THE RELATIONSHIP BETWEEN THE RANDOM WALK OF THE RETURNS OF FINANCIAL MARKET INDICES AND MARKET EFFICIENCY: AN ANALYTICAL STUDY OF THE INDICATORS OF A SAMPLE OF ARAB FINANCIAL MARKETS

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ABSTRACT

Purpose: The aim of this article is to study focused through the sample that was selected for the Arab financial markets (Iraq, Kuwait, Dubai) on testing the behavior of the returns of the stock indices for the sample to verify whether they follow the random walk or not.

Theoretical framework: The concept of financial market indices and market efficiency was considered as a complex multi-tiered system. theory of capital markets functioning were employed in the study.

Design/methodology/approach: At the weak level, the research dealt with the returns of the daily market indices during the period from January 5/2021 to December 1, 2021.

Findings: through the use of three tests, which are to test the normal distribution of the studied observations using the test (Kolmogorov-Smirnov test), and the time-series stability test (Stationary), which is known as the unit root test through the use of the modified Dickey-Fuller Test, and the serial self-correlation test (Q-Stat) as part of the financial markets efficiency test.which means that the conscious investor can benefit from achieving extraordinary returns in those markets.

Research, Practical & Social implications: We suggest a future research agenda and highlight the contributions made to executive and financial market.

Originality/value: The research concluded that the random movement hypothesis was accepted, and that the stock indices reflect all the historical information in the researched markets, and then the efficiency of the studied markets at the weak level.

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A RELAÇÃO ENTRE O PASSEIO ALEATÓRIO DOS RETORNOS DOS ÍNDICES DO MERCADO FINANCEIRO E A EFICIÊNCIA DO MERCADO: UM ESTUDO ANALÍTICO DOS INDICADORES DE UMA AMOSTRA DE MERCADOS FINANCEIROS ÁRABES

RESUMO

Objetivo: O objetivo deste artigo é estudar com foco através da amostra que foi selecionada para os mercados financeiros árabes (Iraque, Kuwait, Dubai) em testar o comportamento dos retornos dos índices de ações para a amostra para verificar se eles seguem o padrão aleatório andar ou não.

Referencial teórico: o conceito de índices de mercado financeiro e eficiência de mercado foi considerado como um sistema complexo de múltiplas camadas. teoria do funcionamento dos mercados de capitais foram empregadas no estudo.

Desenho/metodologia/abordagem: No nível fraco, a pesquisa tratou dos retornos dos índices diários do mercado durante o período de 05 de janeiro de 2021 a 01 de dezembro de 2021.

Achados: por meio da aplicação de três testes, que consistem em testar a distribuição normal das observações estudadas por meio do teste (teste de Kolmogorov-Smirnov), e o teste de estabilidade de séries temporais

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(Estacionário), que é conhecido como teste de raiz unitária através o uso do Teste Dickey-Fuller modificado e o teste de autocorrelação serial (Q-Stat) como parte do teste de eficiência dos mercados financeiros. Isso significa que o investidor consciente pode se beneficiar ao obter retornos extraordinários nesses mercados.

Implicações de pesquisa, práticas e sociais: Sugerimos uma futura agenda de pesquisa e destacamos as contribuições feitas ao mercado executivo e financeiro.

Originalidade/valor: A pesquisa concluiu que a hipótese de movimento aleatório foi aceita, e que os índices de ações refletem todas as informações históricas nos mercados pesquisados, e então a eficiência dos mercados estudados no nível fraco,

Palavras-chave: Movimento Aleatório, Eficiência de Mercado, Racionalidade de Mercado, Retornos de Índices de Ações.

LA RELACIÓN ENTRE EL PASEO ALEATORIO DE LOS RENDIMIENTOS DEL ÍNDICE DEL MERCADO FINANCIERO Y LA EFICIENCIA DEL MERCADO: UN ESTUDIO ANALÍTICO DE LOS INDICADORES DE UNA MUESTRA DE MERCADOS FINANCIEROS ÁRABES

RESUMEN

Propósito: El objetivo de este artículo es un estudio centrado a través de la muestra que se seleccionó para los mercados financieros árabes (Irak, Kuwait, Dubai) en probar el comportamiento de los rendimientos de los índices bursátiles de la muestra para verificar si siguen el orden aleatorio. caminar o no.

Marco teórico: el concepto de índices del mercado financiero y la eficiencia del mercado se consideró como un sistema complejo de varios niveles. En el estudio se empleó la teoría del funcionamiento de los mercados de capitales.

Diseño/metodología/enfoque: en el nivel débil, la investigación abordó los rendimientos de los índices del mercado diario durante el período del 5 de enero de 2021 al 1 de diciembre de 2021.

Hallazgos: mediante el uso de tres pruebas, que son para probar la distribución normal de las observaciones estudiadas mediante la prueba (Kolmogorov-Smirnov test), y la prueba de estabilidad de series de tiempo (Estacionaria), que se conoce como prueba de raíz unitaria a través de el uso de la prueba de Dickey-Fuller modificada y la prueba de autocorrelación en serie (Q-Stat) como parte de la prueba de eficiencia de los mercados financieros, lo que significa que el inversor consciente puede beneficiarse al lograr rendimientos extraordinarios en esos mercados.

Investigación, implicaciones prácticas y sociales: sugerimos una agenda de investigación futura y destacamos las contribuciones realizadas al mercado ejecutivo y financiero.

Originalidad/valor: La investigación concluyó que se aceptaba la hipótesis del movimiento aleatorio, y que los índices bursátiles reflejan toda la información histórica en los mercados investigados, y luego la eficiencia de los mercados estudiados en el nivel débil.

Palabras clave: Movimiento Aleatorio, La eficiencia del Mercado, Racionalidad del Mercado, Rendimientos de los Índices Bursátiles.

INTRODUCTION

The behavior of the returns of financial market indices in general and the returns of stock indices in particular occupied, in light of the theories of market efficiency and the hypothesis of random movement, a large space in the field of financial research and studies concerned with the rationality of the financial market and its efficiency based on the research and studies presented by (Kendall, 1953), and (Samuelson, 1965), and (Fama, 1970), and the horizon of those theories was expanded by other researchers in an attempt to reach a model that explains the behavior of the returns of financial market indicators in order to enhance confidence in the rationality of the market and to bridge the gap between theory and actual

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reality that these markets offer from trends for stock prices and their returns. Accordingly, the random movement of stock prices, indicators and causes, the multiplicity of interpretations and the diversity of their tests have become a fertile field for researchers as a path that determines the efficiency of the market, and an approach to predicting normal and unusual returns in light of the uncertainty that prevails in financial investment.

RESEARCH METHODOLOGY
RESEARCH PROBLEM

A careful and detailed review of the researches and studies that dealt with the hypothesis of random movement in the financial market and the possibility of proving market efficiency according to the weak formula, shows many issues that require research and study to determine their nature and importance, and then answer many questions that are usually raised among interested circles and researchers about the extent of market efficiency, especially after the sudden and sharp fluctuations in the values of stocks and investment portfolios in the financial markets, as well as the large losses in the wealth of investors during the financial crisis of 2007-2009 and the subsequent debate and great discussion that embodies the contradiction between theory and practice, which prompted the researchers to tend towards the validity of the claim of inefficiency and the myth of the rationality of the market, and in light of this, the research problem can be formulated as follows:

1. Do stock price indices follow a random behavior in their changes?

2. Are the financial markets in the research sample efficient according to the weak formula and within the random walk paths?

AIM OF RESEARCH

The research aims to

A systematic review of research and studies that shed light on the hypothesis of random walk and its relationship to market efficiency in order to draw the attention of decision-makers and financial analysts to the deficiencies in the work of financial markets in general and the Arab financial markets (the research sample) in particular, and cover the shortage in such topics and then shed light on the methodology used in standardized tests, reviewing results, and reconciling theory and practice, which is one of the most important contents of the research.

IMPORTANCE OF RESEARCH

1. Despite all the developments witnessed by the studies that dealt with the hypothesis of random walk in the financial markets, dealing with that hypothesis according to a literary narration presents the historical roots, dimensions and implications, and then trying to test it statistically to reach market efficiency, and this is something that contributes to supporting The Arab Library and those interested in the financial markets in part, even if only slightly, in this field.

2. The research deals with the daily returns of the indicators of the financial markets in the research sample during the period from January 5, 2021 to December 1, 2021, which gives a new scientific addition and according to new data that takes into account the reconciliation between reality and theory.

RESEARCH HYPOTHESES

Depending on the theoretical basis for the importance of the research, its problem and its objectives, the research put forward a main hypothesis with the aim of testing it, diagnosing the research problem and achieving its goals, as well as statistical sub-hypotheses that were included in the practical side in order to give a greater understanding of the tests (normal distribution, sequential self-correlation, unit root).

MAIN HYPOTHESIS

The returns of the financial market indices, the research sample, do not follow the random walk, and thus these markets are characterized by inefficiency at the weak level.

RESEARCH SAMPLE

The research focused on choosing the financial markets for each of (Iraq, Kuwait, Dubai) due to the availability of data during the research period and the absence of interruption in the sessions of these markets during the research period. The returns of the financial market indicators and the results of the self-correlation of returns as well as the results of the unit root test (stable) Dickey-Fuller test statistic for the markets of the research sample have been included in the research appendix.

THE STATISTICAL METHODS USED IN THE RESEARCH

The research used a number of statistical methods that illustrate the testing of the returns behavior of the financial market indices, the research sample, to find out whether they follow

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the random walk or not, through the use of three tests, which are the test of the normal distribution of the studied observations using the Kolmogorov-Smirnov test, and time series stability test (Stationary), which is known as the unit root test, using the modified Dickey-Fuller test, and the serial self-correlation test (Q-Stat) in the framework of the financial market efficiency test, the research sample conducted at the weak level, in addition, these tests conducted using statistical software. mintab (Eviews 12) .

STUDY MODEL
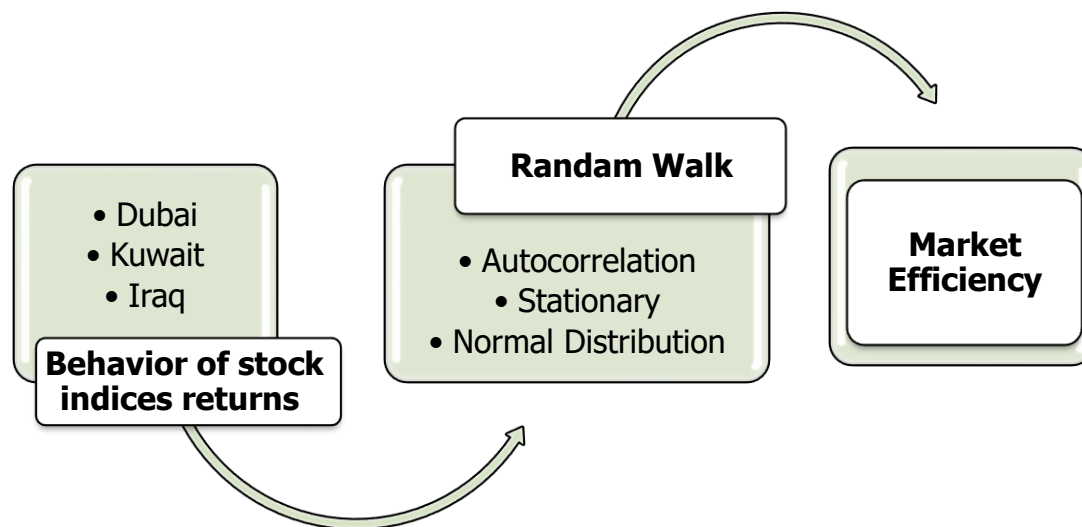
THEORETICAL SIDE

First: Random movement of stock prices in the financial markets and levels of market efficiency

Going back to the 16th century in the year 1564, the eminent mathematician (Girolamo Cardano) in his book *(Game of Chance)* points out that the basic principle in any gambling game is that the conditions and conditions for each player are equal even in the smallest details. While the French stockbroker (Jules Regnault) noted in the year 1863, the longer a security is held, the greater the probability of a greater profit or loss, and the deviation in the price is directly proportional to the square root of time (Sewell, 2011, 2).

And (Jules Regnault) published his book entitled "*The Calculation of Luck and the Philosophy of the Stock Exchange*", which came in the context of answering a set of questions that center around the natural laws that govern price changes in the markets, and (Regnault) believes that equal opportunities in the market come from the market's ability to achieve equality. Among the dealers in terms of their being subject to the same investment conditions

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prevailing in the market, while market justice is represented in the investors receiving returns that are directly proportional to the risk according to the duality of return and risk (Al-Muzahidiyah, 2015, 44).

(Regnault) pointed the subjection of price changes in the financial markets to behavior consistent with random movement, and expressed by the following equation:

$$P_{t+1} = P + \varepsilon_{t+1}$$

(ϵ_t) indicates White Noise as the product of price changes resulting from speculation, and (P) the average value of the security (expected value). Thus, the difference between the expected return in the period (t+1) and the realized return in the period (t) is equal to zero, which indicates the efficiency of prices in reflecting all the information in the period (t+1), and he reached that conclusion after studying a time series. From the prices of French treasury, bills for the period from 1825 to 1862, and the results indicated that the average price differences are directly proportional to the square root of the time, and accordingly confirmed the existence of a mathematical law that governs price changes in the financial markets according to a random movement (Al-Muzahidiyah, 2015, 46).

Physicist (Rayleigh) in 1880, and philosopher (John Venn) in 1888, exposed the concept of random movement in general, as stock prices do not follow a specific pattern to be followed, but rather their movement is random and difficult to predict. In the year 1889, the concept of market efficiency was explicitly addressed in the book of the economist (Gibson), which was titled The Stock Markets of London, Paris and New York, where he indicated that when stocks are offered to the public, their value reflects the best information. Related to it. These ideas formed the cornerstone of the market's efficiency hypothesis (Sewell, 2011, 2).

The Random Walk Hypothesis started with the mathematician (Louis Bachelier) who studied price fluctuations in the Paris Stock Exchange. The result was a doctoral thesis in 1900 that helped re-read financial markets in a new way. (Bachelier) embarked on his investigation at a time when scholars had embraced the idea that although there can be no absolute certainty of anything, uncertainty itself can be a powerful tool. Instead of trying to trace the cause of every oscillation of a molecule or the motion of a planet, one could simply assume that there are many causes, and randomness is the result. The French mathematician and physicist (Henri Poincare) wrote in 1908 that we, thanks to chance, can reach conclusions. The greatest tool for constructing knowledge on such chance was then named the Gaussian distribution after the German astronomer and mathematician (Carl Friedrich Gauss) or the normal distribution, or

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simply the bell curve. The Gaussian number matrix can be adequately described by mentioning the arithmetic mean in the sense of the bell-top, which became known in the last years of the nineteenth century as the standard deviation, known as the bell curve (Fox, 2009, 22).

Louis Bachelier used bell curve assumptions to depict price movements on the Paris Stock Exchange; It started with the idea that the speculator's mathematical expectation is equal to zero, meaning that the gains and losses of all sellers and buyers in the stock exchange by their nature must cancel each other out. This is not absolutely true, stocks and bonds have generated positive returns over time, but as a rationale for investing or speculating, Louis Bachelier's diagnosis remains the most accurate. The average investor cannot outperform the market (Chitenderu et.al, 2014, 1246). It was then that Louis Bachelier realized from this beginning that it is possible to study a stable state of the market mathematically at a given moment, i.e. to establish the law of the probabilities of price changes consistent with the market at that moment (Kushwah et al, 2013, 26).

Bachelier referred to the price law according to the following equation (Jovanovic, 2009, 10):

$$P(z,t) = \int_{-\infty}^{+\infty} P(x,t_1) \; P(z-x,t_2) \; dx \quad t = t_1 + t_2 \ldots\ldots.(1)$$

Equation (1) shows that price changes according to the hypothesis of random movement cannot be predicted, which indicates that price changes are governed by a set of infinite factors, when the amount P (z, t) is the potential price of the asset (Z) in the continuous time sequence $(t_1 + t_2)$, conditional at the price (X), in period (t). This indicates the difficulty of predicting the stock price based on past prices.

(Bachelier, 1900) is credited with setting the first rules in formulating a mathematical model that expresses (Brownian motion) after he formulated the probability of the stock exchange, which prompted (Albert Einstein) five years later to use similar mathematical tools to describe random motion. of fine particles suspended in a fluid or gas, which later helped lay the foundations of nuclear physics in the 1940s.

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(Bachelier) resorted to the Brownian movement and showed that if P (x, t) expresses the amount of Brownian movement of prices at the point (X) and the time count (t), then (P) is given according to the following equation (Davis, 2006, 38-39):[B]

$$\frac{\partial P}{\partial t} = D \frac{\partial^{2P}}{\partial x^2} \ \dots\dots\dots..(2)$$

(D) indicates the extent to which the price can move in a certain period of time, which physicists call the permeability of mass, and since all stock prices start at a certain point in time (t = 0), the solution to equation (2) is the Brownian movement of prices according to the equation (3):

$$P(x,t) = \frac{1}{(2\pi D)^{\frac{1}{2}}} e^{\frac{-x^2}{4Dt}} \ \dots\dots\dots\dots(3)$$

Equation (3) indicates that (X) is the price of the security, at time (t), and the amount $(2\pi D)^{\frac{1}{2}}$ It indicates the coefficient of stability, or the fluctuation in the value of the security. Thus, (Bachelier) was able to measure the momentum of the price movement, which means that every security can move up and down, and this is called the primary movement, and then reached the secondary movement through:

$$\underline{x^2} = 4Dt \ \dots\dots\dots..(4)$$

Equation (4) indicates the mean squared displacement as a time-dependent function, and the extent to which the price can move in a certain period of time as a result of speculation. (Bachelier) explained that the Brownian movement of the security is not proportional to time, but rather to the square root of time.

Figure (1) shows the extent to which prices move in their Brownian form in the financial market until they form a bell curve or a normal distribution, and it turns out that prices start from zero at time (t = 0), and diverge over time until the distribution is equal in infinite time.

[B] Brownian motion means the random movement of micron particles in the block of mathematical works used to explain these random motions. Robert Brown, the discoverer of Brownian motion, noticed that the movement of small gelatinous granules in a liquid result from the movement of the liquid molecules that collide with it.

Bachelier's follow-up to the successive changes in prices in the commodity market has resulted in the fact that they lack any correlation between them, confirming the absence of a pattern of movement of those prices. He commented on this by saying that speculation in those markets is a fair game, as neither the seller nor the buyer can guarantee Achieving profits at the expense of others, and added that the current prices of future contracts in the commodity market are an unbiased estimate of the price that will prevail in the current market on the date specified for the implementation of the contract, and this means in the concept of market efficiency that the current prices reflect the conditions that are expected to prevail on the specified date. for implementation (Davis, 2006, 40).

Figure1 Brownian movement of prices
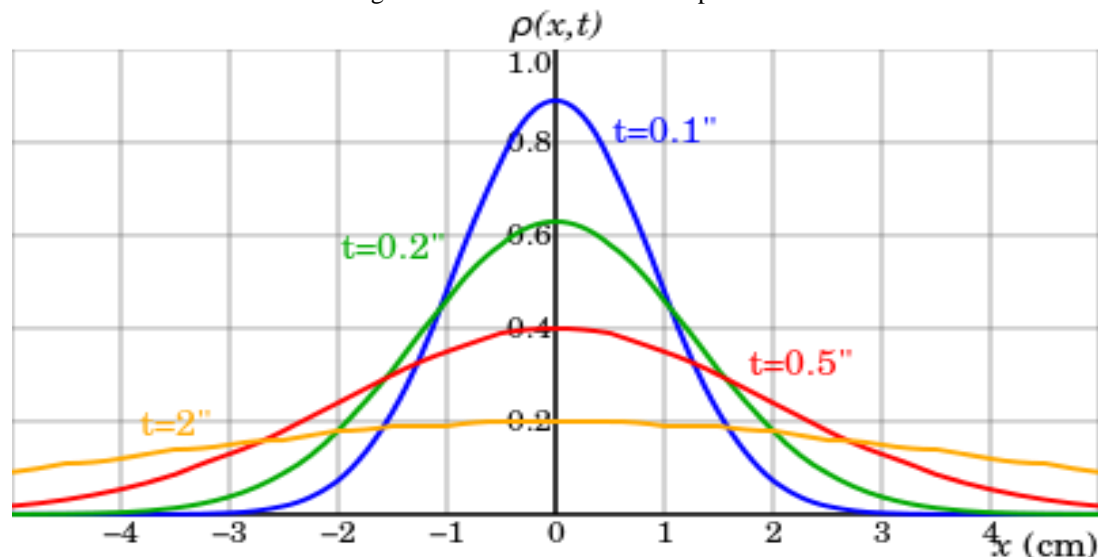
https://en.wikipedia.org/wiki/Brownian_motion#Einstein.27s_theory Source

The results of (Bachelier) coincided with the results of the study (Karl Pearson) on random movement in the field of statistics published in 1905, and in that study, the researcher described the random movement of a drunk person. In it, that point is a biased estimate of where you might find him at any moment in the future, because the drunk usually walks once here, and once there, it spins around itself in a random movement (Sewell, 2011, 2). Another example of random movement came in the mid-twenties of the twentieth century when (Nikolai Kondratiev), founder of the Moscow Institute of Business Cycle, suggested that economic activity moves in waves, and the length of one wave is half a century (Fox, 2009, 55).

In 1906, Fisher wrote, in his book (The Nature of Capital and Income), that if we look at the history of stock and bond prices, you will find that it consists primarily of a record of changing estimates of the future as a result of what is called chance. This was similar to (Louis

Bacheliers) depiction of Brownian motion at the Paris Stock Exchange and half a century later, this concept was called the random motion hypothesis (Fox, 2009, 28).

Frederick Macaulay, an academic with a doctorate in economics from Columbia University, when he was researching the rational behavior of the market, conducted an experiment in 1925 whose aim was to ridicule the views of economic researchers on the predictability of stock prices, and more specifically the opinions of (Hamilton), editor-in-chief of the newspaper The Wall Street Journal, which believed that the highs and lows of the (Dow-jones) index could be predicted. (Macaulay) believes that throwing a coin thousands of times, and recording the results, given that one of the sides of the coin indicates a price increase by one point, while the other side indicates a price decrease by one point, and when collecting the increases and decreases, and putting the result in the form of a graph, note (Macaulay) that the course of such a stochastic trend is unpredictable (Stabile, 2006, 58).

(Macaulay) believes that his experience can lead to negative numbers, while stock prices can drop to zero, but cannot continue beyond that. Second: The actual randomness of the market will not necessarily follow a simple bell curve distribution, as stock prices often rise or fall with values greater than the values of a coin, and therefore he concluded that there is a big problem, which is that human behavior is not random. People and then investors sometimes act by following the behavior of the herd, meaning that the mistakes that investors make in the financial market as a result of speculation are not random, but rather systematic as a reflection of emotion, lack of logic and lack of information, and therefore the absence of rationality. This prompted (Keynes) to say that there is a need for more government intervention and planning of economic activity in order to address economic cycles (Fox, 2009, 28).

These solutions were a wonderful recipe by the late 1930s, which was based on random price fluctuations and their conflict with financial behavior. However, the stage that came after it was diagnosed that science is rushing without vision towards the transition to (positive economics science), which is characterized by sharp logicality. Then economists became more comfortable ignoring the facts of human behavior in order to build quantitative models to explain the economic crisis in 1929, and inspecting that great collapse, and the subsequent depression in search of explanations for what happened, and trying to develop quantitative tools to avoid it according to the theory of market efficiency.

And (Eugene Slutsky) wrote in 1925, he says that most of the phenomena of economic life occur in successive series of upward and downward movements like waves, and that there are absolutely no two identical waves of these waves. A brief summary in English of (Slutsky's) article on random patterns was published in the early 1930s, and a full translation of it was

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published in the (econometric) magazine, in which he states that there is now a school of economic thought that looks at economic time series as being statistically similar to accumulated random series and from Then they are intrinsically unpredictable (Fox, 2009, 28).

In 1938, (John Burr Williams), in his work on real value, was one of the first to try to identify the possible information contained in stock prices, and put forward the idea that stock prices depend on economic foundations. While the dominant idea before that, which was proposed by the famous economist (John Mynard Keynes), is that stock prices are based on speculation rather than on economic basis (Damodaran, 2006, 9). During World War II, the statistical researcher (Holbrook Working) was teaching American aircraft manufacturers how to control manufacturing defects without incurring additional costs, and he achieved this using quality control methods developed in the 1920s that used statistics to set the limits of permissible manufacturing defects, and for (Working) The years he spent teaching the difference between acceptable error and unacceptable error into an intellectual achievement, he wrote a research paper at the annual meeting of the American Economic Association in December 1948 saying: The best forecasts in economic affairs are prone to error, because the results depend on events Unpredictable future, and therefore market expectations include an inevitable error, and his concern was the extent of the possibility of an unacceptable error as a result of speculators exaggerating their reaction to the news or taking more time than it should be to absorb it, and the types of repeated errors by speculators in the market lead to unpredictable recurring price patterns (Fox, 2009, 56).

(Working) wrote this at a time when most economists were still in agreement with John Mynard Keynes' conceptions of forecasting in financial markets, which held that financial analysts, if they wanted to predict stock prices, had to think about what the average investor thinks, and praised (Working) with (Keynes) perceptions, and he also praised what Alfred Cowles concluded in 1932 about that forecasters in the financial markets usually fall into predictive errors, and that these errors are evidence of market efficiency. This was the first clear statement of what became known as the market efficiency hypothesis, which is a prominent mark in twentieth century thought, with the ability of financial markets to collect information and predict future events on the one hand, and on the other hand, the phenomenon of random movement of stock price movements, and (Working) was the first to combine between Monday (Fox, 2009, 57).

In 1953, the British statistician (Maurice Kendall) presented his controversial research entitled Economic Time Series Analysis that he conducted on the weekly returns of the British market index, in which he expected to find a regular behavior of the stock movement, but he

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noticed that stock prices follow a random and unpredictable behavior. in the future (Dimson and Mussavian, 1998, 93). The same applies to the research conducted by (Harry Roberts) in 1959, which found similar results in the (Dow Jones) industrial index (Roberts, 1959, 1). In 1965 (Eugene Fama) presented comprehensive results not only in terms of statistical independence, but also in terms of the feasibility of technical analysis results that support the random movement hypothesis of stock prices. Where he studied the correlation coefficient of the stock price series of the Dow Jones Industrial Average, which consists of 30 stocks, and found that the daily changes in the prices of these stocks have a very small correlation and is close to zero, which led him to conclude the characteristic of the random movement of stock prices. This characteristic is based on the idea that if there is an unimpeded flow of information to the financial markets and their participants, then tomorrow's prices will only reflect tomorrow's news, and will be independent of today's prices. This means that no change in stock prices can be predicted based on today's information (Fama, 1965, 45-46).

Until that time, the true meaning of stock prices and their link to economic foundations had not yet crystallized. Then came the work of (Paul Samuelson) in 1965, and (Benoit Mandelbort) in 1966 to confirm that investing in the stock market is a (fair game) which means that the investor cannot outperform the market performance if he does not possess Information that is useful in it. Also, stock prices reflect investors' expectations in light of all available information. Tomorrow's prices change only if investors' expectations about tomorrow change. These changes can be positive or negative as long as there is no bias in the expectations of investors, and that formed the basis for the rationality hypothesis in financial markets (Sewell, 2011, 4).

Then (Fama) published in 1970 his famous paper (Efficiency of the capital market: a review of theory and an empirical test), which formed the theoretical framework for the hypothesis of efficiency of the market (Brown, 2020, 5). Later, the concept of market efficiency gradually developed, so that the efficient market expresses the market that is characterized by the rapid response of the prices of the securities traded in it to any new information, and market efficiency means that the price of the security in that market and on a certain date reflects all the information available up to this date, and that any New information about this paper will be immediately reflected on the price as soon as it is made available to dealers in the market. In light of market efficiency, we assume that a large number of analysts are estimating the true value of companies, and analysts are trying to find stocks whose current value deviates from their true value. If these analysts find this imbalance in pricing, they will buy or sell these shares, pushing their value towards the real value. Therefore, the existence of competition in

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the financial market pushes the prices of securities towards their true values. Therefore, the prices of securities change every day, every minute, according to the information received to the market, and no one can surpass it (Dimson and Mussavian, 1998, 4).

The efficient market hypotheses confirm that returns or changes in prices are based on the random movement of those changes from the real value, and that no analytical approach can penetrate the market Beat the Market. Informational efficiency is often known as the ability of information to change the profits achieved as a result of exploiting the available information and what it contains of media content capable of achieving extraordinary returns within the entrance of the ability to mentally operate information. Therefore, the opportunity in such circumstances is for some to obtain exceptional profits by two ways: either by obtaining private (unpublished) information that is not available to others within the phenomenon of monopolizing the information, or by being able to analyze the published financial statements more efficiently than others. In this type of market for the work of financial analysts because they will be more able than others to analyze the published financial data and provide it to some dealers in the market so that they can achieve exceptional profits that others do not achieve, and thus beat the market (Bailey, 2005, 69).

Then (Fama, 1991) presented his second article, which was entitled (Efficiency of Capital Markets), in which he explained that the criticisms that affected his theory of market efficiency resulted from the emergence of (anomalies). Then he published his third article in 1998, which was entitled (Market Efficiency and Financial Behavior) in which he proved that the market efficiency theory is moving forward despite the challenges and criticisms it has faced in the financial literature, as well as the lack of theoretical research alternatives confirming that the theory of financial market efficiency is still the theory governing financial thought (Brown, 2020, 9).

(Bernstein) believes that the logic underlying the efficient market theory is not convincing. Proponents of efficient market theory usually advocate the liberation of financial markets from government constraints. On the other hand, there are some financiers and economists who favor the liquidity preference theory, which refers to the need for procedures (regulation) in financial markets, and some restrictive rules that affect the behavior of market dealers. As the logic of the Keynesians in the theory of liquidity preference, is that the main function of financial markets is to provide liquidity to the owners of assets, and if we want the market to be highly liquid, it must have procedures, that is, rules must be set to ensure the regularity of those markets in achieving liquidity, and thus supporters see (Market efficiency) that these measures affect the efficiency of the market in achieving a balance between supply

and demand. If the concept of market efficiency is linked to the ability to achieve liquidity, then according to the theory of liquidity preference, the theory of market efficiency cannot be proven in the real world, for the simple reason that highly liquid markets are not efficient according to the concept of market efficiency. (Bernstein) believes that the market efficiency theory has no place in the real world, and this is attributed to the fatal flaw in the market efficiency hypothesis about the existence of an equilibrium price (supply, demand) in the market, that price based on unrealistic static economic models trying to approximate reality Through unrealistic analytical models, (Bernstein) sees the greater the market efficiency, the lower the corresponding liquidity, and therefore it is important to search for market liquidity, not market efficiency (Davidson, 2002, 180-181).

Despite this, the market efficiency hypothesis was associated with the name of the American economist (Fama), who was famous for his theoretical and empirical research in portfolio theory and pricing of financial assets. He continued to defend the market efficiency hypothesis until he was awarded the Nobel Prize for Economics in 2013, despite the emergence of Many critics saw some weaknesses in the theoretical framework of this hypothesis, especially in light of the emergence of a number of anomalies in the financial markets, which enabled many investors to achieve extraordinary profits that cannot be explained by the efficiency hypothesis, not even by existing capitalist pricing models. (Mohammed, 2014, 418).

According to (Fama), the concept of market efficiency is not an absolute concept, but rather it i a relative concept that is determined by the extent and nature of the relationship between the prices traded in it, and the types of information available to dealers in it. The issue of relative efficiency is one of the important concepts in the financial literature as an expression of the level of efficiency compared to Among the financial markets or at the level of the market itself (stocks, bonds), so the efficiency of the financial market can be classified into three main formulas, the first is known as the weak formula for market efficiency. In the past, including historical data, it cannot be used at all in an attempt to achieve extraordinary profits, and this is illustrated by Figure (2), price changes have high volatility and the market value is either greater than the real value or less than it.

While the second formula is the average formula for market efficiency, and according to this formula, the prices of securities reflect all available relevant public information, in addition to historical information. This information may be financial or accounting statements or information related to the market and the economy in general, and this is evident through Figure (2), the variance is less than the previous level, and this means that the market value is close to the real value.

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The strong formula is the third formula for market efficiency. This formula means that current prices instantly reflect all available public and private information. That is, the market that is efficient according to the strong formula, all the historical information in addition to the current information as it is the private information that only a few people know as members of the board of directors and those inside the company (Insiders) are fully reflected in the prices of securities, and then the price response quickly and, it tied with the real value. Thus, no one can follow any strategy to achieve extraordinary profits in the market (Bailey, 2005, 70-71).

IMPLICATIONS OF MARKET RATIONALITY

The market rationality, embodied in the theory of market efficiency, is the backbone of the traditional economic wisdom that the market knows best in allocating resources in an optimal manner that promotes economic growth, and this is summarized in the functions performed by financial markets from distributing risk, and directing investment and processing information, so that prices always reflect the basic values(Singh, et.al, 2021, 3) (Davidson, 2002, 180). That wisdom is outdated with the advancement of financial markets. In 1889, the historian of financial markets (Gibson) asserted that when stocks become known and their prices open in an open market, their market value reflects the best information about them (Gibson, 1889, 6). We can find hints to this same position in the work of pioneering economists such as (Adam Smith) who focused on the concept of the invisible hand that directs individuals concerned with their personal interests to beneficial results in society, and medieval religious thinkers go beyond That is, and they see the need for legislators to set a fair price for each commodity, to ensure that producers earn subsistence wages and do not exploit consumers. Others, including the saint and philosopher (Thomas Aquinas), saw that the fair price is determined by the market (Fox, 2009, 13) (Nicholas, 2022, 696).

The financial crisis that afflicted the American and European banks in 2008, and whose roots go back to the mortgage market, constitutes a test of one of the most important theories of economic liberalism, which is the theory of "market rationality" based on the basic economic hypothesis that the market is capable, according to its own mechanisms, of effective allocation of economic resources, Consequently, he is able to build an effective, rational, and efficient economic system to manage these resources, meaning that in the end it is a rational system, and according to that theory, and based on it, many of the propositions and theories supporting and supporting it, which in essence do not depart from the sanctification of individual economic freedom , drawing its intellectual roots from the liberal economics classics of Friedrich Hayek, Ludwig von Mises, Milton Friedman, Henry Sidgwick and other great writers of economic

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freedom. Economic Freedom came with warnings, which might be called doses of realism; Gibson writes that markets are prone to mania and panic, and calls for the regulation of unregulated brokers' offices that encourage investors to excessive speculation (Gibson, 1889, 7).

(Raymond) did not see that the market price is always correct, but all there is that it is difficult to come up with a fairer alternative (Raymond, 1958, 419). The rational market theory has been subjected to several criticisms by supporters of the (market failure) theory (Jin Wei et.al, 2021, 8), which is based on the fact that markets cannot fall short and fail if they operate freely, which negates any form of state interference. Because it impedes the freedom of markets, and disturbs their own equilibrium mechanisms. The mechanisms of competition, supply and demand, the freedom to exchange information and goods, and the freedom to make decisions, all lead in the end to achieving general economic balance without the need for state intervention, and any state of imbalance is only a temporary state that the market works on. corrected on its own (Randall, 1983, 131).

Before the financial crisis of 2008, the economic players in the market acted according to the principle of freedom and rational behavior, which ultimately means, from the point of view of each player, achieving the greatest possible self-benefit by using the mechanisms of supply and demand, and using available financing techniques and tools, so that every investor becomes He has his own information about the market situation, and he makes buying, selling and financing decisions based on that information, and as a result of that behavior on all sides, equilibrium prevailed in the market, but in fact it was nothing more than a "temporary critical equilibrium", which is the equilibrium theoretically supported by a set of Legal rights, between economic actors, and not supported in practice by an actual economic and financial position for some of the parties to the equilibrium, and as soon as one of the parties to the equilibrium was exposed to economic and financial exposure, and its fragility became clear, until the general balance of the rest of the parties to the economic system was disturbed, and the crisis began (Shefrin and Statman, 2011, 3).

The difference came in the twentieth century version of the rational market theory; It combines being more accurate and less objective. This version began by noting that stock price movements are random, and unpredictable based on past movements, and followed this note by claiming the impossibility of predicting stock prices on the basis of any publicly available information such as earnings, balance sheet statements, and articles published in financial journals. This idea was powerful; It helped to develop the first investment funds linked to the market index, the investment approach called the modern portfolio theory, performance

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measures adjusted according to the risks that constitute the methodology of financial management work, the doctrine of added value for shareholders adopted by joint stock companies, the emergence of financial derivatives, and the approach to moving away from financial regulation, And the consolidation of the principle of financial freedom in the United States from the beginning of the seventies of the twentieth century onwards (Fox, 2009, 14).

In the 1970s, dissenting economists and finance professors began to question this rational market theory for its theoretical inconsistencies, its lack of empirical support, and by the end of the century they had criticized most of its assumptions. But there was no compelling alternative; Therefore, the rational market idea continued to dominate public debate, government decision-making, and private investment policy until the first decade of the twenty-first century; That is, until the market crash in 2008 (Can, 2010, 35).

Application Side

First: Create and describe models

The researcher followed the descriptive analytical approach in the practical aspect to test the level of market efficiency, and according to the weak level of the financial markets (Iraq, Kuwait, Dubai), by following three statistical and standard tests, namely, the normal distribution of data, serial autocorrelation, and unit root (Dickey Fuller modified) In order to test the stability of the time series for the returns of price indices in the financial markets, the research sample, as follows:

1.Normal distribution test (descriptive statistics)

The Kolmogorov-Smirnov test was used, and this test indicates the matching of the studied observations (the index returns)[C] with the Normal Probability plot, that is, the extent to which the data distribution of the studied phenomenon fits with the normal distribution curve. The hypothesis of the test was built according to the following:

The null hypothesis: The returns changes for the financial market indicators in the research sample are not distributed normally.

The alternative hypothesis: the returns changes for the financial market indicators are distributed in a normal way.

[C] The daily returns of the market index were calculated through the natural logarithm of the index values and according to the following equation:

$Rt = Ln \frac{Pt - Pt-1}{Pt-1} * 100$

As: (Rt) indicates the returns of the index in the period (t), (Pt) indicates the stock prices in the period (t), (Pt-1) indicates the stock prices in the previous period (t-1).

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The decision to reject the null hypothesis is based on the value of (KS) and its comparison with the level of significance (P-Value) shown by the graph when executing the instruction in the program (Minitab).

2.Sequential self-correlation test

(Fama, 1965, 69) proposed (Fama, 1965, 69) in the context of his introduction to the theory of market efficiency, the sequential autocorrelation test. The current observation, and previous observations, and the hypothesis of the serial correlation test takes the following form:

The null hypothesis: the chain correlation coefficients are zero (H_0: $P_k=0$)

Alternative Hypothesis: The chain correlation coefficients are not equal to zero (H_1: $P_k \neq 0$)

If the returns of stock indices are not self-correlated, and this is indicated by the null hypothesis (H_0), then the surveyed returns chain is not stable, and the hypothesis of the weak formula for market efficiency is accepted, and the conclusion is that the returns follow the random movement.

3.unit root test

In order to test the stability of time series (Stationary) or not, the modified Dickey-Fuller test is used (Augmented Dickey-Fuller Test), and its abbreviation (ADF) proposed by (Engle and Granger, 1987), which is one of the most important tests used to measure the stability of time series through Unit root hypothesis testing. The test is based on three models:

$$R_t = \alpha R_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots (1)$$
$$R_t = c + \alpha R_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots (2)$$
$$R_t = c + \beta t + \alpha R_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots (3)$$

Equation (1) expresses a model without a constant and no general trend, while equation (2) indicates a model with a constant and without a general trend, and equation (3) shows a model with a constant and a general trend.

Since:

R_t =Market index returns in period (t).

R_{t-1}=Market index returns in period (t-1).

c=Equation constant.

α=The slope of the autoregressive estimation coefficient.

ε_t=Residuals (random error).

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The modified Dicke-Fuller test (ADF) is based on the (t) test for the slope of the estimate coefficient in the autoregressive equation in order to test the following hypothesis:

nothingness hypothesis: (the series returns stable) H_0: $\alpha=0$

Alternative Hypothesis: (The chain of index returns is unstable) H_1: $\alpha<0$

If the nothingness hypothesis is accepted, which means that the series of market index returns are stable, and that its movement is a random movement, and thus it can be concluded that the financial market is efficient according to the weak formula.

Second: Hypothesis testing and discussion of results

1. descriptive statistics

Table (1) includes the descriptive statistics of the returns of the indicators of the financial markets of the research sample during the studied period, as well as the test of the normal distribution illustrated by the graphs (3), (4), (5) according to the Kolmogorov-Smirnov test to clarify the applicability of the distribution of special data The phenomenon studied with the curve of the normal distribution. Table (1) indicates that the average returns changes for the Iraq market index amounted to (0.334) with a standard deviation of (5.846). While the highest return value reached by the index was (37,920), which is a relatively high value, while the lowest value of returns changes reached (-21.490).
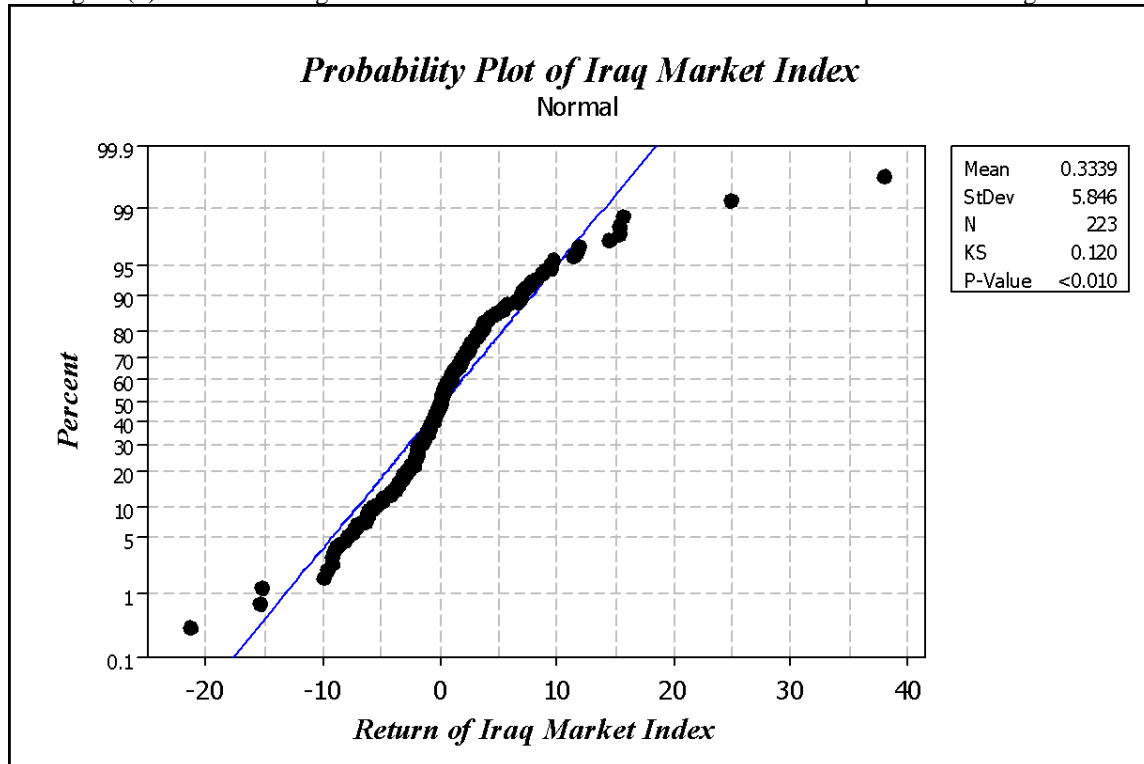
Looking at all the values mentioned in Table (1) related to the return of the Iraq market index, it is clear that the values do not follow a normal distribution and this is confirmed by the Kolmogorov-Smirnov test, as the value of (KS) was (0.120) at a significant level (P<0.010), and this What prompts the researcher to reject the alternative hypothesis and accept the null hypothesis, which stipulates that the returns changes for stock indices in the Iraqi market are not normally distributed. Figure (2) shows the good fit with the normal distribution of returns changes for the Iraq Stock Exchange Index.

Table (1) Descriptive statistics for the returns of the financial market indicators, the research sample during the period January 5, 2021 to December 1, 2021

pointer	Views	Arithmetic mean	standard deviation	Highest value	Lowest value
Iraq	223	0.334	5.846	37.920	-21.490
Kuwait	222	0.053	3.701	10.982	-12.541
Dubai	223	-0.568	2.550	10.600	-9.870

The table was prepared by the researcher based on computer outputs using the mintab program

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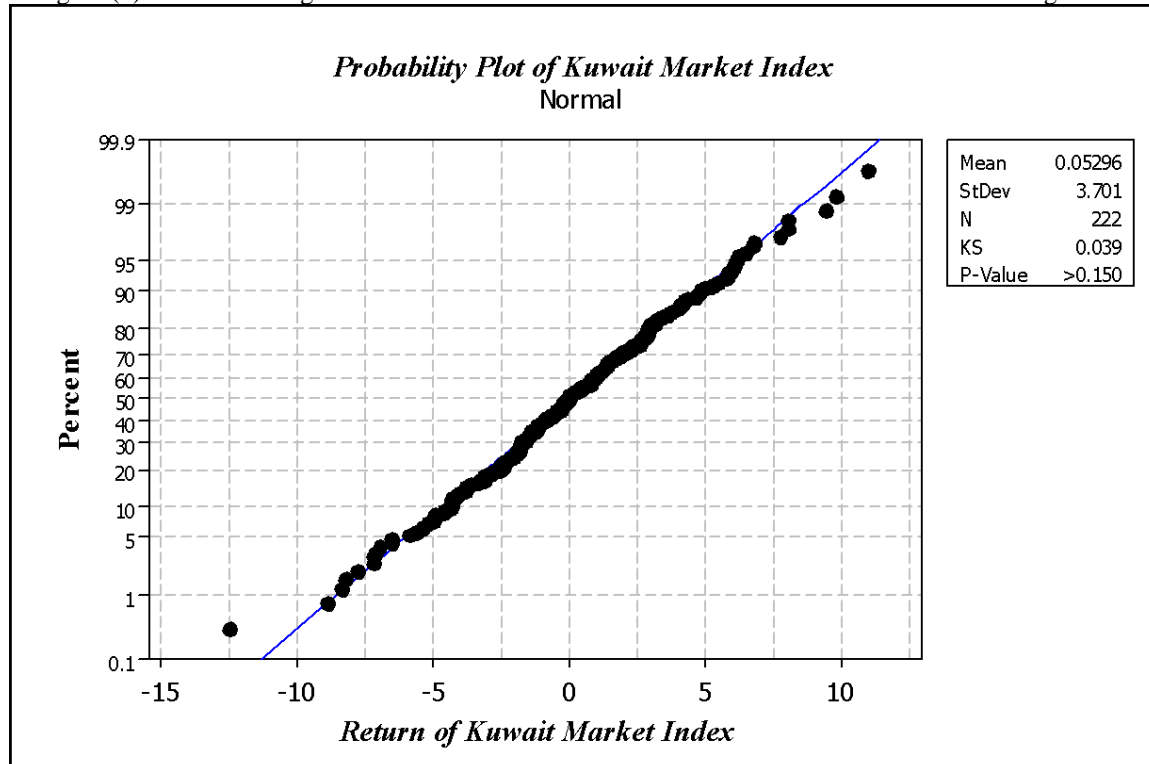
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Figure (2) Good matching with the normal distribution of returns for the Iraq Stock Exchange index

Source: Figure prepared by the researcher based on the returns of the Iraq Stock Exchange index

Table (1) shows that the average returns changes for the Kuwait market index amounted to (0.053) with a standard deviation of (3.701). While the highest value of the index's return reached (10.982), which is a relatively high value, while the lowest changes in returns reached (-12,541). Looking at all the values mentioned in Table (1) related to the Kuwait market index, it is clear that the changes in returns follow a normal distribution, and this is confirmed by the Kolmogorov-Smirnov test, where the value of (KS) was (0.039) at a significant level (P>0.150), and this What prompts the researcher to accept the alternative hypothesis and reject the null hypothesis, which stipulates that the changes in returns for stock price indices in the Kuwait market are not distributed naturally. Figure (3) shows the good matching with the normal distribution of return changes for the Kuwait Stock Exchange Index.

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Figure (3) Good matching with the normal distribution of returns for the Kuwait Stock Exchange index

Source: Figure prepared by the researcher based on the returns of the Kuwait Stock Exchange index

Table (1) shows that the average returns changes for the Dubai market index amounted to (-0.568) with a standard deviation of (2.550). While the highest value of the index's return reached (10.600), while the lowest changes in returns reached (-9,870). Looking at all the values mentioned in Table (1) related to the Dubai market index, it is clear that the changes in returns do not follow a normal distribution, and this is confirmed by the Kolmogorov-Smirnov test, where the value of (KS) was (0.084) at a significant level (P<0.010), This is what prompts the researcher to reject the alternative hypothesis and accept the null hypothesis, which stipulates that the returns changes for stock price indices in the Dubai market are not normally distributed. Figure (4) shows the good fit with the normal distribution of returns changes for the Dubai Stock Exchange index.

Figure (4) Good matching with the normal distribution of returns for the Dubai Stock Exchange index
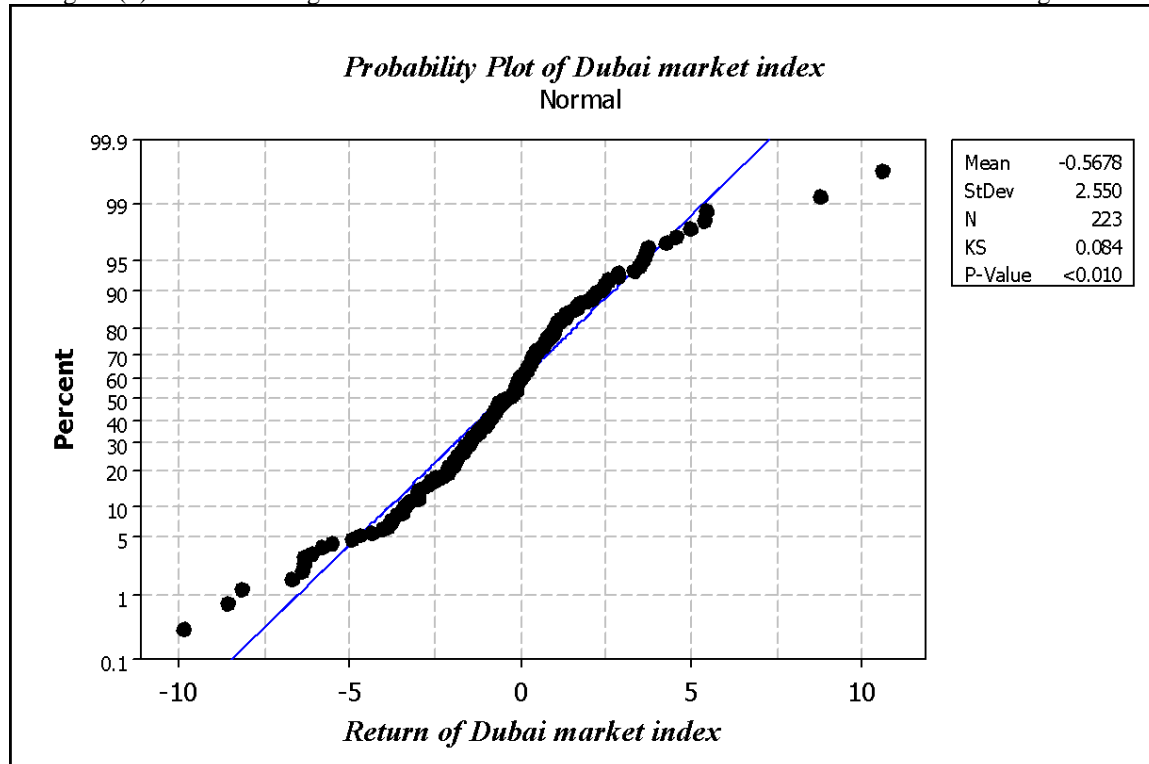
Source: Figure prepared by the researcher based on the returns of the Dubai Stock Exchange index

Through the previous results, it can be said that the studied observations of the indicators of the financial markets in the research sample were not distributed normally at a significant level (5%) with the exception of the returns of the Kuwait Stock Exchange index.

2. Sequential self-correlation test

Table (2) indicates the results of the sequential autocorrelation test taking five slow periods (5 Lags) periodic gaps. The coefficients of the correlation function for the returns of the financial market indicators in the research sample indicate that there is a positive autocorrelation in the returns of the indicators of the Iraq and Kuwait market in the first slowdown period, and then the correlation decreases to below zero in the second slowdown period with a zero value for the probabilistic value.

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Table (2) Sequential autocorrelation test results

Market Index	Lags	Autocorrelation value	Q-Stat	Prob. probability value
Iraq	1	0.261	15.355	0.000
Iraq	2	-0.014	15.401	0.000
Iraq	3	-0.050	15.965	0.001
Iraq	4	-0.107	18.573	0.001
Iraq	5	-0.096	20.691	0.001
Kuwait	1	-0.568	72.617	0.000
Kuwait	2	0.126	76.178	0.000
Kuwait	3	-0.080	77.626	0.000
Kuwait	4	0.023	77.742	0.000
Kuwait	5	0.018	77.817	0.000
Dubai	1	-0.198	8.8548	0.003
Dubai	2	0.076	10.175	0.006
Dubai	3	-0.120	13.467	0.004
Dubai	4	0.009	13.486	0.009
Dubai	5	-0.044	13.930	0.016

The table was prepared by the researcher based on computer outputs using the Eviews 12 program

Table (2) also shows that the values of the autocorrelation in the returns of the Dubai market index were negative, not equal to zero, and then the decrease of that correlation in the second slowdown period, and the re-rise of that correlation to negative autocorrelation in the third slowdown period, which indicates the instability of that correlation during the study period With a zero value of the second-order limit of the probability value, and therefore, that symmetric pattern for the indicators of Iraq, Kuwait and Dubai is a case similar to the hypothesis of market efficiency at the weak level, which leads the researcher to accept the null hypothesis which states that the serial correlation coefficients are equal to zero.

($H_{(0)}$: $P_k=0$) and rejecting the alternative hypothesis, which means that the returns, according to the observations of the studied indicators, move randomly, which means that the returns are not predictable in the short term.

3. unit root test

Tables (3), (4), (5) present, respectively, the results of the unit root test (stability) of the time series for the returns of the indicators of the financial markets, the research sample, which were tested without a constant, with a constant, with a constant and a general trend, and according to the Dickey Fuller test (ADF), and it appears from the tables that the daily returns chains for the price indices of the financial markets, the research sample, are stationery at a level of significance of 5%, in the Iraq, Kuwait and Dubai markets.

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Table (3) Unit root (ADF) test for returns of the Iraq Stock Exchange Index

Model	Counted value	tabular value at a morale level 5%	Prob. probable value
$R_t = \alpha R_{t-1} + \epsilon_t$	-11.344	-1.942	0.000
$R_t = c + \alpha R_{t-1} + \epsilon_t$	-11.350	-2.874	0.000
$R_t = c + \beta t + \alpha R_{t-1} + \epsilon_t$	-11.412	-3.430	0.000

The table was prepared by the researcher based on computer outputs using the Eviews 12 program

If the test statistic values in Tables (3), (4), (5) indicated greater than the critical tabular values at the 5% level of significance, then the null hypothesis of random movement was accepted, which states (the index returns series is stable) $H\_0: \alpha = 0$ And rejecting the alternative hypothesis, which means that the changes in the returns of the financial market indicators in the research sample are random and that these markets are efficient at the weak level, and this confirms the previous tests.

Table (4) Unit root (ADF) test for returns of A Kuwait Stock exchange

Model	Counted value	tabular value at a morale level 5%	Prob. Probable value
$R_t = \alpha R_{t-1} + \epsilon_t$	-10.510	-1.942	0.000
$R_t = c + \alpha R_{t-1} + \epsilon_t$	-10.523	-2.874	0.000
$R_t = c + \beta t + \alpha R_{t-1} + \epsilon_t$	-10.499	-3.430	0.000

The table was prepared by the researcher based on computer outputs using the Eviews 12 program

Table (5) Unit root (ADF) test of the returns of the Dubai stock market index

Model	Counted value	tabular value at a morale level 5	Prob. Probable value
$R_t = \alpha R_{t-1} + \epsilon_t$	-17.183	-1.942	0.000
$R_t = c + \alpha R_{t-1} + \epsilon_t$	-18.141	-2.874	0.000
$R_t = c + \beta t + \alpha R_{t-1} + \epsilon_t$	-18.142	-3.430	0.000

CONCLUSIONS AND RECOMMENDATIONS
CONCLUSIONS

1. The absolute belief in the theory of market efficiency may be the reason for non-random, predictable, and uncontrolled behavior, or there is a misplaced assumption about the rationality and experience of all dealers in the markets, or the existence of misconceptions sometimes that the information available in the market is all accurate, good and transparent and

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does not include even a small percentage of Misrepresentation or fraud, and then it may have had some negative impact on the efficiency and rationality of the market.

2. The results of the normal distribution tests showed that the studied observations were not distributed according to the bell curve, in addition to indicating the autocorrelation coefficients, which shows a decrease in the serial correlation of the returns of the indicators, which indicates that the returns changes follow the random movement.

3. The results of the unit root test (stability) indicated the time series of returns of the financial market price indices, the research sample, which was tested without a constant, with a constant, and with a constant and a general trend, and according to the Dickey Fuller test, that the series of daily returns for the financial market price indices the research sample is stable and compatible with the hypothesis The efficient market is at the weak level.

4. The results indicate that the returns of stock indices for the financial markets, the research sample, take a trend close to random, that is, the changes of returns for these indicators adopt a somewhat stable and predictable behavior, which makes these markets in the efficiency field within the weak level, and then the ability of the conscious investor to achieve unusual returns.

RECOMMENDATIONS

1. It is necessary to make more efforts in the field of research related to market efficiency because of its great role in raising the awareness of investors and financial analysts of the importance of the efficiency of the financial market within an analytical vision between the balance of the capital market through the pricing models of the capital asset and what it contains of a reciprocal relationship between return and risk that is based on efficiency The financial market, represented by its requirements of efficient pricing and operation, and focusing on the qualitative analysis approach embodied in the analysis and evaluation of the risk of financial information to avoid achieving exceptional returns that violate the conditions of efficiency and rationality of the financial market.

2. The researcher recommends the necessity of providing some requirements that guarantee the efficiency of the financial market, such as the efficiency of procedural and supervisory frameworks, and the provision of disclosure and transparency standards, which in turn contribute to enhancing the efficiency of the financial market, which mainly contribute to the distribution of private sector savings among the productive sectors in the national economy,

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and one of the most important channels Which provides the financing needs of joint stock companies at the lowest cost and with the least financing risk.

3. Recommending to the research sample markets the need to keep pace with developments in the advanced financial markets from modern technology in the transfer and provision of information, which reduces the cost of lack of information among investors, which encourages investors to buy shares at their real value or at a value close to it, and then the low rate of return required by investors Which leads to a decrease in the cost of equity and thus a rise in the efficiency of the financial market.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

1: Resarchers can conduct future research to link between the efficiency of financial markets and technical analysis indicators used to interpret the movements of financial market indicators.

2: The research suggests the need for the financial markets, through the financial experts working in them, to conduct the same analysis that was conducted in the current research and to use the same statistical tools that were used in the applied side in the research and to publish them periodically in financial newspapers and economic bulletins in the media.

3: The research also suggests, when searching for the efficiency of financial markets, to take into account directly the developments and competition between countries in all fields (political, economic, social, etc.), as well as the impact of other strategic commodity markets on the efficiency of financial markets.

REFERENCES

1.   Al-Muzahidiyah, Tawfiq Hamadeh, (2015), Random Characteristics of Stock Price Indicators and the Possibility of Predicting Returns in the Gulf Stock Markets, Al-Taawon Journal, Volume 29, Issue 88, pp. 41-94.

2.   Bailey Roy E., 2005, "The Economics of Financial Markets", Cambridge University Press, 1th Edition, New York.

3.   Brown J Stephen, (2020) " The Efficient Market Hypothesis, the Financial Analysts Journal, and the Professional Status of Investment Management", Financial Analysts Journal, Vol. 76 No 2.PP 5-14.

4.   Can Kadir, (2010), "Market Rationality: Efficient Market Hypothesis versus Market Anomalies", European Journal of Economic and Political Studies, Vol. 3, No. 2, pp. 23-38.

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Al-Hamdooni, E. K. F. (2023)
**The Relationship Between the Random Walk of the Returns of Financial Market Indices and Market Efficiency: an
Analytical Study of the Indicators of a Sample of Arab Financial Markets**

5.   Chitenderu T, Maredza A, Sibanda K., (2014) " The Random Walk Theory And Stock Prices: Evidence From Johannesburg Stock Exchange" , International Business & Economics Research Journal, Vol. 13 No 6.

6.   Damodaran Aswath, (2006), "Valuation Approaches and Metrics: A Survey of the Theory and Evidence", Working Paper, Stern School of Business.

7.   Davidson Paul, (2002), "Financial Markets, Money and the Real World", Edward Elgar Publishing Limited, Cheltenham, UK , Northampton, MA, USA.

8.   Davis Mark, (2006), "Louis Bachelier's Theory of Speculation: The Origins of Modern Finance", (Translator), Alison Etheridge, and Paul Samuelson, Princeton university press.

9.   Dimson E., and, Mussavian M., (1998), "A brief history of market efficiency" , European Financial Management, Vol. 4, No 1. pp. 91-105.

10.   Fama Eugene F., (1965), "The Behavior of Stock-Market Prices", The Journal of Business, Vol. 38, No. pp. 34-105.

11.   Fox Justin, (2009), "The Myth of the Rational Market: A History of Risk, Reward, and Delusion on Wall Street", Harper Business, New York.

12.   Gibson, George Rutledge, (1889), "The Stock Exchanges of London, Paris, and New York: A Comparison, New York": G. P. Putnam's Sons.

13.   Jin Wei S, Wei Z, Xu Jianhuan., (2021) " On the market failure of ''missing pioneers'', Journal of Development Economics, Vol. 152 .

14.   Jovanovic, F. (2009), "Le Modèle de Marché Aléatoire dans l'Economie Financière de 1863 à 1976", Revue d'Histoire des Sciences Humaines, No. 20 pp. 51-78.

15.   Kushwah S,V., Negi P., and, Sharma A, (2013), "The Random Character of Stock Market Prices : A Study 0f Indian Stock Exchange", Integral Review- A Journal of Management, Vol. 6 No 1, pp. 24 – 33.

16.   Nicholas, Aaron., (2022) " Invisible Hand, invisible morals: An experiment", Journal of Economic Behavior & Organization, Vol. 197 pp. 395–418.

17.   Randall, Alan. (1983), "The Problem of Market Failure." Natural Resources Journal, Vol. 23, pp. 131-148.

18.   Raymond de Roover, (1958), "The Concept of the Just Price: Theory and Economic Policy", Journal of Economic History, Vol. 18, No. 4, pp. 418-434.

19.   Roberts Harry V., (1959), "Stock-Market Patterns and Financial Analysis: Methodological Suggestions", Journal of Finance, Vol. 14 No 1. pp. 1–10.

20.   Sewell Martin, (2011), "History of the Efficient Market Hypothesis", UCL Research Note RN/11/04, University College London.

21.   Shefrin H., And, Statman M, (2011), "Behavioral Finance in the Financial Crisis: Market Efficiency, Minsky, and Keynes", Working Paper, Santa Clara University.

Intern. Journal of Profess. Bus. Review. | Miami, v. 8 | n. 3 | p. 01-28 | e0663 | 2023.

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22.	Singh J, Babshetti V, Shivaprasad H N., (2021) " Efficient Market Hypothesis to Behavioral Finance: A Review of Rationality to Irrationality", Materials Today: Proceedings, DOI10.1016/j.matpr.2021.03.318.

23.	Stabile, Donald R., (2006) "Forerunners of Modern Financial Economics: A Random Walk in the History of Economic Thought, 1900-1950(a review)", Financial Analysts Journal, Vol. 6 No 1.

24.	Muhammad, Sam Saad, (2014), "Random price movement and the level of financial market efficiency: the case of the Amman Stock Exchange," Dirasat Journal for Administrative Sciences, Vol. 41, No. 2, pp. 417-423.