

The Efficient Market Hypothesis in Developing Countries: Indonesia

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Abstract:

By keeping into account all the historic and progressive details of the proficiency marketplace theory, in this paper it will be a rapid assessment on the indication of the refusal of the theory based on formerly done readings and based on own examinations. The chief objective of the paper is about the determinations done on stock prices. It is often believed that a superior quality predictableness of the stock charges has a gigantic part in the security market and in the whole macroeconomic policies of a country. The predictability and efficiency accustomed by the competence market theories are desecrated in stock market, by accentuating the statistic that the upcoming stock prices and returns are not estimated entirely by the previous years' data. In this paper, it is attempted to rule out other representations done for revenues and charges securities in Indonesia to ascertain the refusal of the theory, that in fact it is involved also in some other developing nations. The exemplary of the stock charges and the other estimators by using the root test examine the weak form of the proficiency market theory and authorize the refusal of the theory. With the assistance of the Augmented Dickey-Fuller test and the Granger test of causality, it can be understood that market proficiency cannot be fully liable and comprehensible, because it is a concern of the financial performance.

Key Words: *Augmented Dickey Fuller Test, Efficient Market Hypothesis, Indonesia, Stock Markets*

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Introduction

The emerging markets newly are exceeding vast social, economic, political and institutional deviations. Financial progress is connected specially with investment flows, vocation and economic market expansions. All the market members are functioning out together in an attempt to build an intercontinental investment market economy where their evolving marketplace can assimilate in the global financial events. Performance of the stock values and also the variabilities on interchange amount give the hint to the stockholders to have certain info regarding the marketplace. This is the fact where Fama (1970) established the notion of the Capital Market Efficiency which depends on the operation of the data obtainable for the balanced prospects. The competence of the marketplace is assumed to be accomplished whenever the entire marketplace spreads all the info that is required to envisage the upcoming scenario for the fresh capitals. He produced this impression in a practical proof of the association amongst the advancing degree and the commercial degree into an operative method anywhere the advancing degree is assumed to be equivalent to the estimated advert degree and the hazard quality of the delivered safety. It is because of this impression additional experimental studies are prepared specifically on stock marketplaces to show the consequence of charges behavior on widely obtainable data. The theory is presumed to be a dual affair as it is understood that the causes that are supposing the assessment of the values in the next age are balanced in the sense that they do create no methodical anticipating miscalculations and they have adequate data to identify the projected market value symmetry and symmetry revenues. The values of the possessions are believed to be a haphazard gait adjustable. The accessibility of the data and the reasonableness of the causes split the theory into three methods: weak, semi-strong and strong competent systems (Lo and MacKinlay, 1988). This arrangement is done to accentuate the belief where the concept is broken down, which is the point that the market has probable info to be simulated into the securities' standards. Most of the trainings done formerly have been tested due to the first two forms of the hypotheses due to the dissemination of the reserved info is so tough and confidentially protected and there it is supposed that the portion of data is costless and the marketplace should be flawlessly modest so that the values advance all the probability to seizure spontaneously all the marketplace data.

An attentive feature that gathered my consideration (being one of the motives why it is I chose Indonesia as a sample in this paper) is that there occur three stock markets: Surabaya, Indonesia and Jakarta Stock market. Every single one of them looks to follow proficient approaches for stockholders and other economical means in order to deliver to the market a lucrative and protected atmosphere. It is because of the financial issues, it is problematic to have an entirely interactive and proficient stock market. Administration is attempting to discover effective strategies to be applied into the finance so that the members can specify themselves to the targets. The Jakarta Stock Market is turning out to be one of the finest performing marketplaces amongst the Asian nations. Though the marketplaces are developing towards economical globalization, there are still some discrepancies between the organizational deviations of the marketplace and the performance of the people notwithstanding that they have three diverse markets for bearing their inclinations from one market to another. But again there are a number of operational threats that link up the corporations that capitalize in the marketplace like as liquidity risk, credit risk, exchange rate risk, market risk etc. There are actual enhancements in the stock market that outclass the stockholders' atmosphere, as enhancements in the assurance of the business sequence and also in the stockholders. The Jakarta Market attempts to outsource the community, the desired sum of the stocks so that they can attempt to accomplish the requisite revenues. It implements micro and macro-economic situations so that the buyers and the sellers of the retreats can intermingle easily with one another. The local environment of the investment market, exclusively the political situations, it has negatively impacted in the global liberalization of the stock market. In most of the developing nations, the effective market theory is forbidden.

Methodology

The EMH postulates the statistic that the stock values replicate all the information given visibly, therefore the Indonesian marketplace by being so well performing entity may agree to this testimonial. The statistics utilized on this analysis contains all the statistics of the stock marketplaces for the business-related firms. Maximum data brought in use are monthly collected from Datastream. On the basis of a few other studies made, there are

calculated grades as per the customary EMH procedure. The elementary econometric recession is verified over the logarithms of stock charges of a definite time and one preceding time. $P_t = \mu + P_{t-1} + \varepsilon_t$, for $t=1, \dots, T$ where P_t and P_{t-1} are the logarithm of the values of the stocks of today and tomorrow correspondingly. And the void hypothesis is: $H_0: \mu=0$ where the $\Delta P = \text{composition of returns} = \mu + \varepsilon$. It is used the Augmented Dickey Fuller checks to scrutinize the stability of the values. The examination that is performed here creates the detail that the values are in the marketplace as a complete and also depicts the marketplace revenue percentage unpredictability over a specific time-lapse. If it is checked beyond the time, a wide spectrum of the data studies shall be noted to regulate the track of the belongings charges. Eugene Fama (1970) was the first economist who developed the impression of the market competency theory and he also examined the rudimentary econometric relapsing structure. He has emphasized strongly the randomness in the price movements and the data collected in an arbitrage form, where he calculated the notion of the combined theory, under which the coming analyses were derived. First the approach shall be examined, if the altercation charges are an arbitrary pace and second condition, if the upcoming information are an equitable forecaster of the forthcoming charges taking also into consideration the returns. There are a lot of econometric practices that put an effort to exam the theory and for sure that they all have the same variables adopted in different manner (Guidi, Gupta and Maheshwari, 2011). In the previous researches, studies are treated two kinds of financial markets: the stock market and the exchange rate market. The basic regression used in the exchange rate market is: $\Delta s_{t+k} = \alpha + \beta f_{t+k} + u_{t+k}$.

According to this regression developed by Fama (1970), Dickey-Fuller (1981), Engle and Granger (1987), Phillips and Perron (1988), Johansen (1991) there are uses to assess the investigation by putting into trial, the manner and point of incorporation of the variables and additionally by checking the moving-average inaccuracies. For an example, the elementary ideology behind these assessments is concealed behind the orthogonality concept where the relation of the info presented and the prediction is demonstrated. On the basis of this system, the values of the possessions are scrutinized, in a straightforward manner. Hansen and Hodrick (1983), Giovannini and Jorion (1987), Chan, Gup and Pan (1992) have oppressed the principal

possession valuing structure into the econometric equation in order to evaluate the riskiness of safety stocks. They all anticipated that the turnover in the long wait shall be at its usual standard in spite of the small span variabilities, as they are triggered because of a gentle adaptation of the new market information. After them many other regression models are been used to test the hypothesis of the efficiency. Dickinson and Muragu (1994) espoused the very freshly utilized means of self-relapsing provisional heteroscedasticity model to depict the standard of the stock-returns. $E_t[P_{t+1}/S_t] = P_t + \mu$ is the representation of the fundamental definition of the EHM where the expectation of the upcoming values providing all the appropriate data S_t will be equal to the today's price and a deterministic regular variable change μ . In base of this concept, the linear models of regression dominates the financial marketplace by inquiring the price changes. The ARCH linear model have some autoregressive structure of their circulation. Additionally people collectively began paying extra consideration to General ARCH as their structures consist of more than one lag: $h_{t+1} = \alpha_0 + \alpha_1 u_t^2 + \beta_1 h_t = \alpha_0 + (\alpha_1 + \beta_1) h_t + \alpha_1 (u_t^2 - h_t)$. In which, it is assumed that the shock unpredictability is trying to get replicated in the next period as well. Nevertheless, several studies highlight that stock marketplace unpredictability is greater while the recessions than during expansions, while mean that returns are lower during recessions (Kim and Shamsuddin, 2008). For instance, if there appears to be GARCH (1,1) with $\alpha_1 + \beta_1 = 1$ which has a unit self-repulsive origin which indicates that current day's unpredictability is going to influence predictions of unpredictability into the indeterminate future. Moreover the term "volatility clustering" seemed in the ARCH procedures highlight the information that the revenues are very restricted with the phase variations, so also the worth unpredictability are replicated straight in the upcoming time period. The greater the budget is assimilated to the universal system, the greater are the effects of the macroeconomic variables into the marketplace of that country. Above and beyond this it can be say that the return of the stocks beside its prices depends also from the exchange rate fluctuations, inflation rates, interest rates, prices of the bonds and many other macroeconomic variables. Another model is the linear Granger causality test, where there is a nonlinear parametric causality test based on the nonexistent prognostic control for yt of insulated standards of an alternative variable xt that is characterized by an additive

smooth transition component as in the additive smooth transition regression model: $\hat{\eta}_t = \beta_0' g_t + \sum_{j=1}^q \delta_j x_{t-j} + \sum_{i=1}^q \sum_{j=1}^q \varphi_{ij} x_{t-i} x_{t-j} + \sum_{j=1}^q \psi_j x_{t-j}^3$. The hypothesis “ x_t doesn't Granger cause y_t ” can be written as $H_0: \delta \mathbf{1} = \mathbf{0}, \varphi \mathbf{1} = \mathbf{0}$ and $\Psi \mathbf{j} = \mathbf{0}$. There are many other regression equations and models used to treat this topic, but in this study, it is tried to give the most important one. As a brief overview, all the approaches calculate the random walk model for the return distribution.

With the help of the outcomes of the examination, it can be perceived that the null and void hypothesis of nonlinearity is rejected completely. The current prices are incapable of reflecting to the community the information needed to predict the tomorrow ones, signifying that the marketplace is incompetent. Such kind of examination demonstrates exclusively the internal influence, which the stock market obtains, but aren't bringing into concern the various other related commercial variables.

Results

Table 1. Regression results.

	Coefficient	Std. Error	z-Statistic	Prob.
C	0.0435764935848	0.0167721497886	2.59814598211	0.00937286374323
LOGX	0.992780522113	0.00274149597436	362.130942886	0
Variance Equation				
C	8.95600570563e-06	1.69972917402e-06	5.26907806404	1.37110649501e-07
ARCH(1)	0.149807018985	0.0580656301223	2.57996027374	0.0098811681507
GARCH(1)	0.600545016307	0.0738663242009	8.13015975553	4.4408920985e-16
R-squared	0.995673121977	Mean dependent var		6.1214737516
Adjusted R-squared	0.995639449775	S.D. dependent var		0.0826286734711
S.E. of regression	0.00545634003197	Akaike info criterion		-7.61638691007
Sum squared resid	0.0153026263239	Schwarz criterion		-7.57542444491
Log likelihood	1981.45240316	F-statistic		29569.5870099
Durbin-Watson stat	1.78604647358	Prob(F-statistic)		0

Source: Author calculations.

As mentioned previously, the stock marketplace must be assumed as a discrete organization where the partakers perform without even observing the marketplace externally. The values of security funds don't act apart from the other micro and macro variables. The variations of the macro pointers both the expansion of the finances of Indonesia but also the stock values. The depositors when

predict the upcoming atmosphere considers into account the current rates and additionally even attempt to seize all the information that supplementary variables provides them. Maximum depositors are fairly very subtle towards the marketplace gossips, exclusively from the ones upstretched from administrative turbulences. Since the rates of the security funds and their revenue

percentage are not unaccompanied in the marketplace, it is determined to check a few variables to demonstrate their specific fluxes and unpredictability. The single root check displays in an apt means the deviances of the variables of the economic system. The Augmented Dickey Fuller test that is used is attained by: $\Delta X_t = \lambda_0 + \lambda_1 X_t$

$+ \lambda_2 T + \sum_{i=1}^p \psi_i \Delta X_{t-i} + \varepsilon_t$, where $\lambda_0, \lambda_1, \lambda_2$ are the coefficients that are assessed and ε is the white noise error term. According to the formulary technique, it is emphasized the detail that ADF system is utilized to assess the variables in the occurrence of a deterministic drift and a constant term.

Table 2. The results of the Augmented Dickey Fuller Test.

Variables	With intercept/ no trend	No intercept/ with trend
turnover	-2.851876**	-2.706144*
RER	1.137613	-1.641691*
interest rate spread	-2.407386*	-2.388681*
real interest rate	-2.138996*	-2.437125*
inflation	-2.315566*	-2.233385*
Δ turnover	-3.473887***	-3.312033**
Δ RER	-2.309938*	-3.386031**
Δ interest rate spread	-4.58942	-4.585493***
Δ real interest rate	-4.425071	-4.233533***
Δ inflation	-4.058288	-3.928913***

Source: Author calculations.

The acute assessments for 1%, 5% and 10 % level of importance for zero tendency variant are -3.9228, -3.0659, -2.6745 correspondingly and acute assessments for 1%, 5% and 10 % levels of importance with tendency variant are -4.6712, -3.7347 and -3.3086 correspondingly. A greater extent of these values are noteworthy but it still should favor the variables with no interrupt and tendency. As it is clearly noticeable from the table above, it isn't just the variable (revenue amount) that discards the single root test but, even additionally nearly all the supplementary variables discard the theories. This states that not just the variable (turnover) is being inconsistent throughout the time but also the finance as a complete entity, does not monitor a fixed route due to the non-linearity, which is a characteristic that links up the marketplaces in

common. The imbalanced distribution of the financial criterions in Indonesia misrepresents the expectable stock engagements. The Indonesian market couldn't replicate all the data among the values or yields of the stocks since the ineffectiveness of the markets comes from the instability of the economy in general. The macroeconomic agents fluctuates over time which also changes the prices of the securities since the stock market is a dependent institution with the economy as a whole. The parameters of the economy highlight the ways of dealing with investments among which the investors can evaluate the indexes of the markets. Despite the fact that the Jakarta Stock Market has make huge progress in the last years it doesn't give the strength to attribute all the relevant information to investors to examine the tomorrow

prices by just looking at today ones. Traders do not only diversify their portfolio among this three stock Indonesian markets but also they used other fields of the economy, even abroad. Thus the market can experience with some stimulus coming from outside that distort the feature of a “closed and isolated” stock market. Indonesia has an inflation targeted policy. Although the inflation should move on the same track, it does not have a unique linear behavior by indicating that the economy has in general abundance resources. Since the major part of the shares is owned by the foreign investors, the exchange rate and the inflation rate patterns should also be considered. The market in Indonesia is still in a transition period because it is trying to cope with the global standards. The new standardization period is comprised of some new behavior investor perspectives where to reach the needed information it has become more difficult because the market policies have been not successfully. The companies not only have to collect info about the stock market but also about for the functioning of the economy.

Conclusions

The Efficient Market Hypothesis has been studied for more than a couple of decades and on its theoretic basis, it is sustained and encouraged by a large number of Economists but in exercise, it is taken as an incorrect finding. Particularly, the stock marketplace has no enticement to agree to this theory as the rates fluctuate over the time without taking into account the data that is assumed to be engrossed by the members. This paper attempted to accomplish the indication that the EMH possesses in the stock marketplace exclusively within the developing nations. In the very initial phase of this article, it is elucidated about the efficient market hypothesis and its methodic approach. Then after on the basis of the previous experimental examinations, it is attempted to create certain assessments to demonstrate the character, which this hypothesis holds on the stocks' market. Finally, it has established an experimental learning over the Indonesian market. As per the complete market research handled and accomplished, the fragile usage of the theory (that the marketplace reproduces a bunch of data accessible to the stockholders to forecast upcoming values), is sturdily denied. The denial conditions that the stock marketplaces of the emerging nations are incompetent, which means that the charges vacillate actively without possessing any distinctive fashion. The typically used approaches were the unit root test

(particularly that of the Augmented Dickey Fuller assessment) that tries to inspect the importance of the standard of the variables for the stock marketplaces (where the most vital check was to verify the unpredictability of the values and its revenues). The earnings of security funds and its charges did not track a moveable fashion. They diverge from the familiarity, so their dissemination is desecrated and they are interrelated successively with one another. The situation of stock marketplace that the emerging nations delivers to the stockholders isn't so dependable due to the uncertainty of the financial condition that these nations have. The poor functioning of the supervisory organizations for the stock marketplaces let into the info extended progressively conflicting from its theme. The financial and as well as the governmental strategy expansions in the emerging nations either close or open fresh doorways for venture prospects. But later on, by observing the retroactive statistics of the stock marketplaces, it was found that they are vastly misleading because of the absence of technology (because of which the data it is not communicated wholly) and organizational associations. On the other hands, in the last years the technological advancements have been occurred but still the prices of securities indexes have not pursue a normality path. The volatility of the prices happened due to the emerging of the markets in the global financial system has make the investors to deal more with the foreign exchange regimes which make the entrepreneurs suspecting and being afraid to react quickly to the market. The relevant information in the market are not so reliable. Moreover the crucial aim of the investors is to maximize their profits so they do not care too much to transmit their acknowledgement to the public; moreover they try to find other illegal ways to increase their earnings. Thus the market by itself cannot adjust the set of the information available to the public because, by opposing the EMH, the stock market is not isolated from the economy as a whole. The inconsistency and inefficiency of the stock market due to macro and micro economic effects and due to the non-asymmetric behavior of the people make the Efficient Market Hypothesis be strongly rejected. To conclude in this paper it is emphasized the fact that the prices of today are not able to reflect all the information that is available to the public for evaluating or predicting the prices for tomorrow. Thus the efficient market hypothesis is strongly rejected especially for the stock market in the developing countries.



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