Inefficiency In Sukuk Implementation In Indonesia: Data Envelopment Analysis

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Abstract

This study aims to measure the efficiency value of Retail Sukuk issuance and to see what factors influence the inefficiency of Sukuk both internally and externally, to provide alternative strategies for the government to achieve Retail Sukuk efficiency. The used method in this study is a Data Envelopment Analysis (DEA) using MaxDEA 6.1 software and interviews with relevant sources. Based on the analysis using the DEA method, it is known that in overall (CRS) and scale, there are 5 series that achieve efficient values or namely SR006, SR008, SR009, SR010, and SR011. The source of inefficiency in Retail Sukuk is dominantly influenced by the Coupon and Total Employee variables. Where coupons have an effect of 41% and total employees by 26% and also fee marketing.

Keywords: Retail Sukuk, Data Envelopment Analysis (DEA), Strategies.

1. Introduction

1.1. Background

Post-reform government in 1998 until now has always used a deficit budget system in which spending is greater than income. The budget deficit that occurred until now continues to experience changes in the structure of the deficit. In the current administration, the budget deficit occurs to maintain the momentum of the country's growth by increasing the budget, while in the previous administration the budget deficit focused more on the costs of government subsidies to the public.

This budget deficit causes the government to overcome the difference in state revenue and expenditure, namely through financing obtained through debt where currently there are 3 main financing instruments namely Direct Loans, Government Bonds (Bonds), and Government Sharia Securities (Sukuk). Direct loans have become the main source of financing the state budget deficit. Although the maximum debt limit is 60% of the Gross Domestic Product (GDP) by Article 12 paragraph 3 of Law No. 17 of 2003 about State Finance, only relying on debt to cover the budget deficit, will have major implications for the country's fiscal conditions, especially for developing countries like Indonesia. The budget deficit is still below the limits mandated by the law, but the problem is the budget deficit financed with debt, in the long run, will narrow the fiscal space (Nasrullah, 2015).

Therefore, financing alternatives other than direct loans are needed, namely Government Securities or Government Bonds. Government Securities currently replace the Direct Loan instrument as the

majority of budget deficit financing. But in the Islamic view, everything that has usury things is prohibited, as well as bonds that have a system of interest in getting benefits for debt holders. In this case, a financial system for financing the Indonesia State Budget through bonds is not allowed in Islam because it is not by sharia principles.

Islam itself has a financial system that is appropriate to sharia principles to be a solution to financing the state budget deficit. In the Islamic financial system, to utilize a business there are only ways available, which is through various partnerships, where investors provide capital, share risks, and rewards from ventures (Alswaidan, Daynes, & Pasgas, 2017). The purpose of Islamic finance is the same as conventional finance, except for its operation according to sharia rules where there are profit and loss sharing and prohibition of usury (Sherif & Lusyana, 2017).

One of the funding systems in the Islamic financial system is Sukuk. Sukuk itself is implemented by the government into the Indonesia budget deficit financing instrument, which is Government Sharia Securities or SBSN. Current position of the SBSN finances around 18% in 2018 from total Government Securities (Indonesia Stock Exchange, 2018). This figure is still relatively small when compared to direct loans and state bonds. But over time, the total issuance of Government Sharia Securities continues to increase because of the response from investors. The presence of Sukuk itself brings financial instruments that are inclusive because not only Muslims but non-Muslims can participate in this SBSN instrument.

Sukuk ijarah are the main basis for Government Sharia Securities or SBSN which are divided into 3 types, that are Sale and Lease Back with underlying assets in the form of land or buildings, Al Khadamat with underlying assets in the form of Hajj Services, and Assets to be Leased with underlying assets in the form of infrastructure projects (Ministry of Finance , 2015). The position of Sukuk as an alternative for Indonesia's state budget financing is significant enough to cover the budget deficit. Where can be seen according to the Ministry of Finance data, the number of issuance of government sharia securities always increases and the realization has also increased from the period of 2014 to 2018.

Source: Directorate of Islamic Finance, DJPPR Ministry of Finance
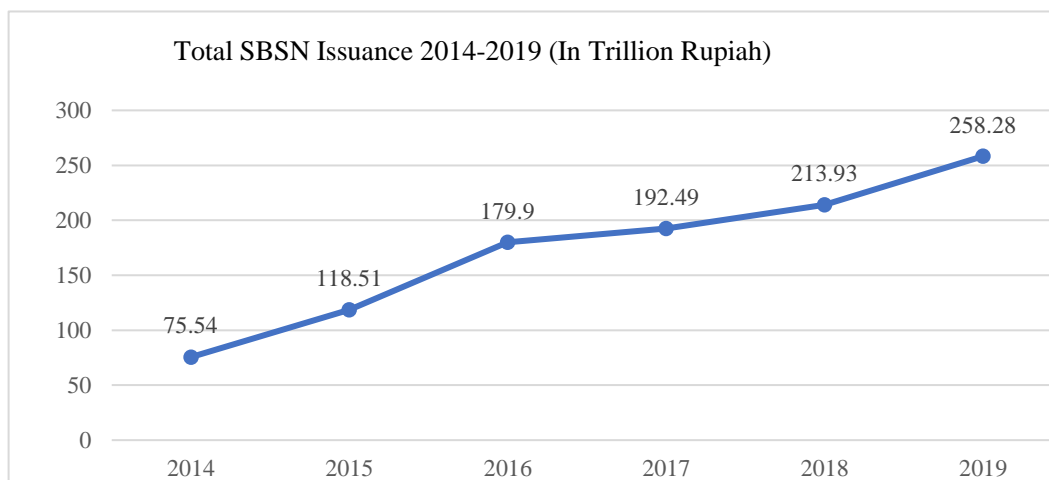

Figure 1. Total Issuance SBSN

The increase in the total issuance of Sukuk is due to the diversification of Sukuk products that can reach Muslim investors where most of the Indonesian occupation are Muslim and also the majority of the world's Muslims are in Asia and the Middle East. With Sukuk, Muslim investors become interested in investing where bonds or state bonds that have existed before Sukuk, make Muslim investors not want to put their funds because there is a usury element of debt repayment. This is also supported by the legality of Fatwa No.32 / DSNMUI / IX / 2002 concerning Sharia Bonds.
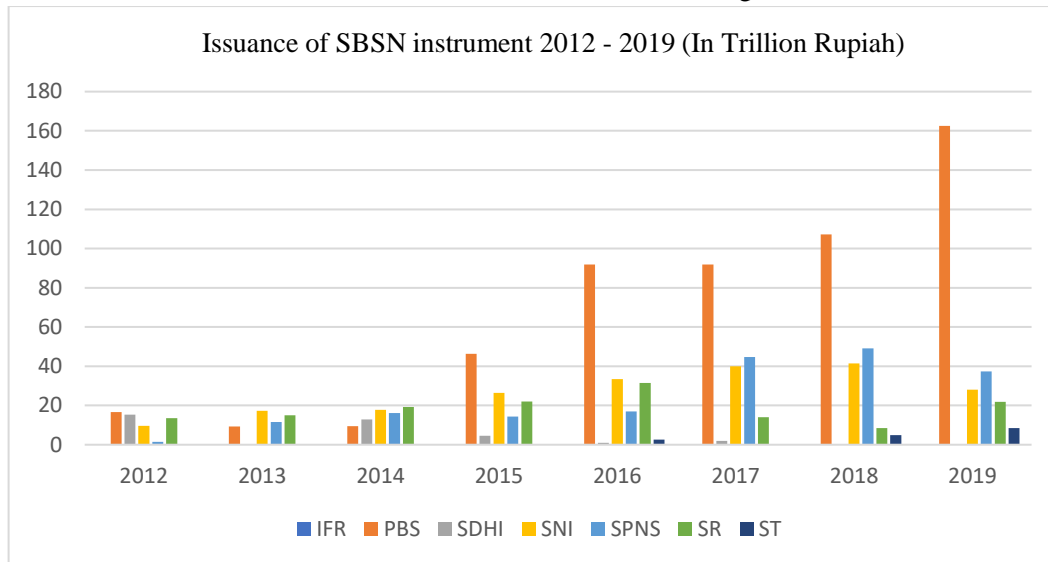
Source: Directorate of Islamic Finance, DJPPR Ministry of Finance
Figure 2. Issuance of SBSN Instrument

As can be seen in the graph above, Project Based Sukuk (PBS) has sufficiently mastered the issuance of Government Sharia Securities over the past 5 years. PBS itself is a Government Sharia Securities instrument that focuses on Government Projects in the Indonesia state budget as an underlying asset with the auction issuance method to the auction participants. The increase from 2015 to 2018 shows conformity to President Jokowi's policy focus on infrastructure development, so the issuance of PBS is added to finance the project. So it is on retail Sukuk instrument (SR), which has the same overall structure as PBS, only the method used is Bookbuilding where the target of the investors is retail or individual community. With the existence of SR, making people can participate in the development of the country. However, Sukuk is only an alternative to Indonesia's state budget financing where Bonds and Direct Loans still dominate budget financing in each state budget. Therefore, research is needed on the potential of government sharia securities in Indonesia whether it is only an alternative or can even be a major source of state budget funding.

In (Hariyanto, 2017) a study was conducted on the effectiveness of government sharia securities as Indonesia's state budget financing. It was found that the government sharia securities experienced a significant increase in which the number of government sharia securities issuances increased. And with the 3-dimensional approach of accuracy namely Right Policy, Right Implementation, and Right Target, it is found that the government sharia securities have been running effectively because it can

solve the budget deficit problem and in its implementation goes according to its target. But to see the potential of government sharia securities requires in-depth research on the level of efficiency of the government sharia securities issuance itself. For this reason, the research will aim to examine the efficiency of SBSN with a focus on one series, namely SR, which has a wide market coverage for retail investors.

1.2. Research Objective

Bonds are the main challenge for the government sharia securities to become the main instrument for financing the state budget because sukSukukemselves are still seeking the trust of the public to invest, which already believes in the return of Bonds. Sukuk's potentials need to be explored to be seen the value of efficiency if people put their funds into Sukuk.

This study aims to measure the efficiency value of the issuance of Retail Sukuk (SR) and to see what factors influence the inefficiency of Sukuk both internally and externally so that it can provide alternative strategies for the government to achieve efficiency of Retail Sukuk (SR). This research targets the institutions involved, the Ministry of Finance of the Republic of Indonesia, and the retail community that will get benefit from this, which is to assist in decision-making related to Government Sharia Securities transactions in the retail market. For this reason, this research must be carried out in detail to assist the government in developing the country.

2. Literature Review

2.1. Budget Deficit

A budget deficit is a budget system used by the Indonesian government in preparing the State Budget which makes expenditure greater than revenue. This fiscal policy is used by the government, one of which is when it implements expansionary economic policies that prioritize a growth momentum. According to (Barro, 1989), there are several reasons for a budget deficit, namely accelerating economic growth, equitable distribution of public income, weakening of the exchange rate, spending due to the economic crisis, and the realization that deviates from the plan, and spending due to inflation.

Therefore, the difference resulting from the budget deficit prompted the government to implement financing policies to cover the budget difference, that is making a loan and issuing state securities. Government finances the budget deficit by borrowing, whereas when there is a budget surplus, the government debt burden is relatively lighter (Mishkin, 2007).

2.2. Sukuk

Sukuk is defined as a document or certificate originating from Arabic, namely sakk in the plural form of Sukuk. In terms, according to AAOFI in Shariah Standard no.17, investment Sukuk is defined as a certificate that reflects the same value and is an undivided proof of ownership of an asset, benefit rights, and services or ownership of a particular project or investment activity.

According to (Godlewski, Weill, & Ariss, 2013), by definition Sukuk itself is an investment certificate such as bonds and shares issued to finance trade or tangible assets that have the maturity and the holder is entitled to regular income during the life of the Sukuk and the last payment due. In Bapepam-LK Regulation Number IX.A.13 concerning Issuance of Sharia Securities, Sukuk is defined as sharia securities in the form of certificates or proof of ownership that have the same value and represent an indefinite (indivisible or undivided share) portion of:

a. Certain tangible assets

b. The value of the benefits of certain tangible assets, both existing and future ones

c. Services that already exist or that will exist

d. Certain project assets

e. Pre-determined investment activities

In its distribution, Sukuk is divided into 3 types according to the basis (Erkol & Sherif, 2017), the first is the capital basis where cooperation funding is to finance a project through contracts such as mudarabah and Masyarakat. The second is based on sales, Sukuk through Murabaha, salam, or listing contracts to finance the purchase of certain commodities. The third type of Sukuk is lease-based (al-Ijarah), a Sukuk with an asset ownership basis that provides fixed returns to the Sukuk holder. But until now, the popular Sukuk are ijarah Sukuk or leases based on a predetermined rate of return (McMillen, 2007).

According to AAOFI, the types of Sukuk themselves are classified into 14 types of Sukuk according to the contracts used in the issuance which are grouped into 3 major groups, which are Ijarah Based Sukuk, Sale and Purchase Based Sukuk (Sale / Debt Based Sukuk), Partnership Based. Most of the popular offerings to date have been Ijarah Based Sukuk (Abdel-Khaleq & Richardson, 2006).

Fabozzi in (Al-Sayed, 2013), explains the risk of bonds in which 3 risks are related and quite influential on Sukuk, namely inflation risk, liquidity risk, and foreign exchange rate.

a. Inflation risk: Due to its fixed-income nature, the investor bears the risk that inflation can be higher than the coupon payment, which leads to a shrink in the real value of the investment.

b. Liquidity risk: Bonds are considered to be less liquid instruments than stocks. Bond investors face the risk of not being able to trade securities due to the lack of potential buyers.

c. Foreign exchange rate: This risk can affect bonds issued in foreign currency when unfavorable currency fluctuations can decrease the initial value of investments.

2.3. Government Sharia Securities

In DSN-MUI Fatwa no. 69 about Government Sharia Securities, it is explained that State Sukuk are Government Securities issued based on sharia principles, as evidence of ownership of SBSN assets both in rupiah and foreign currencies. In its function, Government Sharia Securities have the same function as Government Bonds, that is to finance the budget deficit. However, the basic principles of sharia which are used as an application for the issuance of GovernGovernmenta Securities, certainly, make Government Sharia Securities (SBSN) have several advantages over Government Bonds or Government Securities (SUN). According to (Nasrullah, 2015), there are 4 benefits of Government Sharia Securities. First, it becomes an alternative to the budget deficit financing besides SUN and becomes an asset for investors whose funds want to be managed in the shariah principle. Second, strengthening the role of the sharia-based financial system with the existence of Government Sharia Securities which enrich the effects of sharia in the Islamic capital market. Third, creating benchmarks for Islamic financial instruments on the Islamic financial market both domestically and internationally. Fourth, it can be a means of financing state infrastructure development projects and is ablcanize State Property (BMN).

In Indonesia, ijarah-based Sukuk Sukukhe main reference for issuing Government Sharia Securities (SBSN). With this ijarah contract, ownership of the asset is only temporary and will end when it is due.

The benefits for investors also clearly come from rent payments within a month or year. On the other hand, the profits obtained are not as large as other investment instruments such as shares which are the same investment based on ownership. Nominal profits on SBSN are obtained with a fixed regular amount, while investors generally receive dividends with a fairly large variation (Adam & Thomas, 2004).

In this case, the Government issues 6 types of SBSN instruments, that are Government Sharia Treasury Bills (SPN-S), Islamic Fixed Rated (IFR), Project Based Sukuk (PBS), Retail Sukuk (SR), Indonesia Hajj Fund Sukuk (SDHI), and the Indonesian State Sukuk (SNI).

2.4. Efficiency Concept

According to Kamus Besar Bahasa Indonesia (KBBI), this efficiency can be interpreted as the accuracy of how to do something, as well as the ability to carry out tasks properly and appropriately without wasting costs, time, and energy. This definition suggests that efficiency is related to the performance of a thing by considering the factors involved and the results. In this case, in the concept of efficiency, these factors such as cost and energy are referred to as inputs while the results are referred to as outputs.

In the concept, there are 3 types of efficiency, that are technical efficiency, allocative efficiency, and economic efficiency (Prasetyo M. B., 2007). Efficiency technically shows the ability of the company to use production factors (input) to produce maximum output. Meanwhile, if the company can increase its profits by minimizing the number of inputs, the company can be said to be allocatively efficient. The two types above are by the previous basic theory of consumers and producers. The last type is economic efficiency, which is the combination of both

types of technical and allocative efficiency in which a company can be said to be economically efficient if the company can minimize production costs to produce certain outputs with a certain level of technology and market prices (Ascarya & Yumanita, 2006). The illustration of technical efficiency can be seen in the following figure:
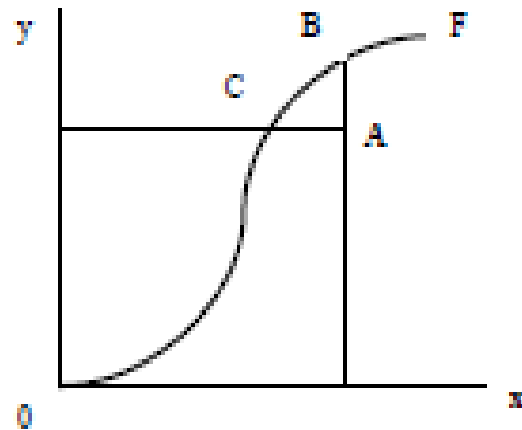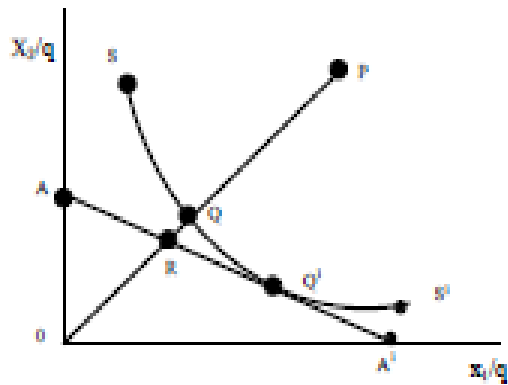

Source: Coelli et. al. (2005)

Figure 3. Frontier Production Chart

Inefficiency, there are two types of measurement techniques, namely input-oriented and output-oriented measurements (Coelli, Rao, O'Donnell, & Battese, 2005).

1. Input Oriented

This input-oriented measurement technique assumes that the number of inputs can be minimized or reduced with the condition that the amount of output is fixed. This assumption arises when the market has entered a saturation point where output cannot be maximized anymore. The following is an illustration of the input orientation measurement technique given by (Farrel, 1957):

Source: Coelli et. al.
(2005)
Figure 4. Input Oriented Efficiency

The illustration above involves a company that uses two types of input (x1 and x2) to produce one type of output (y) with the assumption of constant return to scale (CRS). The SS^1 line is an isoquant line that shows the combination of company inputs to produce the same or technically efficient output value. The AA^1 line is an isocost line that shows the input combination that can be purchased by producers at the same cost level. The OP line is the input combination used by the company. Point P is a company that has not reached its efficient or inefficient value. Point R is allocatively efficient while point Q is technically efficient. Point Q^1 indicates allocative and technical efficiency.

The technical efficiency ratio can be described as TE = OQ / OP = 1 - PQ / OP. From. The PQ line shows the potential for a company to be able to proportionally reduce its input to produce the same output.

The allocative efficiency ratio can be described as AE = OR / OQ = 1 - RQ / OQ The RQ line is a potential company that can do to reduce production costs and reach a point of technical and allocative efficiency, namely Q^1.

From the two formulas above, it can be concluded that the technical and allocative efficiency values will always be between 0 and 1. A company that has a value

of 1 indicates that the company has reached the point of efficiency or it can be assumed as follows:
0 < TE < 1
0 < AE < 1

Both the technical and allocative ratio formulas can be combined into economic efficiency with equations.
Economic Efficiency = Technical Efficiency x Allocative Efficiency
= OQ/OP x OR/OQ
= OR/OP
where 0 < TE, AE, EE < 1

2.   Output Oriented
This output-oriented measurement technique assumes that several outputs produced by the company can be maximized or increased with the same or fixed amount of input. This assumption is used when market conditions are still good so that the company must maximize its output with fixed inputs. The following is an illustration of the measurement with the output orientation.
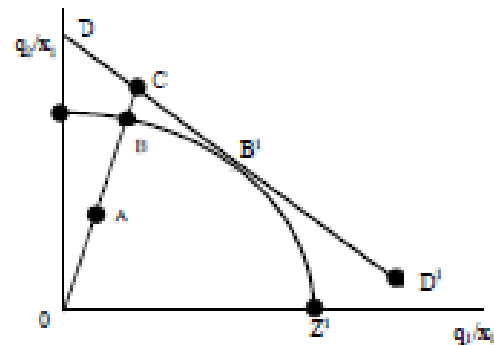
Source: Coelli et. al. (2005)
Figure 5. Output Oriented Efficiency

The illustration above assumes a company with 2 types of output (y1 and y2) and 1 type of input (x) assuming CRS. The ZZ^1 curve is the production possibility curve and the DD^1 curve is an is revenue curve that shows the ratio of output prices or allocatively efficient. It can be seen at point B, shows that a company is technically efficient, while point A is an inefficient company. The distance to point AB is a potential increase for the

company at point A to achieve technical efficiency at point B by increasing the value of its output.

Point C shows the company which is allocatively efficient because it is on the revenue line. Of all points above, point B^1 is the most efficient point because the company has achieved technical and allocative efficiency. Point B to point C shows that there is still potential for improvement for the company at point B to reach the most efficient point, namely B^1. Mathematically, the calculation of efficiency is as follows:

Technical Efficiency = OA/OB

Allocative Efficiency = OB/OC

The two equations can be put together in one equation, namely Economic Efficiency below:

Economic Efficiency   =   Technical Efficiency x Allocative Efficiency

$$= OA/OB \times OB/OC$$
$$= OA/OC$$

2.5.   Previous Study

Until now, the authors have not found a study that analyzes the efficiency level of Sukuk using the DEA method. However, there are some references that the authors take as a basis for efficient research and the application of the DEA method. (Hendrawan & Sumantri, 2013) analyze the efficiency of mutual funds in Indonesia during the period 2007 to 2011. The objects used in this study are 105 mutual funds consisting of 29 equity mutual funds, 38 mixed mutual funds, and 39 fixed mutual funds. The methodology used is an empirical study based on a non-parametric approach, Data Envelopment Analysis (DEA). The variables used are front-end load, redemption fee, and expense ratio as the input, while the total return is the output. The results of the study found that based on the average score during the years 2007 – 2011 the performance of the Commonwealth Life

Investra Equity as equity mutual fund had the highest index score, while Trimegah - the lowest capital trim, the mixed mutual fund performance of CIMB-principal Dollar Mutual Funds had the highest index value, while the first State Indonesian Multistrategy was the lowest. The performance of the Brent Dana Tetap as an equity mutual fund, had the highest index score, while the stable bond fund had the lowest score.

(Tofallis & Sargeant, 2000) conducted to identify 'best practice' in the voluntary sector using the Data Envelopment Analysis method. The objects studied were 327 social institutions in the United Kingdom. The variables used are fundraising expenditure and administration expenditure as input, while the number of voluntary funds collected is output. The results showed that 13 social institutions were relatively efficient. The correlation between efficiency scores and the three variables for the 327 social institution units was 0.34 for voluntary income, 0.18 for fundraising expenditures, and -0.14 for administrative expenditures.

In (Liestiowaty, Sumarwan, Achsani, & Nuryartono, 2011) conducted a study to assess the efficiency of Indonesian Retail Government Bonds (ORI) at each branch of PT. Bank BRI. The method used is the SFA (Stochastic Frontier Analysis) parametric approach. The input variables in this study are the number of marketers and marketing costs, while therefore the output variable is sales fee income from each branch. The results showed that 5 branches produced the most efficient value in selling ORI001-005, namely Jakarta Pasar Minggu, Jakarta Hayam Wuruk, Kramat Jakarta, Medan Iskandar Muda, and Jaya Pura. In this research, the object year was taken only until 2008, which coincided with when the crisis was ongoing and the author recommends conducting research with newer data as a

comparison of the results on whether ORI is still the best choice as an investment instrument.

In (Hariyanto, 2017) conducted research to evaluate whether the policy to continue issuing state Sukuk is by the objectives of the issuance in the SBSN Law and what is the impact of its issuance. The methodology used is descriptive qualitative. The results obtained by SBSN issuance are to the objectives of the SBSN issuance, which are to finance the budget deficit and finance government projects.

3. METHODOLOGY

3.1. Research Data

Data used in this study are secondary. The data are from the Government Sharia Securities (SBSN) transaction draft and the Directorate General of Budget Financing and Risk Managemen (DJPPR) annual report starting from 2009 until 2019 by the issuance of Retail Sukuk. The data is obtained by collecting secondary data by accessing the website of DJPPR. This data will be used to get the efficiency value from Government Sharia Securities.

Table 1. Decision-Making Units

DMU	Retail Sukuk	Years
1	SR001	2009
2	SR002	2010
3	SR003	2011
4	SR004	2012
5	SR005	2013
6	SR006	2014
7	SR007	2015
8	SR008	2016
9	SR009	2017
10	SR010	2018
11	SR011	2019

3.2. Data Analysis Techniques

In this study, the methodology used is Data Envelopment Analysis (DEA) using MaxDEA 6.1 software and interviews with relevant sources. DEA is a non-parametric method that uses a linear program model to calculate the ratio of output and input for all units compared (Prasetyo S. B., 2008). This method was first introduced by (Charnes, Cooper, & Rhodes, 1978), which is used to help evaluate the performance of an activity in an entity unit called the DMU (Decision Making Unit) in DEA. In general, efficiency

DMU = decision-making unit;
n   = DMU to be evaluated;
m   = different inputs;
p   = different outputs;

measurements are formulated using the following model:

Efficiency = $\dfrac{\text{Total Output}}{\text{Total Input}}$

According to (Ascarya & Yumanita, 2006), the measurement of efficiency is formulated mathematically as follows:
Information:

$$Efficiency\,of\ DMU_0 = \frac{\sum_{k=1}^{p} \mu_k y_{k0}}{\sum_{i=1}^{m} v_i x_{i0}}$$

Zij   = number of inputs I consumed by UPKj;
ykj   = number of output k produced by UPC

As a measure of activity performance, the DEA method has several advantages and limitations/weaknesses in applying the results. According to (Purwantoro, 2003), briefly, the advantages and limitations of DEA are:

a. DEA Advantages
- Can handle multiple inputs and outputs
- No need to assume functional relationships between input and output variables.
- DMU is compared directly with each other.
- Input and output can have different units of measurement.

b. Limitations of DEA:
- Specific sample
- Is an extreme point technique, measurement errors can be fatal.
- It only measures the relative productivity of DMUs, not absolute productivity.
- Statistical hypothesis testing on DEA results is difficult to do.
- Using separate linear programming formulations for each DMU (manual calculations are difficult to do especially for large-scale problems).

1.   CCR Model of DEA Method

This model is the first method from DEA that was introduced by Charnes, Cooper, and Rhodes in 1978. This model assumes that the ratio of increment between input and output is equal, commonly called CRS (Constant Return to Scale) (Farida & Azhari, 2018). This CRS assumes an increase in input proportionally to a certain percentage will increase output by the same percentage.

2.   BCC Model of DEA Method

The CCR model was previously developed in 1984 by Banker, Charnes, and Cooper. In contrast with the CCR model, the BCC model assumes that the ratio of input and output addition is not equal or commonly called VRS (Variable Return to Scale). The concept of VRS is that an increase of 1 unit of input will not produce a proportional increase in output, depending on the condition of its return to scale, whether decrease/increase. This assumption of VRS is commonly referred to as "pure" technical efficiency.

According to several studies, the technical efficiency of the CRS model can be divided into two components, namely scale efficiency, and pure technical efficiency. To determine this theory, calculate CRS and VRS on the same data. From these data, if there is a difference between the TE scores of the DMU, the DMU has a scaling efficiency that has the following equation:
Scale Efficiency = Technical Efficiency CRS/Technical Efficiency VRS

3.3.   The Approach Used

The approach in DEA generally uses a banking approach. For this reason, the author will look at a banking approach that is approachable and applicable to Government Sharia Securities. According to (Hadad, Santoso, Mardanugraha, & Ilyas, 2003), there are 3 approaches to defining the relationship between input and output in the behavior of financial institutions, the Production Approach, the Intermediation Approach, and the Asset Approach.

1.   Production Approach

This approach sees financial institutions as producers of savings accounts and credit loans. This approach defines output as the sum of the accounts or related

accounts. While the input in this approach is calculated from the amount of labor, capital expenditure on fixed assets, and other materials.

2.   Intermediation Approach

This approach sees financial institutions as intermediaries. This financial institution changes and transfers financial assets, from units with excess funds to units with a lack of funds. Output in this approach is measured through credit loans and financial investments. While institutional input is the cost of labor and capital and the payment of interest on deposits.

3.   Asset Approach

The asset approach measures the ability of banks or financial institutions to invest funds in the form of credit, securities, and other alternative assets as output. Inputs are measured from the price of labor, the price of funds, and the physical price of capital.

In this study, adjusting to the structure of the Government Sharia Securities, the authors choose a production approach in which Government Sharia Securities as an investment instrument uses its funds to produce underlying assets. The intermediation Approach is not used because Sukuk itself does not distribute funds to the units with lack funds, but is directly used for state development projects. The asset approach is not used because Sukuk is an investment asset itself. The following are the input and output variables used in this study:

Table 2. Input and Output Specification

Variables	Definition	Data Source
Input		
Coupon	Return that must be paid to investors annually	Issued Report
Marketing cost	Spending fees for the government to promote securities	Marketing Division DJPPR
Total Employee	The number of employees in the Directorate of Islamic Finance (DPS)	Human Resource from DPS
Output		
Total Investor	Amount of investors of issued Sukuk	Issued Report
Collected Funds	Funds raised from issued securities	Issued Report
Allocated Funds	Funds that will be used for government project	Difference between collected funds and marketing costs DJPPR

This study is different from (Hendrawan & Sumantri, 2013), which in that study uses the expense ratio as input, while the author changes it to a coupon variable which has a definition that is quite similar to the expense ratio. Marketing cost refers to input variables that use (Liestiowaty, Sumarwan, Achsani, & Nuryartono, 2011) and Total Employee relates to production theories from Hadad et

all. For output variables, this study uses total investor that has a connection with coupon variables that relate to theory (Fabozzi, 1996). Collected funds variable which similar to the output variable from (Tofallis & Sargeant, 2000) and also allocated fund which is the real funds that will be distributed to the project section.

4. RESULT AND ANALYSIS

4.1. Efficiency of Retail Sukuk

Efficiency measured in this research using DEA is the relative efficiency that allows some DMUs to reach efficiency levels. In addition, DEA can also show the source of inefficiency by measuring the potential improvement of each input and output.

Table 3. Efficiency Score

Year	Type Sukuk	CRS	VRS	Scale	RTS
2009	SR001	0.941	1.00	0.941381	1
2010	SR002	0.785	1.00	0.784794	1
2011	SR003	0.778	1.00	0.777778	1
2012	SR004	0.819	0.997	0.822063	1
2013	SR005	0.858	1.00	0.858303	1
2014	SR006	1.000	1.00	1.000000	0
2015	SR007	0.927	0.982	0.944324	1
2016	SR008	1.000	1.00	1.000000	0
2017	SR009	1.000	1.00	1.000000	0
2018	SR010	1.000	1.00	1.000000	0
2019	SR011	1.000	1.00	1.000000	0

Source: Processed Data from MAXDEA 6.1

In the table above, there are differences in efficiency results between scale, overall (CRS), and technical (VRS). In terms of scale and overall (CRS), there are 5 series of Sukuk that have reached efficiency as indicated by the number 1. However, technically, there are 9 series of Sukuk that have been efficient. The number of technically efficient series is greater than the scale and overall, indicating that this Retail Sukuk is efficient in its local process where external factors such as macroeconomic conditions still sufficiently affect the efficiency of the retail Sukuk, it is proven that the Sukuk series as a whole is only efficient in 5 series out of 11 the series. However, relatively, when viewed from a distribution perspective, the lowest efficiency value is not less than 50%, namely in the SR003 series of 0.778. Can be seen in the table below:

Table 4. Efficiency Distribution

Distribution	CRS	VRS	Scale
1	5	9	5
80%-99%	4	2	4
60%-79%	2	0	2
0%-59%	0	0	0

Source: Processed Data from MAXDEA 6.1

The SR001, SR002, and SR003 series have achieved technically efficient values, but in terms of scale and overall, the three series have not achieved efficient values. From the previous explanation, this shows that in the initial conditions for the issuance of Retail Sukuk, the government has been good in the issuance process of managing the funds that have been collected, but external factors still cannot be adjusted to this Sukuk.

Public trust has the potential to be one of the external factors that influence, where the challenge of a new product is the trust of consumers or investors. In this condition, retail bonds already have public trust, so in certain cases, the public still refers to which is safer between existing bonds or newly issued Sukuk. Even in SR004, not only in scale and overall, but technically inefficient even though the results are close to efficient, that is 0.997.

In SR005, the efficiency condition returns to the same as the first three series, which is technically efficient. This is influenced by the coupon rate offered at SR005 reaching the first lowest value of 6%, where from series SR001 to SR005, coupons offered continued to decline, and in SR006 and above experienced an increase in coupons offered again.

The drastic increase in coupons on the SR006 did not affect its efficiency level and became the first series to achieve an efficient value in terms of technical, scale, and overall efficiency. This is partly influenced by good investor interest, which is double the previous series. This proves the risk theory (Fabozzi, 1996) that the inflation risk borne by investors makes investors choose to invest their funds when the coupon reaches the expected value. Unfortunately,

the SR007 series is again inefficient on all assumptions including technically,

Sukuk's efficiency began to improve after the issuance of SR008. It can be seen in Table 3, that SR008 to SR011 always achieve efficient value in terms of technical, scale, and overall. This can be interpreted that public trust and awareness of Retail Sukuk has started to be high with a fairly high Total of Investors and Funds Raised. Even though SR010 experienced a decline again, with coupons touching the lowest value of 5.9% and Total Investors decreasing by 40%, it still brought SR010 to its efficient value. One of the supporting factors is the decrease in the percentage of Fee Marketing by the government starting from SR009, thus helping Retail Sukuk to be efficient up to SR011.

This DEA method also shows the Return to Scale (RTS) results, which is a scale that shows how to optimize the use of inputs to the output results in each DMU. There are 3 RTS conditions, Increasing Return to Scale (IRS), Constant Return to Scale (CRS), and Decreasing Return to Scale (DRS). The IRS condition shows that the inputs have not yet reached the optimal value in producing an output. The DRS condition shows the opposite, that is the output value has reached the optimal value and cannot be added anymore so input is required to be minimized, while the CRS is in normal condition. Table 3, none of the series is in the DRS condition. This shows that the Sukuk is inefficient, the input value should not need to be minimized anymore because there is still potential in the output to be maximized with the existing inputs.

4.2.   Time as Benchmark

Table 5. Benchmark Score

Sukuk	CRS	VRS	Time as Benchmark
SR003	0	1	1

SR005	0	2	2
SR008	3	1	4
SR009	3	1	4
SR010	1	1	2
SR011	3	1	4

Source: Processed Data from MaxDEA 6.1

Time as Benchmark is also one of the results shown by the DEA method. This Time as Benchmark shows that several Retail Sukuk series are used as benchmarks by inefficient series to achieve optimal values. SR008 and above become the series most frequently referred to as the inefficient series. The previous analysis that SR008 has a fairly good actual value and the reduction in marketing costs starting from SR009 makes these series considered good enough to be used as benchmarks.

4.3.   Potential Improvement

The sources of inefficiency in the Retail Sukuk series need to be improved to achieve an efficient value and become a benchmark for future issuance. For this reason, the DEA method also shows the sources of inefficiency and the potential improvement. In a series that is still inefficient, there is a difference between the actual value and the projected value generated from the results of running data. The difference will be a potential improvement for inefficient series.

Table 6. Potential Improvement

Sukuk	Potential Improvement					
	Input			Output		
	Coupon	Fee Marketing	Total Employee	Total Investor	Fund Raised	Allocated Funds
SR001	-73	-6	-34	0	21.	21
SR002	-54	-22	-25	0	1	1
SR003	-52	-22	-22	1	0	0.1
SR004	-21	-18	-18	28	0	0.1
SR005	-16	-14	-14	36	0	0.1
SR007	-20	-7	-7	17	0	0.03

Source: Processed Data from MaxDEA 6.1

From the table above, it can be seen that the inefficiency of retail Sukuk occurs in 6 retail Sukuk instruments with the input approach and CRS assumptions overall. Inefficiency in retail Sukuk series is dominantly sourced from coupons, which is around 41%, followed by total employees by 26%, and the rest is influenced by other variables. Public trust to invest at the beginning of the issuance of Retail Sukuk is

one of the obstacles for the government to determine the coupon value

In the initial series, namely SR001, SR002, and SR003, the coupon value offered by the government was quite high so the potential improvement value was also high, above 50%. The high coupon was influenced by external factors such as the BI rate and Bonds Return so the government had to adjust the Sukuk coupon so that people were interested in injecting their

funds, but this resulted in a lack of efficiency in the series. Market risk and liquidity also affect the high coupon rate because investors ask for Retail Sukuk to be rewarded at a premium level. However, the inefficiency in coupons has begun to decrease in each series, which is supported by Retail Sukuk which has been issued regularly, and a large number of secondary markets.

The total employee overall is quite influential on the inefficiency of Sukuk. However, this happens like a coupon, which is at the beginning of the issuance of the Sukuk. Where, in SR001, total employees have the potential to be reduced by 34% to achieve efficiency. The inefficiency of the total employee slowly decreases with each series. It is proven in the SR007 series, that the total employee has only potential improvement to be reduced by 7%. At SR004 and SR005, the source of inefficiency begins to balance the input variables. That is SR004 coupons need to be reduced by 21%, and marketing fees and total employees are reduced by 18%. As for SR005, the coupon needs to be reduced by 16%, the marketing fee and total employee are 14%

Some of the inefficiencies also come from marketing costs which are a burden for the government as a publisher. At that time, the marketing method used was mostly direct selling (meeting with potential investors directly). The promotional media available are also not as easy as using current online promotion tools. The Retail Sukuk strategy is still carried out offline by holding meetings with potential investors in hotels, restaurants, offices, and others.

The government's efforts to introduce SR to the entire community from Sabang to Merauke also cost a lot of money. The government tried to make Sukuk, which at that time was still a new instrument, must gain the public's trust. On the output side, there are some inefficiencies in total investors. As in SR005 which is quite high,

with the potential that total investors can be maximized again by 36%. However, the orientation used in this research is input orientation so that potential improvement is focused on input variables. To obtain a more valid value, it must be supplemented with other data which so far have limited access because it involves data confidentiality.

5.   CLOSING

5.1.   Conclusion

Based on the analysis using the DEA method, it is known that in overall (CRS) and scale, there are 5 series that achieve efficient values or namely SR006, SR008, SR009, SR010, and SR011. While technically (VRS), there are 9 series that achieve efficient values, namely SR001, SR002, SR003, SR005, SR006, SR008, SR009, SR010, and SR011. From these results, Retail Sukuk is quite good in the issuance process to manage funds, but Retail Sukuk is still influenced by external factors outside of the technicalities.

There was instability in the initial period of the issuance of this Sukuk, but starting from the SR008 series Sukuk began to stabilize and continue to get efficient values up to the SR011 series. The SR008, SR009, and SR011 series are the most frequently referenced series by other series that have not yet reached their efficient value.

The source of inefficiency in Retail Sukuk is dominantly influenced by the Coupon and Total Employee variables. Where coupons have an effect of 41% and total employees by 26%. At the beginning of the issuance of SR, this instrument was considered to still have market and liquidity risks, so investors asked for SR rewards at a premium level. Currently, SR has been issued regularly and the number in the secondary market has been large, so the risk can be eliminated. The Source of

inefficiency also occurs in Fee Marketing. Challenges and constraints in the retail Sukuk marketing process by the government make the cost requirement quite large. Marketing with direct selling or offline is a process that is quite costly. This was done to attract public trust at the beginning of the issuance of Retail Sukuk

5.2. Implication

SR is an investment instrument that has become known to the public. However, the government still needs to continue to educate the public, especially through information technology-based facilities. Public education through these facilities has proven to be cheaper and more efficient because it can reach a very wide area at a very low cost. Education needs to be continued so that people understand SR and know how to invest. The SR marketing model through direct meetings with investors should be kept to a minimum by the Government and Distribution Partner. This marketing model, although preferred by investors, uses a large source of funds. Both the government and Distribution Partner can look for more innovative marketing models, such as online meetings or other forms.

The Government and Distribution Partner can build a joint application that makes it easier for investors to invest in SR and makes it easier for the Government and Distribution Partner to monitor SR marketing. Encouraging Distribution Partners to strive for the distribution of investors from a geographical perspective to be more developed in the central and eastern parts of Indonesia, as well as seeking to increase the number of investors better so that the benefits of investing in SR can be felt by the people of Indonesia. The potential for Retail Sukuk itself is still quite high in terms of potential improvement. However, for better accuracy, more comprehensive research is needed. One of them is by comparing the efficiency of Retail Sukuk and Retail Bonds so that the potential for Retail Sukuk is more accurate.

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