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Does It Pay to be Good? The Performance of Indonesian Green Companies from 2009–2018

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Abstract

In Indonesia, KEHATI Sustainable and Responsible Investment (SRI) Index, hereafter referred to as SKI, aims to raise public awareness and help pro-environmental investors by selecting 25 highly rated public companies that adhere to the internationally accepted green business standard. This paper compared the financial performance of the companies listed in SKI and their counterparts between the period of January 2009 and December 2018 by predicting their future opening price of stock, comparing the performance of SKI to JKSE market index, and examining their financial performance using ROA and ROE as dependent variables. The findings suggest that being included in SKI is insignificant to the future opening price of stock. The index itself is found to be slightly more volatile than the market index, which is attributed by a previous study to SKI selection process lowering the chance for portfolio diversification and the volatility of the Indonesian market due to the financial crises. However, being included in the index positively affects both ROA and ROE, albeit small differences. Therefore, there is no significant difference between the financial performance of green companies in Indonesia and their counterparts.

Keywords: sustainability; SRI KEHATI Index; corporate sustainability; profitability

JEL classifications: G10; G11; G12; G30; G32; G41

1. Introduction

Anita Roddick, the founder of The Body Shop, believes that business can be a force for good (Burlingham 1990). Whether we realize it or not, every purchase we make as consumers and every action taken by big corporations affect the planet, the environment, animals, and ourselves. Consumers are becoming more sensitive to the environmental costs resulted from the production of goods and firms producing green products have a competitive advantage based on differentiation (Hamdoun & Zouaoui 2017).

Environmental or green performance of companies can be measured by several indices. The Global Green Economy Index (GGEI) launched in 2010 by Dual Citizen, an American private consulting firm, is the first index to measure the environmental performance of 130 countries. In their September 2018 report, Sweden ranks as the highest performing country while Bahrain is the lowest. Smaller countries such as the Nordic countries, Costa Rica, Uruguay, Colombia, Kenya, Taiwan, and Singapore continue to consistently raise GGEI results while the results are uneven in EU countries (Dual Citizen 2018a,b). When using GGEI as the key independent variable to measure the impact of green economy, Lukas (2015) find that green economy has a negative relationship with economic growth, a positive relationship with income per capita, an insignificant effect on unemployment, and a significant effect on poverty reduction.

Carbon Disclosure Project (CDP) is a UK-based non-profit organization that supports investors, com-

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panies, cities, states, and regions to disclose their environmental impacts. In 2018, CDP was able to list 126 companies in its "A List", including big companies such as Apple, Johnson & Johnson, L'Oreal, Microsoft, Nestle, and Sony (Hill 2019). These "A-List" companies are able to prove that it is possible to generate business benefits while taking action on climate change (We Mean Business Coalition 2019).

In Indonesia, KEHATI (an acronym for *Keanekaragaman Hayati*) Foundation, or the Indonesian Biodiversity Foundation, was established on January 12, 1994 by Professor Emil Salim, the former Minister of Environment of Indonesia. This foundation functions as a non-profit organization that mobilizes and manages resources in the form of grants, facilitation, consultations, and assistance for programs that support biodiversity conservation and sustainable business manner (KEHATI Foundation n.d.). On June 8, 2009, KEHATI launched the KEHATI Sustainable and Responsible Investment Index (SKI)[1] which aims to identify companies that run their business in accordance to the standard of sustainable development.

The term green company used in this paper is in accordance with the criteria of the companies selected by KEHATI Foundation: running their business in relation to environmental initiatives, community involvement, corporate governance, business manners, employment, and human rights (KEHATI Foundation n.d.). Historically, the index has demonstrated better performance than other indices such as the Composite Stock Price Index (CSPI), LQ45, JII, etc. (KEHATI Foundation n.d.). On its first trading day, SKI has generated a positive reaction with a value of 116.946 (Zulkafli, Ahmad & Ermal M 2017). When comparing the performance of SKI to Jakarta Composite Index (JKSE), Zulkafli, Ahmad & Ermal M (2017) find the latter to perform slightly better. While the previous research only account for six-year data, this paper aims for a ten-year period from 2009 to 2018.

The sole objective of this paper is to examine whether SKI companies perform better financially by being listed in the index. In addition to comparing opening price of stock, this paper also attempted to analyze internal performance by using Return on Asset (ROA) and Return on Equity (ROE) as independent variables. Previous findings indicate no significant relationship between being included in SKI and higher opening price of stock in the future. However, observed from internal performance, SKI companies have slightly higher ROA and ROE.

Therefore, this paper aims to answer these research questions: (1) Do companies listed in SKI have higher opening price of stock in the future than other companies?; (2) Do companies listed in SKI have better ROA compared to other companies?; and (3) Do companies listed in SKI have better ROE compared to other companies?

In the next sections of this paper, we will discuss: the supporting literature; methodology, data, and research hypotheses; empirical findings; and lastly, conclusions and limitations of the study.

2. Literature Review

2.1. Sustainability Reporting

The framework for sustainability was originally coined in the forestry sector, with a saying that we should never harvest more than what the forest yields (Wiersum 1995; Kuhlman & Farrington 2010). In economic studies, there is a concept of scarcity, such as the work of Thomas Malthus in 1798 theorizing about mass starvation caused by the inability to meet the required number of resources to feed an expanding population (Kuhlman & Farrington 2010).

In 1987, Our Common Future by Brundtland Commission published a report aiming to connect the issues of economic development and environmental stability (Emas 2015). The report defines sustainable development as development that meets the

[1] INDEX SRI-KEHATI. https://kehati.or.id/en/index-sri-kehati/.

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needs of the present without compromising the well-being of future generations (United Nations 1987). In addition, the concept of corporate sustainability is aligned with Goal 12 of the Sustainable Development Goals (SDGs) of the United Nations (UN), aiming to ensure sustainable consumption and production. According to the UN, currently SDGs have been adopted by 193 countries including Indonesia. The government of Indonesia, through the Ministry of National Development Planning/National Development Planning Agency (BAPPENAS), acts as the financing hub channeling the fund to support SDG projects in Indonesia (Direktorat Jenderal Aplikasi Informatika 2019).

The Economics of Ecosystem and Biodiversity (TEEB) is a global organization established in 2007 and operating under the United Nations Environment Programme (UNEP) that attempts to address the growing corporate concern about biodiversity loss by striving to incorporate values which accommodate biodiversity and ecosystem issues into the decision-making process of the companies. In relation to TEEB, the Global Reporting Initiatives (GRI) is an independent international organization that has acted as a pioneer of sustainability reporting since 1997. Sustainability reporting is a way for companies or organizations to be more transparent about the economic, environmental, and social impacts generated from their everyday activities. To a certain extent, it will help them to measure, understand, manage, and later communicate the impacts of their sustainability performance, be it positive or negative.

2.2. Triple Bottom Line

TBL is a concept that was first developed by Elkington in 1994. In his book published in 1997 entitled *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*, Elkington refers corporations as cannibals using "forks". The term "forks" symbolize the concept of sustainable business, where everyone will prosper when and only when the cannibals (corporations) are willing to balance their businesses with regards to the forks, namely stakeholders, society, and the environment (Elkington 1997).

Although the concept of *sustainable business* is not new in the 1990s, Elkington (1997) further expands the concept by presenting a framework of how businesses should conduct social responsibility. TBL exceeds the measures of conventional profitability, return on investment, and shareholder profit by including environmental and social dimensions (Slaper & Hall 2011). Prior to Elkington introducing the concept in 1997, environmentalists wrestled with how to measure and create the frameworks for sustainability (Slaper & Hall 2011).

In essence, TBL is a sustainability framework that examines the social, environmental, and economic impacts of a company (Elkington 2018). These measurements are also more commonly referred to as the 3Ps: people, planet, and profit (Slaper & Hall 2011). TBL has no universal or standardized measurement, which can be considered beneficial as it allows users to adapt the general framework of TBL (Slaper & Hall 2011).

2.3. Cost-Benefit Analysis (CBA)

The Economic Times (n.d.) defines CBA as a procedure for estimating all costs involved and the possible profits to be derived from a business opportunity or proposal. Furthermore, CBA takes into account both quantitative and qualitative factors for the value for money analysis of a particular project or investment opportunity. This concept is closely related to the topic of this paper, since we will discuss whether or not companies obtain something in return for going green. By taking the definition of CBA into account, companies will be more likely to perform corporate sustainability supposing they believe that the benefits of doing it will offset the costs.

Previous studies have tried to examine the financial performance of green companies, or companies with high corporate sustainability performance. One research finds companies with high corporate sustainability performance to be more likely to have

established stakeholder engagement, ran their businesses in a more long-term orientation, and exhibited more transparency, hence significantly outperforming their counterparts in terms of stock valuation and financial performance (Eccles, Ioannou, & Serafeim 2014). Turkish companies with numerous green innovation activities are also revealed to have a competitive advantage (Küçükoğlu & Pinar 2015). An increase in the number of United States manufacturing companies investing in low-carbon energy technology has a positive and significant impact on the unified performance (Wang 2017). Green companies are also found to have lower underpricing in the stock market, and yet the performance of green and non-green companies in the long run is found to follow a similar pattern (Anderloni & Tanda 2017).

On the contrary, a research by Puopolo, Teti & Milani (2015) demonstrate no linear relationship between the "green behavior" of corporations and financial return, in the sense that there is neither reward nor punishment for corporations to impose or not impose "green behavior". When calculating profitability and liquidity ratios, Santis, Albuquerque & Lizarelli (2016) also find no evidence of significant differences between the performance of companies listed in the Corporate Sustainability Index established by the São Paulo Stock Exchange and their counterparts. Furthermore, when analyzing Chinese publicly listed manufacturing firms, Zhang, Rong & Ji (2019) discover that state-owned enterprises are more likely to accumulate profit from green patent goods due to their close relationship with the government.

Interestingly, Xiao et al. (2018) find that companies operating in countries with higher levels of sustainability performance will generally experience more difficulties to cultivate their corporate sustainability performance in the form of capital incentives. Meanwhile, firms that practice corporate sustainability in emerging or developing countries with low sustainability performance can acquire more competitive advantages (Xiao et al. 2018). However, another research finds that despite the personal concerns of managers toward environmental issues, small firms in Europe perform significantly few pro-environmental practices and are reluctant to learn more about it (Hitchens et al. 2005).

2.4. Green Governance and Impact Investing

Accompanying the rise of sustainable development, there is a new framework for green governance. The Economic and Social Commission for Asia and the Pacific (UNESCAP) of the United Nations first defines the concept as "an environmentally sustainable economic process to promote the low carbon development and benefit all members of society." (Li, Xu & Zheng 2018). According to the Organisation for Economic Co-operation and Development (OECD), green growth will promote economic growth and development at the same time (Li, Xu & Zheng 2018). It is a cycle that drives an organization towards environmental sustainability (Kuo, Yu & Chang 2015). The goal is significantly aligned with TBL by Elkington, in the sense that green governance mediates the relationship between human beings and nature (Li, Xu & Zheng 2018).

Green growth, according to Kuo, Yu & Chang (2015), is derived from environmental management and green innovation. In environmental management, companies strive to minimize the impact of their productions on the environment (Klassen & McLaughlin 1996; Kuo, Yu & Chang 2015). Meanwhile, green innovation is any process related to compliance with the environmental protection standard (Lai, Wen & Chen 2003; Kuo, Yu & Chang 2015).

As the biggest contributor to global CO2, China now is already leaning towards a low-carbon economy, that is, when the corporate social responsibilities are extended into emission reduction and environmental protection in order to sustain their economy from domestic and international pressures (Kuo, Yu & Chang 2015). This move by the government is also mirrored in the Chinese stock market, with Kuo, Yu & Chang (2015) suggesting that Chinese firms that disclose their green management and compli-

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ance with emission reduction and energy saving receive higher reputation in return. Furthermore, these green governance initiatives will also contribute positively to the environmental performance of China (Kuo, Yu & Chang 2015).

While green governance is more applicable for companies, impact investing is tailored to investors. Impact investing involves not only the conventional investment measures, namely to gain financial return, but also social and environmental impacts (Global Impact Investing Network [GIIN] 2013; Louche, Arenas & Van Cranenburgh 2012; Höchstädter & Scheck 2015). The term was first coined in 2007 by the Rockefeller Foundation when they invited leaders in finance, philanthropy, and development to discuss how global industry should incorporate a positive social and environmental impact when striving for investments (Harji & Jackson 2012; Höchstädter & Scheck 2015).

Historically, the term impact investing may be new, but the concept of using investments to yield social outcomes already exists (Nicholls 2010; O'Donohoe et al. 2010; Höchstädter & Scheck 2015). However, now a movement is rising to formalize the impact of investing market (O'Donohoe et al. 2010; Saltuk 2011; Höchstädter & Scheck 2015). Referring to the 2010 report by J.P. Morgan and the Rockefeller Foundation, it appears that there is a potential for impact investing to serve the Bottom of the Pyramid or BoP (those earning less than $3000 per annum per capita), ranging from $400 billion to nearly $1 trillion by 2020 (O'Donohoe et al. 2010; Höchstädter & Scheck 2015).

Observed from the concepts of green governance and impact investing, we shall presume a growing movement to develop an equilibrium between financial performance and corporate sustainability. SKI is, therefore, greatly serves as a way for companies to obtain funding from impact investing in Indonesia.

3. Method

To compare the performance of green companies and non-green ones in Indonesia, this paper defines green companies as those listed in SKI[2]. To answer the research questions, this paper will analyze the internal and external performance of companies listed in SKI.

3.1. Internal Performance Analysis

This paper defines internal performance as company profitability, denoted by Return on Asset (ROA) and Return on Equity (ROE). In general, this paper mainly follows Alarussi & Alhaderi (2018) and Pratheepan (2014) in finding the determinants of company profitability, in addition to several other past literature. Alarussi & Alhaderi (2018) attempt to estimate the impact of Firm Size (measured by total sales), Working Capital (current assets minus current liabilities), Company Efficiency (measured by asset turnover ratio), Liquidity (measured by current ratio), and Leverage (measured by debt-to-equity ratio and leverage ratio) on the proxies for profitability of Return on Equity (ROE) and Earnings per Share (EPS). Pratheepan (2014) tries to determine the significance of Size (measured by the logarithm of sales), Leverage (ratio between debts and total assets), Liquidity (ratio between current assets and long-term liabilities), and Tangibility (ratio between

[2]The followings are three stages of selection process carried out by KEHATI Foundation to select the 25 SKI constituents:

1. Stage 1: Core Business. At this stage, they will eliminate companies that produce pesticide, nuclear, weaponry, tobacco, alcohol, pornography, gambling, genetically modified organism (GMO), and coal mining.
2. Stage 2: Financial Aspect. At this stage, the companies must possess minimum market cap of IDR1 trillion, minimum total assets of IDR1 trillion, a free float ratio of more than 10%, and a positive price-per-earnings ratio.
3. Stage 3: Fundamental Aspect. At this final stage, the companies will be assessed by their environmental initiatives, community involvement, business management, business manner, labor, and human rights.

This selection process is carried out every May and November each year.

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fixed assets and total assets) to Return on Assets (ROA) as the profitability measure.

When analyzing 247 companies listed in IDX from 2009 until 2011, Pontoh & Ilat (2013) determine ROA and ROE as the measures for profitability, which is also applied in this paper. ROA is also applied to measure company profitability in Syamni et al. (2018), Lazăr (2016), Menicucci & Paolucci (2016), Margaretha & Supartika (2016), and Pratheepan (2014). Meanwhile, ROE is a ratio between net income and equity (Wild et al., 2016). Alarussi & Alhaderi (2018) employ ROE as one of the dependent variables to determine the determinants of the profitability of Malaysian companies. In addition, Syamni et al. (2018), Menicucci & Paolucci (2016), and Pontoh & Ilat (2013) also include ROE as the measurement of company profitability.

Therefore, ROA and ROE in this paper were named as the proxies for profitability. Meanwhile, firm size, leverage, liquidity, tangibility, company efficiency, capital adequacy, management efficiency, sales growth, asset growth, industry affiliation, working capital, and the dummy variable for SKI companies (dummy KEHATI) were the determinants for the profitability. Lag variables for ROA and ROE, dummy variables for sector of industry, and dummy variables for time were also introduced to account for the past values of the dependent variables and measure the effect of the regressions on different sectors and periods of analysis.

At the time this research was conducted, there were 622 Indonesian companies listed in Indonesia Stock Exchange (IDX) which were further classified into nine sectors. The data were collected through the Thomson Reuters Eikon software. Following the research period (Q1 of 2009 until Q4 of 2018), there were several adjustments made for the sample selection. First, companies that went public after January 2009 were not included. Second, due to the limitations of time and human resources, companies with insufficient data were also excluded. Third, we omitted companies that were not available in the software. That left us with a total of 192 companies.

SKI helped us differentiate between green and non-green public companies. Observed from 192 companies included, 21 of them has been listed in the index. Thus, we categorized them as green. Dummy KEHATI was introduced in our regression to help us classify these companies.

Firm Size is the natural logarithm of total assets (Odusanya, Yinusa & Ilo 2018). When determining the profitability of banks, Menicucci & Paolucci (2016) reveal a positive relationship between firm size and profitability and associate it with the theory of economies of scale, in which firms with higher amount of assets will generally control a larger portion of the market and improve their profits. Another explanation follows the resource-based theory, in the sense that companies with larger size will have a lower cost of capital (Alarussi & Alhaderi 2018). However, Lazăr (2016) discovers that size has a negative effect on firm performance, suggesting that companies are unable to utilize the economies of scale. The negative relationship can also indicate an inverse influence, in which companies with larger size have lower profitability (Margaretha & Supartika 2016).

Leverage is measured by debt-to-equity ratio (DER) to account for a tradeoff between borrowings and financial risk (Alarussi & Alhaderi, 2018). Companies utilizing shareholder investments tend to have better credit ratings, while those using large borrowings to finance their operations face higher financial risks (Alarussi & Alhaderi, 2018). Lazăr (2016) discovers a significantly negative relationship between leverage and firm performance due to the existence of nominal interest rates, rendering debt financing less appealing. Pratheepan (2014) also reveals that leverage has a negative coefficient, indicating the association of high debt levels with low profitability.

Liquidity is defined as the ability of a company to pay its short-term obligations (Wild et al. 2016). The commonly used measurement is current ratio, which is the ratio of the current assets to the current liabilities of the company. Despite its importance, Pratheepan (2014) finds that liquidity has no importance in determining profitability when analyz-

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ing Sri Lankan manufacturing firms because managers has failed to utilize their high levels of liquidity to invest in projects that will generate more profit. This finding is supported by Alarussi & Alhaderi (2018) that liquidity does not affect profitability. They theorize that perhaps liquidity is merely important in firms operating in the financial sector, such as banks. Since the sample of this paper is not limited to firms in the financial sector, we too shall expect the relationship between liquidity and profitability to be insignificant.

Asset Tangibility is measured by the ratio between fixed assets and total assets (Pratheepan 2014). Tangibility is found to have a significantly negative association with profitability of Sri Lankan manufacturing companies, implying that companies with higher tangible assets are more inclined to improve human capital and increase their long-term investment to acquire more profit (Nunes, Serrasqueiro & Sequeira 2009; Pratheepan 2014). A more recent study finds tangibility to have a negative and insignificant coefficient to profitability since several tangible assets are not directly involved in the production of goods (e.g., land and building) and several other tangible assets (e.g., vehicles) tend to depreciate in value over time (Odusanya, Yinusa & Ilo 2018).

Company Efficiency is the ability to productively exploit assets and acquire higher revenues in return (Wild et al. 2016). Asset turnover ratio, a measurement for company efficiency, is revealed to yield a significant impact on ROA as the measurement for profitability (Warrad & Al Omari 2015; Alarussi & Alhaderi 2018). However, a different study finds a negative correlation between asset turnover ratio, operating profit margin, and ROA (Reed & Reed 1989; Alarussi & Alhaderi 2018). Despite these complications, Alarussi & Alhaderi (2018) expect a positive relationship between asset turnover ratio and profitability and discover that it indeed has a significantly positive relationship with ROE.

Capital Adequacy is measured by capital ratio, or the ratio between equity and total assets, because it efficiently assesses capital strength (Golin 2001; Menicucci & Paolucci 2016). The structure of capital is crucial for financial institutions in facing unstable financial conditions and generating higher profitability (Menicucci & Paolucci 2016). On the other hand, Lipunga (2014) finds capital adequacy to insignificantly determine ROA while it significantly affects another measure of profitability, namely earnings yield. Thus, we should expect a positive relationship between capital adequacy and profitability.

Company Profitability can be affected by internal factors (e.g., management decisions) and external factors (e.g., events beyond the scope of the managers) (Ayanda, Christopher, & Mudashiru 2013; Lipunga 2014). The quality of the management of a firm is one of the internal factors that can differentiate one firm and another (Ongore & Kusa 2013; Lipunga 2014). Lipunga (2014) accounts for management efficiency as revenue divided by profits before tax and finds that it significantly affects both ROA and earnings yield.

Sales Growth is measured by a ratio between sales at time $\mathrm{t1}$ $(\mathrm{S1})$ minus sales at time $\mathrm{t0}$ $(\mathrm{S0})$ and then divided by $\mathrm{S0}$ (Margaretha & Supartika 2016). In general, it is considered to have a positive impact on profitability (Asimakopoulos, Samitas & Papadogonas 2009; Nunes, Serrasqueiro & Sequeira 2009; Lee 2009; Yazdanfar 2013; Lazăr 2016). However, a study by Margaretha & Supartika (2016) on Small Medium Enterprises (SMEs) listed in IDX in Indonesia indicates that growth rate negatively affects profitability, because costs of storage, advertisement, delivery, packing, etc. will increase in accordance with the increase in sales (Margaretha & Supartika 2016).

Asset Growth is measured by Debt Asset Ratio (DAR), or total debt divided by total assets (Pontoh & Ilat 2013). In general, the higher the total debt of a company is, the lower the profitability (Shubita & Alsawalhah 2012; Pontoh & Ilat 2013). Furthermore, Pontoh & Ilat (2013) also reveal not only a significantly negative relationship between DAR and ROA, but also between DAR and firm size.

Industry Affiliation is one way to measure vertical integration between firms, which is found to

significantly affect profitability (Vijayakumar 2011; Margaretha & Supartika 2016). It is measured by value added, which is sales minus Cost of Goods Sold (COGS) (Margaretha & Supartika 2016). The importance of industry affiliation to the level of profitability is also stated in other studies (McDonald 1999; Margaretha & Supartika 2016). However, there is also another research finding a negative result (Yazdanfar 2013; Margaretha & Supartika 2016).

Working Capital is measured by current assets minus current liabilities (Wild et al. 2016). It is considered one of the significant variables in determining firm profitability (Grinyer & McKiernan 1991; Alarussi & Alhaderi 2018). When testing the determinants of profitability of Pakistani firms, it is found that working capital has a significantly positive correlation with profit (Malik 2011; Alarussi & Alhaderi 2018). Furthermore, in their research, Alarussi & Alhaderi (2018) report a significant relationship of working capital with earnings per share but not with ROE. A research finds the opposite, in which working capital negatively impacts firm profitability (Dong & Su 2010; Alarussi & Alhaderi 2018).

Upon conducting several pre-tests, there appeared to be a low R-squared value. One can argue that the low R-squared value means that our model needs more explaining variables. To counter the possibility of a low R-squared value, the initial regressions for both ROA and ROE are divided into three types of model. In these models, we added lagged dependent variables (LDV) based on the argument by Wilkins (2018) that they will yield more accurate results.

Thus, LDV lagROA and lagROE were added to the regression to observe whether the past values of the dependent variables significantly affect their current values. Syamni et al. (2018) add dummy Agriculture sector and find that agricultural companies listed in IDX have implemented good CSR initiatives in general. Since the data set was derived from various industries, we will look into all sectors of industry and assign each sector with a dummy variable. Lazăr (2016) factors year into the regression, which was adapted into this paper by denoting dummy variables for time.

Model 1 includes all independent non-dummy variables and dummy KEHATI. Model 2 is further divided into two versions. Version 1 includes Model 1 plus dummy variables for sectors while Version 2 is the continuation of version 1 plus dummy variables for time. Model 3 is also further classified into two. Model 3 Version 1 is the continuation of the first version of Model 2 LDV. Meanwhile, Model 3 Version 2 is the continuation of the first version plus all dummy variables for time. The variables found to be insignificant would be omitted from the regressions in each model, leaving only the significant variables. Furthermore, dummy KEHATI would also be analyzed in terms of its significance to the independent variables.

Therefore, our first hypothesis is:
H1: There is no a significant relationship between being listed in SKI and the internal performance of firms.

3.2. External Performance Analysis

To maximize the current value of stock is to fulfill the goal of financial management (Ross, Westerfield & Jordan 2010). In their book *Fundamentals of Corporate Finance*, Ross, Westerfield & Jordan (2010) argue that since stocks are owned by shareholders (owners), a company can provide welfare to other stakeholders supposing it can maximize its stock price. This theory is in line with the findings of J.P. Morgan and the Rockefeller Foundation 2010 report that we have discussed earlier.

To account for the research objectives, this paper conducted two external analysis. First, predicting the future opening price of stock. In this part, dummy KEHATI was introduced to compare green and non-green companies. Second, we followed Zulkafli, Ahmad & Ermal M (2017) to compare the performance of JAKSRI (the index for SKI as denoted in IDX) with the market index JKSE. To make it easier, we will note the first analysis as “stock

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price analysis" and the second one as "index analysis".

To analyze the stock price, this paper used secondary data in a form of historical daily stock price data from the period of January 1, 2009 to December 31, 2019. The data were collected from Yahoo Finance website. Initially, we attempted to collect the stock price data for all 622 companies listed in Indonesia Stock Exchange (IDX). However, there appeared to be variations in the listing dates and the number of observations for each company. The listing dates are the dates in which each company went public and was listed in IDX. Meanwhile, the number of observations might originate from the differences between the time the companies pay dividends to their shareholders and the occurrence of stock splits.

Thus, several adjustments were made. First, we excluded companies that went public after the beginning of the observation period, or January 1, 2009. Second, when counting for the mode, we found 2,468 to be the number of observations which included the greatest number of companies and therefore excluded all companies with less than or more than 2,468 period of observations. Third, we excluded companies with incomplete or insufficient data. The companies included in SKI will be deemed as green, and thus dummy KEHATI was introduced. A remaining 80 companies were made as samples for this stock price analysis.

Since the data for price were in the form of numbers, they were converted into log natural for the purpose of the regression. Thus, our initial equation is:

$$\begin{aligned} \mathrm{lnOpening} &= \beta 1 + \beta 2 \mathrm{lnAdjusted} + \beta 3 \mathrm{d\_SKI} \\ &\quad + \beta 4 \mathrm{lag1\_lnOpening} \\ &\quad + \beta 5 \mathrm{lag1\_lnOpening} + \mathrm{ui} \end{aligned} \tag{1}$$

where $\mathrm{lnOpening}$ denotes the log natural of the Opening Price for the next period; $\beta 1$ denotes the coefficient of the constant variable; $\beta 2$, $\beta 3$, and $\beta 4$ denote the coefficients of each of the independent variables; $\mathrm{lnAdjusted}$ denotes the log natural of the Adjusted Closing Price for the past periods; $\mathrm{d\_SKI}$ denotes dummy KEHATI; $\mathrm{lag1\_lnOpening}$ denotes the first LDV; $\mathrm{lag2\_lnOpening}$ denotes the second LDV; and ui denotes the standard error.

This analysis was divided into three models. Model 1 accounted for the Adjusted Closing Price and introduced dummy KEHATI. In Model 2, the first LDV was introduced in addition to the variables included in Model 1. Meanwhile, Model 3 was the continuation of Model 2 with the addition of the second LDV. We understood that adding LDV might seem unconventional, but we should account for the possibility that the current opening price of stock $(\mathrm{t0})$ will affect the future price of stock $(\mathrm{t1})$. This was in line with the theory of expected return, for which we could estimate the stock performance of a company by examining the historical prices (Duff n.d.). Thus, supposing we would like to have a long-run estimation of the independent variable, we should introduce LDV to prevent residual autocorrelation which in turn would help to maintain the consistency of our model (Wilkins 2018).

Since the data for price were in the form of numbers, they were converted into log natural for the purpose of the regression. When comparing the performance of JKSE with JAKSRI, Zulkafli, Ahmad & Ermal M (2017) discover the latter to have a slightly lower performance yet still generates competitive returns.

Therefore, our second hypothesis is:
H2: There is no significant relationship between being listed in SKI and the future opening price of stock of firms.

Regarding the index analysis, the idea was to collect index price data for both JAKSRI and JKSE under the period of analysis to analyze the performance of each index and to obtain the overall comparison. We utilized secondary time series data, namely a set of observations on the values taken by a variable at a different time (Gujarati 2004). The method applied in this research was one of the time series forecasting methodology called the Box-Jenkins methodology or else known as the Autoregressive Integrated Moving Average (ARIMA)

model.

The data were collected from the first initial public issuance of JAKSRI, with the period of analysis ranging from June 8, 2009 until December 31, 2018. All of the data used in the index analysis were retrieved from the Thomson Reuters Eikon software. Upon collecting all the necessary data, we run the ARIMA model regression for each index. Afterwards, we compared the best model retrieved from JAKSRI and JKSE.

Gujarati (2004) defines the criterion for finding the best ARIMA model: (1) The most significant coefficient, for which the p-value should be lower than or do not exceed 0.05; (2) The lowest volatility, which is measured by the coefficient of sigma; (3) The highest log-likelihood statistics; (4) The lowest value of Akaike Information Criterion (AIC); and (5) The lowest value of Schwarz Information Criterion (SIC).

Thus, our third hypothesis is:
H3: In general, JAKSRI will outperform the market index JKSE.

4. Results and Analysis

4.1. Internal Analysis

Appendix 1 and 2 are the correlation tables for the regression models. Supposing the degree of association between variables exceeds 0.8, we can say that there is multicollinearity within the model and thus variables with a high degree of collinearity should be omitted (Gujarati 2003; Odusanya, Yinusa & Ilo 2018). Since the independent variable $\mathrm{lnIndustryAffiliation}$ has a correlation of more than 0.80, it is omitted from all models for both ROA and ROE.

Table 1 denotes the summary statistics of the variables included in the company profitability analysis. The mean ROA is higher for SKI companies, showing better management and effectiveness in turning investments into net income. The ROE of SKI companies is also higher than their counterparts, meaning that they are more efficient in converting the money of shareholders into profit. SKI companies are slightly higher in size because they possess higher amount of total assets. In addition, SKI has a slightly lower Leverage which means they rely less on debt financing. However, non-SKI companies has higher Liquidity which indicates a better ability to pay short-term obligations.

In the second version of Model 3, it is evident that subsequent to implying dummy variables for time, the Adjusted R-squared value becomes higher at 0.7166. The variables that significantly affect ROA are the lag of ROA, the lag of ROE, firm size, leverage, liquidity, tangibility, capital adequacy, management efficiency, sales growth, working capital, dummy agriculture sector, dummy consumer goods sector, dummy variables for year 2009 until year 2012, and dummy variable for year 2015. However, leverage, liquidity, tangibility, sales growth, working capital, and dummy variable for year 2015 have a negative relationship with ROA.

Sales growth also shows a negative relationship, which may be due to the additional costs entail, as stated by Margaretha & Supartika (2016). Company Efficiency appears to be insignificant in driving profitability. According to Innocent, Mary & Matthew (2013), this may indicate that companies have failed to utilize their assets in order to generate more income. Asset Growth is also insignificant, which can suggest that Indonesian public companies have a tolerable amount of leverage (Pontoh & Ilat 2013). However, again we should note that higher debt will still lead to less profit as denoted by Leverage having a significant negative coefficient. Most importantly, dummy KEHATI shows a significant relationship with the dependent variable ROA, with a coefficient of 0.0106. This means that being included in SKI will increase profit despite the small difference.

To check the possibility of confounding variables, we conducted several random checks using the linear regression model and multiple linear regression model. The rule of thumb states that supposing the coefficient b1, that is, the coefficient of the dependent variable X1 changes by more than 10%

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Table 1. Summary Statistics of the Non-Dummy Independent Variables Included

Variable	Mean		Standard Deviation		Lowest Observation		Highest Observation	
	KEHATI	Non-KEHATI	KEHATI	Non-KEHATI	KEHATI	Non-KEHATI	KEHATI	Non-KEHATI
ROA	0.1112	0.0369	0.1177	0.1056	-0.0575	-1.4598	0.9435	0.7408
ROE	0.2179	0.1825	0.2842	3.2029	-0.2151	-8.3355	2.2446	110.3999
lagROA	0.1113	0.0369	0.1177	0.1056	-0.0575	-1.4598	0.9435	0.7408
lagROE	0.2179	0.1825	0.2843	3.2030	-0.2151	-8.3550	2.2446	110.3999
Firm Size	23.5216	20.8288	1.0279	1.8492	20.2322	13.0793	26.2006	24.7115
Leverage	0.2300	0.2421	0.1692	0.1872	0	0	0.5136	1.0277
Liquidity	2.1576	3.6513	1.6035	15.2997	0.3341	0.0343	10.4226	247.3610
Tangibility	0.5519	0.5098	0.2108	0.2364	0.1276	-0.6032	0.9267	0.9953
Company Efficiency	0.8676	0.1384	0.5376	0.0415	0.0924	0.0860	30.4710	0.2156
Adequacy	0.5124	0.5019	0.2016	0.2194	0.1907	-0.5666	0.8763	1.0476
Management Efficiency	0.9639	0.9288	0.8269	3.9974	-5.8258	-44.5396	8.4840	115.8809
Sales Growth	0.0491	0.8149	1.0011	40.2023	-1	-1	28.4535	3215.0030
Asset Growth	1.0461	1.2550	0.7830	8.6656	0	0	23.1608	541.3845
Working Capital	22.0523	19.4250	1.2479	1.9167	16.0778	10.5950	24.0878	24.2853

when we add another dependent variable X2 to the regression, we have a confounding variable in the form of X2 (Boston University School of Public Health 2013). We discovered no confounding variable in this regression model for ROA.

In the second version of Model 3, dummy SKI has a significant relationship with the dependent variable ROE. The finding of this particular model has a moderate explanative power with an Adjusted R-squared value of 0.4952. The lag of ROA, the lag of ROE, firm size, leverage, tangibility, capital adequacy, asset growth, working capital, dummy KEHATI, dummy variable for mining sector (although coal mining companies are excluded in SKI), dummy variable for trading sector, and dummy variables for year 2009 until year 2017 significantly affect ROE. Upon conducting the same tests to check confounding variables as we had performed for ROA, we also discover that no confounders exist in our model for ROE.

Observed from the regressions for ROA and ROE, we can infer that being included in SKI significantly influences both. Thus, we should reject our H1. We reckon this is because SKI companies in general have presumably acquired better financial aspects such as market cap, total assets (which lead to higher firm size), a free float ratio, and a positive PE ratio required by the KEHATI foundation.

By examining the significance of the dependent variables, we find leverage, tangibility, and working capital to have negative relationships with both ROA and ROE. Company efficiency is found to be insignificant in driving profitability (ROE). Referring to Innocent, Mary & Matthew (2013), we can say again that this points to how Indonesian public companies have failed to maximize their assets to generate more income. Meanwhile, Sales growth has an insignificant relationship with ROE, which means that the additional costs of sales growth only affect ROA and not ROE.

4.2. External Analysis

Observed from Table 4, we can see that dummy KEHATI is significant in the first model of the analysis, but insignificant for Model 2 and 3. However, Model 3 appears to be the most reliable model since it has the highest Adjusted R-squared value of 0.9981. This is in line with Wilkins (2018) finding the least biased estimator to have more LDVs. All of the remaining independent variables for Model 3 are also significant. Therefore, although the opening price of stock is predicted to be higher in the future, there is no additional incentive for the companies included in SKI. Thus, our H2 is accepted.

Following the general rules of finding the best model in ARIMA, the best model for the market index JKSE will be ARIMA(0,1,15) since it has pocketed three

Table 2. Regression Results for ROA

Variables	Model 1	Model 2		Model 3	
		Version 1	Version 2	Version 1	Version 2
Profitability Determinants					
lagROA	-	-	-	0.6884***	0.6837***
				0.0078	0.0078
lagROE	-	-	-	0.0049***	0.0048***
				0.0003	0.0004
Firm Size	0.0231***	0.0229***	0.0279***	0.0071***	0.0064***
	0.0020	0.0019	0.0019	0.0008	0.0007
Leverage	-0.0691***	-0.0695***	-0.0504***	-0.0331***	-0.0291***
	0.0131	0.0131	0.0128	0.0065	0.0062
Liquidity	-	-	-	-	-0.0001*
					0.0001
Tangibility	-0.1212***	-0.1196***	-0.0792***	-0.0313***	-0.0227***
	0.0087	0.0088	0.0089	0.0041	0.0037
Company Efficiency	-0.0124***	-0.0124***	0.0058**	-0.0038***	-
	0.0024	0.0024	0.0026	0.0012	
Capital Adequacy	0.0974***	0.0955***	0.1087***	0.0307***	0.0356***
	0.0123	0.0123	0.012	0.0062	0.0058
Management Efficiency	0.0008***	-0.0008***	0.001***	0.0006***	0.0007***
	0.0002	0.0002	0.0002	0.0002	0.0002
Sales Growth	-0.0011***	-0.0011***	-0.0009***	-0.0004***	-0.0004***
	0.0002	0.0002	0.0001	0.0001	0.0001
Working Capital	-0.0061***	-0.0059***	-	-0.0029***	-0.0019***
	0.001	0.0010		0.0006	0.0006
Dummy Variable for SKI Companies					
Dummy KEHATI	0.0296**	0.0272*	0.0073**	0.0109***	0.0106***
	0.0143	0.0141	0.0143	0.0027	0.0026
Dummy Variables for Sector of Industry					
Dummy Agriculture	-	-	-	0.0085**	0.0076**
				0.0037	0.0036
Dummy Consumer Goods	-	0.0279**	0.0263***	0.0111***	0.0110***
		0.0120	0.0121	0.0022	0.0022
Dummy Finance	-	-	-	-0.0203**	-
				0.0103	
Dummy Variables for Time					
Dummy Year 2009	-	-	0.042***	-	0.0137***
			0.0033		0.0021
Dummy Year 2010	-	-	0.0426***	-	0.0107***
			0.0031		0.0021
Dummy Year 2011	-	-	0.0314***	-	0.0056***
			0.0029		0.0020
Dummy Year 2012	-	-	0.0344***	-	0.0085***
			0.0028		0.0020
Dummy Year 2013	-	-	0.0171***	-	-
			0.0028		
Dummy Year 2014	-	-	0.0119***	-	-
			0.0027		
Dummy Year 2015	-	-	-0.0091***	-	-0.0085***
			0.0027		0.0020
Constant Variable	-0.2845***	-0.2848***	-0.511***	-0.0693***	-0.0873***
	0.0389	0.0386	0.04	0.0114	0.0112
Random Effects GLS Regression					
R-squared	0.2247	0.2360	0.2428	0.7128	0.7167
Adjusted R-squared	0.2246	0.2359	0.2427	0.7127	0.7166
Wald Chi-squared Value	617.83	625.73	1059.91	11849.43	12502.8
Number of Observation	6000	6000	6000	5,999	5,999
Number of Groups	182	182	182	182	182

Note: *Significant under 10%
**Significant under 5%
***Significant under 1%

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Table 3. Regression Results for ROE

Variables	Model 1	Model 2		Model 3	
		Version 1	Version 2	Version 1	Version 2
Profitability Determinants					
lagROA	-	-	-	1.1006***	1.0730***
				0.0217	0.0218
lagROE	-	-	-	0.0101***	0.0096***
				0.0009	0.0009
Firm Size	0.0323***	0.0321***	0.048***	0.0141***	0.0140***
	0.0039	0.0039	0.0041	0.0032	0.0029
Leverage	-0.2212***	-0.2189***	-0.1687***	-0.1385***	-0.1355***
	0.0212	0.0212	0.0302	0.0246	0.0245
Tangibility	-0.2319***	-0.2295***	-0.1616***	-0.1083***	-0.0768***
	0.0192	0.0192	0.0205	0.0162	0.0229
Company Efficiency	-0.026***	-0.0262***	-	-0.0195***	-
	0.0054	0.0054		0.0043	
Capital Adequacy	-	-	0.0539*	-0.0751***	-0.0737***
			0.0284	0.0231	0.0229
Management Efficiency	-	-	0.0009**	-	-
			0.0005		
Sales Growth	-0.001***	-0.001***	-0.0009**	-	-
	0.0004	0.0004	0.0004		
Asset Growth	-	-	-	-0.0005**	-0.0005**
				0.0002	0.0002
Working Capital	-0.0129***	-0.0128***	-0.0092***	-0.0083***	-0.0062***
	0.0027	0.0023	0.0024	0.0019	0.0019
Dummy Variable for SKI Companies					
Dummy KEHATI	0.0839***	0.0794***	0.0304	0.0463**	0.0366*
	0.0299	0.0298	0.0299	0.0201	0.0192
Dummy Variables for Sector of Industry					
Dummy Consumer Goods	-	0.0495**	0.0462*	-	-
		0.0252	0.0255		
Dummy Mining	-	-	-	-0.0307*	-0.0353**
				0.0175	0.0172
Dummy Trading	-	-	-	-	-0.0223*
					0.0123
Dummy Variables for Time					
Dummy Year 2009	-	-	0.0819***	-	0.0395***
			0.0077		0.0056
Dummy Year 2010	-	-	0.0751***	-	0.0281***
			0.0074		0.0055
Dummy Year 2011	-	-	0.0602***	-	0.0194***
			0.0072		0.0053
Dummy Year 2012	-	-	0.0645***	-	0.0224***
			0.0069		0.0052
Dummy Year 2013	-	-	0.0302***	-	-
			0.0069		
Dummy Year 2014	-	-	0.0246***	-	-
			0.0068		
Dummy Year 2015	-	-	-0.0218***	-	-0.0205***
			0.0069		0.0052
Dummy Year 2016	-	-	0.0115*	-	0.0090*
			0.0069		0.0053
Constant Variable	-0.1591**	0.1651**	-0.6979***	0.0395	-0.0366
	0.0766	0.0763	0.0855	0.0609	0.06
Random Effects GLS Regression					
R-squared	0.1292	0.1357	0.1638	0.4851	0.4952
Adjusted R-squared	0.1291	0.1356	0.1637	0.4850	0.4951
Wald Chi-squared Value	330.56	335.39	605.18	3144.58	3300.30
Number of Observations	6124	6124	6000	6,123	6,123
Number of Groups	182	182	182	182	182

Note: *Significant under 10%
**Significant under 5%
***Significant under 1%

Table 4. Regression Results for Stock Price Analysis

Variables	Model 1	Model 2	Model 3
Independent Variables			
Adjusted Closing Price	0.9174***	0.1231***	0.1165***
	0.0181	0.0386	0.0359
First Lag of Opening Price	-	0.8809***	0.6741***
		0.0381	0.0587
Second Lag of Opening Price	-	-	0.2134***
			0.0427
Dummy Variable for SKI Companies			
Dummy KEHATI	0.2280**	0.0075	0.0068
	0.1019	0.0085	0.008
Constant Variable	0.5599***	-0.0133**	-0.0138**
	0.1161	0.0057	0.0055
Random-effects GLS Regression			
R-squared	0.9821	0.9980	0.9981
Adjusted R-squared	0.9821	0.9980	0.9981
Wald Chi-squared Value	4133.34	1190000	1430000
Number of Observation	197,440	197,439	197,438
Number of Groups	80	80	80

Note: *Significant under 10%
**Significant under 5%
***Significant under 1%

out of five criteria. It is because ARIMA(0,1,15) has the highest number of significant coefficients, the highest log-likelihood statistics, and the lowest value of AIC.

Thus, the equation for ARIMA(0,1,15) of JKSE is:

$$\begin{aligned}\Delta \mathrm{Yt} &= -0.7294\Delta \mathrm{Yt}-1+0.1456\Delta \mathrm{Yt}-2 \\ &\quad -0.1415\Delta \mathrm{Yt}-5+0.0848\Delta \mathrm{Yt}-7 \\ &\quad +0.1181\Delta \mathrm{Yt}-12-0.0852\Delta \mathrm{Yt}-15\end{aligned} \tag{2}$$

Referring to Equation (2), we can see that the future opening stock price of JKSE as denoted by $\Delta \mathrm{Yt}$ is influenced by the first differences of its first, second, fifth, seventh, twelfth, and thirteenth lags or past data in particular. However, we should note that lag 1, 5, and 15 all have negative relationships with $\Delta \mathrm{Yt}$. In addition, the values of the lag error term do not influence the future opening price of stock of JKSE.

Based on the criteria in finding the best ARIMA(p,d,q) model, ARIMA(3,1,5) is the most appropriate model for SKI, JAKSRI. This is because ARIMA(3,1,5) has the most significant coefficient, the lowest volatility, and the lowest coefficient of AIC. Therefore, the equation for ARIMA(3,1,5) of JAKSRI is:

$$\begin{aligned}\Delta \mathrm{Yt} &= -0.6148\Delta \mathrm{Yt}-1-0.4703\Delta \mathrm{Yt}- \\ &\quad 2-0.8049\Delta \mathrm{Yt}-3+0.4184\varepsilon \mathrm{t}-2 \\ &\quad +0.7741\varepsilon \mathrm{t}-3-0.5737\varepsilon \mathrm{t}-4\end{aligned} \tag{3}$$

Observed from the aforementioned equation, we can interpret that the future opening stock price of JAKSRI index follows an ARIMA(3,1,5) function. In other words, the future opening stock price is influenced by both the values of the lag variables, or the past data, and the value of the lag error terms. All of the lag variables are significant and have a negative relationship with the future opening stock price. Meanwhile, the significant lag error terms are found in lag 2, 3, and 4 with lag 4 being the only lag error with a negative relationship with the future opening stock price.

The next step is to compare the best model of JKSE and the best model of JAKSRI. Table 7 summarizes the comparison between ARIMA(0,1,15) of JKSE and ARIMA(3,1,5) of JAKSRI, with both having six significant coefficients. However, we can see that ARIMA(0,1,15) of JKSE performs better. Particularly, when we pay attention to the volatility (coefficient of sigma), JKSE is lower at 0.0115649 com-

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Table 5. Models for JKSE

Indicators	ARIMA(0,1,5)	ARIMA(0,1,6)	ARIMA(0,1,15)
Significant coefficients	0	0	**6**
Volatility	0.118861	0.118369	0.00115649
Log-likelihood statistics	4368.544	4369.166	**4375.87**
AIC	-8725.089	-8726.331	**-8725.740**
SBIC	-8693.221	-8694.464	-8656.694
Indicators	ARIMA(3,1,5)	ARIMA(3,1,6)	ARIMA(3,1,15)
Significant coefficients	3	0	0
Volatility	**0.0105759**	0.0091187	0.0084961
Log-likelihood statistics	4371.863	4730.445	4379.365
AIC	-8725.727	-8720.891	-8726.730
SBIC	**-8677.926**	-8667.778	-8641.750

Source: Author

Table 6. Models for JAKSRI

Indicators	ARIMA(0,1,5)	ARIMA(0,1,6)
Significant coefficients	3	0
Volatility	0.0140991	0.0145003
Log-likelihood statistics	4084.970	4084.996
AIC	-8159.940	-8157.992
SBIC	**-8133.384**	-8126.125
Indicators	ARIMA(0,1,15)	ARIMA(3,1,5)
Significant coefficients	5	**6**
Volatility	0.0141011	**0.0126544**
Log-likelihood statistics	**40933.919**	4091.996
AIC	-8161.838	**-8163.992**
SBIC	-8092.792	-8110.880

Source: Author

pared to JAKSRI at 0.0126544. This means that, despite the small differences in values, JAKSRI seems to be slightly more volatile than JKSE.

Table 7. Comparison of the Best ARIMA Models

Indicators	JKSE	JAKSRI
	ARIMA(0,1,15)	ARIMA(3,1,5)
Significant coefficients	**6**	**6**
Volatility	**0.00115649**	0.0126544
Log-likelihood statistics	**4375.87**	4091.996
AIC	**-8725.740**	-8163.992
SBIC	**-8656.694**	-8110.880

Source: Author

Zulkafli, Ahmad & Ermal M (2017) associate the volatility of the index to the Asian Financial Crisis and the 2008/2009 global economic crisis storming the Indonesian market, rendering Indonesia highly prone to market volatility as reported by The European Sustainable Investment Forum in 2010. Furthermore, the screening process of SKI may restrict the portfolio diversification, thus making the index appear to be underperforming (Zulkafli, Ahmad & Ermal M 2017). However, it is important to consider that the performance gap between JAKSRI and JKSE is not wide. With regards to our hypothesis, because JAKSRI is slightly riskier than JKSE, we should reject H3.

5. Conclusion

To determine whether Indonesian public companies that adhere to the framework of corporate sustainability receive financial incentives in return, this paper conducted three separate analyses. First, comparing the opening price of stock of the companies. Second, comparing the green index JAKSRI to the market index JKSE using the Autoregressive Moving Average (ARIMA) model to obtain a more robust analysis. Lastly, comparing their profitability by determining the proxies for profitability and analyzing the performance of the SKI companies.

Based on our findings, we conclude that first, being included in SKI does not lead to higher opening price of stock in the future. Second, when comparing the performance of the indices by referring to Gujarati (2004), we discover that JAKSRI has a slightly higher coefficient of sigma, hence our conclusion that the index is slightly more volatile than the market index JKSE. Third, despite the small difference, companies included in SKI are predicted to have significantly higher ROA and ROE.

Thus, based on their internal performance, we can interpret that green companies in Indonesia will out-

perform their counterparts significantly. However, the Indonesian stock market does not reward these green companies with having higher stock price. Although SKI is in essence the manifestation of awareness of impact investing by Indonesian investors, previous study attributes this with the volatility of the Indonesian market caused by the financial crises and the SKI selection process which contributes to lower portfolio diversification (Zulkafli, Ahmad & Ermal M 2017).

Additionally, based on the potential of impact investing, we would like to suggest for public companies in Indonesia to adhere to the framework of green governance in order to be included in SKI. We believe this will be beneficial for the companies in the long-run since SKI has shown its great performance since its launch compared to other indices such as CSPI, LQ45, and JII (KEHATI Foundation n.d.). This is also proven by the dummy KEHATI having a significant and positive relationship with both ROA and ROE in our internal analysis.

Although this paper has been able to fulfill its aims, there remain several inevitable limitations. We need to admit that the data for some companies included in the analyses performed were insufficient or unavailable. Due to the lack of human resources and time, we could not include them as samples. These companies are the ones that went public after the research period (Q1 of 2009 until Q4 of 2018), several financial sector companies with insufficient data in the Thomson Reuters Eikon software, and those not listed in the software. Following Zulkafli, Ahmad & Ermal M (2017), we also acknowledge notably limited previous studies about SKI, hence our aim to broaden the empirical findings about the index.

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Appendix 1. Correlation Table for Model 1 and 2 of the Company Profitability Analysis

	Firm Size	Leverage	Liquidity	Tangibility	Company Efficiency	Adequacy	Management Efficiency	Sales Growth	Asset Growth	Industry Affiliation	Working Capital
Firm Size	1										
Leverage	0.1459	1									
Liquidity	-0.2606	-0.1638	1								
Tangibility	-0.1169	0.2474	-0.0808	1							
Company Efficiency	0.3714	-0.0591	-0.1221	-0.4439	1						
Adequacy	-0.2643	-0.716	0.2741	-0.0101	-0.1508	1					
Management Efficiency	0.0021	0.0294	-0.0395	-0.0092	0.0042	-0.0118	1				
Sales Growth	-0.0594	-0.0118	0.012	0.0260	-0.0214	-0.0209	0.0406	1			
Asset Growth	-0.0509	-0.0114	0.0094	-0.0084	-0.0224	0.00011	-0.0695	0.0406	1		
Industry Affiliation	0.9293*	0.0855	-0.2067	0.0048	0.1912	-0.1568	-0.0243	-0.0695	-0.0540	1	
Working Capital	0.7466	-0.0882	-0.01269	-0.1677	0.0609	0.0422	-0.0032	-0.0243	-0.0407	0.7799	1

Note: *High correlation of more than 0.80

Appendix 2. Correlation Table for Model 3 of the Company Profitability Analysis

	lagROA	lagROE	Firm Size	Leverage	Liquidity	Tangibility	Company Efficiency	Adequacy	Management Efficiency	Sales Growth	Asset Growth	Industry Affiliation	Working Capital
lagROA	1												
lagROE	-0.01164	1											
Firm Size	0.2662	-0.0357	1										
Leverage	-0.3191	-0.0228	0.1459	1									
Liquidity	-0.0572	-0.0092	-0.2606	-0.1638	1								
Tangibility	-0.203	0.0198	-0.1169	0.2474	-0.0808	1							
Company Efficiency	0.2053	-0.014	0.3714	-0.0591	-0.1221	-0.4439	1						
Adequacy	0.2448	-0.0431	-0.2643	-0.716	0.2741	-0.0101	-0.1508	1					
Management Efficiency	0.0296	-0.0023	0.0021	0.0294	-0.0395	-0.0092	0.0042	-0.0118	1				
Sales Growth	-0.0203	0.2189	-0.0594	-0.0118	0.012	0.026	-0.0214	-0.0209	-0.0019	1			
Asset Growth	-0.0218	-0.0026	-0.0509	-0.0114	0.0094	-0.0084	-0.0224	0.0011	-0.002	0.0406	1		
Industry Affiliation	0.3300	-0.0009	0.9293*	0.0855	-0.2067	0.0048	0.1912	-0.1568	0.0201	-0.0695	-0.054	1	
Working Capital	0.2505	0.0270	0.7446	-0.0882	-0.0169	-0.1677	0.0609	0.0422	-0.0032	-0.0243	-0.0407	0.7799	1

Note: *High correlation of more than 0.80

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