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Islamic hedging for pilgrimage funds: case of Indonesia

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Abstract

Purpose – The demand for Saudi Arabian real (SAR) is very high in the pilgrimage (hajj) season while the authority, unfortunately, does not hedge the hajj funds. As such, the hajj funds are potentially exposed to exchange rate risk, which can impact the value of hajj funds and generate extra cost to the pilgrims. The purpose of this paper is to conduct simulations of Islamic hedging for pilgrimage funds to: mitigate and minimize exchange rate risk, identify and recommend the ideal time, amount and tenors of Islamic hedging for hajj funds, estimate cost saving by pursuing Islamic hedging and propose technical and general recommendations for the authority.

Design/methodology/approach – Forward transaction mechanism is adopted to compute Islamic forward between SAR and Rupiah (Indonesian currency) or IDR. Findings – based on simulations, the paper finds that: the longer the Islamic hedging tenors, the better is the result of Islamic hedging, the decreasing of IDR/USD is the right time to hedge the hajj funds and, on the other hand, the IDR/SAR appreciation is not the right time to hedge the hajj funds.

Findings – Based on simulations, the paper finds that: the longer the Islamic hedging tenors, the better is the result of Islamic hedging, the decreasing of IDR/USD is the right time to hedge the hajj funds and, on the other hand, the IDR/SAR appreciation is not the right time to hedge the hajj funds.

Research limitations/implications – The research suggests the authority to (and not to) hedge the hajj fund, depending on economic conditions and market indicators. Even though the assessment is for the Indonesian case, other countries maintaining hajj funds might also learn from this paper.

Originality/value – To the best of author's knowledge, this is the first paper in Indonesia that attempts to simulate the optimal hedging of hajj funds.

Keywords Hajj funds, Islamic hedging, Rupiah

Paper type Research paper

1. Introduction

Indonesia, as is the case for most other Moslem countries, has seen an increasing number of pilgrims undertaking hajj every year with the amount of hajj funds growing at the same time. In fact, the accumulated hajj funds managed by the government during 2003-2017 were more than IDR 100tn (US$7.7bn) (Kompas, 2015). However, the significant funds involved have never been hedged by the government (by the Ministry of Religious Affairs or more recently, by the Hajj Fund Management Body or BPKH) (Republic of Indonesia, 2014). Pilgrims typically pay the hajj costs in the local currency (rupiah or IDR) while during the hajj seasons, hajj spending take place in either US dollar (USD) and Saudi Arabian real (SAR). The exchange rate risk facing the hajj funds has not been anticipated by the authority and as a result, it might influence the value of paid-up hajj costs in the time of hajj

JEL classification – G11, G14

(pilgrims generally have to wait for more than 10 years to perform hajj after paying the initial hajj costs).

From an economic and finance point of view, there are two potential for the importance of hedging hajj funds in the Indonesian context; these are:

(1) the decreasing trend of IDR against USD (depreciation of IDR) in recent decades; and

(2) the volatility of IDR against USD and SAR, which might impact the value of hajj funds.

Particularly, if BPKH applies Islamic hedging, the demand for SAR (under hedging contract) requires "multiple hedging" because Islamic banks do not normally have enough USD liquidity, and thus, re-hedge their positions via conventional banks and (lately) to Saudi Arabian banks.

This paper attempts to analyze Islamic hedging for hajj funds in Indonesia by simulating a scenario of Islamic hedging from the authority to local Islamic banks, conventional banks and Saudi Arabian banks. The paper attempts to identify the ideal time and amount of hajj funds to be hedged, including the preferred premium rate, and estimate saving costs (possibly earned by the authority) by comparing hedging hajj funds with non-hedging outcomes.

2. Islamic hedging: verdicts (fatwa), regulation and global practices

The Indonesian National Sharia Board (DSN) issued two verdicts in relation to Islamic hedging, which were verdict number 28/DSN-MUI/III/2002 on trading of foreign currency (Al Sharf) (National Sharia Board, 2002) and verdict number 96/DSN-MUI/III/2015 on Islamic hedging *(Tahawwuth Al Islami)* (National Sharia Board, 2015). The former explicitly stipulates that:

- trading of currency is unlawful for any speculative motive;
- trading of currencies is based on the real demand and to mitigate an unavoidable exchange rate risk;
- trading of the same currencies should be in the same value, cash and on the spot; and
- trading of the different currencies refers to the current market rate and on the spot basis.

Further, regarding Islamic hedging, the latter verdict stipulates that:

- Islamic forward *(Tahawwuth al-Basith)* is proceeded based on a mutual commitment *(Muwa'adah)* among related parties; and
- Islamic forward is actually a different spot contract with a mutual commitment.

Following the DSN verdicts on Islamic hedging, Bank Indonesia (the central bank) Regulation (PBI) on Islamic hedging was issued in 2016, namely, PBI number 18/2/PBI/2016 to regulate Islamic hedging transaction in banks as follows (Bank Indonesia, 2016a):

- Islamic hedging is not for speculation and uses either Islamic forward or Islamic swap contract mechanism as stipulated in the verdict.
- Islamic hedging documents are non tradable and not an object of sale.
- The maximum values and tenors of hedging are the same as its underlying documents.
- The forward rate premium and an agreed exchange rate are determined in a *Muwa'adah* (mutual consents) of the contractual parties in the beginning of Islamic hedging contract.

- Settlement mechanism in the maturity of the committment date is settled by transferring full amount of committed money (without any delay) and the same as the settlement of uncommitted (with mutual consents of parties) Islamic hedging contract.
- Those who may perform Islamic hedging are: customers to Islamic banks (BUS), Islamic banks to other Islamic banks and, Islamic banks to the conventional bank (BUK) (not the other way around).

Both of DSN verdicts and PBI on Islamic hedging have become the legal basis for market players to offer and customers (BPKH or government) to demand for Islamic hedging contract to prevent hajj funds from exchange rate risk (Viva, 2016). Moreover, most of the global foreign exchange (forex) derivative instruments are in forms of forward and swap contracts especially in the short term tenor to mitigate the adverse impact of forex depreciation (Moreno and Avalos, 2013). As such, hedging is a common practice to mitigate forex risk including hajj (pilgrimage) funds.

3. Literature review and previous studies on social (hajj) funds
Some studies have suggested a better management of social (including hajj) funds. Tabung Haji (pilgrimage saving) institution in Malaysia has become one of the ideal institutions managing hajj funds. Especially, its hajj management has given significant impacts on economic growth, social development and Islamic teaching (Yahaya *et al.*, 2016). Internationally, the management of hajj is now controlled by the Organization of Islamic Cooperation (OIC), which is internationalizing the hajj management and replacing the domination of Saudi Arabian hajj management (Bianchi, 2017).

To support the pilgrims, many OIC countries give hajj subsidy to manage the cost, including Indonesian government, which has a dedicated fund for direct investments in its hajj packages (Thompson Reuters and Dinarstandard, 2017). However, the hajj funds and cost management need to be managed by socio economics institutions (for example, in Pakistan) to be invested in interest-free investment and to serve the pilgrims during their hajj rituals (Baig, 2016).

However, despite providing Islamic investment alternatives for social funds, it is also important to have a national system on Islamic hajj funds, namely, Integrated Hajj Funds Management System (*Siskohaj*) to properly manage the hajj fund collection and investment (Haq, 2015). The system might further minimize moral hazard risk of managing social (hajj) funds and ease the pilgrims to pay and monitor their hajj fund payment. Meanwhile, the roles of banks to support social funds are amongst others (World Bank, 2002):

- managing the demand and supply of social funds;
- maintaining the usage of social funds for preferably short term objective;
- ensuring that suitability and design of social fund projects depends on the nature of goods and services to be provided;
- acknowledging that the impact of social funds also depends on the progress of the broader institutional and public sector reform; and
- understanding the relationship between the social fund and mainstream public sector institutions.

4. Research methodology and methods
The paper uses qualitative research methodology as it attempts to assess Islamic hedging for pilgrimage (hajj) funds particularly to manage exchange rate risk. While, the method is a quantitative one, namely, a forward contract mechanism stipulated by DSN and Bank Indonesia (central bank) and practiced in the financial market. Basically, the forward

contract is one of the derivative instruments involving parties to exchange an asset in return for cash or another asset in the future (Choudhry *et al.*, 2002). Then, the forward price is the delivery price making the initial value of the forward contract zero and for the renewal, it is liabile to change due to the subsequent fluctuation of the price of the underlying asset (Kwok, 2002).

Further, between the spot rate and the forward rate is known as a forward point with the formula as follow (Coyle, 2013):

$$\text{Forward point } = \frac{S\left(\frac{I_v - I_B}{100}\right)\left(\frac{D}{360^*}\right)}{1 + \left[\left(\frac{I_B}{100}\right)\left(\frac{D}{360^*}\right)\right]} \tag{1}$$

in which S is the spot rate, I_v and I_B are the interest rate on the quoted currency and interest rate on the based currency consecutively and D is the number of days to the forward contract's maturity. Whilst, 360* represents a number of days in a year, which could also be 365 days.

Referring to forward contract formula, the verdict (fatwa) and the central bank regulation on Islamic hedging above, the paper simulates some scenarios by using the Indonesian financial market rates and currency rates to determine the recommended Islamic hedging transactions for pilgrimage funds.

5. Assumptions and outputs of hedging the hajj funds

Before simulating Islamic hedging, three assumptions are put in place to manage the simulations and produce meaningfull results. Those are assumptions of the market players, Islamic hedging transactions and economic conditions. First of all, for the market players:

- BPKH has a rupiah (IDR) account in Islamic banks and needs SAR for the up coming hajj season;
- BPKH proposes an Islamic hedging with only Islamic banks (Bank Indonesia, 2016a);
- Islamic banks receive an Islamic hedging contract from BPKH and re-hedge with the domestic conventional banks (supplier or USD) (Bank Indonesia, 2016b) and finally re-hedge with the Saudi banks (supplier of SAR);
- the costs (forward premium) are born by Islamic banks and then deducted BPKH's rupiah account; and
- there is no transaction barries (Figure 1).

For the Islamic hedging transactions, it is assumed that:

- the mutual commitment *(Muwa'adah)* is fulfilled and executed by the committed parties (National Sharia Board, 2012);
- forward premiums are Islamic money market (PUAS) rate for Islamic banks, conventional money market (PUAB) rate for the conventional ones and Saudi Arabian interbank offer (SAIBON) rate for the Saudi Arabian banks;
- Islamic hedging tenors are 3, 6, 9 and 12 months;
- the no hedge uses the current IDR/SAR exchange rate in an on the spot basis; and
- there is no (or very minimum) administrative costs (Figure 2).
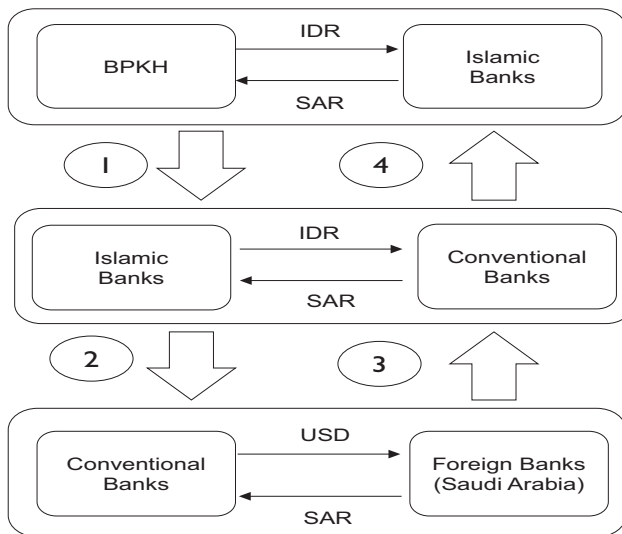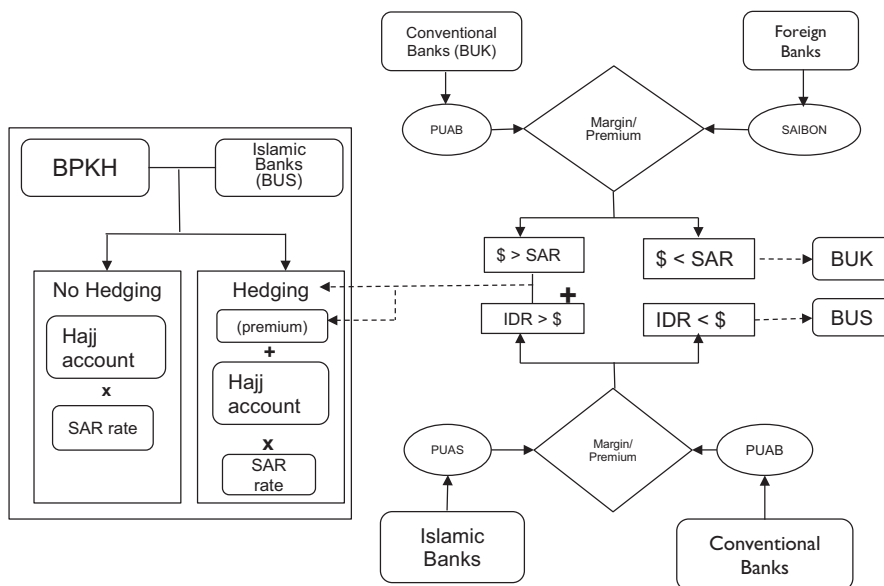
Figure 1.
Islamic hedging
mechanism

Figure 2.
Pricing (premium)
mechanism

Technically, the authority (BPKH), which has a rupiah account in Islamic banks, requests an Islamic hedging for hajj funds to Islamic banks. Referring to equation (1) above, premium rates to be paid by BPKH are (Figure 2):

- price differentiation between domestic money market rate (from the conventional bank) and Saudi Arabian money market rate (from the Saudi Arabian bank). Premium rate occurs when the former rate is higher than the latter;

- price differentiation between domestic money market rate (from the conventional bank) and Islamic money market rate (from Islamic bank). Premium rate occurs when the former rate is higher than the latter; and
- total premiums to be paid by BPKH are the accumulation of those two previous premiums.

Such premiums deduct the BPKH rupiah account in Islamic banks, and lately, reduce the amount of rupiah funds to be converted to SAR. On the other hand, if BPKH does not hedge the hajj funds, rupiah account could directly be converted to SAR in an on the spot basis. A comparison between doing Islamic hedging for hajj funds and not doing Islamic hedging becomes an indicator to determine if BPKH should (or not) hedge the hajj funds.

Finally, for the economic condition, it is assumed that the economy within the period of 2004-2008 was relatively stable as shown in the stable exchange rate, inflation and GDP growth rate. Whilst, the period of 2009-2012 depicted the less stable economic condition as shown in the slow growth of GDP, increasing trend of inflation and less stable IDR/USD rate. Finally, the current period of 2013-2017 reveals an improved economic conditions (Figure 3).

5.1 Islamic hedging for hajj funds: simulation of three months tenor

For the three months Islamic hedging tenor in a stable economic condition (2004-2008), the simulation reveals that there might be at least five months cost saving per year if hajj funds were hedged. The estimated cost saving per year in this period was between IDR 7bn (US $5,260,000) and IDR 200bn (US$15m) (Figure 4 and Table I). Meanwhile in a less stable economic condition (2009-2012), no hedge was recommended as IDR tended to appreciate against SAR (during 2009-2010) or limited hedging could be pursued with a potential cost saving around IDR 117bn (US$8.8m) – more than IDR 200 bn (US$15 m) per year.

Whilst, the current economic condition (2013-2017) recommends the authority to hedge hajj funds with a maximum of eight months cost saving per year. The estimated cost saving is around IDR 1.2tn (US$90.2 m) – IDR 3tn (US$225.5 m) per year in this period. Then, for the whole periods of analyses, if hajj funds are hedged for a three-month tenor, the total accumulation of the estimated cost saving for the authority might be more than IDR 8tn (US $601.5m).
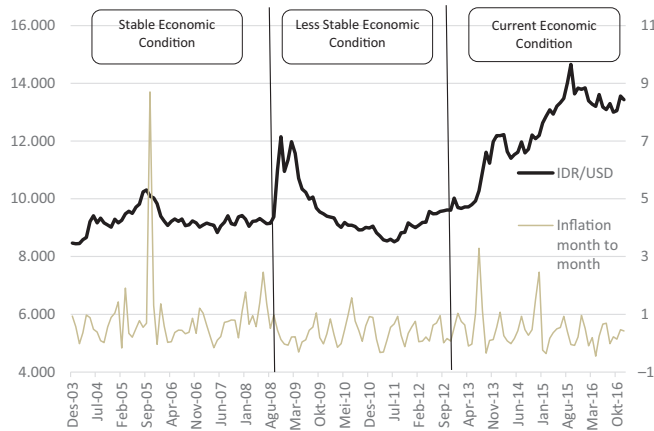

Figure 3.
Three economic conditions

5.2 Islamic hedging for hajj funds: simulation of six months tenor

For the six months Islamic hedging tenor in a stable economic condition (2004-2008), the simulation shows that there might be at least eight months cost saving per year when the authority hedges the hajj funds. The estimated cost saving per year in this period was between IDR 0.9 bn (US$6.7 m) and IDR 400 bn (US$30 m) (Figure 5 and Table II). Meanwhile, in a less stable economic condition (2009-2012), no hedge was recommended as IDR tended to appreciate against SAR (during 2009-2010) or limited hedging could be pursued with a potential cost saving around IDR 200 bn (US$15m) – IDR 280bn (US$21m) per year.

In addition to the current economic condition (2013-2017) really recommends the authority to hedge the hajj funds with a maximum of ten months cost saving per year. The estimated cost saving is around IDR 2tn (US$150m) – more than IDR 4tn (US$300.7 m) per year in this period. Then, for the whole periods of analyses, if hajj funds are hedged for a six-month tenor, the total accumulated estimated cost saving for the authority might be more than IDR 11tn (US$827 m).

5.3 Islamic hedging for hajj funds: simulation of nine months tenor

Meanwhile, for the nine months Islamic hedging tenor in a stable economic condition (2004-2008), the simulation implies that there might be at least ten months cost saving
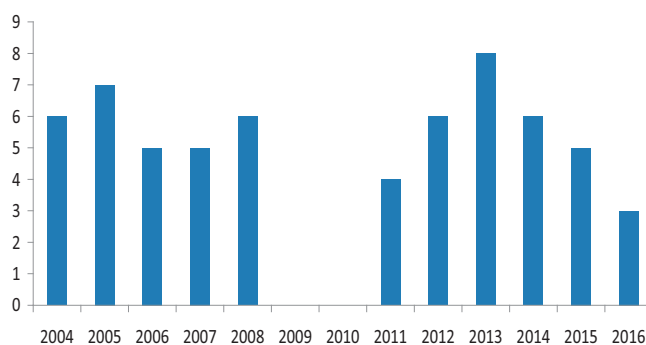

Figure 4.
Estimated number of
monthly saving

	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex all tenors, SAIBON, PUAS		
	Mo**	Saving cost (Rp)	Premium cost (Rp)	Mo**	Saving cost (Rp)	Premium cost (Rp)
2004	6	37,362,175,417	9,276,436,107	6	37,782,121,656	8,507,459,917
2005	7	19,675,261,609	3,235,964,531	6	17,010,439,489	8,407,971,024
2006	5	7,588,515,378	5,512,812,456	3	2,854,228,459	24,376,628,749
2007	5	120,085,162,864	10,548,073,102	5	108,687,792,485	42,380,860,353
2008	6	205,632,720,720	76,319,083,191	6	203,390,259,659	75,753,733,428
2009	0	0	136,405,995,642	0	0	132,693,860,628
2010	0	0	168,108,239,442	0	0	164,024,300,530
2011	4	117,131,290,336	239,644,821,519	4	118,222,222,893	233,438,956,521
2012	6	196,095,958,305	278,617,031,552	6	201,969,832,337	263,957,902,791
2013	8	1,291,563,328,393	614,863,667,038	8	1,306,231,625,899	594,017,316,932
2014	6	2,089,196,801,648	2,207,817,825,857	6	2,117,252,372,496	2,153,362,555,985
2015	5	2,898,027,023,015	3,738,772,460,131	5	2,927,443,994,818	3,644,277,227,907
2016*	3	1,638,465,776,856	2,947,463,099,157	3	1,725,363,141,263	2,715,863,683,714

Notes: *Data up to October 2016; **number of cost saving months

Table I.
Simulation of three
months tenor

QRFM
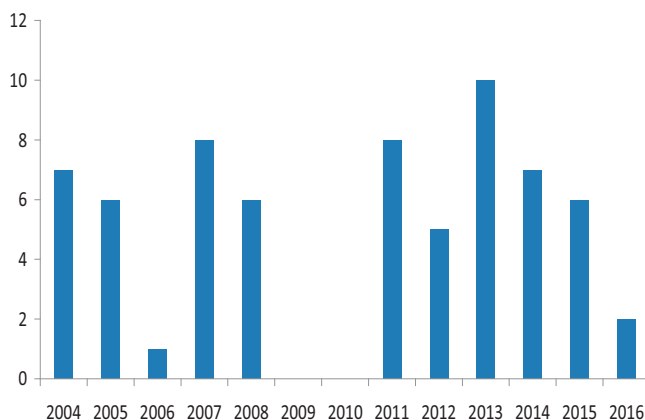
Figure 5.
Estimated number of
monthly saving

	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex all tenors, SAIBON, PUAS		
	Mo**	Saving cost (Rp)	Premium cost (Rp)	Mo**	Saving cost (Rp)	Premium cost (Rp)
2004	7	42,226,685,806	18,552,872,215	8	42,613,955,214	17,023,804,938
2005	6	29,037,767,267	6,471,929,063	6	23,711,790,290	16,979,857,565
2006	1	940,789,648	11,025,624,912	0	0	49,355,904,948
2007	8	114,155,117,317	21,096,146,204	4	87,421,538,304	85,800,039,722
2008	6	393,808,108,987	152,638,166,382	6	392,722,666,777	151,824,198,116
2009	0	0	272,811,991,285	0	0	265,385,712,704
2010	0	0	336,216,478,885	0	0	328,047,739,719
2011	8	205,871,433,377	479,289,643,038	8	213,614,691,808	466,875,881,182
2012	5	269,579,955,525	557,234,063,104	5	279,389,365,351	527,905,558,455
2013	10	2,859,184,920,522	1,229,727,334,076	10	2,893,368,017,222	1,188,019,202,144
2014	7	3,985,040,530,020	4,415,635,651,714	7	4,055,044,555,915	4,306,682,745,898
2015	6	3,647,157,542,612	7,477,544,920,261	6	3,717,261,602,499	7,288,483,549,036
2016*	2	134,474,871,012	4,220,017,438,830	2	231,052,922,906	3,930,549,421,095

Table II.
Simulation of six
months tenor

Notes: *Data up to July 2016; **number of cost saving months

per year if hajj funds were hedged. The estimated cost saving per year in this stable economic period was between IDR 2bn (US$150,000) – more than IDR 500bn (US$37.6m) (Figure 6 and Table III) except in 2006 when hedging or no hedging made no significant difference. Meanwhile, in a less stable economic condition (2009-2012), no hedge was recommended as IDR tended to appreciate against SAR (during 2009-2010) or limited hedging could be pursued with a potential cost saving around IDR 200bn (US$15 m) – more than IDR 500 bn (US$37.6m) per year.

Then, the current economic condition (2013-2017) recommends the authority to hedge the hajj funds with a maximum of nine months cost saving per year. The estimated cost saving is around IDR 2tn (US$150.3 m) – more than IDR 6tn (US$451 m) per year except in 2016 when hedging or no hedging made no significant difference. Then, for the whole periods of analyses, if hajj funds are hedged for a nine-month tenor, the total accumulation of the estimated cost saving for the authority would be more than IDR 10tn (US$751.8 m).
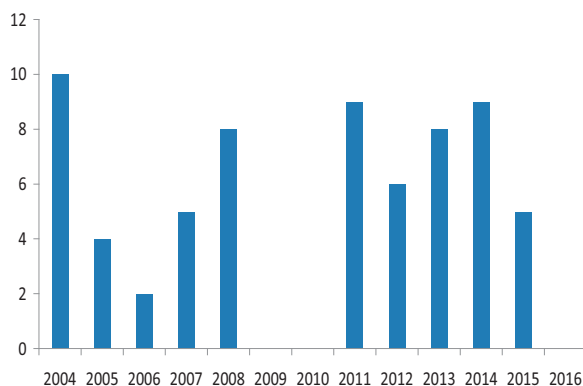
Figure 6.
Estimated number of
monthly saving

	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex all tenors, SAIBON, PUAS		
	Mo**	Saving cost (Rp)	Premium cost (Rp)	Mo**	Saving cost (Rp)	Premium cost (Rp)
2004	10	41,441,919,855	27,829,308,322	10	42,260,115,175	25,549,035,064
2005	4	18,601,895,315	9,707,893,594	4	13,921,692,649	25,715,659,622
2006	2	2,467,180,906	16,538,437,368	0	0	74,937,828,597
2007	5	109,581,826,516	31,644,219,305	2	82,567,446,768	130,257,538,107
2008	8	504,014,573,843	228,957,249,573	8	495,637,901,942	228,211,394,067
2009	0	0	409,217,986,927	0	0	398,075,556,226
2010	0	0	504,324,718,327	0	0	492,070,317,570
2011	9	268,203,914,965	718,934,464,556	9	281,315,710,165	700,310,773,984
2012	6	464,155,085,153	835,851,094,655	6	484,812,400,239	791,842,966,991
2013	8	3,522,466,062,115	1,844,591,001,114	8	3,563,548,591,672	1,782,005,655,634
2014	9	6,673,869,809,742	6,623,453,477,570	9	6,819,525,034,098	6,459,960,569,741
2015	5	2,638,364,741,212	11,216,317,380,392	5	2,728,589,462,876	10,932,618,963,388
2016*	0	0	3,567,934,316,049	0	0	3,349,747,409,629

Notes: *Data up to April 2016; **number of cost saving months

Table III.
Simulation of nine
months tenor

5.4 Islamic hedging for hajj funds: simulation of 12 months tenor

Finally, for the 12 months Islamic hedging tenor in a stable economic condition (2004-2008), the simulation suggests that there might be at least 11 months cost saving per year if hajj funds were hedged. This is the highest estimated monthly cost saving compared to the previous tenors. The estimated cost saving per year in this stable economic period was between IDR 3bn (US$225.30,000) – IDR 350bn (US$25.3m) (Figure 7 and Table IV). Meanwhile, in a less stable economic condition (2009-2012), no hedge was recommended as IDR tended to appreciate against SAR (during 2009-2010) or limited hedging could be considered with a potential cost saving around IDR 300bn (US$22.5m) – IDR 1.4tn (US$105.3m) per year.

Then, the current economic condition (2013-2017) recommends the authority to hedge the hajj funds with a maximum of 10 months cost saving per year. The estimated cost saving was around IDR 700bn (US$52.6m) – IDR 9tn (US$676.7m) per year. Finally, for the whole periods of analyses, if hajj funds were hedged for a 12-month tenor, the total accumulation of the estimated cost saving for the authority would be around IDR 12tn (US$905.2m).
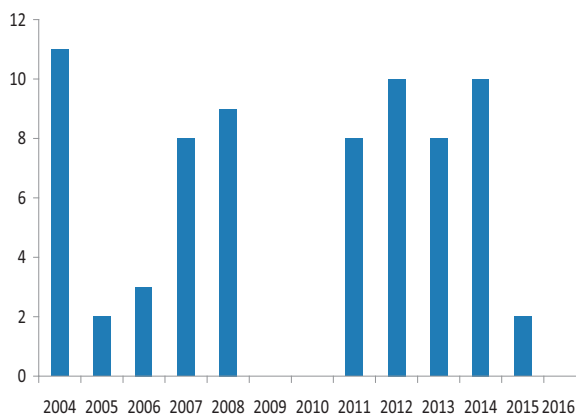
Figure 7.
Estimated number of
monthly saving

	PUAB Forex O/N, SAIBON, PUAS			PUAB Forex all tenors, SAIBON, PUAS		
	Mo**	Saving Cost (Rp)	Premium Cost (Rp)	Mo**	Saving Cost (Rp)	Premium Cost (Rp)
2004	11	60,650,401,526	37,105,744,429	11	62,586,802,660	34,083,150,295
2005	2	3,665,890,550	12,943,858,125	1	3,210,303,344	34,615,377,196
2006	3	8,592,727,194	22,051,249,824	0	0	101,122,399,695
2007	8	198,252,168,641	42,192,292,407	3	147,032,111,414	175,753,355,508
2008	9	355,086,369,597	305,276,332,764	8	354,159,568,362	304,915,321,278
2009	0	0	545,623,982,570	0	0	530,763,391,195
2010	0	0	672,432,957,769	0	0	656,092,034,080
2011	8	321,116,188,733	958,579,286,075	8	336,609,170,290	933,743,634,926
2012	10	1,353,109,522,968	1,114,468,126,207	10	1,397,897,669,842	1,055,770,128,401
2013	8	3,283,771,286,994	2,459,454,668,153	8	3,338,569,022,600	2,375,976,677,404
2014	10	8,758,180,764,964	8,831,271,303,427	10	8,961,408,691,977	8,613,196,027,512
2015	2	785,687,425,515	14,955,089,840,523	2	836,619,271,044	14,576,683,470,963
2016*	0	0	1,217,604,816,767	0	0	1,165,133,277,524

Table IV.
Simulation of 12
months tenor

Notes: *Data up to January 2016; **number of cost-saving months

6. Findings from simulations and policy recommendations
6.1 Findings from Islamic hedging simulations
The Islamic hedging simulations produce some important findings related to ideal time and
recommended tenor to hedge the hajj funds including estimated cost saving. Particularly,

(1) The longer the tenor of Islamic hedging for hajj funds, the higher would be the
potential of cost saving for the authority. This finding is in line with previous
researches conducted by Yahaya *et al*. (2016) and Baig (2016).

(2) When IDR/USD is depreciated, for examples, in (Figure 8):

- 2011-2012 when Indonesia was firstly impacted by the global financial crisis;
- 2012-2013 when such an impact accelerated; and
- 2014-2015 when such an accelerated impact still occurred.

is proven to be the recommended time to hedge the hajj funds.

(1) When IDR/SAR is appreciated, it is also not recommended to hedge the hajj funds (Figure 9).

(2) If the authority decides to hedge the hajj funds, based on periods of analysis above (December 2003-2016), the highest accumulated cost saving is found: in 2013 (either 9 or 12 months tenor) with an amount of IDR 0.6tn (US$45m), in 2014 (12 months tenor) with an amount of IDR 1.6tn (US$120.3m) and in 2015 (either 6 or 9 months tenor) with an amount IDR 1.8tn (US$135.3m) (Figure 10).

(3) For the current economic condition, the authority is strongly recommended to hedge the hajj funds because of (Figure 11):

- the IDR/USD volatility and estimated saving cost if hajj funds are hedged;
- the growing trend of hajj funds every year; and
- the impact of the global economic condition and the less conducive domestic economy to prevent hajj funds from having a loss.
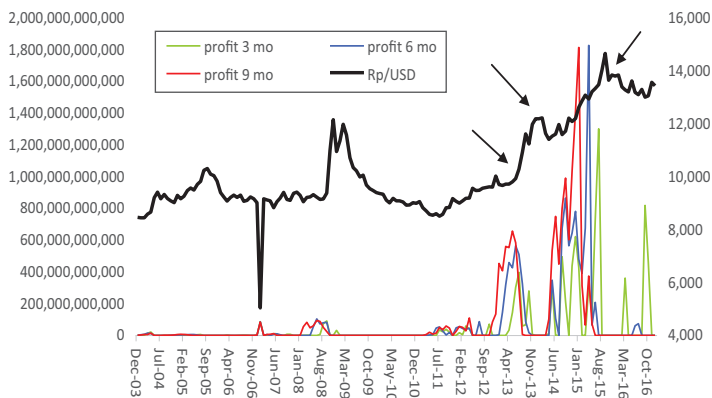

Figure 8.
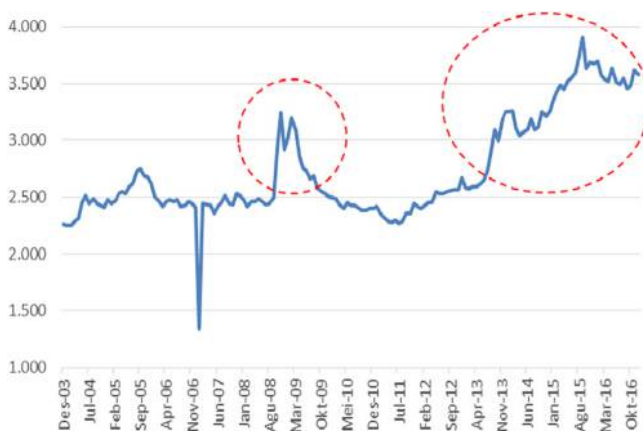IDR/USD and cost
saving (profit)

Figure 9.
IDR/SAR
exchange rate
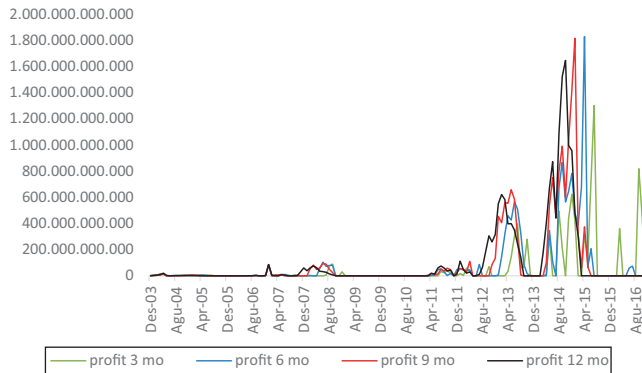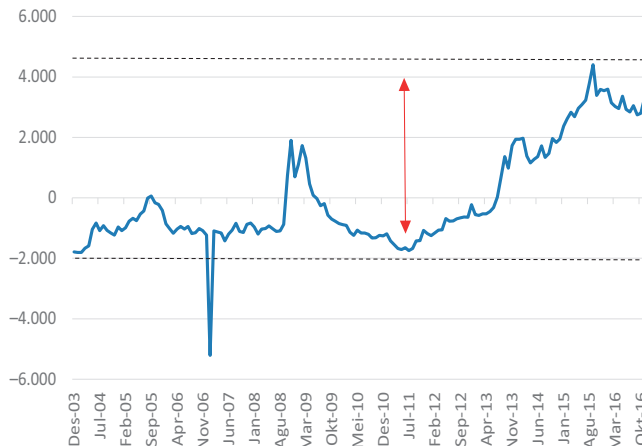
Figure 10.
Estimated cost
saving (profit)

Figure 11.
Volatility of IDR/USD
exchange rate

6.2 Policy recommendations
Based on findings from simulations, the paper proposes two types of recommendations namely technical recommendations and policy recommendations. The former would be:

(1) The recommended times to hedge the hajj funds are (based on exchange rate):
   - When IDR/USD depreciates 20-30 per cent in a stable economic condition.
   - When IDR/USD depreciates 40-50 per cent in the current economic condition.

(2) The less recommended time to hedge the hajj funds is when IDR/SAR appreciates 20-30 per cent.

(3) The recommended times to hedge the hajj funds are (based on premium rate):
   - When Islamic money market (PUAS) rate stands on 8-10 per cent, conventional market (PUAB) forex rate is between 3-4 per cent and SAIBON is also between 3-4 per cent, in a stable economic condition.
   - When Islamic money market (PUAS) rate stands on 6-7 per cent conventional market (PUAB) forex rate is between 0.2-0.4 per cent and SAIBON is also between 0.5-0.7 per cent, in the current economic condition.

(4) The recommended amount of hajj funds to be hedge (based on estimated cost saving) is around IDR 15tn (US$1.1 bn) – IDR 19tn (US$1.4 bn).

(5) If hajj funds are hedged in a 12-month tenor, the potential cost saving might stand up to 9-12 per cent of such hedged funds.

Then, the latter would be:

(1) The authority (government or BPKH) is highly suggested to hedge the hajj funds to:

  • maintain both the ongoing and future values of hajj funds;

  • prevent exchange rate risk and guarantee the amount of SAR to be received in the future (hajj season);

  • avoid currency loss (hajj funds loss) due to the exchange rate volatility and on the other hand, could save the cost of purchasing SAR with Islamic hedging transactions; and

  • maintain the value of hajj funds by pursuing Islamic hedging in the high exchange rate volatility (higher trend of IDR depreciation).

(2) The accurate time of Islamic hedging is very essential, particularly by monitoring both IDR/USD and IDR/SAR exchange rates movement.

(3) Gradually hedging the hajj funds (instead of fully hedging the total amount of hajj funds) is also suggested, particularly if it is proceeded in some (instead of only one) Islamic banks to share the risk among Islamic banks. This is also in line with the world bank recommendation on the roles of banks to manage the social funds above (World Bank, 2002).

(4) Considering the potential (estimated) cost saving of conducting Islamic hedging for hajj funds is the other one to be considered by the authority.

(5) Evaluating and valuing the existing and future economic conditions (both from domestic economic indicators and external economic indicators) are highly recommended.

7. Conclusion

Forward contract as one of the derivative instruments is applicable to prevent pilgrimage funds from foreign exchange risk. Hajj funds in Indonesia faces the risk of exchange rate because of the increasing trend of the amount of hajj funds, the volatility of rupiah against USD and SAR and no hedging ever applied to prevent exchange rate risk. Based on simulations of Islamic hedging for hajj funds, hedging is recommended for certain considerations (timing, premium, amount to be hedged and cost to be saved). The Indonesian experience in managing hajj funds and the paper recommendation to hedge the hajj funds in responding the demand for SAR in the hajj season might also inspire other countries having similar hajj funds management and risk exposure. Hence, findings and simulation scenarios in the paper are hopefully applicable and useful to other countries as well.

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