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HEDGING INSTRUMENTS IN CONVENTIONAL AND ISLAMIC FINANCE

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Abstract: *The paper presents instruments of hedging and risk management applied in both conventional and Islamic banking market places. We compare the framework, models and instruments of financing in these two banking environments and explore the speculative behavior of Islamic Banking. In this research, we refer to information from different papers, proceedings and websites to identify characteristic aspects of these two banking systems and the related risk mitigation (hedging) instruments. We show that hedging for risk management in these two banking systems are actually quite similar, although the concept, framework, goals and objectives, as well as risks, are different in their respective business activities. Further investigation is needed to identify why Islamic banks replicate the conventional banking hedging instruments and how the Islamic hedging instruments are effectively based on double rules and regulations such as Sharia and Local Government, as well as four-fold tax obligations (Zakat and Government Tax).*

Keywords: *Basel III, risk management, hedging, conventional banking, Islamic banking and finance, swap.*

1. Introduction

A hedge is a position established in one market usually in the context of one's commercial activity, in an attempt to offset exposure to the price risk of an equal but opposite obligation or position in another market. Banks and other financial institutions use hedging to control their asset-liability mismatches so that the maturity matches between long, fixed-rate loans and short-term (implicitly variable-rate) deposits. Investors and intermediaries purchase different types of

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hedging instruments based on their investments and preferences. Varieties of these instruments are traded both in the conventional as well as in Islamic financial markets. The next sections present a short description of functionality and ideology of Islamic banking [20], risk and hedging, financial modes, the framework and associated instruments. We conclude with a comparative analysis.

2. Islamic Banking

What is Islamic banking? The definition of an Islamic bank, as approved by the General Secretariat of the OIC, is stated as follows: ‘An Islamic bank is a financial institution whose status, rules and procedures expressly state its commitment to the principle of Islamic *Sharia* and to the banning of the receipt and payment of interest on any of its operations’ [1]. Therefore, Islamic banking is a system of financial intermediation that avoids receipt and payment of interest in its transactions and conducts its operations in a way that helps achieve the objectives of an Islamic economy. Alternatively, it is a banking system whose operation is based on Islamic principles of transactions of which profit and loss sharing (PLS) is a major feature, thus ensuring justice and equity in the economy. That is why Islamic banks are often known as PLS banks.

2.1 Objectives of Islamic Banking

The primary objective of establishing Islamic banks all over the world is to promote, foster and develop the application of Islamic principles in the business sector. More specifically, the objectives of Islamic banking, when viewed in the context of its role in the economy, are listed as follows:

- To offer contemporary financial services in conformity with Islamic *Sharia*;
- To contribute towards economic development and prosperity within the principles of Islamic justice;
- To provide optimum allocation of scarce financial resources; and
- To help ensure equitable distribution of income.

2.2 Conventional and Islamic Banking

Conventional banking is essentially based on the debtor-creditor relationship between the depositors and the bank on the one hand, and between the borrowers and the bank on the other. Interest is considered to be the price of credit, reflecting the opportunity cost of money. Islam, on the other hand, considers a loan to be given or taken, free of charge, to meet any contingency. Thus in Islamic banking, the creditor should not take advantage of the borrower. When money is lent out on the basis of interest, it often leads to some kind of injustice. The first Islamic principle underlying such kinds of transactions is that “deal not unjustly, and ye shall not be dealt with unjustly” (the Qur’an [2:279]). Hence, commercial banking in an Islamic framework is not based on the debtor-creditor relationship.

The second principle regarding financial transactions in Islam is that there should not be any reward without taking a risk. This principle is applicable to both labour and capital. ‘No payment is allowed for labour, unless it is applied to work, there is no reward for capital unless it is exposed to business risk’ [2]. Thus, financial intermediation in an Islamic framework has been

developed on the basis of the above two principles. Consequently financial relationships in Islam have been participatory in nature. Several theorists suggest that commercial banking in an interest-free system should be organized on the principle of profit and loss sharing. 'The institution of interest is thus replaced by a principle of participation in profit and loss. That means a fixed rate of interest is replaced by a variable rate of return based on real economic activities' [7, 12]. The distinct characteristics which provide Islamic banking with its main points of departure from the traditional interest-based commercial banking system are: (a) the Islamic banking system is essentially a profit and loss sharing system and not merely an interest (*Riba*) banking system; and (b) investment (loans and advances in the conventional sense) under this system of banking must serve simultaneously both the benefit to the investor and the benefit of the local community. The financial relationship, as pointed out above, is referred to in Islamic jurisprudence as *Mudaraba*. The functions and operating modes of conventional banks are based on man-made principles not the Islamic *Sharia*. The investor is assured of a predetermined rate of interest that is not available in Islamic banks. Collecting and distributing *Zakat* is one of the service-oriented functions of Islamic banking system whereas conventional banks do not deal with this. Though leading money and getting it back with interest is the fundamental function of the conventional banks, hence Islamic Banks does the partnership business. The status of a conventional bank, in relation to its clients, is that of creditor and debtors; not as investors and traders. A conventional bank can guarantee all its deposits that its counterpart cannot.

In summary, depositors allow the Islamic banks to bear the risk of loss if it arises out of the investments made from their deposits. This may lead the banking institutions to use the depositors' money for more risky economic activities. Moreover, banks may choose such risky activities to invest depositors' money that may benefit the owners/shareholders of the banking institutions rather than the providers. The distinct dimensions of risk in Islamic banking emerge, therefore, from: contractual relationship with the depositors, choices of the models of financing and risk-taking being a part of investing in a real sector activity.

The Bank of International Settlements has noted the need for innovation in Islamic banking activities in three directions: liquidity enhancement, risk transfer and revenue generation. Islamic banks have to focus on revenue generation, as it has to compete with conventional finance and show comparable returns [7]. In this work we focus on hedging as a basic risk transfer instrument and study its characteristics in the context of Islamic banking.

3. The financial risk

Risk is derived from uncertainty or unknown result. The theoretical categories of risk for financial activities are systematic and idiosyncratic.

3.1 Systematic and Idiosyncratic Risks

Interest rates, recession and wars represent sources of systematic risk because they affect the entire market and cannot be avoided through diversification. Whereas these types of risks affect a broad range of securities, unsystematic risk affects a very specific group of securities or an individual security. Systematic risks can only be mitigated by hedging [18].

Idiosyncratic risks are risks, which can be diversified. Financial risk management focuses on when and how to hedge using financial instruments to manage costly exposure to risk. The

theoretical argument established by Modigliani and Miller with respect to hedging this M & M proposition can be paraphrased as follows: in a world, with no taxes, no transaction cost, and a fixed investment policy, investors can create their own 'home-made' risk management by holding diversified portfolios [13]. Consequently, if risk management were to affect the value of a firm by increasing its real cash flows, it would do so by affecting tax liability, transaction costs or investment decisions.

3.2 Risks in the Financial Market

Corporate risks include financial, business, operational and portfolio risks. The financial risks are mostly addressed by managing credit risk whereas market risks are linked with business risks. These two types of risks include: Default, Foreign Exchange, Shape, Volatility, Sector, Liquidity, Inflation Risks, etc which fall under the broad category of systematic risks. The interaction between compensation and hedging is a highly topical question in corporate finance. Complex financial securities have led to an increase in firm risk as managers do hedge (or speculate) with financial securities that have their value tied to risks in the general economy. Since credit risk is the natural business of banks, but unwanted risk for commercial traders, naturally an early market developed between banks and traders. This involved selling obligations at a discounted rate. For example, forfeiting, bill of lading, factoring, or discounted bills are the examples. There is another type of risks; operational risk, which is a risk arising from execution of a company's business functions. Basel II defines operational risk as the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events [6]. Although the risks apply to any organization in business, this particular way of framing risk management is of special relevance to a banking regime where regulators are responsible for establishing safeguards to protect against systematic failure of the banking system and the economy.

4. Reasons of Hedging

Hedging could add value by reducing taxes. Hedging reduces financial distress. Smith and Stulz noted that, 'by reducing volatility, hedging can reduce the probability that the firm will encounter financial distress, so it could reduce the expected cost of such distress' [16]. For example, consider a firm that provides service agreements and warranties and are more likely to turn to a competitor. If the firm can convince potential consumers that the likelihood of financial distress has been reduced, it can increase consumers' valuation of its service agreements and warranties. Dolde and Samant [4] both found a statistically significant, positive relationship between the use of risk management and leverage. Hedging facilitates optimal investment. Evidence shows that there is statistically significant and positive relation between the firms' R&D expenditure and its hedge instruments. Samant [15] finds a statistically significant positive relationship between this.

4.1 Hedging and Capital Requirements

Minimum capital, or eligible capital to run business, is an important criterion for risk mitigation and hedging. Eligible risk-weighted assets and/or capital could protect the company from being a defaulter. The Basel Committee Capital Adequacy Framework requires holding total capital equivalent to at least 8% of their risk-weighted assets. The risk weights differ based on the credit

rating and individual claims. The minimum requirements are designed to ensure the integrity of the internal risk assessment. There is a range of options for determining the capital requirements for credit risk and operational risk that allows banks and supervisors to select approaches that are most appropriate for the operations and the financial market structure [6]. The standard risk weights for unrated claims on corporate will be 100%. No claim on an unrated corporate may be given a risk weight preferential to that assigned to its sovereign of incorporation.

4.2 Hedging and Derivatives

Derivatives can be used to reduce a firm's risk exposure. Specifically, the empirical results show a firm that employs intensive hedging activities through derivatives tends to experience both statistically and economically significant risk reductions on its future cash-flows as well as equity returns. In the process, it can also help manage any underinvestment problem associated with costly external financing. 'Major challenge faced by corporate risk managers in formulating a value maximizing hedging strategy is identifying the appropriate mix of linear and non-linear derivative' [5]. The terms 'linear derivative' refers to products such as futures, forward and swap contracts whose payoffs vary in linear fashion with changes in the underlying asset price or reference rate. 'Non-linear derivatives' are contracts with options as payoffs including caps, floors and swaps. In the context of credit derivatives, the Basel Committee might allow banks to take account of credit protection in calculating capital requirements if the credit derivatives are direct, explicit, irrevocable and unconditional with certain minimum operational conditions relating to risk management process are fulfilled [6].

4.3 Hedging and Insurance

The traditional providers of risk management solutions are investment banks and re-insurers. Banks have traditionally been taking credit risks on their books in their wholesale lending operations, but also market risks, through their securities trading operations. Insurers and re-insurers have been taking most other kind of risks: mortality and interest rate risks for life insurers, natural disasters, liability and accident risks for non-life insurers. Dacorogna [3] noted the identification of emerging risks using internal and external sources and central information gathering. Global pandemic can be one of the examples of emerging risk. Business continuity planning, hedging and options can be the control measures to mitigate risk.

4.4 Hedgeable Risk

Finance theory has identified several ways by which hedging could increase firm equity values. For example, by reducing the dispersion of operating cash flows, hedging can be used to reduce both the company's expected tax liabilities and its direct and indirect costs associated with financial distress and bankruptcy. There are varying types of risk that can be protected against with a hedge. Those types of risk include:

- i. Commodity risk: the risk that arises from potential movements in the value of commodity contracts, which include agricultural products, metal and energy products.
- ii. Credit risk: the risk that money in owing will not be paid by an obligor. Since credit risk is the natural business of banks, but an unwanted risk for commercial traders, an early market is developed between banks and traders involved selling obligations at a discounted rate.
- iii. Currency risk (also known as foreign exchange risk): the risk which is used both by financial investors to deflect the risks they encounter when investing abroad and by non-financial

actors in the global economy for whom multi-currency activities are a necessary evil rather than a desired state of exposure.

- iv. Interest rate risk: the risk being the relative value of an interest-bearing liability, such as a loan or a bond will worsen due to an interest-rate increase. Interest rate risks can be hedged using fixed-income instruments or interest rate swap.
- v. Equity risk: The risks of the depreciation of investments because of stock market dynamics causing one lose money.
- vi. Volatility risk: the threat that an exchange rate movement poses to an investor's portfolio in a foreign currency, and
- vii. Volumetric risk: the risk that a customer demands more or less than expected.

5. Modes of and Derivatives in Conventional Finance

5.1 *Forward Contract*

A forward contract is a non-standardized contract between two parties to buy or sell an asset at a specified future time at a price agreed today. This is in contrast to a spot contract, which is an agreement to buy or sell an asset today. The party agreeing to buy the underlying asset in the future assumes a long position, and the party agreeing to sell the asset in the future assumes a short position. The price agreed upon is called the delivery price, which is equal to the forward price at the time the contract enters into. The difference between the spot and the forward price is the forward premium or forward discount; generally considered by the purchasing party as a profit, or loss. The value of a forward position at maturity depends on the relationship between the delivery price and the underlying price at that time.

5.2 *Forward Rate Agreement (FRA)*

A forward rate agreement (FRA) is a forward contract in which one party pays a fixed interest rate, and receives a floating interest rate equal to a reference rate (the underlying rate). The receiver of the fixed interest rate is the lender or the seller, whilst, the payer of the fixed interest rate is also known as the borrower or the buyer. The differential payments are calculated over a notional amount in a certain period. It is paid on the effective date. The reference rate is fixed one or two days before the effective date, dependent on the market convention for the particular currency. FRAs are over-the counter derivatives and its transactions are entered as a hedge against interest rate changes.

5.3 *Futures Contract*

Futures Contract is a standardized agreement between a buyer and a seller for a pre-specified quantity of an underlying cash asset at a specific price. Futures trade, on an official exchange, until the contract expires, allows traders to profit from price changes without receiving delivery of the cash asset. Eurodollar Futures is one of the good examples of Futures that are traded on the International Monetary Market (IMM). London International Financial Futures Exchange (LIFFE), S & P 500, Dow Jones Industrial Average (DIJA), T-Bill Futures and T-Bond Futures are other example of Futures Contract.

5.4 Swap Contract

A swap is a derivative in which two counterparties agree to exchange one stream of cash flows against another stream. Usually at the time when the contract is initiated at least one of these series of cash flows is determined by a random or uncertain variable such as an interest rate, foreign exchange rate, equity price or commodity price. The cash flows are calculated over a notional principal amount, which is usually not exchanged between counterparties. Swaps can be used to hedge certain risks such as interest rate risk, or to speculate on changes in the expected direction of underlying prices.

5.4.1 Credit Default Swap (CDS)

A credit default swap (CDS) is a swap contract in which the buyer of the CDS makes a series of payments to the seller and, in exchange, receives a payoff if a credit instrument - typically a bond or loan- goes into default (fails to pay). Less commonly, the credit event that triggers the payoff can be a company undergoing restructuring, bankruptcy or even just having its credit rating downgraded. CDS contracts have been compared with insurance, because the buyer pay a premium and, in return, receives a sum of money if one of the events specified in the contract occur.

5.4.2 Interest Rate Swap (IRS)

The most common type of swap is a “plain Vanilla” interest rate swap. It is the exchange of a fixed rate loan to a floating rate loan. The life of the swap can range from 2 years to over 15 years. The reason for this exchange is to take benefit from comparative advantage. Some companies may have comparative advantage in fixed rate markets while other companies have a comparative advantage in floating rate markets. When companies want to borrow they look for cheap borrowing i.e., from the market where they have comparative advantage. However, this may lead to a company borrowing fixed when it wants floating or borrowing floating when it wants fixed. This is where a swap comes in. A swap has the effect of transforming a fixed rate loan into a floating rate loan or vice versa.

5.4.3 Other Swaps

There are some other types of swaps. A currency swap involves exchanging principal and fixed rate interest payments on a loan in one currency for principal and fixed rate interest payments on an equal loan in another currency. As interest rate swaps, the currency swaps are also motivated by comparative advantage. A commodity swap is an agreement whereby a floating (or market or spot) price is exchanged for a fixed price over a specified period. The vast majority of commodity swaps involve crude oil. An equity swap is a special type of total return swap, where the underlying asset is a stock, a basket of stocks, or a stock index. Compared to actually owning the stock, in this case one does not have to pay anything up front, but having no voting or other rights that stockholders do have. Total Return Swap, Variance Swap, Constant Maturity Swap and Amortizing Swap can also be referred [19].

5.5 Option

An option is a contract between a buyer and a seller that gives the buyer the right, but not the obligation, to buy or to sell a particular asset (the underlying asset) on or before the option's expiration time, at an agreed price, the strike price. In return for granting the option, the seller collects a payment (the premium) from the buyer. A call option gives the buyer the right to buy

the underlying asset and a put option gives the buyer of the option the right to sell the underlying asset. If the buyer chooses to exercise this right, the seller is obliged to sell or buy the asset at the agreed price. The buyer may choose not to exercise the right and let it expire. The underlying asset can be a piece of property, a security (stock or bond), or a derivative instrument, such as a futures contract. There are two types of Options: Exchange Traded (also called 'Listed Option'), which is a class of exchange, traded derivatives. Exchange traded options have standardized contracts, and is settled through a clearinghouse with fulfilment guaranteed by the credit of the exchange. The second one is Over-The-Counter (also called 'Dealer Option') which are traded between two private parties, and are not listed on an exchange.

6. Framework of the Concept of Islamic finance

There are some elements those comprise the framework of Islamic finance. Riba, Gharar, Maysir or Ghubn etc. are some of the basic elements of Islamic Finance. Riba is best translated today as the charging of any interest, meaning money earned on the lending out of money itself. The prohibition on paying or receiving fixed interest is based on the Islamic tenet that money is only a medium of exchange, a way of defining the value of a thing; it has no value in itself, and therefore should not be allowed to give rise to more money, via fixed interest payments, simply by being put in a bank or lent to someone else. Interest can lead to injustice and exploitation in society; the Qur'an (2:279) characterises it as unfair, as implied by the word *zulm* (oppression, exploitation, opposite of *adl* i.e. justice)

There is no real 'lending' in Islam since all 'lenders' obtain ownership interests in the assets that they finance, or earn a profit-share or purely fee-based remuneration. In order for an Islamic Bank to earn a return on money lent, it is necessary to obtain an equity, or ownership, interest in a non-monetary asset. Islam's prohibition of interests without risks was not unprecedented. The Greek philosopher, Aristotle, condemned acquiring of wealth by the practice of charging interest on money. Reference to this also exists in Jewish and Christian Holy Scriptures:

“Very much disliked also is the practice of charging interest: and the dislike is fully justified for interest is a yield arising out of money itself, not a product of that for which money was provided. Money was intended to be a means of exchange; interest represents an increase in the money itself. Hence of all ways of getting wealth, this is the most contrary to nature.” Aristotle, *The Politics*, tr. Sinclair, pg.46, Penguin “Do not charge your brother interest, whether on money or food or anything else that may earn interest.” (Deuteronomy 23: 19). “If you lend money to My people, to the poor among you, you are not to act as a creditor to him; you shall not charge him interest.” The Holy Bible (American Standard Bible) [Jesus said], “If you have money, do not lend it at interest, but give [it] to one from whom you will not get it back.” Gospel St Thomas, V95. Besides Riba (Interest without risk) some other things such as Garar (Speculation), Maysir (Gambling), and Jahala (Uncertainty) are also prohibited in Islamic Finance.

7. Modes of Operation and Derivatives in Islamic Finance

Basic modes of operations and derivative in Islamic finance are discussed below:

7.1 Operating Modes for Islamic Banks

Murabaha: Murabaha is an Islamic form of asset financing and has a fixed term and a pre-determined profit. In a Murabaha the bank buys a specific asset that the customer wants, and it sells to the customer at the buying price plus a profit at a rate agreed at the time of entering into the contract

Musharaka: Musharaka is a contract whereby the bank and a customer agree to combine their financial resources for the establishment or running of a business or project, or for undertaking any type of business activities. The two parties agree to manage the project in accordance with the terms of the contract. The profit or loss will be apportioned between the parties pro rate their participation in the invested capital. There are two types of Musharaka Contracts; Permanent Musharaka being by contributing a share of the capital and Diminishing Musharaka being the long term financing.

Istisna: Istisna is an Islamic form of financing used to finance construction and industrial projects, such as the construction of buildings and so on. The unique feature of Istisna is that it allows the selling of an asset that does not exist at time of the contract. The payment can be in immediate cash or may be in the form of deferred payments.

Ijara: The Bank leases movable and immovable assets to its customers, with the option that the customer may or may not own the leased asset at the end of the term of the lease as per the agreement signed between the two parties.

Salam: Salam in the definition jurists a sale of a commodity whose delivery will be in a future date for a cash price. It is a financial transaction in which price is advanced in cash to the seller who abides the delivery of commodity of determined specification on a definite due date. The deferred is the commodity sold and described (on liability) and the immediate is the price. Salam sale is suitable to finance agricultural operations. Thus the bank renders great services to the farmers in their way to achieve their production target.

Mudaraba: The term Mudaraba refers to a contract between two parties in which one party supplies capital to the other party for the purpose of engaging in a business activity with the understanding that any profits will be shared in a mutually agreed upon. Losses, on the other hand, are the sole responsibility of the provider of the capital. Mudaraba is also known as Qirad and Muqarada. This type of business venture serves the interest of the capital owner and the Mudarib (agent). The rate of return is quite uncertain and the cost of capital is also uncertain. Hence, there is a perfect correlation between cost of capital and rate of return on capital.

7.2 Risk, Hedging and Derivatives in Islamic Finance

As already mentioned, it is a prerequisite in the Islamic financial activities that the investor must bear certain risk. However, that does not imply that Islamic entrepreneurs must expose themselves to all and any type of risk, Ibu Taymiah more than 670 years ago acknowledged a dual form of risk. 'The first form of risk that arises due to the nature of transaction is value adding and wealth creating activities. While the second form of risk is that of gambling; this implies eating wealth for nothing. It is prohibited in Islam. This risk is referred as 'zero-sum' activity, where, there is no additional wealth is created' [11]. Therefore, the resolution about decreasing or hedging risk is recommended as long as it is conducted in a manner that is compliant with Sharia.

Hence, the question that comes to mind is if risk arising from zero-sum games is not allowed, would hedging using zero-sum games, where the loss of one party is the gain of the other. This condition is applicable on both the conventional and Islamic derivatives regardless of their

purposes; for risk mitigation or speculation. Theoretically, derivatives are supposed to distribute risk among market participants in accordance with their ability to assume them. If such distribution is achieved, each party will be better off, this improving deficiency and productivity. If the initial motive in using derivatives is mainly for hedging purposes, then any gain accrued from this process may trigger other purposes for income generation. There is another important thing about Islamic contract law. AAOIFI's (Accounting and Auditing Organisation of Islamic Financial Institution) Council of Sharia Advisors (in its Resolution NO. 25) has prescribed that combining more than one contract is permitted, provided that each contract itself is permitted in Sharia and each contract must stand independently, that is, without binding one another. At the same time, each contract cannot in anyway indicate of having any condition between contracts with another contract [21]. Let us see what are the instruments being in trade in the market:

7.2.1 Islamic Foreign Exchange Forward

Islamic Foreign Exchange forwards is the Islamic alternative for the conventional FX forward. In the Islamic version, the concept of wa'ad (Undertaking) and tawarruq are utilized in order to replicate the effect of conventional FX forward. The application of wa'ad comes at dealing date where the customer only commits to wa'ad with the bank to exchange a certain amount of money at a certain date. This promise is not binding; therefore, the contract of tawarruq is applied in order to ensure commitment of both parties. The delivery is conducted at the date agreed upon initially with the exchange rate fixed at the dealing date.

7.2.2 Profit rate swap - Murabaha based

In the financial market, one party receives a stream of income on an investment where the quarterly return is variable (linked to 3-month floating LIBOR). If first party has fixed quarterly obligations to discharge, it may want to hedge its variable income returns. It must be noted that Sharia scholars do not permit profit rate swaps unless a genuine hardship is evident. Under the profit rate swap arrangement, Party A sells a commodity (say copper) to an Islamic bank at a fixed price payable in quarterly instalments over a term which matches the duration of the principal investment on which the variable return is being received. Accordingly, the return of Party A is now fixed. Every 3 months under separate transactions, the Islamic bank sells another commodity (say aluminium) to Party A on a deferred payment basis where the "profit" will be calculated with reference to 3-month LIBOR. As a result, Party A will use its variable income to pay the variable expense due to the Islamic Bank and in return will receive fixed income to discharge its fixed costs.

7.2.3 Profit rate swap - Wa'ad based

Two Banks such as Bank A (as Promissor) and Bank B (as Promisee) enter into a Purchase Undertaking Deed (PUD 1) for Sharia compliant assets (typically copper and aluminium). Simultaneously, they enter into a second PUD (PUD2) where Bank A is the Promisee and Bank B is the promissory. Each PUD grants the Promisee an irrevocable and unconditional right – upon delivery of an Exercise Notice – to sell to the Promissor a predefined quantity of copper for cost plus a mark-up which could be fixed or floating (the floating mark-up is benchmarked against an external rate, such as, LIBOR). Typically, the mark-up under both the PUDs is the difference between fixed and floating rate. If under PUD1, the mark-up is "fixed rate minus floating rate", the mark-up under PUD2 would be "floating rate minus fixed rate". The PUD with fixed rate has one settlement date while the PUD with floating rate has multiple settlement

dates. However, the option is generally exercisable upon maturity. Upon maturity, the Promisee with higher yield sends the Exercise Notice to the Promissor to acquire the copper at 'cost' plus the difference in the two rates and the net proceeds are settled.

7.2.4 Currency rate swap – Murabaha or Qard based

Two parties sell Sharia compliant assets (typically copper and aluminium) to each other for immediate delivery but on deferred payment terms in different currencies (i.e. use two parallel Murabaha on two different commodities to generate corresponding deferred inter-party cash flows in the swapped currencies (Currencies A and B)). The deferred payment date(s) is / are the same, although being under two different agreements. Typically, the value of the transaction is the same, although in two different currencies. The parties recognize an asset and a liability in different currencies. The assets / liabilities in two different currencies is settled on maturity date(s).

7.3 Insurance (Takaful) in Islamic Finance

Takaful is a system of Islamic insurance based on the principle of Ta'awun (mutual assistance) and Tabarru (voluntary contribution), where the group shares the risk collectively. It is operated on the basis of shared responsibility, brotherhood, solidarity and mutual cooperation or assistance, which provides for mutual financial security and assistance to safeguard participants against a defined risk. The nature of the principles of Takaful is fundamentally different from the principles of conventional insurance. The operation of Takaful is generally based on the governing principles of Mudharaba, profits and loss sharing financing technique which is an alternative to the interest (riba) based financing technique as adopted by the conventional insurance practices. The operation of Takaful is generally supervised by an independent body, which is called the Sharia Supervisory Council. It is the duty of the council to advise the Takaful operator(s) in any given organization on their operations for the purpose of ensuring that no aspect of the company(s) operations involves any element, which is not approved by the Sharia principles. In other words, the establishment of Sharia Supervisory Council for every individual Takaful operator is a prerequisite prior to the commencement of the Takaful operation. Along, the duty to disclose material facts or matters is not imposed only on the operator and also the participant equally.

8. The relationship of Islamic Hedging Instrument with that of Conventional Banking

We discussed earlier profit rate swap in section 5. Here, we focus on Interest Rate Swap and Profit Rate Swap considering its functionality and Sharia context. The following discussion is on the similarity of these two hedging instruments in conventional and Islamic financial market and the difference in their legal concept.

The article of Allen & Overy [17] shows that a profit rate swap is similar to a conventional interest rate swap . Under a conventional interest rate swap the parties agree to exchange periodic fixed and floating payments by reference to a pre-agreed notional amount. As with many conventional derivatives products, a conventional interest rate swap is problematic from a Sharia perspective since it potentially leads to three key Sharia prohibitions, the prohibitions on 1) Riba, 2) Garar and 3) Maisir (all discussed above). This debate arising is reminiscent of the struggle that some secular legal systems have had investigating whether derivatives contracts should fall

within gambling prohibitions. Sharia scholars may therefore look at the structuring and return profile in their consideration of a transaction's Sharia compliance, as well as consider the purpose of the transaction. The relative motivations of the parties are also significant. In 2006, the establishment of the International Swaps and Derivatives Association (ISDA) and International Islamic Financial Market (IIFM) joint working group aims at creating a proforma Sharia compliant Master Agreement for derivatives transactions [22, 23]. This has helped focus debate and proved to be a catalyst to the process of market standardization.

The Profit Rate Swap seeks to achieve Sharia-compliance by using reciprocal Murabaha transactions: commercial arrangements long accepted by Sharia scholars. The Murabaha is a sale:

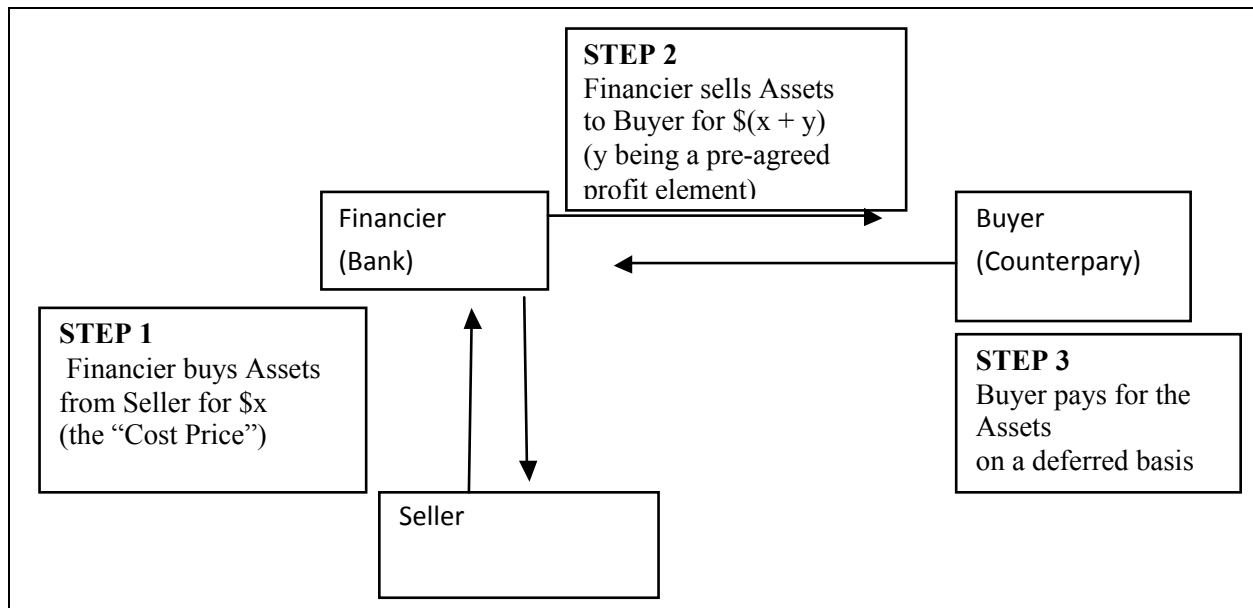


Figure 1. The Basic Murabaha Structure.

under this profit rate swap, the parties enter into Murabaha contracts to sell Sharia-compliant assets (often London Metal Exchange traded metals) to each other for immediate delivery but on deferred payment terms. A term Murabaha is used to generate fixed payments (comprising both a cost price and a fixed profit element) and a series of corresponding reverse Murabaha contracts are used to generate the floating leg payments (the cost price element under these reverse Murabaha contracts is fixed but the profit element is floating). It should be noted that a profit rate swap might also be structured as a series of Wa'ads (unilateral promises) whereby each party undertakes to the other to "swap" relevant fixed and floating rate payments at some particular point of time in the future.

For the Floating leg, we are allowed for Murabaha with markups linked to LIBOR. We can enter into consecutive Murabaha on a rolling basis, with Waa'd to enter into Murabaha at the market price + market determined LIBOR to make for rolling Murabaha.

For the Fixed leg, some scholars would allow the linkage of the Profit Rate of the Murabaha to be almost anything so long as it is determined as of the time of entering into the Murabaha. So the range of accruals (i.e., the profit rate is LIBOR + X accruing times the number of days LIBOR is in between Lower-Bound and Upper-Bound) and exotic payoff can be used as a

markup so long as it is set at the time the Murabaha enters into. ‘This structure, in effect, is not dissimilar to the "parallel loans" structure (that was used by institutions in the earliest examples) of conventional swap transactions’ [17].

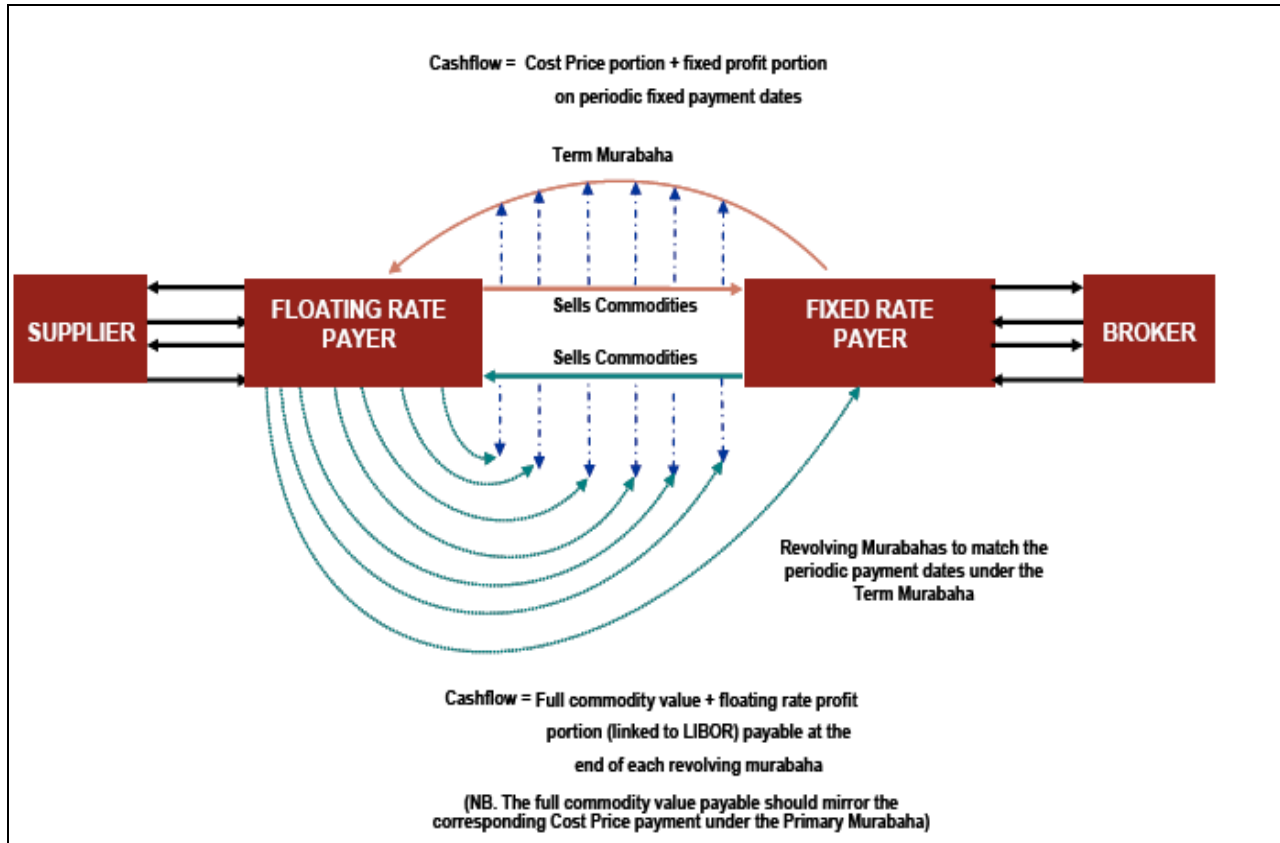


Figure 2. Full Profit rate swap structure (Source: www.allenoverly.com).

In the next section we study, by simulation, the impact of cross currency swaps hedging in Islamic finance.

9. Simulation Analysis of Hedging in Islamic Finance

Using hedging instruments in Islamic Finance is a growing phenomenon. The recent examples were Islamic Cross-Currency Swap of US\$ 10 million introduced by the Standard Chartered Bank in 2006 and USD 230 million Currency Hedge of Kuwait Finance House with Air Asia in March 2007. Based on these two sources of information we simulated market behaviour to build a normal model of Islamic Currency Swap.

At first, our approach is to build a uniform distribution model from \$10 million to \$230 million of execution of cross-currency swap. Such data is not currently accessible and our simulation is a surrogate for a future analysis based on real data. Figure 3 presents 2000 simulated cross-currency swaps.

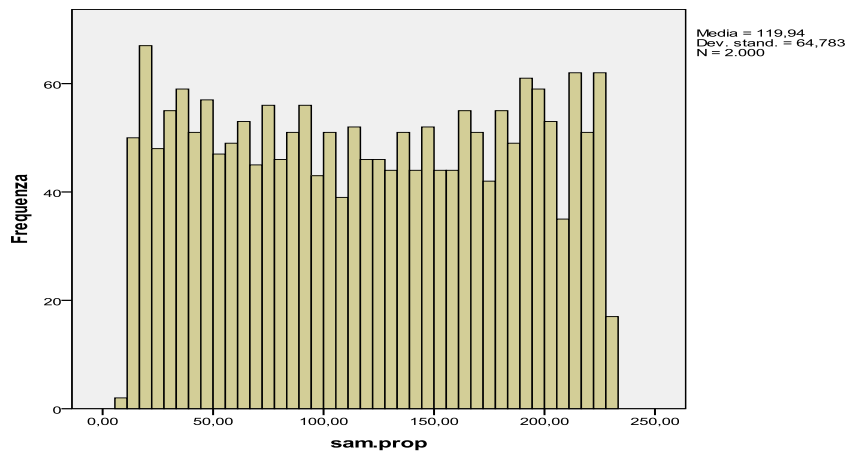


Figure 3. Simulated Cross-Currency Swaps: uniform distribution.

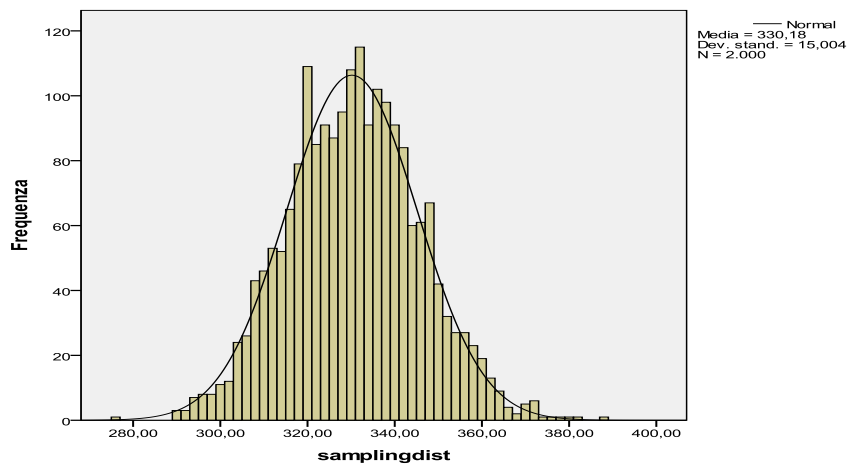


Figure 4. Simulated Cross-currency Swap: normal distribution.

From the simulated data of Figure 3 we produced normally distributed model of Islamic cross-currency swaps (Figure 4). The mean of Islamic cross-currency swaps is 330 million based on an assumed probability of 1/3. Though in the corresponding conventional derivative market the total trade of currency swap 309,588 billion of US\$ (notional amount) in 2007 [24].

We know that hedging is considered a measure designed to reduce or eliminate exposure to risk. Hedging itself is believed to increase certainty and efficiency of the management process as well as provide a degree of stability of financial transactions. In the past decade, it was also used as an instrument of speculation that caused its exponential growth. According to the Bank of International Settlement (BIS) the amount of outstanding derivatives worldwide as of December 2007 crossed USD 1.144 Quadrillion (1,114 Trillion). This extraordinary value is 22 times the GDP of the whole world, which is USD 50 trillion. Hence, the current financial crisis has proven that derivative without any real underlying asset, which is securitized again and again, is not a reliable instrument that can be used a medium for transaction or financing. The application of hedging and Islamic derivatives should strictly be aimed at risk management. In order to ensure this, some financial institutions give a written representation to get a guarantee and declaration from the counterparty subscribing the swap product making sure that the derivative instrument is only used for the purpose of hedging and not speculation. Also the underlying asset or asset

foundation for the swap instrument is based on entirely actual and real economic activity and not a fictitious one. Overall, 'one could differentiate among three basic types of Islamic risk management products and mechanisms' [11]: Firstly, those are formally being standardized, such as the ISDA (International Swap and Derivatives Association) Ta'hawwut (Hedging) Master agreement, which creates the Profit rate swap. Secondly, risk management methods directly based on the well-organized Islamic financing modes and rules; whereas standard Murabaha and Salam contracts can be efficiently used to construct Islamic inflation hedges without replicating any conventional derivatives. Finally, the third is the possibility to use formally Sharia-compliant mechanisms to relocate conventional risk management products and risk profiles. Thus, we find two base reasons:

- Islamic Bank has different ideology, framework and financial modes. The bank is not merely a profit oriented commercial firm; rather it is responsible for social development and depositors share in the risk of the bank.
- Risks are also different. According to the BASEL 2 Framework the conventional banks face mainly Credit Risk, Operational Risk and Market Risk. On the other hand, 'Islamic Banks are exposed to unique risks namely the benchmark risk, rate of return risk, displaced commercial risk, withdrawal risk, and Sharia compliant risk' [10]. Adapting current operational risks to Islamic finance is a challenge for financial institutions and regulators alike. For more on this topic, see [7, 9, 10].

Islamic bank follow Sharia rules as well as local government regulation. They are to pay Zakat as well government tax. Islamic hedging tools and risk management in Islamic banks, in a non-Islamic regulation environment is requiring more research and analysis. We conclude with some possible directions for such research.

10. Conclusion

Islamic financial institutions have been trading with the following types of rules and regulation: The first one is the Sharia rules and the second one is the local government's laws and by-laws. Therefore, unrestricted profit-sharing investment accounts are Islamic banking products that offer the major and the most complicated regulatory challenges. The spirit of Islamic banking requires increasing the Profit-Loss Sharing accounts in mobilizing resources. These accounts distinguish the Islamic banking institutions from conventional banking institutions. Investing depositors' money in high-risk/high-return projects means that if there is high return, both depositors and equity holders will get higher return, but if the investment ends up incurring loss then the entire loss will be passed on to the depositors. However, Islamic banking and organizations must launch some innovative and sustainable products and services to ensure sound and stable growth in the financial sector. From the hedging perspective, Islamic banks speculate in some cases with hedging instrument of conventional banking. This is one strategy for facing challenges and continued growth. Islamic banks should however consider different rules and regulations that are Sharia based and used in conventional banking. As the objective of Islamic banking is not just to be a commercial bank, they apparently also have a responsibility for social development and economic growth by supporting production and trade. Therefore, they might, come up with some derivative instruments that not only minimize risk but also generate income.

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