Testing the Green Banking Model: The Effect of Performance to the Bank Index Securities Price of Srikehati

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Abstract
The study aims to understand the efficiency of green banking that may affect the SRIKEHATI bank index’s performance. The population group is gathered from Indonesian banking companies, with a sample of SRIKEHATI bank index to the 2016 period. The dependent variable used in this study is the securities’ price since 2010 to 2015. The independent variable describes the ratio of the bank’s performance and measured by the RGEC (Risk profile, Good corporate governance, Earnings, Capital) method, being proxy by the GCG self-assessment, NPL, LDR, ROE, NIM, and CAR between 2010-2015 period. The data analysis is based on multiple regression with time series data. The result shows that NPL shows a significant effect to SRIKEHATI banking index securities price.

Keywords: Sustainable Finance, Green Banking, Srikehati Index, Banking Securities Performance, Rgec.

Background
Based on green banking undated presentation of Bank Indonesia also called BI (2017), nowadays global issues are crisis in financial, energy, food; poverty and global warming. Whereas, national issues in real sector are decrease in export commodities, energy subsidy, crops production, flood and landslide, healthcare and biodiversity. Also in moneter sector, loans interest rates became higher, consumer loans domination, limited in financial access, low involvement in climate change finance. The global issues hampered global economic growth, increasing unemployment, high cost financial crisis treatment, increasing global warming impact, threatening monetary stability and sustainable economic growth. Therefore old paradigm whose stated higher economic growth but sacrifice natural resources and social prosperity, must be transformed into new paradigm, the economic growth in the balance of planet, people, profit, and basic on economic participation profit or loss sharing.

The role of bank as financial intermediary still has large potential to transform the economic growth to be greened. The green banking elements are green in loans and its operations, support by regulations and banking principles. January 2005, Bank Indonesia has declared roles about Quality of Assets for Commercial Banks No. 7/2/PBI/2005, environment is
one of factors that affects business prospect evaluation by debtor (Volz, 2015:22). The BI’s roles update at PBI No.14/15/PBI/2012, Assets Quality Assessment is the focus to protect environment; PBI No. 14/26/2012 and 14/22/2012, productive loans improvement and loans access for SME’s industry (OJK, 2017). In 2009, Indonesian government cooperate with KEHATI a foundation whom cares the biodiversity to launch SRIKEHATI index based on Sustainable Responsible Investments (Kehati, 2016). In 2014, OJK launched roadmap for Indonesia’s sustainable finance (OJK, 2014). Whereas, bank performance RGEC consider the risks, governance, profit and capital with required standards (OJK, 2017).

This research purpose is to explore implementation of green banking in Indonesia, especially SRIKEHATI bank index with bank performance method RGEC (risk profile, good corporate governance, earnings, capital).

**Literature Review**

**Green Finance**

**Green Finance** Based on Green Finance Synthesis Report G20 (2016:3), green finance is known as an investment on project funding that orientate on the benefits of environmental awareness in the context of environmentally sustainable development. As an example, environmental benefits include reducing air, water, and land pollution, reducing greenhouse gas (GHG) emission, increase energy efficiency followed by using outside resources, also preventing and adapting on climate change (Chowdhury et al., 2013:2).

**Green finance** is a potential strategy to internalized external environmental factor and to adjust risky perception as an effort to create an environmentally friendly invention and to reduce environmental destruction. **Green finance** includes issues in financial institution and groupings in both public and private assets. **Green finance** is the basis to establish an efficient environmental risk management across the financial system (G20, 2016:3).

**Sustainable Finance in Indonesia**

According to Indonesia’s Sustainable Finance Roadmap by the OJK (2014:16), sustainable finance in Indonesia is defined as a full support from the financial-services industry to support the financial growth resulting from the unity between economic, social, and environmental needs.

Sustainable finance consists of several dimensions:

1. To reach the industry, social, and economic excellence (as a way to reduce global warming, to prevent environmental and social problem),
2. To target the competitive low-carbon economy,
3. To promote environmental-friendly or green investment in various sectors,
4. The Indonesian development 4P principals (pro-growth, pro-jobs, pro-poor, and pro-environment).

As stated by Schaefer (2014:4), green finance can be an approach strategy to address issues related to finance and risk prevention, through its contribution in transforming the “green economies” process in the context of adaptation to environmental changes.
Green Banking

In accordance with Coalition for Green Capital (2016), green banks are public intuitions that fund energy renewal project, energy efficiency, and clean energy project, partners with private lenders. Green banks are capitalized via the public fund, thus being used to lend, lease, credit, and financial service to close the gap between private capital markets as an energy renewal project.

The low-risk clean energy project is often hard to be accessed by the private funding. Green banks have a method on funding private capital to cover the financing gap by reducing the real risks and potential risks, giving opportunities to private investor to study a new opportunity in the market with the guarantee of government partnership. Private lenders will receive experience, information about processes, risk, and able to enter the clean energy market. Private lenders will feel confident to give loan in this project. In other words, private investors are more confident to enter the energy renewal market with Green banks supports.

Figure 1. Green Bank Structure

Source: Coalition of Green Capital, 2016.

Schub (2015:29) stated that green banks will only invest on economical project with proven technologies, loaners or project owners are able to save money from reducing the carbon emission and energy savings. Green bank institution is constructed based on the legislative regulation and fund by the public funding. Different from the government programs that are budgeted in a year, green bank puts its fund on the balance sheet as a loan. It is hope that they are only able to withdraw funds only if a compatible and low-cost project is present.

Three Bottom Line Theory

According to Elkington (2004) when suggesting this theory in 1994, this theory discuss about three basic factors in running a business, which are “Planet,” “People,” and “Profit.” Planet is a type of business activity that must contributes to the environmental sustainability and not damaging the environment. People, business activities that pay attention on the social needs and to keep the environmental-social balance. Profit concerns about enabling business activity to have profits that will be used for business operation and
continuity. This theory is different from any other conventional theories, which only prioritize the profit but not the effect to the surroundings. In Indonesia, the green banking concept is relatively new. It is caused by the low socialization of green banking as an operation business banking activities that is based on three factors of sustainable development (Haryanto, 2016).

**Figure 2. Three Bottom Line**

![Three Bottom Line Diagram](https://example.com/three-bottom-line.png)

Source: Bank Indonesia, Undated Presentation.

**Mechanism of Bank Performance**

As found on the Regulation of Financial Service Authority No.4/POJK.03/2016 about the Rating of Bank Performance of Article 3 paragraph 1, a bank must conduct a self-assessment on bank performance. Article 6, a bank must conduct an individual bank performance rating using a risk-based bank rating as referred in Article 2 paragraph 3 and Article 7 paragraph 1, with scope of assessment on the following factors:

1. Risk profile. There are eight types of risk profile that need to be measured: credit risk, market risk, liquidity risk, operational risk, legal risk, strategy risk, compliance risk, and reputation risk.
2. Good Corporate Governance (GCG). Based on the result of self-assessment towards the bank management on implementation of GCG principles.
3. Earnings, involving performance assessment, resource used, and continuity of profits by the bank.
4. Capital, covers assessment towards the level of capital adequacy and capital management.

**Research Methodology**

**Data**

This research is based on quantitative measures using multiple linear regression method to process the data. The research population group is Indonesian bank companies, with a sample of bank companies indexed by SRIKEHATI in 2016, which are Bank Mandiri, Bank BCA, Bank BNI, Bank BRI, and Bank Danamon. The securities performance is proxy by the daily securities price of the bank companies since 2010 to 2015. The ratio of bank performance is measured by RGEC (Risk profile, Good corporate governance, Earnings, Capital) methodology, proxied by GCG self-assessment, NPL, LDR, ROE, NIM and CAR in 2010 to 2015 based on the overview of the financial statements.
Hypothesis
Is the bank performance with RGEC method affects performance of bank securities prices indexed by SRIKEHATI significantly?

H1: risk profile affects SRIKEHATI indexed bank securities return significantly.
H2: good corporate governance affects SRIKEHATI indexed bank securities return significantly.
H3: earnings affects SRIKEHATI indexed bank securities return significantly.
H4: capital affects SRIKEHATI indexed bank securities return significantly.

Research variables
The following equation is used to test the effect of independent variables, consist of GCG, NPL, LDR, ROE, NIM, CAR, to the dependent variables, which is the price of SRIKEHATI indexed bank securities.

\[ P_i = \alpha_i + \beta_1 GCG_i + \beta_2 NPL_i + \beta_3 LDR_i + \beta_4 ROE_i + \beta_5 NIM_i + \beta_6 CAR_i + \epsilon_i \]

Annotation:
- \( P_i \): yearly mean price of securities bank
- \( \alpha_i \): intercept
- \( \beta \): constants
- \( GCG \): self assessment of good corporate governance
- \( NPL \): ratio of Non Performing Loan
- \( LDR \): Loan to Deposit Ratio
- \( ROE \): ratio of Return On Equity
- \( NIM \): ratio of Net Interest Margin
- \( CAR \): Capital Adequacy Ratio
- \( \epsilon_i \): error

1. Securities price
   The daily securities price of Bank Mandiri, Bank BCA, Bank BNI, Bank BRI, and Bank Danamon, calculated the average value every year since 2010 to 2015.

2. Risk profile
   NPL is an indicator for credit risk that is used in this research. NPL Non-Performing Loan is a ratio that shows the amount of non-performing loans faced by the banks. The liquidity risk is represented by the LDR Loan to Deposite Ratio, which is a ratio that measure the amount of loan given to the public compared to the amount of public funds deposited in the bank.

3. Good Corporate Governance
   The rating value obtained from the self-assessment corporate governance and has been reported in the annual report.

4. Earnings
   ROE Return on Equity shows the bank’s ability to make profit compared with the amount of capital. NIM Net Interest Margin is a company’s ability to manage the productive assets compared to the net interest income (the difference between interest income and interest expense)

5. Capital
CAR Capital Adequacy Ratio describes the amount of bank’s minimum capital. The minimum CAR value set by Bank Indonesia is 8%. The higher the CAR value is, the better the bank to fund the operational needs and generate profits.

**Hypothesis testing**

1. Multiple-regression analysis
   1.1. Classic assumption test
   1.2. Hypothesis test
      a. Simultaneous regression coefficient test (F-Test)
      b. Partial regression coefficient test (t-Test)
      c. Determination coefficient test ($R^2$)

2. Correlation test

**Result and Discussion**

Table 1 shows the data statistic of securities price and bank performance ratio from 2010 to 2012 by SRIKEHATI indexed banks until the 2016, compared to the previous three periods before SRIKEHATI indexed banks were formed, which is the 2007 to 2009. There is an increase in bank performance, shown by the mean ratio of each banking performance ratio. Research conducted by Zulkafli, Ahmad and Ermal (2016:12) SRIKEHATI indexed significantly underperform the Jakarta Composite Index by 10% from 2010 period to the 2014. According to Tambunan (2010) in Zulkafli, Ahmad and Ermal (2016:12), several external factors that affect the underperformance is the global financial crisis in 2008, which highly impacted the Indonesian market. In 2010, there was an uncertain political issue caused by the election that kept the investor to hold back their investment until early 2010. Other external factors are changes in commodity price and changes in exchange rates that affect the securities price during 2009-2010.
Table 1. Descriptive Statistic of Bank Index SRIKEHATI

<table>
<thead>
<tr>
<th>Before SRI 2007 - 2009</th>
<th>Price of Securities</th>
<th>GCG</th>
<th>NPL</th>
<th>LDR</th>
<th>ROE</th>
<th>NIM</th>
<th>CAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4026.56</td>
<td>1,447</td>
<td>0.020</td>
<td>0.673</td>
<td>0.219</td>
<td>0.076</td>
<td>0.163</td>
</tr>
<tr>
<td>Median</td>
<td>3767.04</td>
<td>1.35</td>
<td>0.017</td>
<td>0.641</td>
<td>0.221</td>
<td>0.064</td>
<td>0.157</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1887.63</td>
<td>0.271</td>
<td>0.014</td>
<td>0.146</td>
<td>0.094</td>
<td>0.024</td>
<td>0.027</td>
</tr>
<tr>
<td>Minimum</td>
<td>1113.23</td>
<td>1.1</td>
<td>0.004</td>
<td>0.436</td>
<td>0.080</td>
<td>0.049</td>
<td>0.131</td>
</tr>
<tr>
<td>Maximum</td>
<td>7149.94</td>
<td>2.05</td>
<td>0.045</td>
<td>0.888</td>
<td>0.352</td>
<td>0.111</td>
<td>0.211</td>
</tr>
<tr>
<td>After SRI 2010 - 2012</td>
<td>Price of Securities</td>
<td>GCG</td>
<td>NPL</td>
<td>LDR</td>
<td>ROE</td>
<td>NIM</td>
<td>CAR</td>
</tr>
<tr>
<td>Mean</td>
<td>6011.56</td>
<td>1,318</td>
<td>0.013</td>
<td>0.766</td>
<td>0.272</td>
<td>0.071</td>
<td>0.157</td>
</tr>
<tr>
<td>Median</td>
<td>5831.37</td>
<td>1.31</td>
<td>0.008</td>
<td>0.7517</td>
<td>0.244</td>
<td>0.059</td>
<td>0.153</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>1716.69</td>
<td>0.143</td>
<td>0.010</td>
<td>0.128</td>
<td>0.092</td>
<td>0.020</td>
<td>0.020</td>
</tr>
<tr>
<td>Minimum</td>
<td>2756.73</td>
<td>1.08</td>
<td>0.004</td>
<td>0.552</td>
<td>0.162</td>
<td>0.051</td>
<td>0.127</td>
</tr>
<tr>
<td>Maximum</td>
<td>9282.69</td>
<td>1.5</td>
<td>0.03</td>
<td>1.006</td>
<td>0.438</td>
<td>0.107</td>
<td>0.189</td>
</tr>
</tbody>
</table>

Sources: Yahoo Finance, IDX, Prepared by Researcher.

Standard deviation which is greater than the mean value means that there is a fluctuation in the data distribution. A lower standard deviation compare to the mean value means that the data is well distributed. In this study, the standard deviation is lower than the mean value, indicating that the data is well distributed or showing a low fluctuation. Normal probability diagram plot also shows a normal and linear distributed data. The standard deviation of all variable before SRI and after SRI shows that SRI’s standard deviation is lower with a slight difference. Standard deviation illustrates the risk. This result shows that after green economy was established and designed, the risk of banking securities is slightly declining. The support and commitment of the government gave a positive signal for private investors.

1. **Multiple-regression analysis**

1.1. **Classic assumption test**

Classic assumption test is done to find out whether the equation model is fit and feasible to be used in the study. The VIF value of all independent variables is <5, meaning that no multicollinearity is found in the six independent variables. The Durbin-Watson value compared to the Durbin-Watson table dL 0.9982; dU 1.9313 models is free from the autocorrelation. The residual value and the predicted value of dependent variable that has been standardized by Scatterplot shows a uniform spreading, thus free from heteroscedasticity. Residual is normally distributed; the distribution of dots is close to the diagonal line.

1.2. **Hypothesis test**

   a. **Simultaneous regression coefficient test (F-Test)**
Model feasibility test or the F-test was done to know whether the model estimation can be used to explain the effect of independent variable to the dependent variable. The Prop. F (Sig.) value is 0,007 < 0,05, showing that the model is eligible to explain the effect of GCG, NPL, LDR, ROE, NIM, CAR variable to the securities price.

### b. Partial regression coefficient test (t-Test)

Table 3. Partial regression coefficient test (t-Test)

<table>
<thead>
<tr>
<th>Variable</th>
<th>July 2009-July 2014</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-test</td>
<td>Significancy</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>6737,39</td>
<td>-0,93893</td>
<td>0,357523</td>
<td></td>
</tr>
<tr>
<td>GCG</td>
<td>1503,59</td>
<td>-1,02214</td>
<td>0,317347</td>
<td></td>
</tr>
<tr>
<td>NPL</td>
<td>-191399</td>
<td>-2,11581</td>
<td>0,045399*</td>
<td></td>
</tr>
<tr>
<td>LDR</td>
<td>7831,809</td>
<td>1,141434</td>
<td>0,265435</td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>12904,89</td>
<td>1,938695</td>
<td>0,064905</td>
<td></td>
</tr>
<tr>
<td>NIM</td>
<td>58468,79</td>
<td>1,433458</td>
<td>0,165182</td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>28828,2</td>
<td>1,159294</td>
<td>0,258231</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *significantly α = 0,05 or < 0,05

Sources: Yahoo Finance, IDX, Prepared by Researcher.

The regression coefficient test or t-test was done to test whether coefficient regression and Constanta on the regression model is exact. The prob. t value from the NPL independent variable is 0,045 < value sig. 0,05 and the t value is -2,116, thus NPL shows a negative significant effect to SRIKEHATI banking index securities price.

### c. Determination Coefficient Test

Table 4. Determination Coefficient Test

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,713486</td>
<td>0,509062</td>
<td>0,380992</td>
</tr>
</tbody>
</table>

Sources: Yahoo Finance, IDX, Prepared by Researcher.

The adjusted R Square value is 0,380992, thus the independent variables of GCG, NPL, ROE, NIM, and CAR has a proportion influence on the securities price of 38%, whereas the other (100%-38% = 62%) is explained by other variables outside the regression model.
2. Correlation Test

The correlation test was done to know the strength of relationship between variables. The securities price has the strongest correlation with GCG (Good Corporate Governance) of -0.55321. The GCG self-assessment test attracts investor attention to invest on banks with low rating value (the lower the GCG rating is, the better it is). The correlation of securities price with ROE is linear and strong on 0.448222. It shows that the capital investment by the owner has the ability to generate profit and respond positively by the investor. There is a strong correlation between the securities price and the NPL (Non-Performing Loan) on -0.29461. Investors show a positive respond to banks that have a low-level of bad credit loans (the lower the NPL is, the smaller the bad credit loan is).

Table 5. Correlation Test

<table>
<thead>
<tr>
<th>Correlation</th>
<th>Price of securities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of securities</td>
<td>1</td>
</tr>
<tr>
<td>GCG</td>
<td>-0.55321</td>
</tr>
<tr>
<td>NPL</td>
<td>-0.29461</td>
</tr>
<tr>
<td>LDR</td>
<td>-0.15113</td>
</tr>
<tr>
<td>ROE</td>
<td>0.448222</td>
</tr>
<tr>
<td>NIM</td>
<td>0.109337</td>
</tr>
<tr>
<td>CAR</td>
<td>0.010325</td>
</tr>
</tbody>
</table>

Sources: Yahoo Finance, IDX, Prepared by Researcher.

Discussion

According to Sintha, Primiana, and NIdar (2016:389), the NPL ratio shows the ability of the bank management to manage credit loan issues. The higher the ratio, the worst the quality of credit loan that can cause a high number of credit loan issues. When the NPL value is high, it increases the provision of productive asset and other cost, thus the potential lost is also high. The low NPL value shows that the number of credit loan issues decreased, and the credit lending system is more effective.

Barnea, Heinkel, Kaus (2003:6) indicated two types of investor, which are neutral and green. The neutral investor is willing to invest in any kind of company, while the green investor refuse securities in polluting companies. In White Paper, Coalition Green Capital (2016:3), private lenders must offer loan with a “positive cash flow,” which is an energy-cost saving achieved via clean energy installation monthly saving that exceeds the monthly financing charge. Under the positive cash flow, the loaner will be able to set aside money every month without paying the upfront costs, and making the project to be more attractive. Cash flow structure is only possible when the loan terms is in line with the expected year of project investment, at a rate that matches the risk received.
A number of credit loan problem make banks to be more cautious in increasing the amount of loan given, especially when loans to the third party fail to repay the loans (Roswitasari, Achsani, Andati, 2017:630). Bromund (2014:16) is on his research to understand sustainable finance in Indonesia. Bromund said that bank who take into account the social and environmental risk surrounding the client should make sure that the financial and operational stability. For example, operational risk caused by a change in the external environment, such as agriculture threatened by drought; social condition, such as the high labor cost associated by the high cost of health benefits or health insurance; the high turnover of employees related to health and environmental issue. Operational risk is one of the risks that significantly affect the decline in business profit and future business prospect because it will affect the client’s ability to return back the loan to the bank. Bank’s social and environmental risks depend on the client who borrow funds, in what field of industry or how big the business is.

Different from a research by Roswitasari, Achsani, and Andati (2017:630), NPL ratio have a positive effect to the securities price. Increase in NPL will also increase the securities price, the bank profits, the credit growth, and an addition to the uncollectable credit reserves, thus attracts investor to invest after observing the NPL margin. The company’s profit can still increase with a high NPL because bank will still able to generate profits from other sources other than credit loans.

Ratio that have a strong correlation between securities price and bank performance ratio, but not significant to affect the securities price is the result of GCG self-assessment. In the context of green finance, implementing GCG will not bring a big impact to the operational efficiency with the green bank system and cannot be a source of investment information. A study by Irma, Hadiwidjaja and Widiastuti (2016:99) shows a significant positive correlation between GCG and profit development. A good implementation of GCG will promote the bank’s profit growth. This is related to the NIM ratio that shows the bank’s ability to manage their earning assets to generate net interest income.

Conclusion and Suggestion
The implementation of green banking in Indonesia, focus on bank performance and SRIKEHATI banking indexed results:
1. NPL affects SRIKEHATI banks indexed securities prices significantly. Lower NPL ratio, lower nonperforming loans, result in higher profit because financing operational activities is not hampered. This information is good signal for investors to invest in a bank with low NPL ratio, therefore securities prices increase.
2. Lower NPL ratio of SRIKEHATI banking indexed shows productive loans are based on environment risks and social risks. The government support this action by declare Bank Indonesia’s roles about productive loans.
3. Investors are aware about environment and social issues. Green investors investing in SRI indexed companies, the companies’s securities prices of SRIKEHATI indexed has rose since 2009 when SRIKEHATI formed.
OJK as authorized financial intermediary should concern to climate change finance and productive loans. Most of Indonesian society are farmer and fisherman suspended from nature and Indonesia is disturbed from natural disaster. There should be mitigation for natural risks.

References


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