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Derivative Instruments And Islamic Finance: Some Thoughts For A Reconsideration

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Abstract

This paper examines contemporary derivative instruments and the Islamic viewpoint of these new instruments. The validity and permissibility of these instruments appears to vary by scholar. Even where Islamic scholars have found them to be objectionable, their reasons for objection differs. Much of the work by Islamic scholars has been of a highly juridical nature. They examine derivatives within narrow confines of contractual arrangements and thereby miss the broader picture of why instruments like futures and options are needed in modern business environments.

This paper analyzes forwards, futures and options, examines the evolution of these instruments, their unique benefits and makes a case for why they are needed. Islamic Finance instruments with derivative like features such as the Ba'i Salam and Istijrar contracts are also examined. Some of the key concerns that Islamic scholars have regarding derivatives is addressed.

The paper is divided into four parts. Part 1, outlines the objective and introduces derivative instruments. Part 2, examines the Islamic viewpoint and shariah conditions for financial instruments. Part 3, examines Ba'i Salam and Istijrar contracts. Part 4, clarifies why some of the objections of Islamic scholars regarding features and trading mechanism may be misplaced and concludes.

Financial derivative instruments which have become hugely popular in conventional finance, appear to be at a crossroad in Islamic Finance. There appears to be little coherence nor coordination in what ought be the right place for derivative instruments in Islamic Finance. The Islamic viewpoint is undoubtedly mixed. Any review of the relatively scant non-Arabic literature in this area clearly points to a difference in opinion among Islamic Jurists. Even where ulamas have agreed on their non-permissibility, their stated reasons for non acceptance is often based on very different grounds. This is further clouded by differences among the Madhahib. The Maliki and Hanbali schools appear relatively more liberal. Most of the work in this area have been of a highly juridical nature. The objective being mostly to examine these instruments in a contractual framework of the Shariah.

Motivation of Study

The lack of a consensus regarding the permissibility of derivative instruments would not matter much if one considers them to be at the periphery of the spectrum of financial products/instruments. Nor would it matter if they were thought to be instruments of a purely speculative nature. While there is no denying that derivatives can be easily and are often used for speculative purposes, their growth and extensive use in conventional finance is testimony to the many benefits that business organizations derive from their use. As will be elaborated below, derivatives are being used by businesses not only for hedging and arbitrage, but also as a competitive tool in marketing. Furthermore, much of the theoretical framework of derivative instruments have flowed into diverse areas such as project evaluation, instruments design, performance evaluation techniques etc.. Given the wide array of benefits to be reaped from these exciting range of instruments, there is much to be lost from ignoring them.

The objective of this paper is not to reevaluate these instruments in the light of the Shariah nor is it intended as a critical examination of the juridical work thus far of a fuqaha. What is intended here is to provide a deeper understanding and an appreciation of these instruments. How they evolved, why they are needed, their diversity of use and the serious handicap that could be posed to Islamic businesses

from ignoring them. The paper is organized as follows, Section 1, examines the common derivative instruments with emphasis on how they evolved and where they are needed within modern financial management. Section 2, is a brief overview of the literature from the Islamic viewpoint followed by a discussion of the Shariah requirements for financial instruments. Section 3 examines instruments currently used in Islamic Finance that may be considered derivative instruments. Section 4, clarifies why some of the objectives of Islamic scholars regarding features and trading mechanism may be misplaced and concludes.

Section 1: The Evolution of Derivative Instruments

As in the case of any other product, derivative instruments evolved as a result of product innovation. Innovation which was in response to increasingly complex needs. As business environments became increasingly sophisticated, new and better financial products were needed to manage changed needs. The requirement that every newly evolved product must provide increased benefits or 'value added' over existing products in order to survive applies equally to derivatives. We examine below the evolution of financial derivatives and how each step down the evolutionary chain led to value added products. Though derivatives is a widely encompassing term, we restrict our discussion here to the three main instruments namely Forwards, Futures and Options.

Forward Contracts

A derivative instrument is simply a financial instrument or asset that derives its value from the value of some other underlying asset. The first derivative instrument was probably the forward contract. Not surprisingly, forwards were also the simplest type of derivatives. In a forward contract two parties undertake to complete a transaction at a future date but at a price determined today. The two parties could be a producer who promises to supply the product (underlying asset) and a consumer who needs the product. To see how a typical forward contract works, let us examine a simple example of a cocoa farmer (producer) and a confectioner who needs cocoa for his

products (consumer). To simplify matters, let us say the farmer has planted cocoa and expects to harvest a 120 tons of cocoa in 6 months. The confectioner on the other hand has cocoa in his inventory to last him the next six months but will need to replenish his inventory in 6 months with a 120 tons. Though simplified, this is a very common business situation. We have a producer who would have products available at a future date and a consumer who would need the product in the future.

Clearly, both parties here are faced with risk; essentially price risk. While the farmer would be fearful of a fall in the spot price of cocoa between now and six months from now, the confectioner would be susceptible to an increase in the spot price. Since they both face risk but in the opposite direction, it would be logical for both parties to meet, negotiate and agree on a price at which the transaction can be carried out in six months. Once the terms are formalized and documented we have a forward contract. The benefit of such a forward contract accrues to both parties. First, both parties, as a result of the forward contract have *eliminated all* price risk. The farmer now knows the price he will receive for his cocoa - regardless of what happens to cocoa prices over the next 6 months. The confectioner too has eliminated price risk since he will only have to pay the agreed price regardless of spot prices in the next 6 months. There is a second benefit to this. Since both parties have “locked-in” their price/cost, they would be in a much better position to plan their business activities. For example, the confectioner can now confidently quote to his customers the prices at which he can deliver them products in the future. This would not have been possible, if he were uncertain about his input price. The benefits of a forward contract therefore, are often much more than merely hedging price risk.

The Need for Futures Contracts

The next step in the evolution from forwards were futures contracts. Futures contracts were innovated to essentially manage risk. One would be tempted to ask why futures were needed if forwards were sufficient for risk management purposes. As pointed out earlier, a newly innovated product will not survive unless it has some value added over existing products. That futures contracts have become increasingly popular and have huge trading volumes is testimony to its benefits over forward contracts. The need for futures contracts came about given the problems associated with forwards.

The forward contract has a number of problems. We will examine the three main problems here. The first problem may be classified as that of double coincidence. Here, the party to a forward contract would have to find a counterparty who not only has the opposite needs with respect to the underlying asset but also with regards to timing and quantity. The counterparty must need the product in the right quantity at the right time. Thus, a number of factors will have to coincide before a forward contract could be drawn up. A second problem with the forward contract often lies in the way the forward price is arrived at. Typically, the forward price is arrived at through negotiation. Depending on the bargaining position however, it may be possible that a forward price is forced upon the other party. This may either be due to urgency on the part on one party (eg. perishable goods) or more commonly due to informational asymmetry. A third and probably most important problem with forward contracts is counterparty risk. Counterparty risk refers to default risk of the counterparty in the contract. Though a forward is a legally binding arrangement, legal recourse is slow, time consuming and costly. Default risk in forward contracts arise not so much from 'dishonest' counterparties but from increased incentive to default as a result of subsequent price movement. When spot prices rise substantially above the forward price, the short position (seller) has the incentive to default. The long position would have the incentive to default if the opposite happens - i.e. spot price falls heavily.

As these shortcomings of the forward contract became apparent over time, a new instrument was needed that would provide the risk management benefit of forwards while simultaneously overcoming its problems. The resulting innovation was the

futures contract. A futures contract is essentially a standardized forward contract. Standardized with respect to contract size, maturity, product quality, place of delivery etc. With standardization, it was possible to trade them on an exchange – which in turn increases liquidity and therefore reduces transaction costs. In addition, since all buyers and sellers transact through the exchange, the problem of double coincidence of wants is easily overcome. One would transact in the futures contract maturity closest to needed maturity and in as many contracts as needed to fit the underlying asset size.

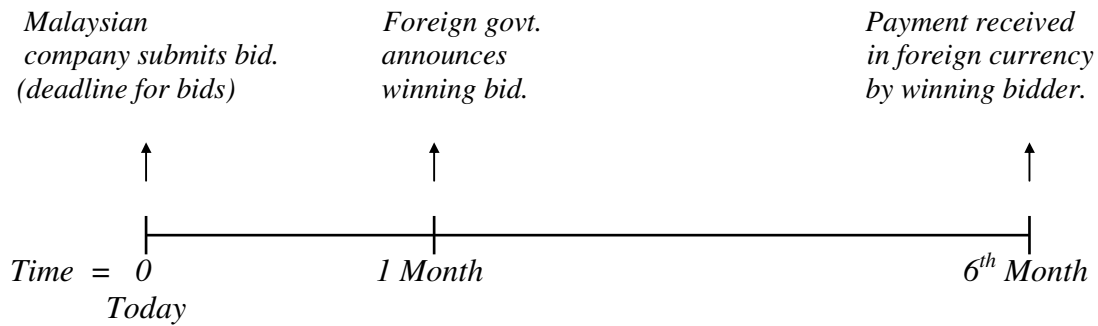
With exchange trading, the second problem with forward contracts, that of being possibly locked into an unfair price would not exist. This is because each party is a price taker with the futures price being that which prevails in the market at the time of contract initiation. As exchange quoted prices are market clearing prices arrived at by the interaction of many buyers and sellers, they would by definition be ‘fair’ prices.

The problem of counterparty risk is overcome in futures contracts by means of the novation principle. The exchange being the intermediary ‘guarantees’ each trade by being the buyer to each seller and seller to each buyer. What this means is that each party transfers the counterparty risk of forwards on to the exchange in the case of futures contracts. This transfer of risk to the exchange by parties to the futures contract has to be managed by the exchange which now bears the risk. The exchange minimizes the potential default risk by means of the margining process and by daily marking to market. The basic idea behind the margining and marking to market process is to reduce the incentive to default by requiring initial deposits (initial margins) and recognizing losses as they occur and requiring the party whose position is losing to pay up as the losses accrue (margin calls). This margining and marking to market process has been refined and fine-tuned over the years by futures exchanges to such an extent that incidences of market concerning and systemic defaults have been reduced to negligible rates.

The Need for Options

Though futures contracts have been able to overcome the problems associated with forwards, they were still inadequate in some respects to later day business needs. In particular, there were two inadequacies that stimulated the search for further product innovation. The first is the fact that while futures enabled easy hedging by locking in the price at which one could buy or sell, being locked-in also meant that one could not benefit from subsequent favorable price movements.¹ A second and much more important inadequacy is the fact that futures (and forwards) were unsuited for the management of contingent liabilities or contingent claims. These are liabilities or claims on a business entity that *could* arise depending on an uncertain outcome. In other words, contingent claims or liabilities are business situations that involve at least two levels of uncertainties. In an increasingly turbulent world such situations have become commonplace and their management that much more important. By way of an example, one of the easiest ways to see how a contingent claim/liability could arise would be in international business. Let us say a Malaysian company involved in the manufacturing of a certain electrical component has just submitted a bid in an international tender by a foreign government for supply of the components. Let us assume that payment will be in a foreign currency, that today is the last day for submitting bids and that the foreign government will choose among several international bidders and will make known its chosen bid and supplier in one month's time. For clarity, let us assume further that once the government announces the winning bid, the chosen supplier will supply over the following five months and will be paid in full at the end of the fifth month. The time line below shows the chronology of events.

¹ *Though one could easily reverse out of a futures position subsequently, the price at which reversal takes place would be at changed prices. Also, there is the possibility that since there now is full exposure (no more hedge), subsequent unfavorable price movements could really hurt.*



From the viewpoint of the Malaysian company, they will know the outcome in a month and if chosen will supply and receive payment in foreign currency six months from today. Though simplified, notice that this is by no means a hypothetical situation. In fact, in international business this is a highly common situation. Clearly, the Malaysian company faces risk. If chosen, they would be paid in a foreign currency. Since they would have bid a fixed amount in foreign currency, they face the risk that the foreign currency could depreciate against the Ringgit and since their costs would be in Ringgit cause them to make losses. Notice, that this currency exposure begins the moment the bid is submitted, yet becomes reality only if their bid is chosen. There are two simultaneous sets of uncertainty here. First, uncertainty regarding the Ringgit amount that will be received given currency fluctuation and second, uncertainty whether their bid would be chosen.

How could one manage such compounded risks? Suppose the company did nothing to hedge, they would face currency risk if chosen but would have no problem at all if they are not chosen. Clearly, there is a need to hedge the currency risk, yet currency futures or forwards would be unsuitable. A forward would be unsuited since if not chosen a forward contract cannot be easily reversed out. With futures, the company has two choices (a) take a short position² in a 6 month currency futures contract *now* and reverse out in a month if not selected or (b) wait until the result is known in a month's time and then if chosen, take a short position in 5 month currency futures. While at first glance it may seem appropriate, neither of these alternatives would really be suited. Figure 1 in Appendix shows the alternatives available with using forwards and futures and the problems that could arise.

² A short position is to make delivery, while a long position to take delivery.

It is precisely for managing such complicated risks that options were innovated. All exchange traded options come in two types - Call Options and Put Options. A Call option entitles the holder the right but not the obligation to buy the underlying asset at a predetermined exercise price at or anytime before maturity.³ A Put option on the other hand entitles the holder the right but not the obligation to sell the underlying asset at a predetermined exercise price at or before maturity. Since options provide the right but impose no obligation, the holder need only exercise if it is favorable for him to do so. This non obligation to exercise provides increased flexibility and is the key advantage of options over forwards or futures. The buyer of the options pays for this privilege by paying the seller a non refundable premium.⁴ The maximum possible loss to a buyer of an option is therefore limited to the premium he pays. This loss occurs if he chooses not to exercise the option. In most other respects, trading methods, contract specifications etc., the exchange trading of options is similar to that of futures. Though introduced in its exchange traded form only in 1973, options have now taken centre stage in risk management.

How would options help in managing the compounded risks of the above example? The Malaysian company at the time of its submitting the bid (today) would simply have to buy (long) 6 month Put options on the foreign currency.⁵ The number of contracts needed would depend on contract size. Buying the needed number of 6 month Put option contracts to equate the amount of foreign currency receivable, the company would **fully hedge both** the currency risk **and** the uncertainty about the outcome of the bid. In the event the company's bid is not chosen, the Put options could be left unexpired with losses limited to the cost of the premium, on the other hand should it be chosen and receive a depreciated foreign currency, the Put options purchased become profitable and would be exercised. If properly designed to be fully

³ This is an American style option. An European option differs slightly in that it can be exercised only at maturity and not before.

⁴ In well developed markets, the premium is usually a tiny percentage of underlying asset value. This however could still be higher than commissions paid for futures contracts. The higher cost being a reflection of the increased advantage of options.

⁵ Since the company might be receiving foreign currency in 6 months, put options by providing the right to sell would be the hedging tool. They should buy as many contracts as needed to fully hedge the receivable amount.

hedged, the profit payoff from the long put position would equal the losses made on receiving the depreciated currency.⁶

Recall that in introducing the need for options, two inadequacies of futures contracts were pointed out. The first, that futures were inadequate with contingent claims/liabilities and second that the price lock-in feature of futures meant that one could not take advantage of subsequent favorable price movements. We have seen above how options can be used where contingent claims or compounded risks are involved. Options also have the advantage that while the exercise price locks in the price to provide protection from unfavorable price movements, their non-obligatory nature also means that one could also take advantage of favorable price movements. In the example here, what if the foreign currency appreciates over the 6 month period? Suppose the foreign currency exchange rate is higher than the exercise price, the company would not exercise the Put option but sell the received foreign currency at the higher spot rate. Thus, once the Put option is purchased, the company is assured of a minimum Ringgit proceeds equal to the exercise price but possibly higher proceeds if there is favorable exchange rate movement. In short, options provide the best of both worlds. They provide downside protection by limiting losses to the premium paid while simultaneously allowing for gain. To summarize, put options are useful where protection is needed from price falls but where price increases would be beneficial. Call options on the other hand would be useful where protection is needed from price increases but where price declines are beneficial.

The Main Players in Derivative Markets

As is the case with other financial markets there are thousands of institutions and traders involved in derivative markets. However, they could all be classified into three broad categories, namely (i) Hedgers, (ii) Arbitrageurs and (iii) Speculators. If hedging is the *raison-d-etare* for derivative markets than obviously hedgers would be major players. The cocoa farmer and the confectioner in our earlier example were hedgers. So was the company involved in the international bid. Hedgers use

⁶ *The assumption here is that the Put options had exercise price equal to the spot exchange rate at time of submitting the bid.*

derivative markets to manage or reduce risk. They are typically businesses that use derivatives to offset exposures resulting from their business activities. The second category of players - arbitrageurs use derivatives to engage in arbitrage. Arbitrage is the process of trying to take advantage of price differentials between markets. Arbitrageurs closely follow quoted prices of the same asset/instruments in different markets looking for price divergences. Should the prices be divergent enough to make profits, they would buy on the market with the lower price and sell on the market where the quoted price is higher. Since most financial markets are integrated by computer networks arbitrage activity boils down to hitting the right keystrokes. As arbitrage opportunities can quickly disappear, quick action is needed. Thus, institutions (commercial banks, investment banks, currency dealers etc.) that engage in arbitrage activity invest huge amounts of money in global computer networks and telecommunication equipment.

In addition to merely watching the prices of the same asset in different markets, arbitrageurs can also arbitrage between different product markets. For example between the spot and futures markets or between futures and option markets or even between all three markets. It is in this type of arbitrage that sophisticated financial engineering techniques come into play.

The final category of players are the speculators. Speculators as the name suggests merely speculate. They take positions in assets or markets *without* taking offsetting positions. For example if they expect a certain asset to fall in value, they would short the asset. Should their expectation come true they would make profits from having shorted the asset. On the other hand should the price increase instead, they would make losses on their short position. Speculators therefore expose themselves to risk and hope to profit from taking on the risk.

Having described the activities of the three major categories of players, it would be pertinent to ask if these activities are useful from a societal viewpoint. Hedging is undoubtedly useful. Aside from enabling businesses to plan better, the reduction in fluctuation of their product prices can help reduce costs and thereby provide a tangible benefit to society. Consumers would benefit since producers need charge lower risk premiums. Societal benefits from arbitrage activity is much less direct.

The benefits accrue from the proper realignment of prices. Arbitrageurs by means of their activities ensure that prices in the different markets (spot; futures, options) do not diverge from each other. Because product prices are perhaps the most important signal in market economies, proper price discovery has serious implications on resource allocation. Arbitrage activity enhances the price discovery process. For example, arbitrage between markets in different countries “internationalizes” product prices. This forces less efficient producers to enhance productivity in order to remain in business. Arbitrage also helps reduce the distortionary effects of government regulation/intervention.

Speculative activity tends to hurt more than help. The evils of speculative activity are well documented. While speculative activity is harmful there are some benefits. First, speculative trading increases trading volume. This in turn provides two benefits, (a) increased trading volume reduces transaction costs thereby making it cheaper for genuine hedgers to hedge. Additionally (b) it increases liquidity. As a result markets become deeper and broader thereby reducing execution risk. Finally, the fact that speculators are willing to take risks means that hedgers have someone to pass on their risks. Despite these, it will be difficult to make a case in favor of speculation. Speculative activity can be disruptive. Yet, regulators have often been unable to keep such activity under control. This has largely to do with the fact that it is a very fine line that separates hedging and arbitrage from speculation.

Section 2: Literature Review; The Islamic View of Current Day Derivative Instruments

2.1 Having examined the evolution of derivative instruments, their use and the players in this market, this section reviews some of the relevant Islamic literature in the area⁷ and tries to outline the Islamic stand on modern day futures and options. As stated earlier much of the existing work have been of a highly juridical nature. Even so, the approach taken by Islamic scholars appears to be different. In the case of options for example, some have examined their validity under the fiqh doctrine of *al-Khiyarat* or contractual stipulations while others have drawn parallels between options and *bai-al-urbun*. *Urbun* being a transaction in which a buyer places an initial good faith deposit with the seller. Should the buyer decide to go ahead with the transaction, the payment is adjusted for the initial deposit but is non refundable if the buyer decides not to proceed with the transaction. A third view has been to examine options in the light of gharar - or uncertainty. In at least one other situation, (Abu Sulayman, 1992) options have been viewed as totally detached from the underlying asset.

When viewed solely as a promise to buy or sell an asset at a predetermined price within a stipulated period, Shariah scholars find nothing objectionable with options.⁸ However, it is in the trading of this promises and the charging of premiums that objections are raised. In the case of futures contracts, some ulamas have objected stating that deferred sale is not allowed while yet others cite precedents to deferred sale such as Ba'i Salam but have objection to futures on other grounds - mostly that it encourages speculation.

⁷ The review is restricted to works in English alone. Where Arabic work is referred to, this is based on references to them in English articles/papers.

⁸ See - Mohd. Obaidullah (1997b) - *Ethical Options In Islamic Finance* (Pg. 6).

The View on Options

A number of scholars, notably Ahmad Muhayyuddin Hasan (1986), Abu Sulayman (1992) and Taqi Usmani (1996) have all found options objectionable. Each of these scholars have objected for a different reason. Ahmad Muhayyuddin Hasan⁹ objects on two grounds, firstly, that maturity beyond three days as per *Khiyar-al-shart* (option of stipulation) is unacceptable. And second, that the buyer of an option is granted much more benefits than the seller and that “this is oppression and injustice”. Abu Sulayman (1992)¹⁰ of the Fiqh Academy of Jeddah, finds options acceptable when viewed in the light of *bai-al-urbun* but concludes that options should be prohibited since he considers options to be detached and independent of the underlying asset and therefore unjustified for the seller to charge the premium. It should be noted here that yet other scholars have forbidden *bai-al-urbun* transactions.

Mufti Taqi Usmani (also of the Fiqh Academy - Jeddah) in answering a set of questions posed in a feature article¹¹, writes in response to a question about a sale of stock with Put Options attached that while a option contract when viewed as a promise is acceptable, charging a fee and trading them are not. He also finds the sale of stock with a Put Option to resell the stock to the issuer at a future date unacceptable since a precondition is placed on the original sale of stock.

Gharar has been another reason for objection to options. Mohd. Obaidullah (1997) writes, “*permissibility to conventional options is generally denied by a majority of scholars on the ground that these involve gharar and are primarily transacted for speculative gains*”. Acknowledging that gharar does not have a consensus definition, gharar is said to be the result of *jahl*, inadequate information and a lack of transparency. Citing that some scholars have pointed out that in modern option markets standardized contract specifications

⁹ See - Hashim Kamali pg. 37, 38.

¹⁰ See - Hashim Kamali pgs. 39-41.

¹¹ New Horizon, June 1996, pgs. 10-11.

and other controls have rendered invalid the gharar argument, he goes on to state that this argument is rejected since there is no physical delivery but mere cash settlement. Implying that cash - settlement induces gharar and excess speculation.

He further adds that “*while the gains, if they materialize are in the nature of **maisir** or unearned gains, the possibility of equally massive losses do indicate a possibility of default by the loser and hence, gharar*”. Both the maisir and gharar arguments here are invalid. That profits from options are “unearned” ignores the fact that both the buyer and seller take on risk and that the buyer also has at stake the premiums he has paid.

Furthermore, the change in an option’s value arises from changes in underlying asset value and not by chance. If such gains are ‘unearned’ than it implies that all capital gains income could also be considered unearned. The second argument that options involve gharar since there is potential for default, totally ignores the fact that exchanges place margin requirements on sellers of options precisely to prevent default. Note that buyers of options would by definition not default since their maximum possible losses is the premium, all of which is fully paid for at time of purchaser.

In perhaps the most extensive and in depth analysis of its kind, Hashim Kamali (1995) examines the permissibility of modern day options and its trading in the light of Islamic Commercial Law. Analyzing the basic option contract, and the validity of its parameters such as premiums, time to maturity and delivery, he concludes that “*there is nothing inherently objectionable in granting an option, exercising it over a period of time or charging a fee for it, and that options trading like other varieties of trade is permissible **mubah** and as such, it is simply an extension of the basic liberty that the Quran has granted...*”.

The View on Futures

In evaluating the validity of Futures contracts, we see similar inconsistencies in arguments. Mufti Taqi Usmani writing in the same article mentioned earlier states that modern day Futures contracts are invalid for two reasons. *“Firstly, it is a well recognized principle of the Shariah that sale or purchase cannot be affected for a future date. Therefore, all forward and futures transactions are invalid in Shariah. Secondly, because in most of the futures transactions, delivery of the commodities or their possession is not intended. In most cases, the transactions end up with the settlement of difference of prices only, which is not allowed in the Shariah”*.

Yet, Fahim Khan (1995), states *“we should realize that even in the modern degenerated form of futures trading, some of the underlying basic concepts as well as some of the conditions for such trading, are exactly the same as were laid down by the Prophet (PBUH) for forward trading. For example, there are clear sayings of the Prophet (PBUH) that he who makes a **Salaf** (forward trade) should do that for a specific quantity, specific weight and for a specific period of time. This is something that contemporary futures trading pays particular attention to”*.¹² In spite of this he goes on that *“the conversion of the original futures market (to be referred to as Forward trading) into the modern futures market is only a recent phenomenon starting from the mid seventies... forward trading was converted into futures market in order to increase speculative activities by trading”*. In proposing an Islamic Futures market based on Ba’i Salam he takes a harsh view of conventional markets.

Fahim Khan’s harshest criticism of modern futures contracts is that it is necessarily exploitative of small farmers since it gives “wrong” signals. *“This concept of hedging through futures in the modern futures market, though is an indirect way of reducing the farmer’s risk. But the futures market being totally independent and separate from the cash market is quite likely to give wrong signals to the farmer and the farmer not being a player of the futures*

¹² See - Fahim Khan (1995) pg. 12.

*market and having forced to compete the professional speculators, they may often end up being exploited by the wrong signals”.*¹³ This argument that futures and cash markets are separate is fundamentally incorrect since it ignores arbitrageurs and arbitrage activity. Any deviation in prices beyond parity and transaction costs will lead to *riskless* arbitrage! Such arbitrage tends to keep both cash and futures prices aligned. Furthermore, any market or instrument that consistently exploits one party of the transaction will see trading volumes reduced and die out naturally. This is because the party that is always on the losing end (farmers in this case) would naturally not want to use this instruments subsequently.

The literature review thus far, though by no means comprehensive, points to two overriding factors. First, it appears that most scholars agree that futures and options are basically instruments that are by and large congruent with Shariah principles. Second, where scholars object to these instruments, their objections are based on very different reasons. Most of the objections are based on individual interpretation of both the Shariah and their understanding of these instruments.

2.2 Necessary Features for Islamic Financial Instruments

Before going on to examine existing instruments in Islamic finance that have derivative - like features, we examine here some of the necessary features for Islamic financial instruments. All financial instruments and transactions in general must meet a number of criteria in order to be considered halal. At a primary level all financial instruments and transactions must be free of at least the following five items¹⁴; (i) riba (usury), (ii) rishwah (corruption), (iii) maysir (gambling), (iv) gharar (unnecessary risk) and (v) jahl (ignorance). Riba which literally translates to usury is more commonly referred to as the charging of interest. Riba can be in different forms and is prohibited in all its forms. For example, Riba can also occur when one gets a positive return

¹³ See - Fahim Khan, (1995) pg. 22.

¹⁴ See - Muhamad Ma'sum Billah, AJISS, Summer 1997, pg. 221.

without taking any risk. As pointed out earlier, there is no consensus on what gharar means. It has been taken to mean, unnecessary risk, deception or intentionally induced uncertainty. In the context of financial transactions, gharar could be thought of as looseness of the underlying contract such that one or both parties are uncertain about possible outcomes. Alternatively, that the contract could be read in a number of ways such that one party could easily deceive (deception) the other party. Masyir from a financial instrument viewpoint would be one where the outcome is purely dependent on chance alone - as in gambling. Finally, jahl refers to ignorance. From a financial transaction viewpoint, it would be unacceptable if one party to the transaction gains because of the other party's ignorance.

Though their exact definition may still be open to interpretation, there cannot be any doubt as to what is being intended by the Shariah in requiring that financial instruments and transactions be free of the above items. Clearly, what is being intended is fair play and justice to all parties to a transaction.

In addition to these requirements for financial instruments, the Shariah has some basic conditions with regards to the sale of an asset (in this case a real asset as opposed to financial assets). Since a derivative instrument is a financial asset dependent on the value of its underlying asset (real asset in most cases), the Shariah conditions for the validity of a sale would also be relevant. Aside from the fact that the underlying asset must be halal, at least two conditions have to be met, (i) the underlying asset or commodity must currently exist in its physical, sellable form and (ii) the seller should have legal ownership of the asset in its final form. These conditions for the validity of a sale would obviously render impossible the trading of derivatives. However, the Shariah provides exceptions to these conditions to enable deferred sale where needed.¹⁵

¹⁵ See - Shafi, *etal* (1997), pgs. 34-37.

Section 3: Islamic Finance Instruments with features of Derivative Instruments

A number of instruments/contracts exist in Islamic finance that could be considered a basis for derivative contracts within an Islamic framework. In this section we examine two such contracts. These are (i) the Ba'i Salam Contract, and (ii) the Istijrar Contract. While the Ba'i Salam contract has provisions and precedence, the Istijrar is a recent innovation practiced in Pakistan.

Ba'i Salam

Salam is essentially a transaction where two parties agree to carry out a sale/purchase of an underlying asset at a predetermined future date but at a price determined and *fully paid* for today. The seller agrees to deliver the asset in the agreed quantity and quality to the buyer at the predetermined future date. This is similar to a conventional futures contract however, the big difference is that in a Salam sale, the buyer pays the entire amount in *full at the time the contract is initiated*. The contract also stipulates that the payment must be in cash form. The idea behind such a 'prepayment' requirement has to do with the fact that the objective in a Ba'i Salam contract is to help needy farmers and small businesses with working capital financing. The buyer in a contract therefore is often an Islamic financial institution. Since there is full prepayment, a Salam sale is clearly beneficial to the seller. As such, the predetermined price is normally *lower* than the prevailing spot price. This price behavior is certainly different from that of conventional futures contracts where the futures price is typically higher than the spot price by the amount of the carrying cost. The lower Salam price compared to spot is the "compensation" by the seller to the buyer for the privilege given him.¹⁶

¹⁶ See - Fahim Khan (1995) for an elaborate discussion of Ba'i Salam.

The Ba'i Salam contract is subject to several conditions, of these the important ones are as follows;

- (i) Full payment by buyer at the time of effecting sale.
- (ii) The underlying asset must be standardizable, easily quantifiable and of determinate quality.
- (iii) Salam contract cannot be based on an uniquely identified underlying. This means the underlying commodity cannot be based on commodity from a particular farm/field etc. (By definition such an underlying would not be standardizable).
- (iv) Quantity, Quality, Maturity date and Place of delivery must be clearly enumerated in the Salam agreement.
- (v) The underlying asset or commodity must be available and traded in the markets throughout the period of contract.

Given our earlier description of futures contracts it should be clear that current exchange traded futures would conform to these conditions with the exception of the first, which requires full advance payment by the buyer. However, given the customized nature of Ba'i Salam, it would more closely resemble forwards rather than futures. Thus, some of the problems of forwards; namely "double-coincidence", negotiated price and counterparty risk can exist in the Salam sale. Counterparty risk however would be one sided. In that, since the buyer has fully paid, it is only the buyer who faces the seller's default risk and not both ways as in forwards/futures. In order to overcome the potential for default on the part of the seller, the shariah allows for the buyer to require security which may be in the form of a guarantee or mortgage.

The contract could also form the basis for the provision of working capital financing by Islamic financial institutions. Since financial institutions would not want possession of the underlying commodity, parallel contracts may be used. Though not all jurist are in agreement about its permissibility, the literature cites two venues for parallel Salam.

The first is a parallel Salam with the original seller while the other is an offsetting transacting by the financial institution with a third party. In the first alternative, the financial institution after entering into the original contract, gets into a parallel Salam to sell the underlying commodity after a time lapse for the same maturity date to the original seller. The resale price would be higher and considered justifiable since there has been a time lapse. The difference between the 2 prices would constitute the bank's profit. The shorter the time left to maturity, the higher would be the price. However, the requirement is that both transactions should be independent of each other. The original transaction should not have been priced with the intention to do a subsequent parallel Salam. Under the second alternative, the bank which had gone into an original contract enters into a contract promising to sell the commodity to a third party on the maturity date of the contract. Since this second transaction is not a contract the bank does not receive advance payment.

The Istijrar Contract

The Istijrar contract is a recently introduced Islamic financing instrument.¹⁷ Introduced in Pakistan, the contract has embedded options that could be triggered if the underlying asset's price exceeds certain bounds. The contract is complex in that it constitutes a combination of options, average prices and Murabaha or cost plus financing. The Istijrar involves two parties, a buyer which could be a company seeking financing to purchase the underlying asset and a financial institution.

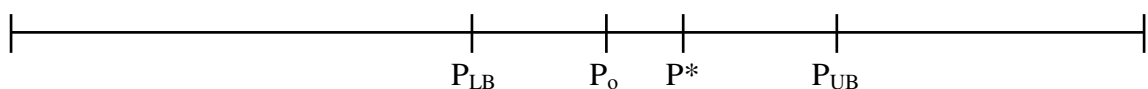
A typical Istijrar transaction could be as follows; a company seeking short term working capital to finance the purchase of a commodity like a needed raw material

¹⁷ For an extensive description of the Istijrar; see - Mohd Obaidullah (1997a)

approaches a bank. The bank purchases the commodity at the current price (P_0), and resells it to the company for payment to be made at a mutually agreed upon date in the future – for example in 3 months. The price at which settlement occurs on maturity is contingent on the underlying asset’s price movement from t_0 to t_{90} . Where t_0 is the day the contract was initiated and t_{90} is the 90th day which would be the maturity day.

Unlike a Murabaha contract where the settlement price would simply be a predetermined price; P^* where $P^* = P_0 (1+r)$, with ‘r’ being the bank’s required return/earning, the price at which the Istijrar is settled on maturity date could *either* be P^* or *an average price* (\bar{P}) of the commodity between the period t_0 and t_{90} . As to which of the two prices will be used for settlement will depend on how prices have behaved and which party chooses to “fix” the settlement price. The embedded option is the right to choose to fix the price at which settlement will occur at anytime before contract maturity. At the initiation of the contract; t_0 , both parties agree on the following two items (i) in the predetermined Murabaha price; P^* and (ii) an upper and lower bound around the P_0 . (bank’s purchase price at t_0).

For better elucidation, the different prices are shown below in a continuum. Prices increase as one goes to the right.



- where
- P_0 = The price that bank pays to purchase underlying commodity.
 - P^* = Murabaha price; $P^* = P_0 (1+r)$.
 - P_{LB} = The Lower bound price.
 - P_{UB} = The Upper bound price.

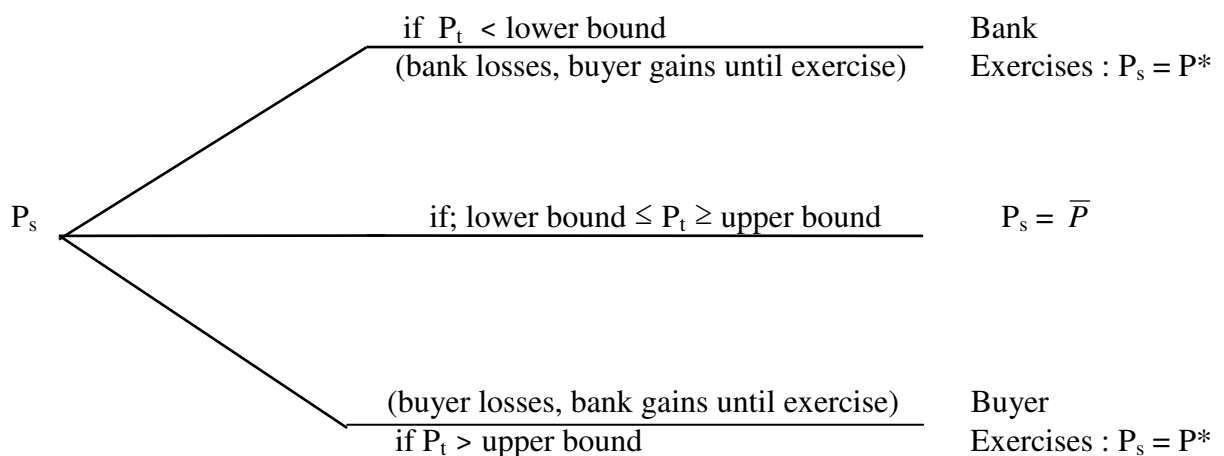
The settlement price (P_s) at t_{90} would be;

(i) $P_s = \bar{P}$ if the underlying asset price remained within the bounds.

or (ii) $P_s = P^*$ if the underlying asset exceeds the bounds and one of the parties chooses to exercise its option and use P^* as the price at which to settle at maturity.

For either party to exercise its option and thereby fix the settlement price at P^* , the spot price during the term of the contract must have exceeded the bounds at any time. As to which party would exercise would of course depend on the *direction* of the spot price movement. For example, if the spot price at anytime breaks through the upper bound, the buyer would get worried. But whether he will exercise or not would depend on his expectations of the spot price over the remaining period of the contract. If he believes that the price is likely to keep increasing thereby causing \bar{P} at which settlement will occur to be greater than P^* , it will be in his interest to 'exercise' by fixing the settlement price now at P^* . Essentially, he would notify the bank that he is exercising his option and that the settlement would be P^* . Should spot prices be falling such that it breaks the *lower* bound, the seller, in this case the bank would have the option to fix the settlement price at P^* .

The settlement price is determined as follows;



where	P_s	=	Settlement Price at Maturity
	\bar{P}	=	Average price; P_{t_0} to $P_{t_{q_0}}$
	P_t	=	Spot Price of underlying commodity on day t
	P^*	=	The predetermined, cost-plus or Murabaha price

Analyzing the Istijrar contract in its entirety from an option's viewpoint is complicated since it has two different exercise styles¹⁸ rolled in one. Such an instrument would be highly unusual in conventional finance. Still, for our purpose here, the embedded options in the Istijrar can simply be thought of as follows. The fact that buyer gets to fix the buying price at P^* when the price goes higher implies that he has a **Call Option** at an exercise price of P^* while the bank a **Put Option** at the same exercise price.¹⁹

What the Istijrar contract attempts to do is to allow for the impact of price changes but to cap the benefits that accrue as a result. By definition, since price changes are allowed only within a band the advantage to one party and the disadvantage to the other is capped. The maximum potential gain or loss is limited. Such a contract fulfills the need to avoid a fixed return on a riskless asset which would be considered "riba" and also avoids gharar in that both parties know up front, P^* and the range of other possible prices. (by definition between the upper and lower bounds).

Section 4:

This final section is intended to evaluate some of the arguments and reservations put forth by Islamic scholars, from a conventional finance viewpoint. The objective being to clarify why the trading mechanism and other processes in derivative markets are the way they are. Before proceeding, it must be kept in mind that contemporary derivative markets have in place processes and trading systems that have been fine tuned over years of practice. There have been many past failures and exchanges and

¹⁸ Asian style exercise between the upper and lower bounds and American style since the settlement price can be fixed at any time before maturity once the spot price breaks out on either side.

¹⁹ At P^* exercise price both the Call and Put are American style.

markets have had painful lessons. They have responded by tightening regulation, redesigning instruments and trading methods and added new control features. It would be absurd to brush aside all of these experiential learning.

Trading Volume

The first issue that will be addressed here is the argument often put forth that the huge trading volume of derivative markets is indicative of extensive speculation, that the market attracts and accentuates speculative behavior. While it cannot be denied that there is plenty of speculative activity, there are logical reasons for why the total trading volume is often much larger than underlying asset volume. Often 10 or 15 times higher. This huge divergence between underlying asset and trading volume has to do with *risk dissipation*. To see how this works and can lead to increased trading volume let us use an example. Let us say a hedger, Hedger A, wishes to hedge a foreign currency receivable of \$100 million. He approaches his main banker - Bank A with the request to do a forward contract. The Bank obliges since Hedger A is a regular customer. Once the forward contract is done, Hedger A is fully hedged but Bank A is exposed. To protect itself, Bank A would use either the currency futures or options markets. Using futures, Bank A would short as many contracts as needed to lay off the \$100 million. While Bank A shorts the foreign currency futures there must be parties on the other side taking long positions. Since the amount is huge, there may be several other counterparties. Let us say four other parties become Bank A's counterparty in currency futures. Each taking \$25 mil. worth of contracts. These four are Bank B, Speculator A, Speculator B and Speculator C respectively. With this transaction Bank A is fully hedged. Bank B may have come into the currency futures transaction to hedge its own needs. For example, Bank B may have a need to make a \$25 million foreign currency payment and so needs this contract to protect itself from appreciation of the foreign currency. The speculators A, B and C however are still exposed. Clearly, they must be willing to take the risks. However, as time passes and way before maturity, some of the speculators might reverse their position. For example, Speculator A and C might now short the foreign currency to Speculator D and Bank X respectively. The reason for why Speculators A and C are reversing out may be to either take profits from favorable movements or to cut losses resulting from

price falls. Bank X, the new bank that came into the picture may have come in to hedge its own exposure which arose recently.

Notice that the single original transaction of \$100 mil. between Hedger A and Bank A led to a series of other transactions in the futures market. Figure 2 in appendix shows the transactions. Notice that \$150 mil. of transactions was created in futures for a total of \$250 mil. of derivative transactions and the process is not complete since Speculators B and the new Speculator D are still holding on to their positions. If we add to this the potential role of arbitrageurs one could see why trading volumes are much more than underlying asset volumes. As mentioned earlier, the need for all these sets of transactions arises from the need to share risks – i.e. risk dissipation. At each level as more players come in, the asset risk gets dissipated among more parties. Islamic jurists often call for elimination of speculative activity. Such drastic action however can hurt more than help. Without speculators, hedgers would be hurt. In our example above, Bank A may not have entered into the forward contract with Hedger A, if the Bank had felt that it may not be able to offset its resulting exposure. In a way this process of trading and risk dissipation is no different from insurance and the reinsurance process.

The Issue of Non Delivery

A second issue that causes uneasiness among ulamas is the fact that a large portion of those trading in derivative markets have no intention of either making or taking delivery of the underlying asset. The implication is that since there is no intention of delivery, these people must all be speculators. There are however many situations in which even genuine hedgers would not want to take or make delivery. An easy example of such a situation is as follows; let us say a Jeweler has just bought RM1 million worth of Gold bars for inventory. These are to be used as raw materials for jewelry he intends to produce over the next six months. Since jewelry prices are dependent of the spot price of gold,²⁰ the jeweler clearly has exposure. If the spot price of gold falls subsequently, he would be hurt since not only the value of

²⁰ *This is the case in Malaysia and several other countries.*

remaining gold bars in his inventory will fall but also the finished jewelry and jewelry to be produced in the near future would all be worth less.

How can the jeweler hedge such a risk? An easy way would be for him to use gold futures contracts - that is short RM1 million worth of 6 month gold contracts. By doing so, he neutralizes subsequent gold price declines since the losses resulting from diminution in value of inventory will be offset by the profits he makes on the short position in the futures contract. The opposite will happen if gold prices rise. Notice that eventhough the jeweler is a genuine hedger and not a speculator, he has no intention and will be in no position to deliver the gold. In 6 months the gold in his inventory would be just about finished. He cannot deliver and had not intended too. All he needed was insurance against price falls for 6 months and he received that protecting. Just before maturity the jeweler merely calls his futures broker to reverse out his position. The jeweler's position here is different from that of the cocoa farmer in Section 1. The farmer produced the cocoa. He needed to sell the cocoa and protect himself from price falls. The jeweler does not want to sell the gold he merely needs to hedge fluctuations in gold price. The position of the jeweler is not unusual. His position would apply to any producer whose finished product prices depend on the price of an input product.

Cash Settlement

The issue of cash settlement is yet another contentious point. Some have alleged that cash settlement was designed in order to enhance speculative activity.²¹ Far from being intended to help speculators, cash settlement is used for the many advantages it has. Cash settlement is normally though not exclusively used with financial futures and options - for example; Stock Index Futures and Index Options. Though a relatively new type of settlement procedure, exchanges have a preference for cash settlement largely due to three advantages. The first advantage is convenience to both parties. Without cash settlement the seller/short position would have to buy each of the underlying stocks in the correct proportion in order to deliver. This would not

²¹ See - Fahim Khan (1995), Mohd. Obaidullah (1997) and New Horizon (1996).

only be tedious but causes complications of having to buy in odd-lot sizes. On delivery, the long position will have to get all these stocks registered or sell them in the odd lots received, again a tedious and time consuming process. Cash settlement overcomes this. If the long position wants to receive the stocks it would not be a problem since the underlying stocks are trading contemporaneously. The second advantage is cost reduction. By avoiding the need for the short to buy the underlying stock and the long position to sell the received stock both parties save substantial transaction costs. In Malaysia for example, a brokerage commission equivalent to one percent of value would have to be paid for either buying or selling. Cash settlement saves two percent of contract value which typically is a few thousand ringgit. In this case, the only ones who would benefit from requiring physical settlement would be stock brokers. A third advantage of cash settlement is that a market concerning attempt will not work. It would be impossible to corner a market when physical delivery is not needed. There is no reason why cash settlement as opposed to physical delivery would induce any greater uncertainty or gharar. A hedger who had taken a position will have locked in a price regardless of whether the contract is cash or physically settled. Much of the argument that cash settlement increases gharar ignores the convergence principle. By this principle the futures price at maturity must converge to the spot price since on its maturity day a futures contract is essentially a spot contract. Aside from this reason, any disparity between futures and spot price at maturity will mean easy riskless arbitrage. The existence of such arbitrage is yet another reason why there cannot be any disparities to cause increased uncertainty or gharar.

Conclusion

This paper examined the evolution of derivatives, discussed the unique benefits to businesses of using them and the Islamic viewpoint regarding their use. As is evident from the literature review and related discussion, there does not appear to be a common view. Though most scholars have evaluated them from the basic contractual viewpoint, each appears to have taken a different approach and viewed them from very different angles to arrive at their conclusion on validity. Aside from differential approach on the Shariah side, their conclusion also appears to have been driven by

their individual perception of derivative instruments. In many cases this perception appears misguided.

The question of whether all currently traded derivatives would be valid is quite irrelevant. Obviously instruments that have as their underlying asset items that are haram would need no further consideration. Still, the case of derivatives on equity instruments, currencies and halal input commodities deserves attention. Though it might seem safer for Islamic scholars to be on the side of conservatism such a position can have costly consequences for Islamic businesses in the long run. In an increasingly competitive and sophisticated business environment denying them the use of a flexible and powerful array of instruments could place them at a disadvantage. Thus, in evaluating the permissibility of derivatives yet another dimension may be needed, that is a social welfare dimension.

Aside from a narrow focus on the contractual framework, Islamic scholars must take into consideration the potential “welfare loss” when deciding on the permissibility of derivative instruments.

Figure 1

Hedging Alternatives Using Forwards or Futures Contracts

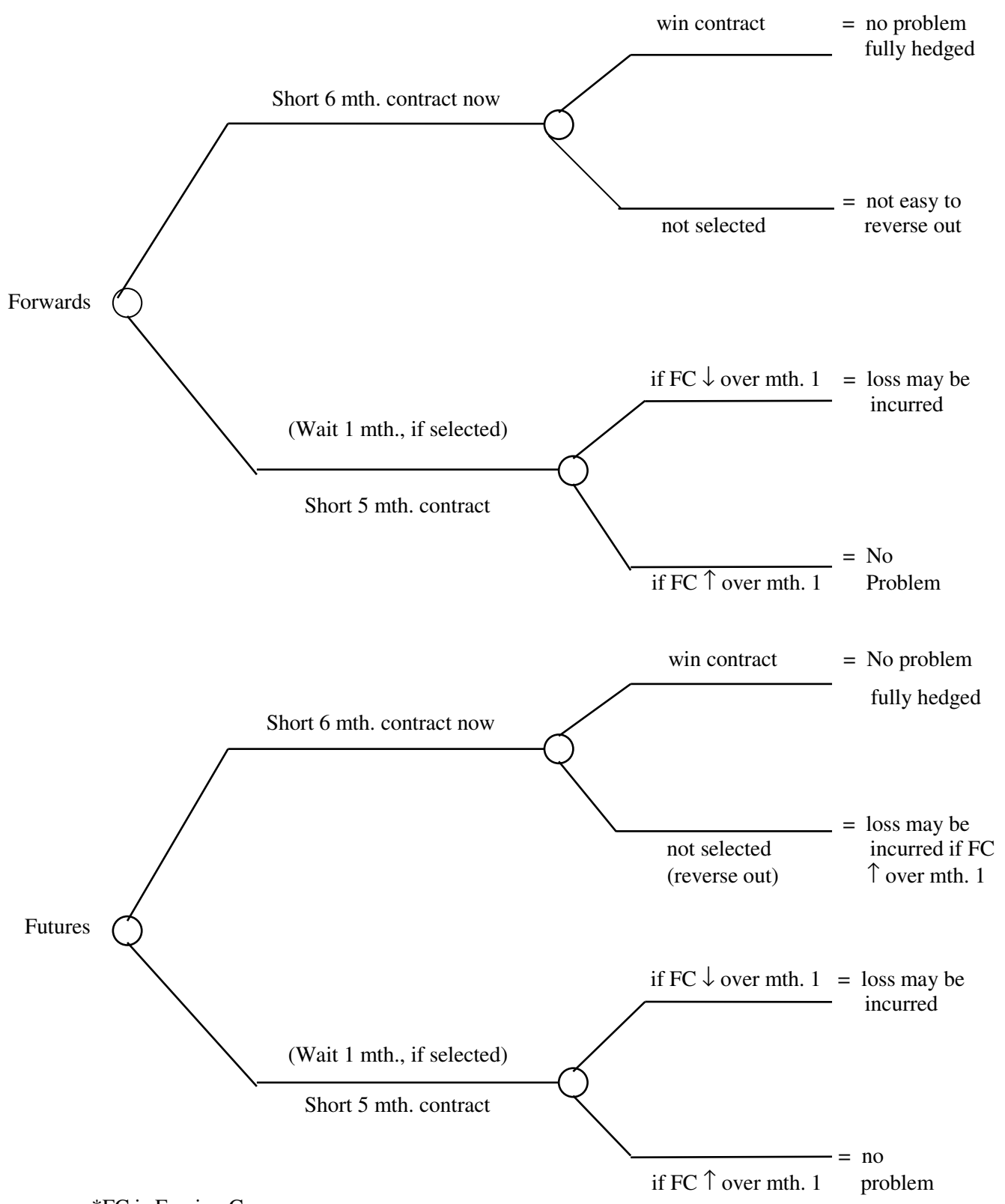
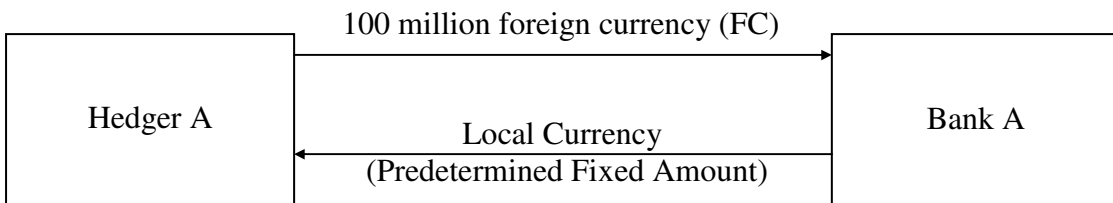


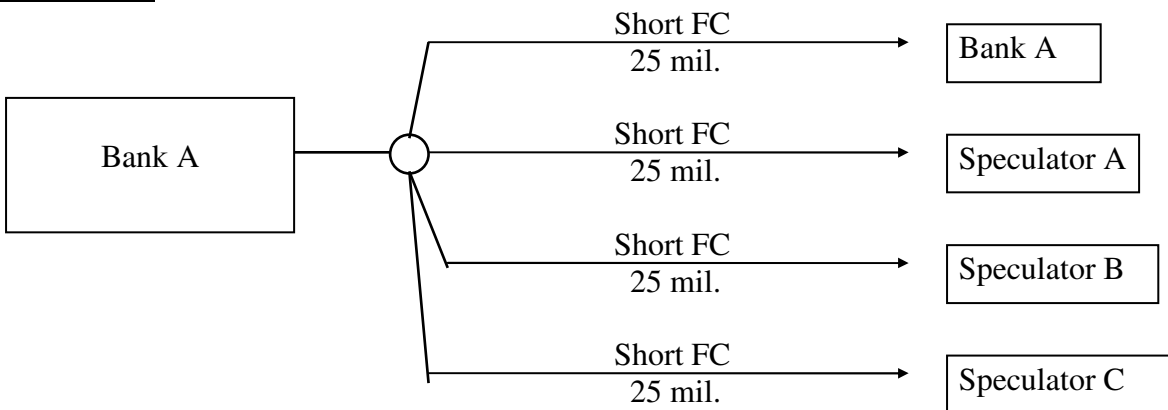
Figure 2

The Risk-Dissipation Process - the cause of Increased Trading Volume

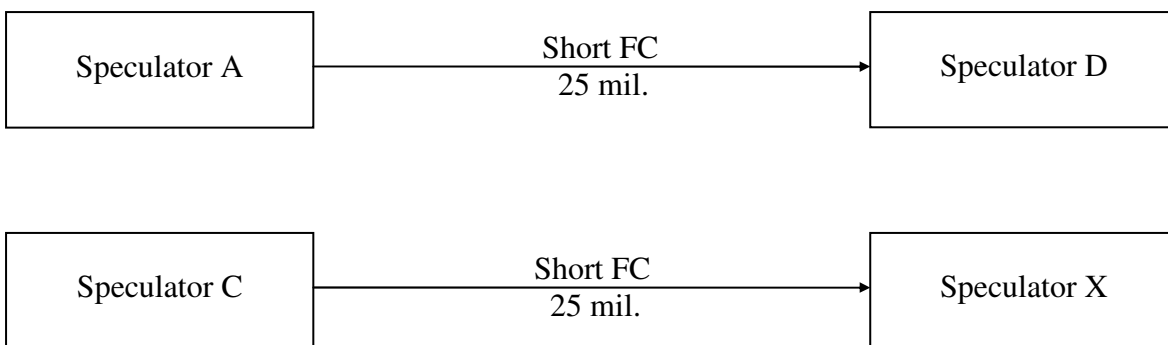
In Forward Market



Futures Market



(Bank A has hedged its exposure in the Forward Mkt., but its counterparties in the Futures are in long position).



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