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Does The Efficient Market Theory In The Weak Form Exist? Evidence From Indonesia

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Abstract

In the weak-form market efficiency theory, investors cannot predict the movement of all prices because of randomness. This circumstance happens because of a quick market reaction to new information. Conversely, suppose the market is not efficient in this shape; in that case, the investors can obtain an abnormal return. One of the reasons is the thin market, where many inactive stocks to be traded are available. Based on these issues, this research intends to examine this theory by employing runs testing on the daily returns of the Indonesia Composite Index (ICI) between January 2014 and December 2018 for each year and a whole. Once performing this test, this research demonstrates that the daily returns of the ICI are random for both situations. By denoting these facts, this research concludes that the capital market in Indonesia is efficient in a weak form and experiences a decrease in the thin level, reflected by the escalation in trading frequency, volume, and value, as well as the number of dynamic shares transacted. This research suggests that investors without sufficient information should utilize the service of the securities analysts to select the stocks they buy and sell to get the capital gain.

Keywords – an efficient market in the weak form; market index return; runs test; thin market

Abstrak

Dalam teori pasar efisien bentuk lemah, investor tidak mampu memprediksi pergerakan semua harga karena adanya keacakan. Kondisi ini terjadi karena pasar bereaksi secara cepat atas informasi baru. Sebaliknya, jika pasar tidak efisien dalam bentuk ini, investor dapat memperoleh pengembalian yang tidak normal. Salah satu alasannya yaitu pasar dengan tingkat perdagangann yang tipis, dimana terdapat banyak saham yang tidak aktif diperdagangkan. Berdasarkan isu ini, studi ini berupaya untuk menguji teori ini dengan memakai uji *runs* pada pengembalian indeks harga saham gabungan harian dari Januari 2014 sampai Desember 2018, baik untuk setiap tahun maupun keseluruhan tahun. Dengan mengacu pada fakta ini, maka penelitian ini menyimpulkan bahwa pasar modal di Indonesia bersifat efisien dalam bentuk lemah dan terjadi penurunan tingkat ketipisan perdagangan di pasar modal, yang diperlihatkan oleh adanya peningkatan frekuensi, volume, dan nilai perdagangan, maupun jumlah saham yang aktif ditransaksikan.

Kata kunci – pasar efisien bentuk lemah; pengembalian indeks pasar; uji larian; pasar dengan perdagangan tipis

I. INTRODUCTION

A magnetism for investors with a short-term orientation to transact the stocks in the capital market is a positive change in prices (Sugiarto, 2009). Furthermore, they can technically predict this change by utilizing chart-based market indicators (Samsul, 2015). This analysis properly works when the market is inefficient in the weak form (Sunariyah, 2011), reflected by the foreseeable market index movement (Al-Jafari, 2011). Also, this situation is confirmed by Al-Jafari (2011) with the Kuwait data; Haroon (2012) with Pakistan data; Phan and

Zhou (2014) with the Vietnam data; Khan, Ikram, and Mehtab (2011), Ayyappan, Nagarajan, Sakthivadivel, and Prabhakaran (2013) and Tripathy (2013) with the India data; Miah and Banik (2013) with the Bangladesh data; Rizkianto and Surya (2014) with the Indonesia data; Angelovska (2018) with the Macedonia data; as well as Ferando and Gunasekara (2018) with the Colombia data.

Also, the inefficient capital market in the weak form gets caused by thin trading (Angelovska, 2018), mirrored by many stocks inactively traded (Hartono, 2017); hence, the volume transaction in the market becomes small (Barnes, 1986). In this situation, the large traders are accessible to manipulating the share marketplace to reach abnormal returns by benefiting new information (Barnes, 1986). Furthermore, if the market is not efficient in a weak form, the anomaly will happen. For example is the weekend effect (Poshakwale, 1996; Yong & Ibrahim, 1999; Cahyaningdyah, 2005; Hui, 2005; Rahman, 2009; Cahyaningdyah & Faidah, 2017), and the January effect, where the return of January is the largest among that of other months (Yoga, 2010; Deyshapriya, 2014; Gouider, Kaddour, & Hmaid, 2015).

Unfortunately, the concept of the inefficient market in the weak form is still debatable. This condition gets confirmed by some researchers supporting the perspective of the weak-form efficiency market by stating the market index movement follows a random walk (Fawson, Glover, Fang, & Chang, 1996; Tambotoh & Sunarto, 2001; Capobianco, Cister, & Maceió, 2002; Asiri, 2008; Munir & Mansur, 2009; Ajao & Osayuwu, 2012; Sheefeni, 2015; Andrianto & Mirza, 2016; Kiliç & Buğan, 2016). By considering two different points of view and their supporting evidence, this research proves the efficient market theory in the weak form by the return of the market index in Indonesia from 2014 to 2018. It explains some indicators related to the thin market-level issue.

II.   LITERATURE REVIEW

The market efficiency in weak form exists when all of the current stock prices reflect historical information (Fama, 1970). In this market, the new info will immediately evaluate all stock prices; therefore, investors cannot use this information to take the abnormal return regularly (Hanafi, 2017) and historical prices to make a prediction (Hartono, 2017). This condition occurs because of the competition among the smart securities analysts in the market to create a fair valuation on the stocks (Husnan, 2015). Furthermore, Fawson et al. (1996) effectively prove this market efficiency by demonstrating the monthly market index return in Taiwan from January 1967 to December 1993 is unpredictable. Similarly, this evidence is also confirmed by Tambotoh & Sunarto (2001) after employing the daily return of the Jakarta Stock Exchange composite index from June 1995 to July 1997.

By utilizing the daily market return of the Sao Paulo stock exchange composite index from January 1968 to December 2001, the study of Capobianco et al. (2002) infers that the daily return is not foreseeable, confirming the market efficiency in the weak shape. This evidence gets acknowledged by Asiri (2008) when studying the everyday stock price of the firms listed on the Bahrain stock market from June 1st, 1990, to December 31st, 2000. In their research applying the Kuala Lumpur composite index between January 1980 and August 2008, Munir and Mansur (2009) summarize that the market index return is random. After examining the change in the monthly all share index in the Nigeria stock exchange from 2001 until 2010, Ajao & Osayuwu (2012) prove this change is not projected.

Sheefeni (2015) attempts to verify the all-share index return in monthly data in Namibia from 1997 until 2012. After testing the associated data, this study confirms the weak-shape market efficiency. Similarly, Andrianto and Mirza (2016) validate this proof once investigating the daily return of stocks forming the Kompas 100, LQ45, and Islamic Jakarta indexes from 2013 to 2014. In their investigation on Istanbul Stock Exchange (ISE) 30, ISE50, ISE100, and ISE Composite indices between January 2nd, 2003 and September 30th, 2015, Kiliç and Buğan (2016) report that all of their return moves randomly. By mentioning the efficient market theory in the weak shape and the relevant study evidence, hypothesis one offered is in this way:

H1: The movement of the market index follows a random walk.

III. RESEARCH METHODS

A. *The design of the study*

This study adopts a quantitative design. According to Sugiyono (2012), the study with this design inspects the previously formulated hypothesis, where the type is descriptive. As explained by Hartono (2012), this hypothesis declares the existence of a single variable.

B. *The operational definition of the research variable*

By referring to the explanation of Hartono (2012), this research only employs one variable. According to Tambotoh and Sunarto (2001), Munir and Mansur (2009), Sheefeni (2015), and Kiliç and Buğan (2016), market index return is the relevant variable in the efficient market in the weak shape examination. The derivation of this variable into indicators, furthermore, can be looked at in Table 1.

Table 1. The operational definition of research variable

Variable	Indicator	Scale
Market index return	Daily relative Indonesia composite index return	Ratio

*Source : Tambotoh and Sunarto (2001), Munir and Mansur (2009), Sheefeni (2015), and Kiliç and Buğan (2016)

C. *The method of data collection*

The study counts on the secondary data; therefore, according to Hartono (2012), archival is the proper method to collect the data. Furthermore, we download the daily market index between January 2014 and December 2018 from finance.yahoo.com

D. *The statistical method of analyzing data*

The statistical test to examine the efficient market theory is the runs test. By alluding to Ghozali (2016), the runs test is suitable for proving the randomness of the data. Additionally, the runs test is a non-parametric statistical test (Al-Jafari, 2011; Ayyappan et al., 2013; Tripathy, 2013; Phan & Zhou, 2014). The non-parametric statistical analysis does not need the normality assumption (Hartono, 2012). The first step to perform the statistical test is by formulating the null hypothesis (H_0) and alternative hypothesis (Ha) as follows.

H_0: The movement of the market index return is random.

Ha: The movement of the market index return is not random.

Then, we set the significance level (α) of 5% to test the null hypothesis. After that, we calculate an asymptotic significance (2-tailed) of Z-statistic by IBM SPSS 19. Next, the comparison between the two of them become the final step to prove the null hypothesis based on this rule:

- If the asymptotic significance (2-tailed) is greater than or the same as 5%, the null hypothesis needs to accept.
- If the asymptotic significance (2-tailed) is less than 5%, the null hypothesis needs to reject.

IV. RESULT AND DISCUSSION

This section contains the following information: the descriptive statistics (see point a), the test result of runs and hypothesis (see point b), and discussion (see point c)

A. *Descriptive statistics*

Descriptive statistics are helpful to describe the collected data related to the research variable (Hartono, 2012). The intended statistics in Table 2 contain the number of trading days (N), the property of the relative daily return of the market index (MI): mean, the standard deviation, and maximum and minimum.

Table 2. The Result of Descriptive Statistics of Relative Daily Return of Market Index

Year	N	Mean	Std. Deviation	Maximum	Minimum
2014-2018	1209	1.0003	0.0090	1.0455	0.9599
2014	242	1.0009	0.0085	1.0323	0.9684
2015	244	0.9995	0.0109	1.0455	0.9603
2016	246	1.0006	0.0088	1.0285	0.9599
2017	238	1.0008	0.0053	1.0259	0.9820
2018	240	0.9999	0.0103	1.0267	0.9624

Generally, the number of full trading days from 2014 to 2018 is 1209. Moreover, the average, standard deviation, maximum, and minimum of the relative daily market index return are 1.0003, 0.0090, 1.0455, and 0.9599, respectively. The mean and the maximum of 1.0003 and 1.0455 points out a positive return. However, a minimum of 0.95994 shows a negative return. Precisely, 1209 trading days consists of 242 in 2014, 244 in 2015, 246 in 2016, 238 in 2017, and 240 in 2018 with the additional descriptions:

- The mean for the year 2014, 2015, 2015, 2017, and 2018 is 1.0009, 0.9995, 1.0006, 1.0008, and 0.9999, individually.
- The standard deviation for the year 2014, 2015, 2015, 2017, and 2018 is 0.0085, 0.0109, 0.0088, 0.0053, and 0.0103, singly.
- The maximum value for the year 2014, 2015, 2015, 2017, and 2018 is 1.0323, 1.0455, 1.0285, 1.0259, and 1.0267, one-to-one.
- The minimum value for the year 2014, 2015, 2015, 2017, and 2018 is 0.9684, 0.9603, 0.9599, 0.9820, and 0.9624, separately.

B. The test result of the runs and hypothesis

Table 3 displays the test result of runs based on the mean performed by IBM SPSS 19, where the asymptotic significance (2-tailed) of Z-statistic for RR from 2014 until 2018 is 0.656, exceeding α of 5%. This situation is similar to that of 2014, 2015, 2017, and 2018, where these significance values are 0.338, 0.879, 0.452, 0.992, and 0.974. By these proofs, we accept the null hypothesis declaring that the movement of the market index follows a random walk.

Table 3. The Result of Runs Test on Market Index Return

Description	RR for all years (2014-2018)	Relative return (RR) for the years:				
		2014	2015	2016	2017	2018
Test Value: Mean of RR	1.0003	1.0009	0.9995	1.0006	1.0008	0.9999
Cases < Test Value	568	114	112	111	122	114
Cases ≥ Test Value	641	128	132	135	116	125
Total Cases (N)	1209	242	244	246	238	239
Number of Runs	611	129	121	117	120	120
Z-statistic	0.445	0.957	-0.152	-0.752	0.010	-0.032
Asymptotic Significance (2-tailed)	0.656	0.338	0.879	0.452	0.992	0.974

C. Discussion

The statistical conclusion related to the hypothesis test shows that the market index return randomly moves. That means that the capital market of Indonesia is already efficient in the weak form between 2014 and 2018. This situation happens because of the augmentation of market liquidity (Khajar, 2012). It refers to how active the shares get traded, measured by trading volume, frequency, and value as the proxy, as seen in Table 4:

- The trading volume of shares in 2018 is 2,536,279 million. The value gets dramatically augmented from 1,327,016 million in 2014; therefore, the rise is 91.13%

- The trading frequency of shares upsurges from 51,458 thousand in 2014 to 92,833 thousand in 2018; thus, the growth of 80.41% takes place.
- The trading value of shares improve from IDR1,453,392 billion in 2014 to IDR 2,040,086 billion in 2019; hence, the uplift of 40.37% ensues.

Table 4. Trading Volume, Frequency, and Value of Shares in the Indonesia Capital Market 2014 - 2018

Year	2014	2015	2016	2017	2018
The trading volume of shares (million shares)	1,327,016	1,446,314	1,925,420	2,844,846	2,536,279
The trading frequency of shares (the thousand times)	51,458	54,066	64,975	74,371	92,833
The trading value of shares (billion IDR)	1,453,392	1,406,362	1,844,588	1,809,592	2,040,086

Source: The Indonesia Stock Exchange Statistical Highlight of IDX Fact Book 2019

Besides the three measurements mentioned previously, we utilize the increasing number of dynamic shares to prove that the level of the thin market goes down (see Table 5). From Table 5, it gets informed that total vigorous stocks escalate from 499 in the year 2014 to 615 in the year 2018; it means that the growth of 23.25% happens.

Table 5. The Number of Dynamic Shares in the Capital Market of Indonesia from 2014 to 2018

Year	2014	2015	2016	2017	2018
The number of stocks traded dynamically	499	517	526	568	615

Source: The Indonesia Stock Exchange Statistical Highlight of IDX Fact Book 2019

According to Hartono (2017), investors without private information dominate in the weak-form efficient market. Consequently, these uninformed investors follow the investors having personal information by observing the change in stock prices. Without sufficient information, investors are problematic in estimating it. As a solution, they need to contact the securities analysts having more information for selecting the bought and sold stocks to get a positive return. Hence, this study affirms the theory of efficient market in the weak form and supports the research of Fawson et al. (1996), Tambotoh and Sunarto (2001), Capobianco et al. (2002), Asiri (2008), Munir and Mansur (2009), Ajao and Osayuwu (2012), Sheefeni (2015), and Kiliç and Buğan (2016).

V.   CONCLUSION AND SUGGESTIONS

The goal of this study is to examine the market efficiency theory in a weak form. Based on the statistical analysis and discussion presented, this study successfully proves that the market index movement from 2014 to 2018 in the Indonesia stock exchange follows the random walk. This circumstance happens because of the increase in volume, frequency, and value of shares. By describing some related indicators plus an increasing number of dynamic shares traded, this study also summarizes that the Indonesia thin market-level goes down.

Academically, this study has a limitation related to the time-period observation and the development of the research model. To overcome this limitation, the following researchers can encompass it to be 15 years. Therefore, they can explore if the market index movement in the bearish and bullish period is random and in the three crisis periods: pre-crisis, crisis, and post-crisis. Moreover, they can contrast the condition of the efficient capital market among Southeast Asian countries.

Practically, by considering the efficient market in the weak form, investors without private information should communicate with their securities analysts in their company to consult the stocks that they should buy and sell to obtain capital gains. It is because the analysts must be having the detail of information behind the change in the stock prices in the market.

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