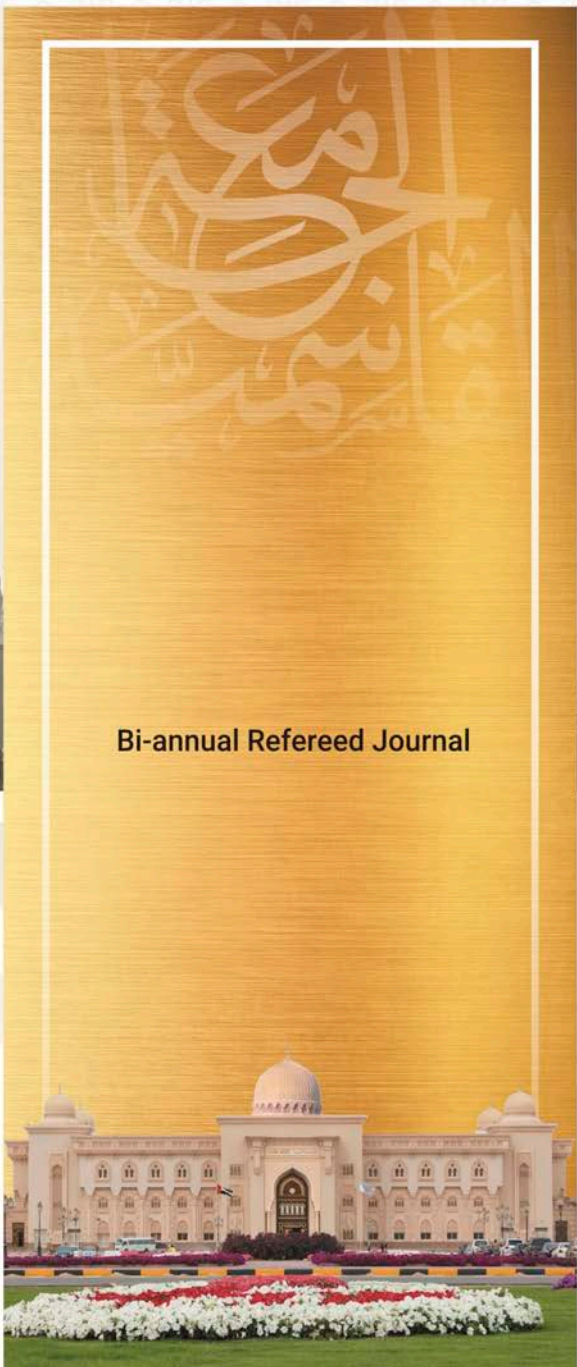
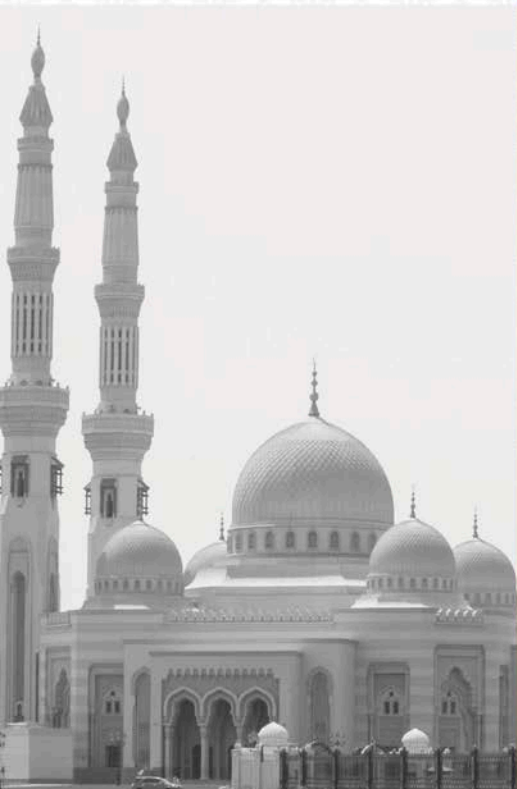


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تسعير المراجعة: القضايا والرؤى

PRICING OF *MURABAHA*: ISSUES AND INSIGHTS¹

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الملخص

يعتبر التسعير بشكل عام، أحد المجالات المهمة في مجال الخدمات المصرفية الإسلامية والتي تحتاج إلى البحث والتحقيق، خصوصاً أداة المراجعة وهي الأداة الأكثر انتشاراً. تهدف هذه الورقة إلى دراسة تسعير المراجعة ومحاولة اقتراح بديل جديد للتسعير. من الملاحظ أن شروط تثبيت هامش الربح في المراجعة تلقي الضوء على عملية التسعير وقضايا مراعاة القيمة الزمنية للنقود واختيار المعيار. نقترح اعتماد معدل العائد على رأس المال الإسلامي (RAROC) والنظر في معيار جديد يعتمد على الصكوك، وتحديدًا صكوك المراجعة. هذا يسمح بمرجع قابل للتداول. الواقع أن الصكوك هي سوق رأس المال الإسلامي الديناميكية. علاوة على ذلك، فإن هذا المعيار المقترح له علاقة قوية بالقطاع الحقيقي.

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Abstract

The pricing mechanism is an important area that needs to be investigated in Islamic banking especially for the *murabaha*, the most financing tool. The main objective of this paper is to examine the pricing of *murabaha* and to try to propose a new pricing alternative. We note that the conditions of the fixation of mark-up in *murabaha* enlighten on the pricing process and the issues of the consideration of time value of money and the choice of benchmark. We propose to adopt an Islamic RAROC and to consider a new benchmark based on *sukuk*, specifically *sukuk murabaha*. This allows a marketable reference. Indeed, *sukuk* is the dynamic Islamic capital market. Moreover, this proposed benchmark has a strong relationship with the real sector.

الكلمات الدالة: المراجعة، التسعير، البنك الإسلامي، المعيار، معدل الليبور، الصكوك.

Keywords: *Murabaha*, Pricing, Islamic Bank, Benchmark, LIBOR, *Sukuk*.

1.0 Introduction

The pricing mechanism of Islamic banking is an important area that needs to be explored (Ismail, 2008). Indeed, pricing can affect the risk exposure level, capital charges, and the financial rating of Islamic banking products. However, due to the competition and their limited experience compared to conventional ones, Islamic banks seem more price takers than price setters. Further, according to Ismail and Arshad (2011), the pricing methods of Islamic banking products can lead to a displaced commercial risk and pose the issue of their compliance with *Shari'ah* rules. Moreover, a debate exists regarding the pricing models given different schools of thought and their mindsets (Salman, 2014).

The pricing of Islamic banking financial products can notably be distinguished on four elements: (1) the profit-share ratio for Profits and Losses Sharing (PLS) financing (*musharaka* and *mudaraba*); (2) markup (margin) in *murabaha*; (3) price discounting

in *salam* (4) rent (Lease and *ijara*). Thus, different factors affect the pricing process in Islamic banking such as target profit (safety profit), risk premium, operational cost, and actual productive capacity of the debtor or business financed (Wahyudi et al, 2015)².

However, some similarities arise between Islamic banking product pricing and those of conventional products, especially for like-debt products. Islamic banking pricing is determined or expressed with reference to the interest rate market. Indeed, benchmark models based on money market interest rate (LIBOR)³, Overnight Policy Rate (OPR), Kuala Lumpur Interbank Offered Rate (KLIBOR), or COFI are used to determine the cost of funds and doing so, the revenues of financial investments (Omar et al., 2010, Ahmed et al., 2015). Recently, Saeed et al (2023) highlight that given the competition; Islamic banks are forced to benchmark their rates using the conventional bank rate which violates religiosity and economic principles. Indeed, using monthly data from January 2009 to April 2018 of Malaysian banks, the ARDL method shows that Islamic bank deposit and financing rates are dependent on both the conventional and Bank Negara Malaysia's policy rates (Saeed et al, 2023). Even, the profit-sharing ratio of *musharaka* and *mudaraba* depends on a benchmark like LIBOR (Hassan and Lewis, 2007). Khan (2013) highlighted the ubiquity of using LIBOR to make expectations about returns on Islamic bank investments.

The Benchmark based on LIBOR sparked debate among researchers. While some authors consider that this does not constitute an issue, others refuse this reference inconsistent with *Shari'ah*. On one hand, according to Kureshi and Hayat (2014), the legitimacy of Islamic bank products "does not lie in its pricing" but the rights and obligations of the parties of the contract. Usmani (2008, p.119) points out that "If all the pillars of sale are valid from a *Shari'ah* point of view, just mere use of interest rate as a benchmark cannot invalidate

² The cost of Islamic financing is higher given the complexity of their credit structures. The Islamic banking costs are about 1 to 3% more expensive in Canada and 1.4 to 1% in the United States in 2007 compared to conventional banks (Cekici, 2012). El-Gamal deplores the "cost of being Muslim".

³ The London Inter-bank offered Rate (LIBOR) is a day-by-day quotation rate centered on the interest rates at which banks lend unsecured loans from other banks in the London wholesale money market.

the wholesale"⁴. The idea is that Islamic finance has not an alternative Islamic pricing benchmark (IPB) to determine its cost of capital. On the other hand, LIBOR poses a problem of legitimacy of financial Islamic products pricing (Ahmed et al., 2014). Chong and Liu (2009) and Ahmed et al (2018) state that Islamic banks are criticized for their reliance even directly or indirectly on conventional benchmark prices. The issue is the replication of conventional usury-based financial indicators in Islamic finance. In conflict with Islamic principles, LIBOR is the proxy of the pure time value of money independently of the real sector. The application of conventional benchmark is not in conformity with the Islamic philosophy of wealth (Gadhoom and Mohamad, 2017). Empirically, Ghauri (2015) concludes that KIBOR does not represent real economic activities in Pakistan.

Consequently, the current issue of Islamic finance is to establish an alternative to LIBOR (Khan, 2013). There is a need for a benchmark price for Islamic banking products which is independent of interest rate (AAOIFI⁵, 2004, Fiqh academy on OIC⁶, 1993). In March 2020, the UK's Financial Conduct Authority (FCA) "confirmed that market participants should not rely on LIBOR being published after the end of 2021 regardless of any difficulties caused by the COVID-19 pandemic" (Clifford Chance report, 2020). Furthermore, the proposals and scenarios for pricing Interest rate swaps (IRS) recently presented by data science software to save LIBOR- which was announced to be discontinued at the end of 2024,- are also forbidden by *Shari'ah* (Kantakji and O'haj (2024).

The main objective of this paper is to examine the pricing of *murabaha* and to try to propose a new pricing alternative. *Murabaha* is the most important financial product in Islamic finance. Miah and Suzuki (2020) confirm that about 90 percent of the total financing of a sample of Islamic banks in GCC is concentrated on *murabaha*. Islamic banks should take care of pricing notably in competition with

⁴ Cited by Bashir Uj Jaman (2011)

⁵ AAOFI standard No 27, clause 7 notes that the development of the Islamic index is guided by adhering to *Shari'ah* among other parameters.

⁶ The need for an Islamic benchmark was emphasized by the Fiqh Academy under OIC in its 8th Conference on Currencies Issues (10-11 April 1993).

conventional banks in a dual system. Price enjoys a large influence on consumers' satisfaction judgments (Herrmann et al., 2007).

In the remainder of this paper, section two discusses the issue of LIBOR consideration in *murabaha* pricing. Section three highlights the need to establish a new benchmark and exhibits previous attempts. Section 4 presents our proposed Islamic benchmark for *murabaha* pricing, and section five provides some concluding remarks.

2.0 Issues of the Consideration of LIBOR as the Benchmark in *Murahaba*

According to AAOIFI, *murabaha* is the sale of goods at cost plus an agreed profit mark-up (Financial Accounting Standard No. 2: *murabaha* and *murabaha to the purchase orderer*, Appendix B, Item 1/1). There are two types of *Murahaba*:

- (i) *Murahaba*, where an Islamic bank sells commodities to any willing buyer; and
- (ii) *Murahaba* to the purchase orderer, where an Islamic bank acquires an asset for an identified purchase orderer based on the orderer's specifications and sells the asset to the orderer. So, it is a resale transaction of the asset (other than gold and silver). Basic rules should be respected in this contract⁷.
 - The object of sale must physically exist at the time of sale to avoid *gharar*.
 - The object of sale must be on the ownership of a seller at the time of sale (in the physical or constructive possession). This means that Islamic banks should directly purchase the object of sale.
 - The seller (Bank) must bear the risk of any possible loss on the commodity before its sell.
 - The selling price should be fixed at the establishment of the contract. Once it is agreed upon between Islamic banks and its customer, the selling price cannot be altered.
 - The profit added to the total cost is left to the discretion of the seller. There is no fixation of a maximum margin, but it is related to supply, cost, demand conditions... From an Islamic perspective, the seller cannot fix unfair prices or exploitative rates.

⁷ See Ebrahim (2007) for further information.

- The mark-up must be known, agreed between two parties, and not revised to avoid *gharar* or uncertainty. The mark-up should not be subject to variation. “Profits of *murabaha* or *murabaha* to the purchase order are recognized at the time of contracting if the sale is for cash or on credit not exceeding the current financial” (Article 2/4/1 standard *Shari’ah* 8; AAOIFI).
- The bank has the right to provide a discount to the client in the case of an earlier payment.

2.1. The issue of the Markup calculation in Murabaha

In the *murabaha* contract, the selling price is the purchase price plus mark-up. The purchase price is currently known while the mark-up should be established which poses difficulties in the pricing process. We focus on the fixation of mark-up which will enlighten us on the pricing process and the issues of the consideration of time value of money and the choice of benchmark.

Components of mark-up: The calculation of the mark-up (margin) on the purchase price should include:

- The cost price (various taxes paid by the bank, handling fees, property acquisition costs, storage costs ...)
- The margin of the bank (including the additional risks induced by the acquisition of the asset by the bank, commercial and tax risk, the collateral required)⁸.

$$\text{Mark-up} = \text{cost price}^9 + \text{profit margin}$$

The method of calculation: The mark-up can be determined in the form of a certain amount or a certain percentage of acquisition cost. Indeed, the pricing mechanisms used in Islamic banks are the following (Ebrahim, 2007):

- Cost of actual good + % percentage of bank mark-up about the period of return (returns are almost equal to interest rate considered as an indicator of inflation+ cost of actual

⁸ For example, in the Islamic Bank of Britain, the credit *murabaha* rate is between 7.9% and 10.9% depending on whether the credit is a consumer credit or investment credit.

⁹ Cost price is the sum of the costs incurred for the production and the distribution of a good or service. There are direct and indirect charges.

transportation, legal cost, or other costs). Mark up is on the actual cost of the goods.

- Total cost of good (actual cost + cost of actual transportation, shipping legal cost, or other costs) + % percentage of bank mark up relating to the the period of return. The mark up is on total cost including transportation.

The price is computed as follow (Ismail and Arshad, 2010):

$$P = \left[\frac{\{(TVC + FC)\}}{Q} \right] / (1 - MK\%)$$

Where, P is price; TVC is total variable costs (example, administration, and transportation costs); FC is fixed cost (example, wages, and tax); Q is a total sale; MK is a percentage mark-up.

$$\left[\frac{\{(TVC+FC)\}}{Q} \right] \text{ is the unit cost.}$$

This reflects a cost-plus price¹⁰. An example of a *murabaha* to the purchase order, involves a customer asking a bank to buy a machine:

Table 1 : Data of a sample of *murabaha*

Purchase price of the machine	100,000
Transportation costs	15,000
Other costs	10,000
Cost price	125,000
<i>Hamech eljiddiya</i>	30,000
The profit margin of the bank	15%
Period of <i>murabaha</i>	24 months

¹⁰ For example, FC = 300,000, TVC= 100,000, Q : number to unity to be sold = 50,000 and MK is percentage mark-up = 20%.

$$\text{So, } P = \left[\frac{\{(100000+300000)\}}{50000} \right] / (1-0.2) = 8/0.8 = 10$$

However, the profit can be added as either a percentage mark-up or an absolute amount. Indeed, $P = (AVC + FC) * (1 + MK\%)$

If AVC = average variable cost = 30, FC = 10, MK is percentage mark-up= 50%. So, $P = (30 + 10) * (1 + 0.5) = 40 (1.5) = 60$

How to calculate monthly payments from customers?

- First method: Cost price is 125,000, then we subtract the *hamech of jeddiya* $(125,000 - 30,000) = 95,000$, we add the yield of the *murabaha* $(95,000 * 1.15) = 109,250$. So, the monthly payment paid by the client $= 109,250 / 24 = 4,552.083$
- Second method: Cost price is 125,000, we add the yield of the *murabaha* $(125,000 * 1.15) = 143,750$. We subtract *hamech al jeddiya* $(143,750 - 30,000) = 113,750$. So, the monthly payment paid by the client $= 113,750 / 24 = 4,739.583$

The differential pricing means that customers with less risky and profitable profiles will experience lower costs for those with a riskier and less profitable profile.

The choice of benchmark: In *murabaha*, a benchmark is used to determine the mark-up. Often, the profit margin is calculated using the mathematical formula by reference to the interest rate (LIBOR: London Interbank Offered Rate). The mark-up should not be indexed on currency variation for example. This margin should not be reassessed or based on an indeterminate rate (Article 4/6 standard *Shari'ah* AAOIFI no.8, *murabaha* to the purchase orderer).

2.2. The issue of the pure time value of money

Money time value is important for the feasibility study of investment projects. Furthermore, it is essential for fixing the margin and so for the pricing of deferred sales and mark-up sales.

Following *Shari'ah* rules, in the sales contract, time is observed in the pricing. As argued by Saadallah (1994), time value is consecutive to the commodity sold without a separate consideration, as it is a part of the sale price¹¹. Ghauri (2015) highlights that Islamic financial contracts give importance to the value of assets rather than to the value of money. The margin is related to the extension of time that the client seeks for the payment. The longer the period of repayment, the higher the profit is charged. The profit must not generate more profits simply because of the passage of time (Cekici, 2012).

¹¹ However, there is no value of time in a loan.

In this view, the conditional legitimacy of money time value and time preference in the Islamic perspective is not respected when LIBOR is considered in the calculation of mark-up. LIBOR represents the opportunity cost of capital. It is a pure time value of money. Even with simple interest, this pricing mechanism based on interest and considering the pure value of money independently is forbidden by *Shari'ah*.

Investigating accounting issues of reporting for Islamic financial transactions regarding the *murabaha* contract, Ahmed et al (2016) highlight the timing difference in profit recognition between IFRS and AAOIFI. Precisely, differences in the reported profits are related to the concept of the time value of money. Indeed, in the recognition and measurement of a *murabaha* contract, IFRS applies the concept of substance over form and time value of money. In fact, "IFRS adopted the concept of the time value of money where the profit allocation is based on amortized cost, which is similar to the measurement of conventional loan transactions that apply the concept of effective interest rate" (p.190). However, AAOIFI considers that *murabaha* is a trading activity. In the measurement adopted by AAOIFI, it is not clear if the concept of the time value of money is applied (Ahmed et al, 2016). It is worth noting that according to the Article 8/8 of AAOIFI *Shari'ah* Standard 13 on *mudaraba* as highlighted by ACCA and KPMG, 2010, neither time value (interest rate) nor discount on current value for extension of the period of payment shall be taken into consideration in measuring receivables. It appears that the concept of the time value of money poses problems at the accounting level but also for the pricing and the financial calculations.

2.3. Debate on the reference to LIBOR in pricing

This use of a mathematical formula based on LIBOR is a subject of debate. Some authors have no objections as there is a strong resemblance between the calculation of profit and the calculation of interest. Usmani (2008) shows that the application of a mathematical formula for a rate as in credit interest is *Islamically* permissible for the calculation of the Islamic profit rate. This does not mean that the transaction itself is forbidden given that the deal itself does not contain

Riba (interest), the interest is only an indicator¹². Cekici (2012) explains that the difference between interest and markup is not related to the calculation method of the remuneration but to the process that each generates. In this regard, the explicit reference to LIBOR does not pose problems because this rate is established and should not be subject to any variation. The pricing mechanism in Islamic banking has "no escape from calculating cost in terms of market-related interest returns" (Ebrahim, 2007). Hamoud (1994) argues that it is difficult to avoid the comparison of the profit margin with the interest rate. In the same vein, AAOIFI standard 27/5/3 state that it is acceptable to consider LIBOR or KLIBOR as a standard to determine the pricing of Islamic financial commodities and facilities. Moreover, while some *Shari'ah* scholars consider that benchmarking interest rate is not desired, they note that it is not forbidden due to the lack of an Islamic benchmark. So, in the absence of an appropriate securities pricing model, the Islamic industry uses the conventional pricing benchmark (i.e. LIBOR) (Herwany and Febrian, 2010).

However, some authors reject the use of LIBOR and outline the need for an Islamic benchmark. The reference to LIBOR as a benchmark poses problems regarding the consideration of time in the *murabaha* contract. Indeed, this favors the time preference as the payment is differed with a margin¹³. According to Usmani (2011), the issue is that interest rate does not represent the main Islamic economy philosophy. We argue following Gharbi (2016) that the reference rate obtained in the non-Islamic financial system is inappropriate from an Islamic perspective.

Consequently, the major challenge is to distance Islamic tools pricing from conventional debt financing benchmarks such as LIBOR and to consider *Shari'ah* principles (Nanaeva, 2010).

Regarding *sukuk*, Uddin et al (2022) highlight that asset pricing literature has not yet addressed the pricing mechanism of *sukuk* despite its global market development. Pricing *sukuk* instruments poses problems. Since *sukuk* are similar to equity-based instruments,

¹² Composite interest is made if it is perceived on an original principal increased by interest until the contract term.

¹³ Wilson (2008) considers that the use of LIBOR as the benchmark is not appropriate for *Sukuk* pricing.

conventional bond pricing methods may not be appropriated for *sukuk* pricing (Katterbauer et al, 2022). This requires linking the *sukuk*'s performance and returns to the performance and quality of the underlying asset. Yet, a simplistic calculation model with a set return or risk assumptions may cause improper pricing. According to Uddin et al (2022), analysts utilize LIBOR, or the Islamic interbank benchmark rate, as an *ad hoc* benchmark to assess *sukuk* performance. So, the authors propose to consider *sukuk* market risk and information asymmetry risk to determine the fair value of *sukuk* rather than other *ad hoc* available metrics.

2.4. The consideration of interest rate swaps (IRS)

IRS has a benchmark function (FSB, 2022). Interest Rate Swap (IRS) “is an agreement between two parties to exchange interest payments, based on the notional principal amount, over an agreed period of time”. The recent Interest Rate Swap (IRS) pricing proposals aim to address the issues of LIBOR. Banks and pension funds rely heavily on IRS to mitigate interest rate risk, to hedge and trade interest rate risk (Boudiaf et al, 2024).

Interest rate swaps (IRS) is the largest segment of the global derivatives market (Boudiaf et al, 2024). The evolution reflects a larger trend in the IRS overall (BIS, 2022). Interest rate swaps are traded in over-the-counter (OTC) markets and are designed to suit the needs of each party.

Pricing based on Interest Rate Swap was proposed in 2021¹⁴ based on R, exchanges equations, and zero curve data from Bloomberg within LIBOR 3M IRS for 5-year period (Kuntakgi and Ouhaj, 2024). IRS pricing with overnight swap discount IRS LIBOR.

This results in a simple pricing which may enable the problem to be dealt with more realistically. Post-crisis, the overnight indexed swap (OIS) discount is the most appropriate approach compared to LIBOR. As argued by Kuntakgi and Ouhaj (2024), the pricing of the interest rate swap is a wedding, yet it did not escape the shortcomings of previous pricing in conventional economics.

In the next section, we explain why there is a need for an Islamic benchmark.

¹⁴ [Interest Rate Swap Pricing using R, R-Bloggers](#)

3.0 Alternative Benchmark for Islamic Product Pricing

In this section, we highlight the need for an alternative benchmark. Besides, we present previous attempts to establish an Islamic benchmark.

3.1. *Why it is important to have a specific benchmark?*

In financial agreements, benchmarking mainly refers to the standardization of products prices with a baseline. The benchmarking consists of "the search for industry best practices which lead to superior performance" (Codling, 1992).

Islamic finance needs to overcome the reference to the LIBOR and to establish an alternative benchmark without a direct or indirect relationship on the interest rate. Islamic banks should have an alternative Islamic Pricing Benchmark (IPB) to determine its cost of capital (Omar et al, 2010). Kantakji (2012) argues that Islamic finance is not yet come up with an alternative model to establish Islamic pricing benchmarks. So, an Islamic benchmark allows more credibility to the Islamic financial system (Gharbi, 2016).

Several arguments support this idea. First, the cost of capital in Islamic banking should be anchored to the real economy. It is then endogenously determined by the profitability of assets and economic productivity. Unlike pricing benchmark in a conventional economy based on financial market variables, Islamic benchmark should be based on the real sector to be more faithful to the spirit of Islamic finance (Ghauri, 2015). Gharbi (2016) notes that "because the financial market is highly related to the problem of using fiat money, the pricing of the asset does not reflect the intrinsic value of the asset". Besides, Wahyudi et al (2015) point out the necessity of a benchmark that reflects the activity of the real sector in the pricing not related to the interest. It should reflect the real rate of return (productivity). Islamic financial transactions must have a real foundation that is correlated to the creation and distribution of wealth in the economy (El Hawary et al, 2004). According to Omar et al (2010), the benchmarks of financial activities may vary according to the real sectors and products concern. Islamic benchmark or cost of financing is based on profitability and riskiness (Ahmed et al, 2018).

Second, Alzafiri and Shubber (2008) highlight that the computing cost of capital for Islamic banks differs from traditional banks. Abbas Mirakhor (1996) suggests that in the Islamic economy, the cost of capital measurement can be performed without reference to the predetermined rate of interest. Gharbi (2016) highlights that the use of discounted cash flows based on the interest rate to derive an approximation of a fair value is a controversial from an Islamic perspective. The valuation techniques based on interest rates have not been adopted by AAOIFI. A Fair value¹⁵-based regime would satisfy Islam's concept of justice more adequately than would historical costs.

Third, the notion of any return being risk-free used by some models is debatable (Vinnicombe and Park, 2007). The authors explain that risk remains even in government bond-related for example to adverse currency movements. Nonetheless, these calculations are not acceptable from the Islamic perspective.

The Fiqh Academy under OIC in its Eight Conference on Currencies Issues, in Jeddah Shawwal 18-19, April 10-11, 1993, has recommended promptly creating a new benchmark alternative to interest-based rates to determine the profit margins and acceptable from *Shari'ah* view. The AAOFI Standard No 27 in Clause 7 indicates that the development of an Islamic index should adhere to *Shari'ah* precepts. While the idea is accepted, it needs to be more affined and more studied the details and properties should be analyzed (Ahmed et al, 2018).

3.2. *Prior literature on alternatives to LIBOR*

Islamic Benchmark is a guide used as an indicator for pricing aiming to establish fairness and justice in Islamic financial transactions. It should reflect real investment behavior (Selim, 2008).

Many attempts to establish the alternative benchmark for pricing in Islamic financial contracts should be mentioned. The following table summarizes some suggested Islamic benchmarks:

¹⁵ Fair value is equal to observed market price in an active market.

Table 2: Proposed Islamic benchmark

Author	Islamic benchmark
Shahata (1978)	The average percentages of expected profits of invested capital.
Aljarhi (1981)	The rate of return on short-term that central bank has in a commercial bank as investment deposits in the productive sector
Elhawari (1982)	The rate of return of the best alternative investment regarding legitimacy, Islamic priority, and degree of risk.
Ezzarka (1983)	The expected rate of return on real investment
Elabji (1985)	The expected average rate in regard to the relative weight of similar investment returns with the same degree of risk for the considered project
Al-Ghazali (1993)	The rates of profit mechanism evaluated in money markets
Mirakhor (1996)	The rate of return of investment for projects with the same degree of risk can be calculated from financial market data using Tobin's q theory.
Mirakhor and Haque (1998)	The rate of return on government papers is derived by eliminating an estimate of the risk premium that may related to private defaults
Umar (2000)	The dividends distributed by Islamic banks to their depositors
Ebrahim and Khan (2002)	The natural evolution of the rate of return, tenure, and the partial ownership supported by the financier upon conversion of the facility using a numerical simulation
Kantakji (2003)	The performance measurement indicator integrating:- the last distributed profits 2- the estimates of eight Islamic banks or financial institutions 3- the appropriate sacrifice price for each sector.
El Gamal (2006)	The rate of profit-taking in a basket of instruments of Sukuk markets.
Taqi Usmani (2008)	The value of the units of a created common pool like lending in asset-backed instruments.
Ezzemel (2007)	Three proposals, which are according to priority: (1) The rate of return on <i>sukuk</i> and government and semi-government bonds with low risk and highly liquid (2) The rate of return on global stock markets characterized by low risk and high

	liquidity such as the Dow Jones. (3) The rate of return on funds and portfolios with low-risk and highly liquid
Albeltaji (2007)	The rate of profitability of financing future sales depends on the <i>zakat</i> ratio, industry risk rate, customer risk rate, formula risk rate, and bank cost.
Kattan (2007)	The rate depends on the <i>zakat</i> percentage, the expected inflation rate, and the risk premium
Swilem (2007)	The benchmark considered 3 elements: (1) double coverage (2) The combination of <i>murabaha</i> sale and <i>musharaka</i> (3) Diversification of the deferred price
Hanif and Sheikh (2010)	The nominal gross domestic product (NGDP) growth rate ¹⁶
Meera et al. (2010)	The Islamic pricing benchmark rate is based upon a weighted average of the sector's returns determined through the Arbitrage Pricing Theory.
Reuters (2011)	Islamic profit rate (Islamic Interbank Benchmark rate, IIBR) following the establishment of a consortium of 16 Islamic banks and Islamic windows. It is the rate of cost in interbank market funding.
Cekici (2012)	TEG must Islamic include new types of fees, new forms of commissions, and insurance premiums: The actual costs, Costs related to the drafting of contractual documents, the assessment of the underlying assets and inputs and the implementation of <i>Shari'ah</i> board and other costs.
Kantakji and O'haj (2012)	The rate of return of project by the consideration of the future cash flows expected relative to the capital invested.

¹⁶ As argued by Gharbi (2016), empirical investigations conclude the proximity between NGDP growth rate and nominal interest rate for most of the countries studied. However, Ghauri (2015) considers a sample of Bangladesh, Indonesia, Iran, Oman, and Pakistan for the period 1997-2011 to observe the evolution of key economic indicators of different sectors and compare them to GDP growth rate. They conclude that "none of the single economic variables reflect the overall economic trend of the country" and economic activity required a composite bunch of real economic indicators. Consequently, they recommend that Islamic banks adopt different benchmarks for different sectors of the economy.

Khan (2013)	RIBOR (Real Inter Islamic Bank Offer Rate): an anticipated rate in real investment at a short run with lesser risks
Ahmed et al (2018)	Islamic pricing benchmark model (IPBM) by estimating the rate of return for any project by considering the cash flows in the future which is expected to be relative to the invested capital.
Kantakji and O'haj (2024)	Pricing futures is using "Maqam model" which distinguishes between regular and irregular cash flows. The model starts from the spot rate for the first year to reach the fifth year and then determines the futures rate and the futures cash flows.

Source : Established by authors

4.0 Results

We propose an Islamic benchmark adapted for *murabaha* contracts following these required conditions.

4.1. Required conditions for *murabaha* pricing

The price should be fair and equitable: Perceived price fairness influences the consumers' reactions to prices, such as satisfaction, loyalty, and price acceptance (e.g. Herrmann *et al.*, 2007). Consumers are often unwilling to pay a price perceived as unfair (Cockrill and Goode, 2010).

The price should be reasonable: In a dual system, as argued by Fitri (2007) who evaluated pricing adopted by the Islamic banks for *ijarah* and *murabaha* in Malaysia, Islamic banks should propose a *reasonable rate* for every commodity if they want to compete with conventional banks. Besides, in competitive dual system, Islamic banks should not have a margin higher than the interest rate. Precisely, Taqi Usmani notes that criteria to determine the mark-up of the *murabaha* contact should be equivalent or some percent above LIBOR (considering LIBOR equal to 4 percent).

The price should be related to the real sector: The reference rate should be derived from the real sector of the economy (Gharbi, 2016). International *Shari'ah* Research Academy for Islamic Finance (ISRA) states that we can have some Islamic benchmarks which may vary according to real economic sectors.

The price should consider an appropriate discount rate: the discount rate is merely used to obtain an estimate of a price¹⁷.

4.2. *New benchmark for murahaha pricing*

The Islamic benchmark or cost of financing should be based on these two variables: profitability and riskiness. In pricing, the Risk-Adjusted Return On Capital (RAROC) method measures the performance of the margin level and in terms of the risks involved. This method helps the bank to estimate the profitability of *murabaha*. It is a tool for the pricing of banking products. It can be useful for *murabaha* pricing. Profit margin = cost price (1+RAROC). RACOC = Adjusted net income / economic capital. RAROC is a method of measuring performance by integrating a risk adjustment. At the end of the 1970s, Bankers Trust developed RAROC and particularly Charles S. Sanford.

We use the rate of return of *sukuk* as a benchmark¹⁸. This proposed benchmark is compatible with *Shari'ah* directives, on the basis on *ghunm bil ghurm*. *Sukuk* are characterized by their dynamism, reliability, and flexibility in the international financial market notably in Malaysia and A. Saudia (Moody's 2020, no.6). Iqbal and Fikri (2024) suggest that Islamic *sukuk* pricing is decided by several major elements, including the projected return and the risk associated with Islamic *sukuk*, the economic conditions, as well as concerns with demand and supply and *sukuk* growth Period.

The methodology developed by Katterbauer et al (2022) incorporates a deep learning framework to estimate and forecast *sukuk* prices. At first, the AI-supported *sukuk* pricing form begins by determining whether a firm meets *Shari'ah* compliance. Afterward, the authors suggest training the XGBoost model for *sukuk* pricing. *Sukuk* pricing necessitates considering some factors that may influence its pricing structure, including business performance, such as cashflows and net income, as well as general stock performance. This framework is an innovative AI-driven method based on big data for *sukuk* pricing, and the authors discussed its use in Chinese stocks.

¹⁷ The discounted cash flow method is an issue for *Shari'ah* compliance (Gambling and Karim, 1991; Vinnicombe and Park, 2007).

¹⁸ See the report of Islamic financial market of *sukuk*, Issue 9, July 2020, pp. 30-31

Table 3: A sample of the RAROC Calculation based on *Murabaha Sukuks*

Volatility rate : $V_0 = 10\%$
 Probability Default : $PD = 2\%$
 Resources = deposits + capital = 100 + 900 = 1000

Funding period	Current deposit ¹		Investment deposit		Free Participatory Placement		Assigned Participatory Placement		Total			Transformation rate (TT) ²			Adjusted Rate (TAF) ¹	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(2)+(5)+(8)+(11)	(1)+(4)+(7)+(10)		(13)
<3 years	60%	600	0,20%	25%	250	1,25%	15%	150	2,25%	0%	0	2,50%	1 000	100,00%	0,77%	0,87%
3-5 years	50%	500	0,20%	45%	450	1,25%	5%	50	2,25%	0%	0	2,50%	1 000	100,00%	0,78%	0,88%
5-7 years	40%	400	0,20%	55%	550	1,25%	5%	50	2,25%	0%	0	2,50%	1 000	100,00%	0,88%	0,98%
7-10 years	30%	300	0,20%	65%	650	1,25%	5%	50	2,25%	0%	0	2,50%	1 000	100,00%	0,99%	1,09%
10-15 years	10%	100	0,20%	65%	650	1,25%	15%	150	2,25%	10%	100	2,50%	1 000	100,00%	1,42%	1,52%
> 15 years	10%	100	0,20%	65%	650	1,25%	10%	100	2,25%	15%	150	2,50%	1 000	100,00%	1,43%	1,53%

Source: Author's calculations

¹ (TAF) = (14) (TT) * V * (13) = V

² (13) = ((1)*(3)+(4)*(6)+(7)*(9)+(10)*(8)) (TT)

³ Current and investment deposits.

Table 4: Counterparty risk

FUNDING OBJECT	Loss in the Event of Default (PD)	Expected Loss (EL)
TRIP	75%	1.5% ¹
STOCK	65%	1.3%
Car	30%	0.6%
Buildings	20%	0.4%

Source : Author's calculations

Table 5 Management cost

FUNDING OBJECT	1 to 3 years	3 to 5 years	5 to 7 years	7 to 10 years	10 to 15 years
TRIP	0.8				
STOCK		0.7			
Car			0.7	0.5	
Buildings				0.6	0.5

Source : Author's calculations

¹ PA= (PD)*V

Table 6: Calculation of exit rate

Period	Trip	Stock			Buildings	
	1-3 years	1-5 years	3-5 years	5-7 years	10-15 years	7-10 years
Resources cost(1)	0,87%	0,88%	0,88%	0,98%	1,52%	1,09%
Counterparty risk (2)	1,50%	1,30%	0,60%	0,60%	0,40%	0,40%
Management cost (3)	0,80%	0,70%	0,70%	0,50%	0,50%	0,60%
Total cost TC(4) ¹	3,17%	2,88%	2,18%	2,08%	2,42%	2,09%
Adjusted costs 1000*(4)=(5)	31,70	28,75	21,75	20,80	24,20	20,85
Return rate of <i>murabaha sukuku</i> (IPBM) (6) ²	8,05%	8,05%	8,05%	6,75%	4,63%	4,50%
Estimated income ¹ 1000*(6)=(7) ³ (EI)	80,50	80,50	80,50	46,30	46,30	45,00
Risk Adjusted Return (A) (8)	48,80	51,75	58,75	25,50	22,10	24,15
Risk Capital (9) : (KS) ⁴	100,00	100,00	100,00	100,00	100,00	100,00
Islamic RAROC= (A/KS) (10)	49%	52%	59%	26%	22%	24%
Profit Margin, PM (11) ⁵	4,72%	4,36%	3,45%	2,61%	2,95%	2,59%
Exit rate ER (12) ⁶	7,89%	7,24%	5,63%	4,69%	5,37%	4,67%

Source : Author's calculations

¹ (TC)(4) : Total cost=(1)+(2)+(3)

² (IPBM) (6) : Return rate of *murabaha sukuku*

³ EI (7)=(Return rate * (6) invested deposits+ capital (1000))

⁴ (KS)(9) :Risk Capital

⁵ PM (11) := ((TC) +1)* (EI(1+(7)))*(4)

⁶ (ER) (12)=(PM)+(TC(11)+(4)

5.0 Conclusion

The pricing of Islamic banking products constitutes an issue. Indeed, not only does pricing need to be competitive in a dual system but also it should be *Shari'ah*-compliant. Several methods of Islamic banking pricing appeared over the years, including cost-plus pricing, price-leadership model, credit-scoring systems, risk-based pricing, and firm profitability analysis. Nevertheless, usually, Islamic banks used the LIBOR as a benchmark which violates religiosity principles.

Murabaha is the most financing provided by Islamic banks. In this paper, we try to examine the pricing of *murabaha* and to propose a new pricing alternative for this Islamic banking product based on a new proposed benchmark. The conditions of the fixation of mark-up enlighten on the pricing process and the issues of the consideration of time value of money and the choice of benchmark. While some authors consider that the reference to LIBOR can be accepted due to the lack of an Islamic benchmark, others disagree and require a *Shari'ah*-compatible benchmark.

After presenting some of the previous alternative benchmarks, we propose to adopt Islamic RAROC in *murabaha* pricing. Its strengths lie in the consideration of a new benchmark based on *sukuk* which is the dynamic Islamic capital market (precisely *sukuk murabaha*) and the strong relationship with the real sector. It allows avoiding the LIBOR and it is referring to the marketable reference. We think that similar RAROC can be established with other *sukuk* such as *sukuk ijara* that may be applied to *ijara* pricing in Islamic banks. Moreover, this study can be extended by comparing the proposed pricing of *murabaha* to those currently practiced in Islamic banks and examine whether this new price rather benefits the banks or their customers.

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