whether the stock markets are rational meant the current stock prices reflect their intrinsic value, is an important and central issue. One way to understand this is to use the concept of "rational bubble" (Allen, Bujang 2009). Continuing divergence of stock actual prices from fundamental values can be defined by the presence of rational expectations bubbles in stock prices (Bhaduri 2012). An important feature of rational speculative bubbles is that although investors perceive the stock prices exceed from their fundamental value, however, they believe that likely bubble continued to grow and leads to a higher return. Consequently, the possibility of higher return will likely compensate their offsetting. This justifies dependency to remain in the market despite its over-valued (Moinas, Pouget 2009: Homm, Breitung 2012). As long as everyone involved in speculative activities believes that he/she will get more profits, the presence of rational speculative bubbles are always possible in the stock market.

If market is efficient, stock prices will send right signals about the allocation of resources in the best way possible. However, problems tend to occur when the stock market is affected by speculative transactions. Rational bubbles cause investors rather than real investments, to focus on short-term investments. Speculative bubbles increased economic instability and eventually led to the crisis in the market (Moinas, Pouget 2009). Speculative activities lead to form stock explosive price bubble, Sooner or later the bubble collapses and causes property prices to fall downhill (Homm, Breitung 2012). In fact, the market is suffering from inefficiency; there is a possibility of a bubble emergence in the price level because the main reason for the emergence of price bubbles and to away intrinsic value is lack of complete information. Bubble is the most complex problem that capital markets have been suffered. Bubble shadow affects market transparency that will be followed by tremendous growth without economic justification (Samadi 2007) in this case, the securities market loses its

 

function in resource optimal allocating and pricing.

One of the important theoretical issues in economics and finance literature is to detect and evaluate of price bubbles in the stock market (Soltani 2007). The majority of published studies to test the existence of speculative bubbles have focused on the techniques used to detect bubbles in stock markets. Several approaches and methods are used to detect price bubbles in stock market which put in four main groups; tests for bubble premiums, tests for excess volatility, co integration between stock prices and fundamental variables and duration dependence tests that have been developed by McQueen and Thorley and have been widely accepted in detecting rational speculative bubbles (Moinas, Pouget 2009). This test is based on duration dependence statistical theory that implies the bubble bursting, leading to price changes. The bubbles in its lifetime, periodically grows. As the bubble grows more and more begins to dominate the fundamental component, which is part of the stock price that is determined by the discounted value of future cash flows. Negative abnormal runs are likely less and generally, may only occur when the bubble will collapse (Mokhtar et al, 2006). If stock prices involve bubble, then, positive abnormal returns, will show negative duration dependence, this is a unique feature of rational speculative bubbles (Zhao 2007; Harman, Y, Zuehlke 2001). Conditional probability of a run ending is that its duration is a decreasing function of the run duration (Moinas, Pouget 2009).

The duration dependence tests in contrast other techniques are more flexibility and they don't need to identify the underlying factors. Moreover, these tests do not need to normal distribution of time series behavior. Because of the robustness duration dependence tests in the presence of existence bubbles, these tests are received more popular and fewer criticisms rather than other methods by academics and researchers and global stock markets ranging from developed and developing markets, are used (Bhaduri 2012). Obviously, the level of confidence in the results of the duration dependence test, it depends on the quality and accuracy of input. Excess positive and negative returns are inputs of the duration dependence test. So, to choose the appropriate method for determining the excess returns is so important.

## 5. Proposed approach in evaluating the presence of speculative rational bubbles in stock markets

5-1 the logic of behind this approach

As noted above, the different methods to detect rational bubbles in stock markets are used. In some studies, the same interval of time and place, there are contradictions in the results. For example, West (1987) and Rappoport and White (1993) found evidence of bubble, While the Diba and Grossman (1988) and Dezhbakhsh and Demirguckunt (1990) obtained results supporting absence of bubbles in stock prices (Wu, Xiao 2008). One major reason for this contradiction can be assumed for various tests and procedures. More, an alternative approach which is based on the efficient market principles will be offered and thus a framework for assessing the rationality of stock market performance.

A prominent and distinctive dimension of this method compared with commonly used method that uses the index data to produce positive and negative excess returns is that applies the pricing models for produce positive and negative excess returns. The Efficient Market Hypothesis (EMH) and CAPM are compatible in nature and are linked together so that the CAPM provides a tool for testing EMH (Talanghi 2007). To evaluate the market efficiency, its proper tool should be used. In an efficient market at any point of time the actual price of securities would be a good estimation of its intrinsic value. In other words, efficiency means that not only stock prices are random, but they were wandering around the intrinsic value (Guerrien, Gun 2011). Capital asset pricing model states that if the observed prices of assets be similar to the obtained price by models, asset pricing is correct (Zivot 2000; Russell et al, 2008; Herekar 2006). In fact, CAPM determines the intrinsic value of securities with respect to the relationship between risk and return. Continuing divergence of stock prices from their intrinsic value, cause in rational bubbles (Salehabadi, Dalirian 2009). Consequently, according to the definition of the efficiency, to determine deviations of stock prices from their intrinsic value, using the capital asset pricing model is appropriate. Experimental tests to assess pricing models in different markets around the world have led to different results. This means that a pricing model such as CAPM in different markets with different offers functions range from weak to strong. This has led many researchers try to fix the flaws and shortcomings of CAPM that these attempts to turn on the creation of various pricing models. The majority of these models include a factor or more, in addition to $\beta$ (indicators of systemic risk) that can compensate shortcomings and deviations of CAPM acceptably. CAPM domestic models have been estimated for different markets according to their conditions. In general, it can be stated that the appropriate pricing models for a particular market provide a reasonable predictions of stock returns.

Therefore, to use the pricing models with acceptable performance in a specific stock market can lead to the creation of a different approach to the evaluation of rational expectations bubbles.

5-2 the different processes of proposed approach

In order to investigate the presence of rational speculative bubbles in the stock market, it is suggested that after to choice the test period, sampling be done among the companies which are members of the Stock Exchange.

 

The next step is to choose an appropriate pricing model with respect to the dominance circumstances on a particular market. Using the domestic pricing models that have had a reasonably successful performance in that market is very suitable. Required data (closing price, dividend, capital growth trend and other variables that are needed to use model) of individual stocks which have been involved in samples are collected. Real returns of selected companies will be calculated. It is recommended that monthly data be collected. Based on to beneath reasons, so monthly data are collected and analyzed:

First, McQueen and Thorley (1992) and Chen et al (1998) stated that the monthly returns are appropriate because the high signal-to noise ratio in weekly runs could cause bubble-related runs to be interrupted by noise. In testing data for the presence of rational expectations bubbles, noise is introduced by fundamental price changes that make bubble detection difficult. Second, the bubble theory gives no indication as to the typical length of a bubble, although the particle literature implies that the bubble may build up over a number of months (Jaradat 2009).

Research period is divided to two parts; ex-post (Period before the survey; estimation period) and ex-anti (forecast period). At the ex-post, stocks returns are chosen as an independent variable and the regression model is used to estimate pricing model coefficients. The coefficients of the model are obtained using historical data and time-series regression. Thus, it is necessary to be considered a time period to estimate the regression coefficients (ex-post). The longer estimation period results in more confidence to the accuracy of regression's coefficients. After calculating the coefficients using regression models, returns of the selected companies are estimated using the model. Then, model is used to forecast stock returns which can be applied to identify abnormal returns for both positive and negative series for the duration dependence tests. In fact, the differences between real returns and anticipated returns using pricing model are the inputs of duration dependence test.

5-3 duration dependence test

The duration dependence technique introduced by McQueen and Thorley (1994) is employed for the detection of rational speculative bubbles in the Chinese stock market. Rational expectations bubbles get rooted when the investors despite the fact that equity prices are valued no more desired to liquidate their holdings, anticipating that the ultimate high return will reimburse for the likelihood of a crash. As the bubble expands, its innovation is positive and small compared to an infrequent large negative innovation when the bubble bursts. Thus in case, the stock prices plagued with rational speculative bubbles, the price fluctuations may reveal a decreasing hazard rate. For positive runs, the probability a run will end and its length are negatively correlated.

The duration dependence tests are conducted by analyzing the hazard rate (hi) for positive and negative runs. The hazard rate is the probability of obtaining a negative return ($\varepsilon t < 0$) given a sequence of i prior positive returns ($\varepsilon t-1>0$). In the presence of a rational speculative bubble,

$h_i$= Prob($\varepsilon < 0/\varepsilon > 0$ , $\varepsilon > 0$,…, $\varepsilon > 0$, $\varepsilon < 0$) the hazard rate decreases with I or $h_{i+1} < h_i$ for all i.

In order to apply the duration dependence test, first of all the real returns are converted into rum lengths of positive and negative returns. The returns are separated in to two groups by following the same way as adopted by Blanchard and Watson (1982), Evans (1986), and McQueen and Thorley (1994). The numbers of positive or negative runs of particular length i are then counted. The sample hazard rate for each length i is computed as h i= Ni/ (N i+ Mi) which is derived from maximizing the log likelihood function of the hazard function,

$$L(\theta /ST) = \sum_{i=1}^{\infty} \quad Ni\ Lnhi + Mi\ Ln(1-hi) + Qi\ Ln(1-hi) \qquad (1)$$

With respect to hi, where Ni the number of completed runs of length i in the sample, Mi and Qi are the numbers of completed and partial runs with length greater than, respectively. To test the null hypothesis of no rational expectations bubble, a functional form of the hazard function is to be specified, McQueen and Thorley (1994) specify the logistic form hazard function:

$$h_i = \frac{1}{1+e^{-(\alpha+\beta \ln t)}} \qquad (2)$$

The duration dependence test for logistic hazard function is performed by substituting Eq. (2) into (1) and maximizing the log likelihood function with respect to α and β.

Harman and Zuehlke (2001) defined the Weibull hazard model

$$S(t) = \exp(-\alpha\, t^{\beta t+1}) \qquad (3)$$

Where S (t) is the probability of survival in a state to at least time (t), the corresponding hazard function is:

$$h(t) = \alpha(\beta+1)\, t^{\beta} \qquad (4)$$

Where α is the shape parameter of the Weibull distribution, and β is the duration elasticity of the hazard function. The fundamental assumption of the Weibull Hazard model is a linear relationship between the log of the hazard function and the log of duration, where:

$$Ln[h(t)] = Ln[\alpha(\beta+1)] + \beta\, Ln(t) \qquad (5)$$

 

The duration dependence test for Weibull hazard function is performed by substituting Eq. (5) into (1) and maximizing the log likelihood function with respect to α and β .The null hypothesis of no rational expectations bubble implies that the probability of a positive run ending is unrelated to prior runs; in other words the hazard rate should be constant ($H_0$: β = 0). The alternative bubble hypothesis suggests that the probability of a positive run ending should decrease with the length of the run, i.e., decreasing hazard rate. Under the null hypothesis of no bubble, the likelihood ratio test (LRT) is asymptotically distributed $\chi 2$ with one degree of freedom (Haque et al, 2008).

Employing both hazard models (log logistic, weibull), ensure that the results are not sensitive to the underlying assumptions of a particular test and that they are not biased. This approach suggests adopting duration dependence test by using both, Log Logistic and We bull's hazard model because of their flexibility in applying the hazard rate distribution (Allen, Bujang 2009).

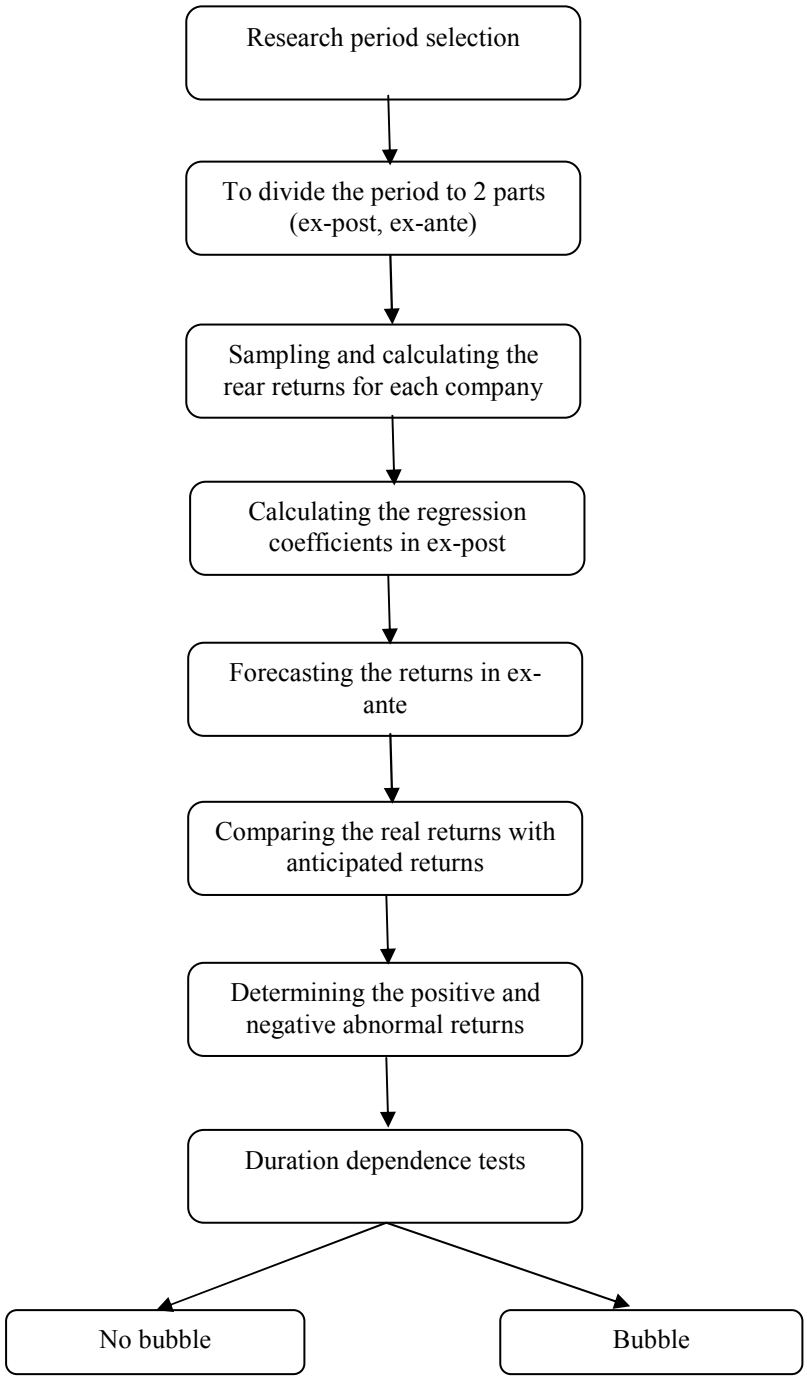


Figure2. A proposed approach to assess the presence rational speculative bubble in stock exchange

 

4-5 advantages and disadvantages the suggested approach

To assess the efficiency of the stock market proper instrument should be used. In this method, pricing models derived from CAPM are used for determining the positive and negative abnormal returns that make up inputs to the duration process. Using the described method in the evaluation of rational speculative bubbles has a couple of major advantages:

- In common approach, the detection of rational bubbles limits to a study of sectoral indices data rather than individual stocks, however, using this approach, data related to individual stocks and duration dependence tests can be used in the analysis.
- To use the index data and duration dependence tests will determine whether there is bubble in a certain index or not? Then, the result is extended to all of the companies which are index's members, but it is not clear that there is bubble in which company or companies. For example, when Industry index is used, differences between the various companies in terms of revenue, risk, and other characteristics are be ignored while there are many significant differences between companies belonging to the an industry and also, the degree of contribution of each company in index is different, so the probability of presence price bubble and bubble size in all companies related to a industry are not alike.

Disadvantages;

- Selecting the pricing model is an important point; therefore, those pricing models which provide better estimation of returns are better than others.
- In this method, the stock returns for each firm separately are calculated and entered to duration dependence tests; therefore, more computations are needed.

## 6. Conclusion

One of the important theoretical issues in economics and financial management literature is to diagnosis and to assessment of the existence of price bubbles in the stock market. Various techniques have been used to assess the presence of bubbles that put in 4 categories: tests for bubble premium test for excess volatility, tests for co integration between price and macroeconomic variables and, duration dependence test.

It was noted that confidence to the results of duration dependence tests, it depends on the quality and accuracy of inputs. Excess positive and negative returns are the inputs of duration dependence tests. So selecting the appropriate method for determining the excess returns is of major importance. Therefore, this paper introduced the infrastructure concepts and assumptions of efficient market (EMH) and the capital asset pricing model (CAPM) and to explain the relationship between them as well as provided an alternative approach for determining the excess returns. It must be noticed that each technique has its advantages and disadvantages. Suggested approach also, is no exception to this rule. Finally, the advantages and disadvantages of new approach were listed.

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