



The Proposed Islamic Hedging for Hajj Funds in Indonesian Islamic Banking

Riadi Fikri¹, Rifki Ismal² and Irfan Syauqi Beik³

¹Graduate Student of Master Program Management School of Business, Bogor Agricultural University

²Deputy Director in the Department of Islamic Banking at Bank Indonesia (Central Bank of Indonesia)

³Director, Center of Islamic Business and Economic Studies, Bogor Agricultural University

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Abstract: Indonesia is a country with a Muslim majority and hence the demand for Hajj (pilgrimage) is increasing especially for SAR (Saudi Arabian Real) currency during the peak hajj season. Unfortunately, the Hajj Financial Management Board (BPKH) as the Hajj (pilgrimage) authority has never hedged the hajj funds including the one based on Sharia (Islamic) principle. Then, in the continues weakening of the rupiah (IDR) exchange rate may invite the exchange rate risk that can affect the hajj funds. In fact, the issuance of Bank Indonesia (central bank) regulations and the National Shari Council's (MUI) decisions on Islamic hedging is expected to become the guideline and solution for sharia financiers to hedge the hajj (pilgrimage) funds even though they have not utilized it due to the limited knowledge and understanding on Islamic hedging. This study aims to: (1) conduct a dynamic Islamic hedging simulation for the pilgrimage funds based on Islamic principle, (2) to identify the amount of cost savings coming from Islamic hedging, the optimal time and price to apply a dynamic Islamic hedging, and (3) to provide recommendations to BPKH in applying a dynamic Islamic hedging for its pilgrimage funds. Finally, the dynamic simulation of Islamic hedging finds that (a) the longer the period of Islamic hedging, the greater the cost savings, (b) the ideal time for Islamic hedging is when the economic condition is less stable such as on 2013-2015 and the IDR weakens against USD about 20%-30% and 40%-50%; (c) the worst time for Islamic hedging is when the IDR increase to SAR such as recent economic condition on 2016-2017 when IDR increase 10%-20% to SAR; (d) The implementation of Islamic hedging needs accurate time especially when IDR to USD and IDR to SAR weaken and the yield of Islamic money market up to 4%-6%, the yield of conventional foreign exchange money market 0.1%-0.4%, and the yield of Saudi Arabian inter-bank overnight market 0.3%-0.6%. Therefore, BPKH needs to monitor the fluctuation of IDR exchange rate against USD and against SAR as well as yields from the money market instruments before the implementation of Islamic hedging.

Keywords: Hajj funds, Islamic hedging, IDR exchange rate.

JEL Classifications: G21, G24

1. Introduction

As a muslim majority country, the demand for pilgrimage (Hajj) to Mecca in Indonesia increases every year, as evidenced by the accumulation of hajj fund managed by BPKH (Hajj Financial Management Board) which has reached IDR 96.6 trillion (USD 7.14 billion) in December 2017. Such a number is expected to keep increasing in the next 5 years to be IDR 150 trillion (USD 11.07 billion)



by 2022 (Republika, 2017). In practice, to go for hajj, the pilgrims pay initial amount of money as a deposit be registered in the state hajj program. However, unfortunately, the waiting list of hajj has been very long which is up to more than 10 years (Kompas, 2017). And then in the time of pilgrimage, the authority (BPKH) needs Saudi Arabian Real (SAR) currency to be paid to the pilgrims which is as much as 25% of the total hajj costs. Such costs are particularly used for accommodation fees and living cost during the rituals in Saudi Arabia and, flight and transportation expenses (Ministry of Religious Affairs, 2017). This could indeed invite for a currency risk taken into account fluctuations of IDR against USD and SAR. The potential currency risk might really happen if IDR continues to weaken while the hajj funds are not hedged under the Islamic scheme. As such, this potential condition should be anticipated by BPKH because currency fluctuations are uncertain (Pratiwi and Santosa, 2012).

From the perspective of risk management, there are at least three main reasons why Islamic hedging for hajj funds in Indonesia is needed, which are: (1) the demand for SAR continues to increase in line with the increase of hajj funds while the IDR exchange rate against SAR and USD might weak beyond its normal market rate, (2) fluctuations of IDR against USD and SAR could for sure affect the value of hajj savings in the authority (BPKH), (3) Islamic hedging is expected to guarantee the supply of SAR and USD at the time of pilgrimage and prevention of loss caused by fluctuation of IDR exchange rate against SAR and USD.

Not many studies that examine the sharia hedging especially in the case of pilgrim funds. Some studies on the hajj limited on the satisfaction of the use of Hajj service *umrah* on the case of banking just like that done by Septiarini (2017). This research is intended to propose the Islamic hedging for the pilgrimage funds by conducting a dynamic simulation of 25% of the hajj funds in Indonesian Islamic Banks (BUS) and improving of the one conducted by Ismal and Septiana (2017). Particularly, the paper is different from the previous researches as follows: (1) the period of analysis is from 2011-2017 (the most up dated), (2) the Islamic hedging simulation accounts for 25% of the total hajj funds (instead of 100%) based on the real demand for SAR, (3) the secondary data comes from hajj deposits in all Islamic Banks, (3) The simulation is a dynamic one instead of static, and (4) policy recommendations exclude the period of the global financial crisis of 2008-2009 in order to be reliable and applicable.

The dynamic simulation involves Islamic Commercial Banks (BUS), Conventional Commercial Banks (BUK) and Foreign Banks (BA). Hence, the results become recommendations for BPKH and all types of banks (Islamic and conventional banks) to determine the exact time and amount of hajj funds, the ideal premium rate and the maximum cost savings to be gained by the authority through a comparison between applying dynamic Islamic hedging and not applying Islamic hedging.

2. Islamic Hedging in Islamic Concept

In the view of Islam, the implementation of hedging should be free from the practices of *usury (riba or interest)*, *gharar* (uncertainty) and *maysir (gambling)*. According to Ahmad and Halim (2014), hedging is permissible in Islam because its purpose is to maintain the values of assets instead of to do a speculation. Razif *et al.* (2012) stated that Islamic hedging is in accordance with *maqhasidal sharia* (purposes of Islam) in particular protection of the wealth (property). Further, according to Zahan and Kenett (2011), hedging was a risk mitigation instrument between Islamic banks and conventional banks despite of their differences in concepts, frameworks and business objectives. On the contrary, according to Rofifah, Topowijono, Nuzula (2017) and Arsyi (2016), it was necessary to consider the Islamic hedging because of the possibility of suffering loss. Similarly, according to Ahmad, (2016), the use of hedging should be appropriate because the failure could give negative effects to the company.



However, the National Sharia Council-The Indonesian Ulema Council (DSN-MUI) has issued Fatwa (verdict) number 28/DSN-MUI/III/2002 on the Sale and Purchase of Currency (*Al-Sharf*) stipulating that futures contracts, option contracts and swap contracts are *haram* (impermissible) and Fatwa number 96/DSN-MUI/IV/2015 on Islamic hedging transactions (*Al-Tahawwuth Al-Islami/ Islamic Hedging*). The later fatwa stated that the hedging based on the Islamic uses forward contracts, must avoid the imperfection of information in contracts (*gharar*), interest-based transactions (*riba*) and speculative transactions (*maysir*). Then, the real future demand for foreign currency is legal based on Islamic law and uses *wa'ad* (promise) which is non-tradable.

Following the DSN-MUI Fatwa, Bank Indonesia has also issued Bank Indonesia Regulation (PBI) number 18/2/PBI/2016 on Hedging Transactions Based on Islamic Principles. The provision stipulates the detail mechanisms of Islamic hedging i.e. (1) Islamic hedging should not be for speculative motive, (2) Islamic and conventional banks are parties eligible for the Islamic hedging transactions, (3) Islamic hedging employs forward agreement contracts (*Al-muwa'adat li' aqd al-sharf al-fawri fi al-mustaqbal*), (4) the nominal and time of Islamic hedging should be equal to the underlying transactions, (5) the calculation of exchange rates and premiums is determined in the beginning of the contract, and (6) Islamic hedging documents cannot be traded.

The decisions of DSN-MUI and PBI on hedging based on sharia principles have become the legal basis for the application of Islamic hedging in Islamic banks, and hence BPKH could hedge the hajj funds in order to minimize exchange rate risk and maintain the value of such funds.

3. Research Methods and Scope of the Study

This study was conducted in Jakarta, Indonesia from December 2017 to February 2018. The secondary data used in the study are in the form of time series and was obtained from Bank Indonesia within the period of December 2011 to December 2017. The data consist of 25% hajj fund in Islamic banks in Indonesia. The study was conducted by applying dynamic system simulation through excel program. According to literature, dynamic simulation approaches can be applied to various fields including financial such as fiscal and budgeting policies undertaken by Heidenbergera *et al* (2003) and Auerbach and Kotlikoff (1987). The dynamic simulation approach in this research is conducted to see the picture of the need for optimal sharia hedging of Hajj funds in the future. Hence, the hypothesis used in this study are:

1. On the hajj fund needed Islamic hedging.
2. Islamic hedging should be applied on relatively stable economic conditions.
3. Islamic hedging should be applied on the economic condition of rupiah exchange rate against USD weakened.

In this research, 3 (three) assumptions are taken into account to have collation of the dynamic Islamic hedging which are (1) BPKH has IDR accounts in Islamic Banks (BUS) and demands for SAR currency for hajj, then BPKH asks the banks to conduct dynamic Islamic hedging for an agreed period of time; (2) the Islamic banks then perform contract of purchase and sale of IDR against USD with conventional banks (BUK); (3) the conventional banks later on conduct a sale and purchase contract of USD and SAR with foreign banks (BA) and; (4) in the maturity date, the foreign banks will deliver SAR to conventional banks and receives USD, and then the conventional banks later on will deliver SAR to Islamic banks and receives IDR, and finally the Islamic banks will deliver SAR to BPKH and debit the BPKH accounts for certain amount plus the premium bill for doing dynamic Islamic hedging (see Figure 1).

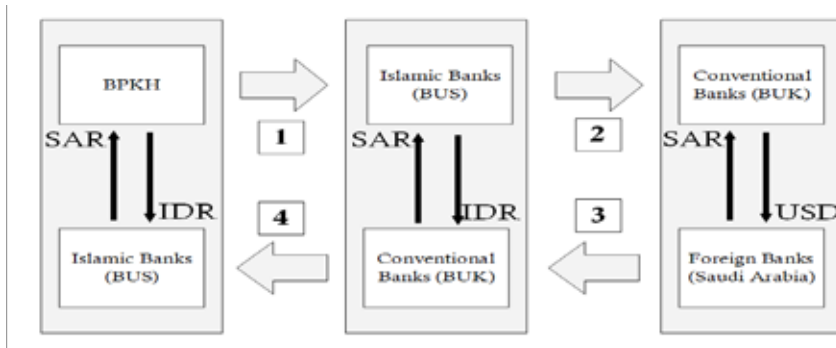


Figure 1. The Islamic hedging mechanisms

Secondly, the assumptions of Islamic hedging transactions include; (1) *Muwa'adah* (mutual promises) transaction is fulfilled by the transaction agents (parties involved in the contract), (2) calculation of exchange rate or premium uses the market rates of PUAS (Islamic Money Market), foreign exchange PUAB (Conventional Money Market) and SAIBON (Saudi Arabian Inter-bank Overnight Market), (3) Any premium belongs to the banks (BPKH may not receive any compensation on premium rate), (4) the dynamic Islamic hedging periods are 3 months, 6 months, 9 months and 12 months, (5) penalties and other transaction fees are not counted and assumed to be very minimum (see Figure 2).

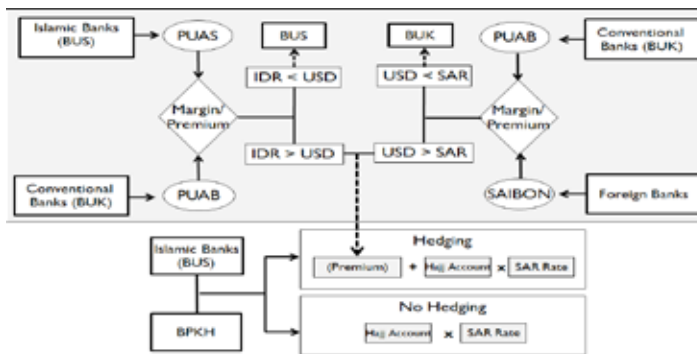


Figure 2. The mechanisms of the calculation of Islamic hedging premium

The mechanisms of the calculation of Islamic hedging premium are set up based on:

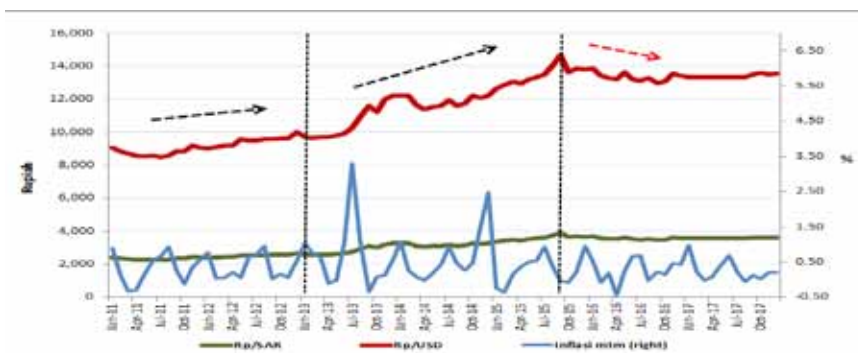
1. Price differences between the level of domestic money market of the conventional banks (BUK) and the Saudi Arabia money market rate (BA) when the rate in the maturity time is higher than that of the previous rate.

2. Price differences between the level of the domestic money market of the conventional banks (BUK) and the price level of the Islamic money market of the Islamic banks (BUS) when the rate in the maturity time is higher than the previous rate.



The amount of premium to be paid by BPKH which reduces its account in BUS is in fact the accumulation of both calculations of the premiums (conventional banks and Islamic banks and, conventional banks and foreign banks). If BPKH does not do Islamic hedging, its account in BUS is going to be converted directly into SAR currency. Thus, differences between dynamic Islamic hedging and non-Islamic hedging of hajj funds become an indicator for BPKH whether or not it should pursue dynamic Islamic hedging on hajj fund.

Third, based on the development of Indonesia's economic conditions after the 2008-2009 global financial crisis, it was assumed that the economic condition in the period of 2011-2012 (post crisis) was assumed to be relatively stable as shown in the stable exchange rate, inflation and GDP. While the period of 2013-2015 was further assumed to be less stable because of the impacts of the global economic turmoil proven by the weakening of the exchange rate, high inflation and slow GDP growth. Finally, the period of 2016-2017, the economy began to improve marked by the strengthening of the exchange rate, low inflation and increased GDP. The assumptions of Indonesia's economic conditions above are in accordance with the development of IDR exchange rate against USD and SAR and inflation (see Figure 3).



Data source: Bank Indonesia

Figure 3. The graph of the assumptions of the economic condition in Islamic hedging

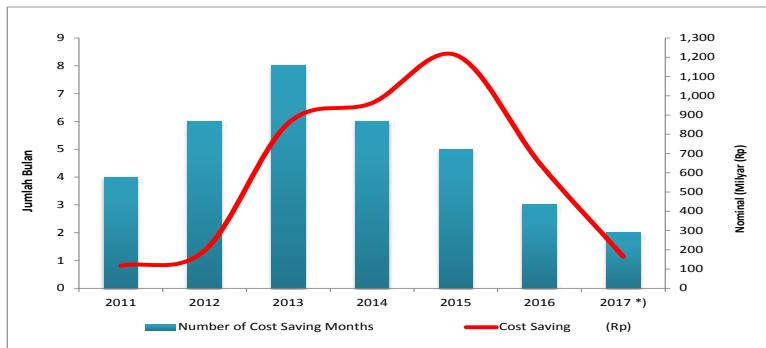
3.1 Dynamic Islamic Hedging Simulation (3 month-periods)

The result of dynamic Islamic hedging simulation for the period of 3 months in the relatively stable economy (2011-2012) shows that there could be a maximum of 6 months of savings per year with the potential cost savings of IDR 117.7 billion (USD 12.9 million) – IDR 196.9 billion (USD 19.6 million) and in total IDR 314.6 billion (USD 32.6 million). Meanwhile, in the less stable economic condition (2013-2015), it is recommended to have a dynamic Islamic hedging to gain a maximum of 8 months of savings per year with potential cost savings of IDR 858.5 billion (USD 70.4 million) – IDR 1.2 trillion (USD 87.8 million) per year and in total IDR 3 trillion (USD 219.8 million). The results of dynamic Islamic hedging simulation for 3 months are presented in Table 1 and Figure 4.


Table 1. Simulation of Islamic hedging for the tenor period of 3 months

The Estimated Cost Saving if Hajj Funds Are Hedged						
Years	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex All Tenors, SAIBON, PUAS		
	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)
2011	4	117,723,855,799	238,677,859,710	4	118,417,769,264	233,024,967,674
2012	6	196,902,651,368	277,698,085,043	6	204,032,416,722	261,501,753,868
2013	8	858,571,389,481	409,456,275,700	8	869,100,693,890	393,383,775,216
2014	6	964,684,577,023	1,101,255,797,370	6	981,300,843,267	1,070,106,615,746
2015	5	1,212,218,263,134	1,531,652,117,558	5	1,225,418,127,224	1,490,573,225,979
2016	3	649,223,080,529	1,392,807,199,993	3	684,112,510,526	1,266,483,550,585
2017 *)	2	164,825,353,904	943,019,632,948	2	173,916,789,524	870,996,732,842

* Data up to Oct 2017


Figure 4. Potentials of cost savings

The current economic condition (2016-2017) shows that there is a maximum of 3 months of savings per year with the potential cost saving of IDR 164.8 billion (USD 12.2 million) – IDR 649.2 billion (USD 47.9 million) per year. Should the hajj funds be Islamic hedged throughout the analysis period (2011-2017), the potential cost savings after deducting the premium costs reach IDR 1.8 trillion (USD 134.4 million).

3.2 Dynamic Islamic Hedging Simulation (6 month-periods)

The results of dynamic Islamic hedging simulations for the period of 6 months when the economy is relatively stable (the period of 2011-2012) show that a maximum of 8 months of savings per year can be obtained with the potential cost savings of IDR 207.3 billion (USD 22.8 million) – IDR 270.8 billion (USD 27 million) or a total of IDR 478.2 billion (USD 47.7 million). When the economic condition is less stable (the period of 2013-2015), it is recommended to conduct dynamic Islamic hedging on hajj funds as there is a maximum of 10 months of savings per year with the potential cost savings of IDR 1.5 trillion (USD 108 million) – IDR 2 trillion (USD 164.8 million) per annual or a total of IDR 5.3 trillion (USD 386.3 million) (see Table 2 and Figure 5).



Table 2. Simulation of Islamic hedging for the tenor period of 6 months

The Estimated Cost Saving if Hajj Funds Are Hedged						
Years	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex All Tenors, SAIBON, PUAS		
	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)
2011	8	207,379,012,536	477,355,719,421	8	214,262,975,709	466,048,702,887
2012	5	270,829,294,965	555,396,170,086	5	282,666,391,946	522,990,908,509
2013	10	2,009,209,009,750	818,912,551,399	10	2,036,651,854,937	786,756,628,212
2014	7	1,829,622,297,039	2,202,511,594,741	7	1,866,624,537,928	2,140,186,191,994
2015	6	1,490,347,303,971	3,063,304,235,116	6	1,522,019,162,738	2,981,114,746,962
2016	3	53,102,208,822	2,785,614,399,986	4	184,677,454,679	2,532,725,176,037
2017*)	2	26,823,269,926	1,378,682,577,775	2	43,672,117,161	1,264,026,052,164

* Data up to July 2017

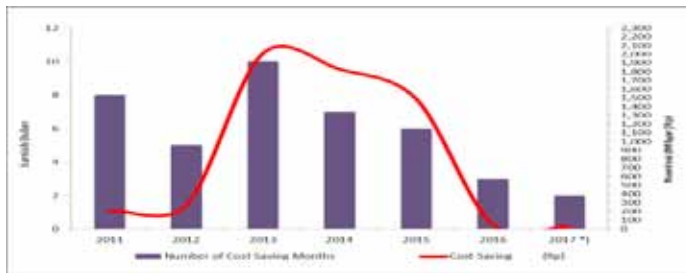


Figure 5. Potentials of cost savings

Then, in the latest economic condition (2016-2017), it is not recommended to do dynamic Islamic hedging because of the potential loss due to higher premium costs as the IDR exchange rate is relatively stronger than SAR. However, dynamic Islamic hedging can be conducted in limited quantities with potential cost savings of up to IDR 26.8 billion (USD 2 million) – IDR 53.1 billion (USD 3.9 million) per year or a total of IDR 80 billion (USD 5.9 million). Meanwhile, if the dynamic Islamic hedging is applied throughout the analysis period (2011-2017), the potential cost savings will reach IDR 1.7 trillion (USD 127.1 million).

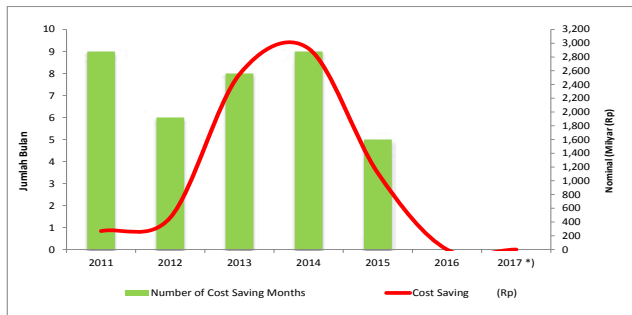
3.3 Dynamic Islamic Hedging Simulation (9 month-periods)

Meanwhile, the results of dynamic Islamic hedging simulations for the period of 9 months when the economy is relatively stable (2011-2012) show that a maximum of 9 months of savings per year could be realized with the potential cost savings of IDR 248.2 billion (USD 27.3 million) – IDR 448.1 billion (USD 44.7 million) or a total of IDR 696.2 billion (USD 72.1 million). When the economic condition is less stable (the period of 2013-2015), it is recommended to conduct dynamic Islamic hedging as there is a maximum of 9 months of savings per year with the potential cost savings of IDR 1.1 trillion (USD 78.6 million) – IDR 2.8 trillion (USD 235.1 million) per year or a total of IDR 6.5 trillion (USD 469.7 million) (see Table 3 and Figure 6).


Table 3. Simulation of Islamic hedging for the tenor period of 9 months

The Estimated Cost Saving if Hajj Funds Are Hedged						
Years	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex All Tenors, SAIBON, PUAS		
	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)
2011	9	248,196,714,461	743,997,628,372	9	249,509,753,006	742,113,467,967
2012	6	448,064,527,052	867,217,533,987	6	450,481,309,787	861,820,156,843
2013	8	2,527,603,274,542	1,265,059,101,995	8	2,531,247,747,448	1,259,702,815,414
2014	9	2,866,748,039,587	3,381,968,742,442	9	2,874,863,169,709	3,371,588,686,289
2015	5	1,085,104,953,250	4,687,737,323,006	5	1,089,556,865,009	4,674,047,881,923
2016	0	0	4,477,224,700,504	0	0	4,435,143,697,939
2017*)	0	0	1,379,062,637,250	0	0	1,366,693,950,128

* Data up to April 2017


Figure 6. Potentials of cost savings

In the current economic condition (2016-2017), it is not recommended to have dynamic Islamic hedging because of the potential loss due to higher premium cost as IDR exchange rate was relatively stronger than SAR. If the dynamic Islamic hedging was conducted on the hajj funds throughout the analysis period (2011-2017), then the potential cost savings would reach IDR1.3 trillion (USD 97.3 million).

3.4 Dynamic Islamic Hedging Simulation (12 month-periods)

The result of dynamic Islamic hedging simulation for the period of 12 months when the economy was relatively stable (2011-2012) shows that a maximum of 10 months of savings per year with the potential cost savings of IDR 324.1 billion (USD 35.7 million) – IDR 1.3 trillion (USD 135.3 million) or with the total of IDR 1.7 trillion (USD 171.1 million). However, when the economic condition was less stable (2013-2015), it is recommended to conduct dynamic Islamic hedging on hajj funds as there is a maximum of 10 months of savings per year with the potential cost savings of IDR 319.8 billion (USD 23.2 million) – IDR 4 trillion (USD 332.2 million) per year or with a total of IDR 6.7 trillion (USD 498.1 million) (see Table 4 and Figure 7).



Table 4. Simulation of Islamic hedging for the tenor period of 12 months

The Estimated Cost Saving if Hajj Funds Are Hedged						
Years	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex All Tenors, SAIBON, PUAS		
	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)	Number of Cost Saving Months	Cost Saving (Rp)	Cost Premium (Rp)
2011	8	324,131,347,052	954,711,438,842	8	337,904,203,240	932,092,475,933
2012	10	1,356,558,885,645	1,110,792,340,172	10	1,406,828,601,608	1,045,931,420,106
2013	8	2,376,982,343,668	1,637,825,102,798	8	2,420,769,317,270	1,573,469,567,544
2014	10	4,051,731,787,842	4,405,023,189,481	10	4,157,649,927,008	4,280,264,225,996
2015	2	319,818,028,514	6,126,608,470,232	2	341,974,191,044	5,962,102,673,943
2016	0	0	5,571,228,799,971	0	0	5,064,482,651,538
2017*)	0	0	405,240,465,903	0	0	325,077,166,449

* Data up to January 2017

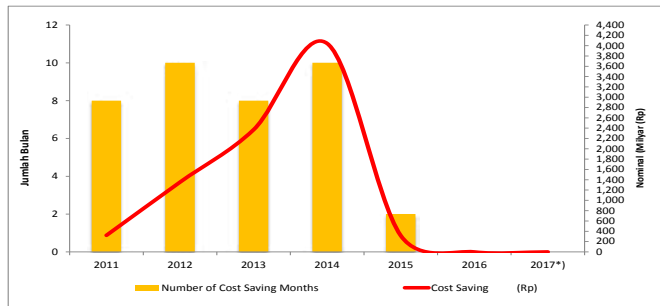


Figure 7. Potentials of cost savings

In the current economic condition (2016-2017), it was in fact not recommended to conduct dynamic Islamic hedging because of the potential loss due to higher premium cost as the IDR exchange rate was relatively stronger than SAR. Then, if the hedging was conducted throughout the analysis period (2011-2017), the potential cost savings reached IDR 2.4 trillion (USD 181 million).

4. Findings and Policy Recommendations

4.1. Findings from Dynamic Islamic Hedging Simulations

The dynamic Islamic hedging simulations resulted a number of findings related to appropriate time and the amount of hajj funds recommended for dynamic Islamic hedging including the determination of the time and optimal premium to provide maximum cost savings. Such findings are as follows:

1. The longer the hedging period of the hajj funds, the greater the cost savings potential. For the periods of 12 months, as much as IDR 2.4 trillion (USD 181 million) was saved respectively.

2. The appropriate time to conduct Islamic hedging is when the IDR exchange rate weaker than USD (as shown in Figure 8):

- a. In the period of 2013-2014, IDR weakened against USD by 20%-30%.
- b. In the period of 2015, IDR weakened against USD by 40%-50%.

3. Inappropriate timing of dynamic Islamic hedging occurs when IDR stronger than SAR by 10%-20% as occurred in the period of 2016-2017 (see Figure 9).



Figure 8. The potentials of cost savings

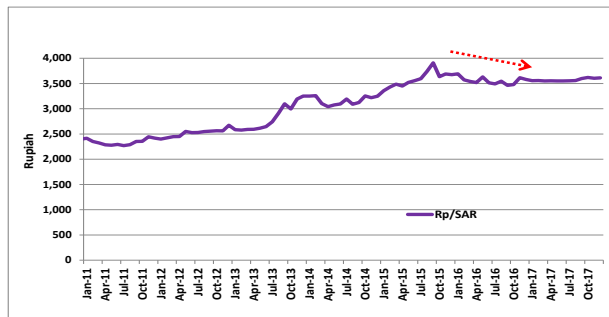


Figure 9. Trends of the exchange values of IDR/SAR/IDR/USD

4. The highest accumulated cost savings occurred in the period of 2013-2015:
 - a. In 2014, the savings reached IDR 4 trillion (USD 332.2 million) for the period of 12 months and IDR 2.8 trillion (USD 235.1 million) for the period of 9 months.
 - b. In 2013, the savings reached IDR 2.5 trillion (USD 209 million) for the period of 9 months and IDR 2.3 trillion (USD 331.5 million) for the period of 12 months.
5. The amount of hajj funds could earn the maximum cost savings if dynamic Islamic hedging was conducted with the amount of IDR 2.5 trillion up to more than IDR 6 trillion.
6. When the economic condition is less stable as in the period of 2013-2015, it is recommended to perform the hedging with the following considerations:
 - a. The annual significant increase of hajj funds and demand on SAR.
 - b. Exchange rate fluctuations of IDR against USD and SAR as well as potential cost savings that can be obtained.
 - c. Prevention of losses in the management of hajj funds due to global and domestic economic impacts.



4.2. Policy Recommendation

Based on the result of dynamic Islamic hedging simulation on the 25% of the hajj funds for the period of 2003-2016, there are two types of policy recommendations to be proposed to BPKH to manage the funds i.e. the general and technical recommendations:

1. General Recommendations

- a. BPKH is recommended to undertake dynamic Islamic hedging of the hajj funds with the objectives of: (i) protecting the pilgrims' saving rates; (ii) providing for guarantee of exchange rate and provision of future SAR currency; (iii) preventing loss due to exchange rate fluctuations and in turn, it can give potential cost savings.
- b. Consideration on the ideal time for dynamic Islamic hedging is very important i.e. at the time of fluctuation of IDR with a tendency to weaken against SAR and USD.
- c. Consideration on the potential cost savings that can be gained because the longer the duration of dynamic Islamic hedging, the greater the potential cost savings of hajj funds.
- d. Implementation of Islamic hedging requires the right time so that BPKH needs to monitor the fluctuation of IDR against USD and SAR. In addition, it is necessary to evaluate and assess the current and future economic conditions of both domestic and external economic indicators.
- e. Implementation of dynamic Islamic hedging on hajj funds needs to start from several sharia banks to share risks among the banks.

2. Technical Recommendations

- a. The accurate and recommended time to conduct dynamic Islamic hedging on hajj funds based on exchange rate fluctuations in the period of 2013-2015 are:
 - i) When the exchange rate of IDR/USD weakened by 20%-30% for the 2013-2014 period.
 - ii) When the exchange rate of IDR/USD weakened by 40% -50% in the period of 2015.
- b. Inappropriate and not recommended time for dynamic Islamic hedging is when IDR is stronger than SAR by 10%-20% in the period of 2016-2017.
- c. Appropriate and recommended time for dynamic Islamic hedging on the hajj funds based on the yield level of instrument or premium are:
 - i) When the PUAS yield reaches 4%-6%, and the foreign exchange PUAB rate is 0.1% -0.4% and the SAIBON rate is 0.3% -0.6% as in the period of 2011-2012.
 - ii) When the PUAS yield reaches 4%-7%, the PUAB foreign exchange rate is 0.1% - 0.3% and the SAIBON rate ranges from 0.5% -0.7% as in the period of 2013-2015.
- d. The less ideal time for having dynamic Islamic hedging on the hajj funds based on the instrument or premium returns are:
 - i) When the yields of PUAS are < 4%, the foreign exchange of PUAB is < 0.1%, and SAIBON is < 0.3% as in the period of 2011-2012.
 - ii) When the yields of PUAS are <4%, foreign exchange of PUAB is < 0.1%, and SAIBON is <0.5% as in the period of 2013-2015.
- e. The amount of the recommended hajj funds to earn the maximum cost savings if Islamic hedging is between IDR2.5 trillion to IDR 6 trillion.
- f. The recommended time periods for dynamic Islamic hedging are 12 months and 9 months with the highest cost savings of IDR4 trillion (USD 332.2 million) and IDR 2.8 trillion (USD 235.1 million).



5. Conclusion

BPKH as the hajj fund management faces exchange rate risk due to fluctuation of IDR against USD and SAR, increasing demand for SAR along with the increasing number of hajj funds every year, and dynamic Islamic hedging on hajj funds has not been implemented even though the fatwa and Bank Indonesia regulation concerning Islamic hedging were already issued. Based on the results of the research on the 25% of hajj funds in the Islamic bank (BUS), dynamic Islamic hedging is recommended based on the appropriate time and premium value, as well as the period and amount of hajj funds that can result in maximum cost savings. In the end, the people's money can be saved by saving a large amount of funds which are supposed to be spent.

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