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Research paper

An Existing Profit Evaluation Model and Its an Alternative Profit Evaluation Model based on Shariah-Compliant

Nadhirah Gazali[1]*, Nurfadhlina Abdul Halim[1], Puspa Liza Ghazali[2], Mustafa Mamat[3], Wan Muhamad Amir W. Ahmad[4]

[1]*School of Informatics and Applied Mathematics, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu, Malaysia*
[2]*Falculty of Economy and Science Management, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Terengganu, Terengganu, Malaysia*
[3]*Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Terengganu, Terengganu, Malaysia*
[4]*School of Dental Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia*
**Corresponding author E-mail: nadhirahgazali08@gmail.com*

Abstract

In Malaysia, financing in Islamic finance is divided into two concepts that are equity financing and loan financing. This both concepts have been modified to fulfill consumer's need and the model should abide the law of Shariah. The model refers to evaluation of profit formula known as Constant Rate of Return (CRR) is widely used in Islamic financing. Besides that, the profit generate is based on the profit rate. The determination of profit rate is based on reference rate which is known as base rate (BR) or base financing rate (BFR) as a proxy. However, there are lacks of Shariah perspective in the formula's framework and also the formulation used nowadays where there is no significant difference with the conventional financing. Therefore, an alternative profit known as base profit rate (BPR) was build based on Islamic jurists and a new profit rate has been introduced for Islamic financing. Hence, the intention of this paper is to investigate between CRR model and BPR model based on Shariah perspective.

Keywords: *Base Profit Rate; Constant Rate of Return; Profit Rate; Reference Rate; Shariah*

1. Introduction

Economy is defined as a social science field that studies human behavior in the provision of limited resources to meet unlimited needs [1]. There are two types of economic systems carried out in Malaysia namely the conventional economic system and the Islamic economic system. The economic system is expanding rapidly with the implementation of the banking system that is the most important and competitive financial service in line with economic progress [2]. Therefore, Malaysia adopts dual-banking banking system and Islamic banking [3].

The main factor that distinguishes the conventional banking system and the Islamic banking system is the law in economics. For Islamic banking, all matters must be met by Muslims and operate the financial system in accordance with the provisions of the Al-Quran and As-Sunnah in order to achieve the maqasid Shariah, which is the overall benefit of the society [4]. Whereas, conventional banking has no law to be complied with. Hence, every financial activity in Islamic banking must be obey to the Syariah. Islamic financial activities include the formulas and instruments used in contracted contracts.

However, Islamic finance contract nowadays is still using evaluation of profit formula that is not Shariah complaint. According to [5], the method and basis of the formation of the profit used in Islamic financing is in common with conventional financing. Hence, the method used recent in Islamic products such as the determination of the profit are no different from conventional banking. Besides that, both banks use the same reference rate in determining the profit rate that is base financing rate (BFR) or base rate (BR) [6]. There are issues in the determination of the BFR/BR [7], the components used are not Shariah-compliant lead to overall profitability in Islamic products offered by the bank still have the element of *riba* [8]. Thus, the objective of this paper was to make the comparison between existing profit evaluation formula and an alternative mathematics profit evaluation formula in Islamic banks and also based on empirical result.

2. Constant Rate of Return Formulation

The formula is widely used in Islamic finance contract in Malaysia is known as Constant Rate of Return (CRR) to determine the profit value. This is because *musyarakah mutanaqisah* principle, the partnership with the decline in ownership on the part of institution has been adopted into the CRR method. Formulation of CRR is given in (1) [9].

$$S = S(1+r)^n - \Pr(1+r)^n$$
$$S((1+r)^n - 1) = \Pr(1+r)^n$$
$$S = \frac{\Pr(1+r)^n}{(1+r)^n - 1} \quad (1)$$

where S : installment amount the customer has to pay to the trader, P : principal, n : period, $(n = T \times m)$ where T is number of year

and m is number of times per year $1 \le m \le 12$ and r: monthly profit rate.
The total amount (notation, V), which will be paid by customer is given in (2).

$$V = S \times n$$

$$V = \frac{\Pr(1+r)^n}{(1+r)^n - 1} \times n \tag{2}$$

Next, the profit (notation, U) generated by using equation (2) is given in (3).

$$U = V - P \tag{3}$$

In (1), r in Islamic finance is based on base financing rate (BFR) or base rate (BR) (notation, w). According to [6], the value of BFR or BR is determined in yearly. So, the formula of r is given in (4).

$$r = \frac{w + \lambda}{100 \times m} \tag{4}$$

where λ is sum of components, which are operating cost, liquidity risk, credit risk and profit margin determined by bank. Whereas, w is consists of sum of benchmark cost of fund and Statutory Reserve Requirement (SRR) which is determined by Bank Negara Malaysia (BNM) [6].
However, CRR method actually introduced by conventional finance/banking sector in determining the value of the lease contract [9]. Hence, both Islamic and conventional finance/banking activity used same formula for profit evaluation. In (1), $\frac{r(1+r)^n}{(1+r)^n - 1}$ is an annuity factor. Based that, notice that S is exponential function of P, r and n. Hence, the formula clearly implies compounding of interest in calculation. So, this shows that CRR formula is not compliant toward Shariah because the compounding apply method of interest charged on interest [10].
In (4), benchmark the cost of funds and the SRR are directly proportional to the overnight policy rate (OPR). OPR is the interest rate between banks [11]. So, the transaction between the bank use OPR as interest rate whether the conventional bank or Islamic banks. When the money is used as commodities in a transaction, it falls under the definition of *riba* [12]. Thus, when the OPR affect BFR or BR, profit rate of Islamic finance directly has the elements of *riba*. Hence, overall the profit evaluation by using CRR formula is non-compliance with the Shariah perspective. Besides that, refer to previous studies by [12-14] found that the profit evaluation formula and the profit rate that used in Islamic financing has no significant difference with conventional financing.

3. Alternative Formula of Profit Evaluation

An alternative profit evaluation is known as a base profit rate (BPR) model. This formula construct for financing instrument based on deferred installment contract. This formula implies two components: principal payment and profit. Principal payment in BPR model is applied Shariah concept that is *musyarakah mutanaqisah*. While, determination of profit is based on current economic condition that is based on bubble economic size. Thus, this formula is transparent in terms of principal and profits. BPR formula is given in (5)-(10).
First, we consider principal payment by customer done periodically through monthly payment is given in (5).

$$a = \frac{P}{n} \tag{5}$$

where a, P and n is payment of principal for each period, principal and number of periodic payment respectively.
Secondly, we determine the profit based on rate of bubble size as profit rate alternative by using Generalized Johansen-Ledoit-Sornette (GJLS) model is given in (6), the formations of GJLS model refer to [15].

$$\ln[p(t) - p_1 = F_{LPPL}(t) \tag{6}$$

where $F_{LPPL}(t)$, p_1 and $p(t)$ is economic bubble size, intrinsic value and price of a stock index respectively. Hence, bubble size rate (notation, $\hat{g}$) is given in (7).

$$\hat{g} = \left(\frac{p(t)}{p_1 n'} - \frac{1}{n'} \right) \times 100\% \tag{7}$$

where n' is number of periodic stock index data.
However, the profit rate in BPR model has maximum limit obtained from the opinion of scholars. Subject to maximum limit of $\frac{33.33\%}{12}$ and $\hat{g} \ge 0$, where the value of 33.33% can be referring to [15].
Lastly, the monthly payment of BPR model is given in (8).

$$S_t = a + U_t$$
$$S_t = a + \hat{g}(P - ta) \tag{8}$$

The determination of amount (notation, V) of the Islamic financing instrument is commonly given in (9).

$$V = \sum_{t=1}^{n} S_t$$
$$V = \sum_{t=1}^{n} (a + \hat{g}(P - ta)) \tag{9}$$

The return on principal (notation, U) generated in (9) and is given in (10).

$$U = \sum_{t=1}^{n} (a + \hat{g}(P - ta)) - P$$
$$U = V - P \tag{10}$$

4. Results and Discussion

The empirical test on CRR model and BPR model rate by using same data for comparison purposes as below:
Principal: RM45000.00
Tenure (years): 3
Tenure (months): 36
For CRR model, the profit rate is determined based on BFR taken from Bank Negara Malaysia from 2006 until 2008. Table 1 shows the illustration execution by using CRR model.

Table 1: Illustration execution by using CRR model

Period	Periodical Payment	Profit Amortisation	Principal Amortisation	Remaining Principal
0				45000.00
1	1374.91	235.88	1139.03	43860.97
2	1374.91	229.90	1145.00	42715.96
3	1374.91	223.90	1151.01	41564.96

4	1377.57	222.37	1155.19	40409.76
5	1379.41	219.22	1160.19	39249.58
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
33	1368.17	27.20	1340.98	4134.82
34	1369.19	20.71	1348.48	2786.34
35	1368.58	13.89	1354.69	1431.65
36	1438.63	6.99	1431.64	0.00
Total	49597.76			

Whereas, by using same data but difference determination of profit rate and profit evaluation. Table 3 shows the illustration execution by using BPR model.

First, we predict the bubble size by using GJLS model. We estimate the w value by three consecutive price peaks. The best result is chosen based on MSE value. The results of the bubbles size as shown in Table 2.

Table 2: Predicted bubbles size of KLCI, 1997 and 2008

Time Interval	Market Value	Intrinsic Value	Bubble Size
28/08/1998-31/01/2008	1445.03	580.60	864.43, 67.17%

Table 3: Illustration execution by using BPR model

Period	Principal Amortisation	Remaining Principal	Bubble Size	Profit Cost	Periodical Payment
0		45000.00			
1	1250.00	43750.00	0.0056	245.00	1495.00
2	1250.00	42500.00	0.0056	238.00	1488.00
3	1250.00	41250.00	0.0056	231.00	1481.00
4	1250.00	40000.00	0.0056	224.00	1474.00
5	1250.00	38750.00	0.0056	217.00	1467.00
.	.	.	.	.	.
.	.	.	.	.	.
.	.	.	.	.	.
33	1250.00	3750.00	0.0056	21.00	1271.00
34	1250.00	2500.00	0.0056	14.00	1264.00
35	1250.00	1250.00	0.0056	7.00	1257.00
36	1250.00	0.00	0.0056	0.00	1250.00
Total					49410.00

From Table 2, bubbles size rate for 10 years is 67.17%. Hence, from equation (7), periodic bubble size rate is 0.56% from 1998 until 2008. This is because the results in Table 2 show that financial bubble usually happened every 10 years. This empirical test is used the data from 2006 until 2008. So, there are no changes of the bubble size value between that times.

From this empirical test, it shows that the amount by using BPR model is less than CRR model. Hence, the institution or traders can gain more profit by using CRR model rather than BPR model. However, one of the main focus of this paper is to construct an alternative mathematics model of profit evaluation which is more compliance towards Shariah that is BPR model. The profit margin in this model is determined based on scholar opinion is to prevent any of contradiction opinion between *ummah*. Besides that, because of the BPR model was built for installment payment. So, the bubble size is used as proxy to determine the profit cost. Bubble size is in line with the economy that makes it relevant as a proxy. This is to avoid losses to traders because if financing is done by lump sum payment, the traders can generate more profit. Besides, randomness in profit rate is permitted in Shariah [12] because it gives more justice to the contracted parties compared to the fixed profit rate since it reflects the true market forces and gives an opportunity for the traders and customers to generate more benefits.

5. Conclusion

Islamic financing instrument are valued based on CRR model. CRR model was constructed by applying the annuities concept. Since, Islamic banking/finance and conventional banking/finance used same model of profit evaluation. So, there are no differences between Islamic and conventional banking/finance. Besides, the determination profit value by using CRR model based on BFR or BR value that makes this profit evaluation non-compliance with the Shariah. This is because the determination of BFR/BR is directly proportional to the overnight policy rate (OPR). OPR have element of *riba* make overall profit evaluation also have the element of *riba*.

Hence, the alternative formula known as based profit rate (BPR) was built to meet Shariah perspective. From the empirical test towards alternative profit rate model, it is proved that the establishment of base profit rate (BPR) can be applied in the real world. The bubble size reflects the current economic condition; it is relevant as a proxy in BPR model. This show that BPR model more Shariah-compliant because no element of *ghabn fashisy* element in Islamic financing. It can be concluded that, this new model is more compliance towards Shariah because determination of the profit rate is transparent and clear. There is no element of *riba* that can be detected in this model because the profit rate is determined before the contract is approved by both party's customers and traders or institution.

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