



Spin-off and efficiency in Islamic banks: DEA approach

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Abstract

Purpose – This study aims to analyze the efficiency level of Islamic banks from spin-off and non-spinoff results and the impact of the separation policy and other factors that affect the efficiency level of Islamic banks.

Methodology – This study uses a quantitative approach through data envelopment analysis to measure the efficiency level of Islamic banks and the difference-in-difference approach to examine the impact of separation and other factors that affect the efficiency level of Islamic banks. Data is collected directly from each of the six Islamic banks' financial statements.

Findings – The results showed no difference in the efficiency level between before and after the spin-off policy at the spin-off bank. Furthermore, it was found that the efficiency level of spin-off Islamic banks was significantly lower than that of non-spinoff Islamic banks.

Implication – This result implies that the rules regarding spin-offs should be evaluated. The spin-off policy must be a corporate action and not a regulation imposed by the regulator. Merger or conversion between sharia business units can be an alternative to improve the performance of sharia banking in Indonesia.

Originality – Research on the impact of Islamic bank spin-off policies is still limited. Only a few studies analyze the efficiency level of Islamic banks as a result of spin-offs by measuring data analysis. Therefore, this research will contribute to research that discusses the spin-off policy of Islamic banks, especially the impact on efficiency and the factors that affect the level of efficiency.

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Introduction

Indonesian government issued Law No. 21/2008 concerning Sharia (Islamic) banking. It mandates that in 2023, the Islamic business units of conventional banks must convert to full-fledged Islamic banks. This policy is generally called a “spin-off policy.” The spin-off policy was issued to strengthen the role of Islamic banks as intermediary institutions in the economy. At the regional level, the soundness of Islamic banks in Indonesia is inferior to that of Islamic banks in Malaysia (Hosen & Muhari, 2018). There are several opportunities from this Islamic business unit spin-off policy, namely improving financial performance, market expansion, rearrangement of financial structures, and having independent management (Siswantoro, 2014). (Yuspin et al., 2020) stated that this spin-off would increase the market share of Islamic banking. This spin-off policy will increase competition in the Islamic banking industry. An increasingly competitive industry will increase the efficiency of bank intermediation functions (Trinugroho et al., 2014).

On the other hand, this spin-off policy has several disadvantages, including the potential loss of joint revenues and disruption in the business/operations during and following the spin-off. Moreover, the parent bank may also lose the benefits of diversification (Prasetyo et al., 2019). (Al Arif et al., 2017; Al Arif et al., 2018) stated a decline in the financial performance of spin-off Islamic banks, such as operational efficiency. The efficiency level of fully-fledged Islamic banks is much higher than Islamic business units that tend to be much smaller. This condition is likely to lead to problems in the Islamic business unit when spin-off. Suppose they are less efficient when they are still Islamic business units. In that case, the Islamic business unit is also likely to be less efficient if they convert to fully-fledged Islamic banks. (Suhail & Nurzaman, 2020) shows that the Islamic bank in Indonesia is less efficient than Islamic banks in Saudi Arabia and the United Kingdom.

This study aims to understand the impact of the spin-off policy on the efficiency level of the spin-off bank. In general, only a few Islamic business units (UUS) have carried out spin-offs. This condition shows the low enthusiasm of banks to follow regulations. Although several studies have examined the impact of spin-offs on efficiency levels in Islamic banking, the majority use the ratio of Operational Expenses to Operating Income (BOPO) as a tool to measure the efficiency level of Islamic banks. This research is the first to combine data envelopment analysis (DEA) techniques in the first stage and difference-in-difference (DID) analysis in the second stage. It investigates the efficiency effects of spin-off and window banks (non-spinoff), and then compares the efficiency levels of the two different groups.

We find evidence that there is no difference in the efficiency level of the spin-off bank between before and after the spin-off. A more in-depth analysis shows that in the first few years after the spin-off, the level of operational efficiency of the spin-off bank decreased. Operational costs are more significant than operating income. After the spin-off, one of the stable banks is the Bank of BNI Sharia. This condition occurs because the technology used is still under the auspices of the parent bank. The rest of this paper is structured as follows. Section 2 discusses the related literature on spin-off policy. The data, variables, and methods are presented in section 3. In section 4, we discuss the empirical result and discussion. The last section concludes the essential findings and provides policy implications.

Literature Review

Research on the spin-off of the Islamic banking industry in Indonesia is interesting to study. Until now, several theories or research related to Islamic bank spin-offs like this (we believe) have only been carried out in Indonesia. In general, the spin-off theory is an organizational unit that leaves an existing company to start as a new company by applying its knowledge and competencies (Al-Jarhi, 2008; Mokhtar et al., 2008). According to (Cristo & Falk, 2006), the spin-off makes the parent company focus on their respective areas of expertise. The spin-off policy is one of the strategies carried out by the regulator to accelerate the growth and performance of Islamic banks.

Efficiency is one component in assessing the level of health (Suseno, 2008) and performance evaluation (Pratikto, 2011). Efficiency is often tied to time with doing the right thing. The discussion about efficiency in a Work Unit/Economic Company is always about how to produce the maximum level of output with the amount of input, in particular, Farrell (1957). Efficiency is an essential measure of bank operating conditions and is one of the critical indicators of a bank's success (Wheelock & Wilson, 1999).

Several studies have examined spin-offs in the Islamic banking industry. The first group stated that the spin-off had a positive impact on the efficiency of Islamic banks. The efficiency level of Islamic banks is better after the spin-off than the previous condition (Rusydziana et al., 2019). (Nasuha, 2012; Pernamasari, 2020) show positive differences in performance on five aspects of financial ratios (CAR, NPF, FDR, ROA, and ROE) in spin-off Islamic banks. In addition, there are also differences between before and after the spin-off policy at the asset level (Khairunnisa & Khasanah, 2018) and deposit funds (Taga et al., 2019).

While the second group stated that the spin-off policy must be evaluated because it does not have an impact on the performance of Islamic banking, the spin-off criterion, reaching 50% of the parent bank's assets, is not possible for Islamic businesses. units to be achieved (Al Arif et al., 2017; Haribowo, 2017). After the spin-off, an increase in the number of entire Islamic banks does not mean a follow-up increase in efficiency levels (Al Arif et al., 2020). There has even been a decrease in the efficiency level of spin-off banks (Al Arif et al., 2018; Hosen & Rahmawati, 2016). In addition, financing risk increases after the spin-off (Trinugroho et al., 2021).

Research Methods

This study uses the DEA analysis technique to, calculate the efficiency level of Islamic banks with DEA in the first stage. In the second stage, we will use difference-in- difference analysis to determine the impact of the spin-off policy and, other factors that affect efficiency levels. The number of banks used was six banks, namely four spin-off banks (namely bank of BRI Sharia, Bank of Sharia Bukopin, Bank of BJB Sharia, and Bank of BNI Sharia) and two bank windows from conventional banks (namely Bank of Sharia Mandiri and Bank of Mega Sharia).

This study uses the technical analysis of DEA with the assumption of Variable Return to Scale (VRS) to measure the efficiency value of Islamic Commercial Banks. The choice of efficiency measurement with the assumption of the VRS model because not all Decision-Making Units (DMU) operate at an optimal scale. Conclusion: there are factors of imperfect competition, technology, and different financial conditions so that financial institutions' optimal conditions are challenging to achieve. While the orientation used is output orientation, it is assumed that Islamic Commercial Banks in Indonesia are mutually competitive. Determination of input and output variables uses an intermediation approach. The input variables in this study are deposit funds, fixed assets, and labor costs. In contrast, the output variables are total financing and total income. Then the difference in difference (DID) analysis is used to compare the outcomes of the treatment and control groups in the period before and after a particular policy.

The DID approach is an excellent method in impact evaluation because it can eliminate time- invariant unobserved variables by using the period before and after treatment (Berger & Roman, 2020). The DID method in this study uses two groups and two observation periods. One group will be the treatment group (spin-off), and the other will be the control group (non-spinoff). So with this assumption, the DID method can accurately analyze the difference in efficiency levels from the period before and after the treatment group and the efficiency level of the treatment and control groups. The following is the mathematical equation of the DID method:

$$EFF_{it} = \alpha + \beta_1 d_{spinoff_{it}} + \beta_2 d_{treatment_{it}} + \beta_3 d_s * d_{tit} + \beta_4 ROA_{it} + \beta_5 NPF_{it} + \beta_6 FDR_{it} + \beta_7 Inf_{it} + \beta_8 GDP_{it} + \epsilon_{it}$$

Where:

EFF = Efficiency level (using DEA)

ROA = Return on Asset

NPF = Non-Performing Financing

FDR = Financing to Deposit Ratio

Inf = Inflation

GDP = GDP growth

$d_{spinoff}$ = Dummy variable for spin-off period, where: 0 before spin-off; 1 after spin-off

$d_{treatment}$ = Dummy variable for control and treatment banks, where: 0 non-spin-off banks;
1 spin-off banks

$d_s * d_{tit}$ = Interaction variable

Results and Discussion

Table 1 shows the results of calculating the efficiency level of Islamic banks using data envelopment analysis. In general, it shows that all banks are at a good efficiency level. BNI Sharia

before and after the spin-off was able to achieve optimal and stable efficiency levels at intervals of 1 during the study period. One of the strategies of BNI Sharia is to minimize operational costs by still integrating information technology facilities with its parent bank, such as an ATM. In addition, office channeling activities with the parent bank are also maintained as a form of saving operational costs for BNI Sharia during the spin-off process. that one of the determinants of the success of the spin-off is the excellent relationship between the parent company and its subsidiaries (Tubke, 2004; Lindhlom Dahlstrand, 2000). After the spin-off, Bukopin Sharia was able to increase efficiency. One of the Islamic banks experienced decreased efficiency in 2015-2017, namely BRI Sharia. However, the efficiency level improved again in 2018. Bank Jabar Banten Sharia fluctuated slightly after the spin-off (2011-2019). There is a tendency to increase operating costs after the spin-off is carried out (Al Arif et al., 2018).

Table 1. The DEA Result

Year	BSB	BRIS	BNIS	BJBS	BSM	BMS
2008	0.99*	1*	1*	1*	1	0.93
2009	1	1	1*	1*	1	1
2010	1	1	1*	1*	1	1
2011	1	1	0.99	1	1	1
2012	1	1	0.95	1	1	1
2013	1	1	0.96	1	1	1
2014	1	1	0.89	1	1	1
2015	1	0.95	1	1	1	1
2016	1	0.97	0.80	1	1	1
2017	1	0.89	0.82	1	1	1
2018	1	1	1	1	1	1
2019	1	1	0.97	1	1	1
2020	1	1	1	1	1	1
Mean	0.999	0.985	0.952	1	1	0.994

Note: *before spin-off

After measuring the efficiency level of Islamic banks, it is carried out using the DEA technique. Furthermore, it will be seen whether the spin-off policy affects efficiency. The difference-in-difference technique is used to see the impact of this spin-off by comparing the spin-off bank and the bank window of conventional banks. Table 2 shows the results of the difference-in-difference (DID) regression.

Table 2. Difference-in-difference Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9,649,473	2,845,961	3,390,585	0,0000
d_Spinoff	3,140,636	1,909,845	1,644,446	0,1046
d_Treatment	4,714,973	2,176,789	2,166,022	0,0338*
D_interaksi	2,831,773	1,893,623	1,495,426	0,1394
ROA	1,011,657	0,308118	3,283,345	0,0016*
NPF	-0,47952	0,145083	-3,305,158	0,0010*
FDR	0,032847	0,015131	2,170,904	0,0334*
INF	-0,06599	0,140223	-0,470571	0,6394
GDP	-0,40312	0,309312	-1,303,273	0,1968
R-squared		0,598323	F-statistic	12,84749
Adjusted R-squared		0,551752	Prob(F-statistic)	0,000000

Note: sig 5%

This chapter analyses the spin-off effect efficiency by looking at the spin-off period and the types of spin-off policies implemented in Indonesia. In Table 2, the empirical results show no significant difference before and after the spin-off in the efficiency level of Islamic banks due to the spin-off in Indonesia. It means that there is no difference in period's performance before

and before the spin-off of Islamic banks. The efficiency measurement results in Table 1, the efficiency level of BNI Sharia before and after the spin-off was able to achieve an optimal and stable efficiency level, meaning that there was no difference in the period before and after the spin-off. Bukopin Sharia and BRI Sharia, there was no significant difference before and after the spin-off, although there were several years where the efficiency level did not reach optimal efficiency. In contrast, BJB Sharia experienced a decrease in efficiency after the spin-off. Therefore, it can be concluded that there is no difference in the efficiency level of Islamic banks before and after the spin-off. These empirical results are in line with research (Rusydiaana & Rani, 2019; Al Arif et al., 2018) that there was a slight decrease in the efficiency level of several Islamic banks after the spin-off. Nevertheless statistically, there is no significant difference in the efficiency level before and after the spin-off.

Empirical results also show a positive and significant coefficient that there is a difference in the influence of spin-off banks and window banks. (Al Arif et al., 2020) even found that spin-off banks have a lower efficiency level than non-spin-off banks. There is a tendency to decrease operational efficiency after the spin-off policy is implemented, because the spin-off policy increases operating costs. Deregulation will increase costs (Zhao et al., 2010). A recent study by (Trinugroho et al., 2021) found that spin-off Islamic banks experiencing a decrease in efficiency over four years after the separation of Islamic banks (conversion) have a better level of efficiency than spin-off Islamic banks. Statistical results are by DEA calculations, in the sample of non-spin-off Islamic commercial banks, Bank Sharia Mandiri, which has an average efficiency level of 100%, and Bank Mega Sharia of 99.5% and spin-off Islamic banks only BNI Sharia, which is capable of reaching this level. Optimum efficiency after and before the spin-off. Therefore, it concludes that Islamic bank spin-offs have an average value of a lower efficiency level than non-spin-off Islamic banks.

The result of the interaction variable shows that the positive effect is not significant, meaning that it does not have a spin-off contribution to the efficiency level of Islamic banks. This result implies that the spin-off policy of Islamic banks has no impact on changes in the efficiency of Islamic banks after the spin-off. This result is in line with a study (Rusydiaana et al., 2019) which states that there is no difference in the efficiency level of spin-off Islamic banks into consideration for Islamic business units that decide to do spin-offs. (Haribowo, 2017) also notes that spin-off plans should be evaluated.

While other variables that affect the level of efficiency are profitability (ROA), default rate (NPF), and level of liquidity (FDR), based on the results of the determinant regression, the ROA variable has a positive and significant effect on the efficiency level of Islamic commercial banks. Islamic banks that can generate greater profits show that Islamic banks operate efficiently. These results support the findings of a study conducted (Ahmad & Noor, 2010), finding a positive correlation between profitability and efficiency level that the more efficient Islamic banks in Asia, the more profitable they are. Then the empirical findings show that NPF harms efficiency. Islamic banks with high non-performing financing will cause inefficiency in utilizing all existing resources (Firdaus & Hosen, 2014). The higher the number of bad loans in Islamic banks, the lower the efficiency level (Al Arif et al., 2020). The results of the Financing to Deposit Ratio (FDR) regression are similar to the study of (Ahmad & Noor, 2011), also found that the Financing to Deposit Ratio (FDR) harms the efficiency of Islamic banking in Indonesia. This condition reflects the minimal allocation of funds from funds collected from the public, causing the efficiency to decline.

The policy to carry out a spin-off must go through certain considerations (Al Arif et al., 2017). First, Islamic banks resulting from the spin-off must meet the minimum capital. The capital aspect will have an important role in the performance of the spin-off bank (Prasetyo et al., 2019). The second aspect is the minimum amount of assets owned by a sharia business unit. This minimum amount of assets will determine the target market. Then, the sharia business unit must have a good performance in at least the last five years before carrying out a spin-off. Since the subsidiaries have performed well before the spin-off, they will have a higher probability of

better performance after the spin-off (Klepper & Thompson, 2010). The last aspect is the commitment from the parent bank after the spin-off is carried out.

The spin-off policy can take several alternative strategies, mergers, and conversions (Al Arif et al., 2020). In general, the merger will be able to strengthen the capital of Islamic banks so that they can compete at the regional level (Miftah & Wibowo, 2017; Ahdizia et al., 2018). Therefore, mergers can have long-term performance differences to control when a crisis occurs (Kandil & Chowdhury, 2014). In addition, the conversion policy can be an alternative strategy that can be taken. A conversion strategy will give better results, especially for profitability and efficiency, than a pure spin-off strategy (Trinugroho et al., 2021).

Conclusion

The researchers empirically examine the impact of spin-off policies on the efficiency level of spin-off banks. This study uses data from four spin-off banks and two subsidiary banks of conventional banks in 2008-2020. In addition, this study shows no difference in the efficiency level in Islamic banks resulting from the spin-off between before and after the spin-off. This study also finds that spin-off Islamic banks have lower efficiency than non-spinoff Islamic banks. The spin-off policy will increase operating costs in the first few years of the spin-off. The empirical findings obtained provide several policy implications. The spin-off policy must be a corporate action from each bank, not government coercion. In addition, conventional banks must improve the performance and capital of their sharia business units. Banking consolidation through mergers, conversions, and acquisitions between sharia business units can be an alternative policy.

Author Contributions

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