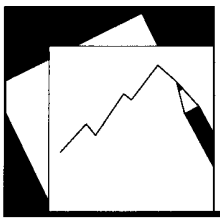
WP/12/63



IMF Working Paper

Operative Principles of Islamic Derivatives – Towards a Coherent Theory

Andreas A. Jobst and Juan Solé

INTERNATIONAL MONETARY FUND

 WP/12/63

IMF Working Paper

Monetary and Capital Markets Department

Operative Principles of Islamic Derivatives – Towards a Coherent Theory

Prepared by Andreas A. Jobst[1] and Juan Solé[2]

Authorized for distribution by Laura Kodres

March 2012

Abstract

Derivatives are few and far between in countries where the compatibility of financial transactions with Islamic law requires the development of *shari'ah*-compliant structures. Islamic finance is governed by the *shari'ah*, which bans speculation and gambling, and stipulates that income must be derived as profits from the shared generation of goods and services between counterparties rather than interest or a guaranteed return. The paper explains the fundamental legal principles underpinning Islamic finance with a view towards developing a cohesive theory of derivatives subject to *shari'ah* principles. After critically reviewing accepted contracts and the scholastic debate surrounding existing financial innovation in this area, the paper offers an axiomatic perspective on a principle-based permissibility of derivatives under Islamic law.

JEL Classification Numbers: D81, G15, M20

Keywords: derivatives, Islamic risk management, Islamic finance, shari'ah compliance, sukuk, mudaraba, ijarah, murabaha, riba, istisna, gharar, maisir, maslaha.

Authors' E-Mail Addresses: ajobst@bma.bm, juan.sole@bis.org

---

[1] Corresponding author: Andreas Jobst, Bermuda Monetary Authority (BMA), 43 Victoria Street, Hamilton, Bermuda, e-mail: ajobst@bma.bm; Juan Solé, Secretariat to the Financial Stability Board (FSB), Bank for International Settlements (BIS), Centralbahnplatz 2, Basel, Switzerland, e-mail: juan.sole@bis.org. The paper was completed when both authors were economists in the Global Financial Stability Division of the Monetary and Capital Markets Department (MCM).

[2] The views expressed in this paper are those of the authors and should not be attributed to the IMF, its Executive Board, or its management or the current employers of the authors. Any errors and omissions are the sole responsibility of the authors. We are grateful for comments and feedback received from Sheik Yusuf DeLorenzo, Ali Ibrahim, Basil Mustafa, Laura Kodres, Priya Uberoi, and Peter Werner. We thank several conference participants for their comments on segments of this paper presented at the *Second Islamic Finance Roundtable* in Oxford (April 15, 2009) and at the seminar series of the Centre for Islamic Studies at the University of Oxford. A first version of this paper was presented at the *International Conference on Islamic Capital Markets* held in Jakarta/Indonesia (August 27–29, 2007), jointly organized by Islamic Research and Training Institute (IRTI) of the Islamic Development Bank (IDB), Jeddah/Saudi Arabia, and Muamalat Institute, Jakarta/Indonesia.

Contents Page

I. INTRODUCTION

During the recent financial crisis, derivatives have come into sharp focus on account of their complexity and their role in precipitating and propagating the economic fallout. The crisis caused a global realignment of risk premia, a widespread retrenchment of credit exposures, and substantial intervention measures by governments and central banks alike. The populist criticism, however, tends to ignore the vast economic gains from efficient risk management associated with derivatives.[3]

Derivatives have real value if they are applied with judgment based on a good understanding of how they facilitate financial intermediation, especially in instances of high transaction costs, poor liquidity due to the dispersion of markets, and limited asset supply or the conglomeration of many risks into one asset.[4] Therefore, the main economic rationale from the wide availability of derivatives stems from their role in the diversification and transfer of risk, which allows economic agents to reduce funding costs and hedge risks associated with certain transactions.

Despite their demonstrable importance for financial sector development, derivatives are few and far between in countries where capital market transactions are governed by Islamic law. From the standpoint of Islamic jurisprudence *(fiqh al-muamalat)*, financial contracts must satisfy a number of requirements, which seem absent in the use and trading of conventional derivatives. Since risk-shifting violates basic principles of *shari'ah* law, derivatives are not readily accepted by *shari'ah* scholars as permissible financial instruments due to their often speculative and unfunded nature.[5]

---

[3] A "derivative" or "derivative product" is a financial contract, whose value derives from one or more underlying reference assets, such as securities, commodities, market indices, interest rates, foreign exchange rates, or other agreed upon quantitative measures, and whose fulfillment or settlement is to occur at a future date not subject to extension.

[4] While financial globalization facilitates greater diversification of investment and enables risk to be transferred across national boundaries, the growing volume of international trade and capital flows also raises interdependence of financial markets and the potential of greater fluctuations of cross-border capital flows. In this regard, derivatives play a critical role in facilitating the effective management of risks related to a greater market determination of interest and exchange rates. Derivatives also support risk management strategies aimed at cushioning potential currency mismatches of cross-border capital flows from unhedged external lending and borrowing and serve as access instruments for foreign investment in local markets.

[5] *Shari'ah* is not a codified body of law but a principles-based legal system that is subject to interpretation in the way it governs social, economic, and political relationships and institutions (Tredgett and others, 2008).

As Islamic finance is coming into its own, the role of derivatives remains controversial. Legal scholars have alleged that derivatives contain excessive uncertainty *(gharar)*,[6] encourage speculative behavior akin to gambling *(maisir)*, and/or enrich claimants unjustly from the payment or receipt of interest *(riba)* in exchanges between counterparties where money alone (rather than the creation of real assets) is the primary subject of the transaction—three concepts that contravene fundamental principles of Islamic law.[7] In particular, the inherent uncertainty of investor payoffs due to the state-contingent valuation of derivatives is often considered in violation of the overall objectives of Islamic law *(maqasid al-shari'ah)*, which is predicated on the transparency, pre-determinability, and certainty of profit generation based on clearly stated object characteristics and/or delivery results subject to the premise of maintaining an equitable system of distributive justice as a public good *(maslahah)* by avoiding exploitation from ignorance *(jahl)*.

Despite existing reservations, scholars and practitioners alike acknowledge the important benefits of viable hedging instruments, which has helped bring discussions on the utility from derivatives to a head. Many *shari'ah* scholars now accept the application of hedging of actual exposures as an essential element of sound risk management and acknowledge the opportunity cost imposed by a lack of Islamic hedging tools. Risk diversification through derivatives contributes to the continuous discovery of the fair market price of risk. Derivatives also enhance liquidity management, supplement cash markets at lower funding cost, and ensure an efficient transmission of funds from lender to borrowers. The limited availability of suitable *shari'ah*-compliant risk transfer mechanisms, however, deprives financial institutions of these advantages.

The prevailing clerical criticism as not only arrested the development of risk management in Islamic finance, but also affected the way derivatives can serve as hedging tools and help redress perceived market imperfections and financing constraints. The principle-based religious norms set by *shari'ah* codes have also induced considerable heterogeneity of assessments on the *shari'ah* compliance of derivatives. Thus, varying scholarly opinions on the legitimacy of derivatives have led to a total ban on derivatives in some countries but allowed their actual implementation—albeit on a limited scale and via complicated structures—in others. While Islamic finance can synthesize close equivalents to equity and

[6] Kamali (1999) defines *gharar* as "risk, uncertainty, and hazard [in transactions]. In a [sales contract *(bay)*], *gharar* often refers to uncertainty and ignorance of one or both of the parties over the substance, characteristics or attributes of the object of sale, or of doubts over its existence [or possession/ownership by the seller] at the time of contract." However, the term *gharar* defines a broad concept, whose interpretation varies by the type of contracts. In the most generic sense, it refers to contracts with a zero-sum proposition, i.e., the parties enter into a transaction they would rationally reject if they had perfect knowledge about their future payoffs.

[7] It should be noted that, although there seems to be general agreement among scholars for rejecting conventional derivatives as such, the reasons can vary substantially among scholars.

debt, there has been considerable difficulty developing *shari'ah*-compliant instruments that emulate the characteristics of conventional derivatives. So far, Islamic financial institutions and corporates have either resorted to existing conventional derivatives or developed specific *shari'ah*-compliant and customized hedging solutions, so-called "wrappers," to manage risks.

Legal hindrances to the development of a wide range hedging products for managing risks has put many investors and institutions involved in Islamic finance at a disadvantage. Especially the lack of standardized documentation based on universally comprehensible terms often delays the execution of transactions in the Islamic finance industry. As the use of derivatives is gradually gaining ground, various standard setting bodies in Islamic finance have intensified their collaboration to enunciate immutable Islamic finance principles for the benefit of consistent application of religious norms. Also several private sector initiatives are under way to advance the application of Islamic derivatives and enhance their standardization.

However, the recent completion of the first standard derivatives documentation testifies to the greater convergence of *shari'ah* interpretations in this area. In March 2010, after more than three years of negotiations and industry consultations, the International Swaps and Derivatives Association (ISDA) and the Bahrain-based International Islamic Financial Market (IIFM) published the long-awaited Tahawwut (Hedging) Master Agreement (TMA), which standardizes *shari'ah*-compliant swap-based hedging transactions. The TMA is marking an important step toward greater transparency as the first standardized documentation for privately negotiated Islamic derivatives, providing much-needed consistency and predictability of shari'ah-compliant risk management.

Against this background, and based on the current use of accepted risk transfer mechanisms in Islamic finance, this paper explores the validity of derivatives in accordance with fundamental legal principles of the *shari'ah* and summarizes the key issues in the scholastic debate surrounding derivatives. The paper argues that there are indeed a number of Islamic financial instruments with derivative-like features which could help agents reduce risks and that could form the basis for designing *shari'ah*-compatible derivatives. Standard Islamic *asset-based* instruments (such as lease, or *ijara*, agreements) can be decomposed to a set of contingent claims via put-call parity of option pricing, which are equivalent to *implicit* derivatives. Based on a review of accepted contracts and existing industry solutions (or *explicit* Islamic derivatives), the paper offers axioms to set the stage for the permissibility of certain types of derivatives. To this effect, the existing menu of Islamic instruments is viewed as already rich enough to deliver some of the risk management solutions that conventional derivatives offer. Finally, section V concludes by discussing the prospects for *shari'ah*-compliant derivatives.

II. Why Are Conventional Derivatives Controversial in Islamic Finance?

A. General Tenets of Shari'ah in Islamic Finance

Islamic finance encompasses all transactions by two (or more) contractual parties whose actions are subject to prohibitory and permissible norms defined by *shari'ah* law in keeping with the *qu'ran* and the *sunnah* as religious sources.[8,9] More specifically, it stipulates ethical standards that govern the manner in which these contracting parties generate profits from bilateral exchanges that serve a public good in a general sense *(maslaha)*. This premise legitimizes the participatory nature of investment, trading and leasing contracts with a view towards maintaining a mutually beneficial balance between borrowers and lenders.

Shari'ah law requires contractual certainty regarding the generation and distribution of profits arising from mutual contributions of transacting agents. Any financial transaction under Islamic law binds contractual parties to mutual obligations arising from clearly identifiable rights and obligations for which investors are entitled to receive commensurate return in the form of unsecured, state-contingent payments based on direct participation in asset performance. While the reliance on a real or nonmonetary asset, or "asset-backing," might imply risk-sharing between contractual parties as an end result, *shari'ah* law discourages risk-taking *per se* regardless of economic significance.

While *shari'ah* does not object to payment for the use of an asset, the manner in which profits are generated is pre-defined and immutable while profits themselves are not guaranteed *ex ante* but accrue only if the investment itself yields income. Payment and delivery obligations arise from the use of existing or future (contractible) assets as part of a legitimate sale and not from exchange of homogenous goods, such as money, at different points in time, making asset-backing (in the form of tangible investment) an essential element of any commercial transaction under *shari'ah* law (Jobst, 2007a; Jobst and others, 2008).

The process-driven view on the permissibility of profits lies at the heart of *shari'ah*-compliant contracts, which substitute the permanent transfer of funds at a specified interest rate (underpinning the "self-generating" profit proposition in conventional finance) with the

---

[8] The latter refers to the record of the sayings and deeds of the prophet Mohammed, which are clarified in the *hadith*, a collection of reports of statements and actions of the prophet (and the approval of something said or done in his presence) as an essential supplement to the *qu'ran*. For *Sunni* and *Shia* Muslims rely on six and three major *hadith* collections, respectively.

[9] In practical terms, the principle of permissibility *(ibaha)* under established religious principles is generally taken to mean that all commercial transactions are *shari'ah*-compliant in the absence of a clear and specific prohibition by way of religious censure *(taqlid)* (Uberoi, 2010).

profitable transfer of assets, which restricts financial transactions to only interest-free forms of exchanges (Subhani, 2011). While interest payments in conventional finance represent the contractible cost for funds tied to the amount of principal over a pre-specified lending period, *shari'ah*-compliant finance prohibits interest *(riba)*.[10] In this regard, interest income is not seen as the *effect* of business transactions but as the result of an undesirable *process* by which such an effect is achieved. Thus, the prohibition of interest applies to any capital gain derived from the quantitative inequality of two goods or services whose values are determined by purchase and sales contracts.[11] The rationale behind this stance is motivated by the unlawful "self-generation" of profits *(ribawi)* resulting from the pre-determination of interest-based compensation rather than the outcome of trade or shared investment *(bay'awi)* in a particular asset or service by two different and opposing counterparties.

Islamic finance aims at the creation of heterogeneous goods and/or services by two or more participating parties ("co-generation") while prohibiting activities that involve profits from exchanges of the same goods and/or services. Thus, *shari'ah* law rules out the (back-to-back) trading of the *same* object at *different* prices (or quantities) between buyer and seller *(bay al-inah)*, which also extends to the trading of debt (or promises) *(bay dayn bi-dayn)* at a price different than its face value (regardless of whether the transaction occurs spot or in the future) (see Table 1). The *hadith* "gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates, salt for salt, like for like, equal for equal, hand to hand. If these types differ, then sell them as you wish, if it is hand to hand" implies a prohibition of an equal and instantaneous exchange of homogenous goods although not by means of a direct negative command *(amr nahi)* but a positive affirmation that renders the transaction pointless. If there is a trade of different goods within the same category (either "money" or "general commodities"),[12] such as gold for silver, this *hadith* clearly endorses the exchange of different quantities or units (due to different prices) as long as the transaction is completed on the spot *(yad bi-yad)* so that the settlement of both counter values in a transaction is

[10] *Riba* is generally understood as the realization or prospect of an economic advantage by way of excessive compensation *(riba al-fadl)* or deferment of asset delivery and/or payment *(riba al-nasi'a)*. It applies to any transaction that involves profitable exchange of two or more species *(anwa)* that belong to the same genus *(jins)* and are governed by the same efficient cause *(illah)*. The prohibition of *riba* is upheld if deferred settlement is disallowed even if the rate of exchange between two objects involves no gain to either party.

[11] The general consensus among Islamic scholars is that *riba* covers not only usury but also the charging of interest and any positive, predetermined rate of return that is guaranteed regardless of the performance of an investment or granted benefit (Iqbal and Tsubota, 2006; Iqbal and Mirakhor, 2006). While the elimination of interest is fundamental to Islamic finance, *shari'ah*-compliant investment behavior also aims to eliminate exploitation pursuant to Islamic law.

[12] Although trading of debts is forbidden in many Islamic jurisdictions, it is allowed in others (e.g., Malaysia) under the concept of *bay al-dayn*.

completed in the same contracting session *(majlis*), which rules out the extraction of profits from the use of the asset(s).[13]

Table 1. Permissible Trading Assets Under Islamic Law

	Gold	Silver	Wheat	Barley	Dates	Salt
Gold	🕘 =	🕘	☑	☑	☑	☑
Silver	🕘	🕘 =	☑	☑	☑	☑
Wheat	☑	☑	🕘 =	🕘	🕘	🕘
Barley	☑	☑	🕘	🕘 =	🕘	🕘
Dates	☑	☑	🕘	🕘	🕘 =	🕘
Salt	☑	☑	🕘	🕘	🕘	🕘 =

Note: This table illustrates the possible pairing of traditional commodities ("money": gold and silver; "staple foods": wheat, barley, dates, salt) for *shari'ah*-compliant trade according to the *qu'ran*. These categories are to be viewed as "proxies" for similar commodities that are more prevalent today. The symbols signify that trade is legitimate only if it occurs (i) spot (as indicated by the clock symbol) without profit, and/or (ii) for the consideration of the same quality and quantity (as indicated by the equality sign). Thus, the cells that contain both symbols (colored in red) constitute the most restrictive form of trade, i.e., any profitable exchange of two or more species *(anwa)* that belong to the same genus *(jins)* and are governed by the same efficient cause *(illah)*. All other combinations of commodities can be traded without restriction (as indicated by the checked boxes).

Besides the prohibition of interest-based forms of income *(riba)* and unethical (or socially detrimental) activities *(haram)*, *shari'ah* also prohibits betting and gambling *(maisir)* as sinful behavior in contracts with a remote probability of positive payoffs to the investor ("game of chance"), as well as preventable contractual uncertainty and/or contingency risk of performance *(gharar)*,[14] including all financial derivative instruments and agreements aimed at speculative trade (rather than genuine hedging[15] and/or equitable risk sharing) that result in payments *without* an underlying asset transfer.

[13] While even a slight delay *(nasi'a)* might render a transaction invalid, in some cases, such delay would be in violation of pristine *shari'ah* principles and can be justified only as within the doctrine of extreme necessity.

[14] There is no standard definition of *gharar*, which may also result from ignorance, inadequate information or lack of transparency.

[15] Hedging defines the process of reducing risk in return for the payment of a fair price for such risk transfer, which contrasts with speculation, which aims at risk-seeking without full protection against any loss event.

These overarching requirements for a sale to be considered valid *(sahih)* under Islamic contract law distill a number of more specific conditions, which pertain to *shari'ah*-compliant derivatives:

(i) *price certainty* and *balance between borrowers ("protection buyers") and lenders ("protection sellers") without manipulation of risk*. While the fair value of an asset (and the return from investment) are inherently uncertain, the *shari'ah* prohibition of *maisir* stipulates that transactions are tantamount to gambling or speculation if they (i) generate returns from money as a store of value (rather than a medium of exchange to execute trade or shared investment) and (ii) have the manipulation of risk as their primary or sole purpose. While commercial risk-taking is deemed permissible, the (probability of a certain) price to be paid for an asset is definite (although potentially adjustable to the fair value in case of material changes) and must be known to both parties *ex ante*. Uncertain returns or payment obligations that are incalculable *ex ante* and divorced from (required) asset performance and/or the rendering of a service can amount to speculation. However, contracts that are premised on the reduction of risk to facilitate trade (and quite possibly enhance productivity) could be considered acceptable under the religious maxims of *shari'ah* (see Box 1).

(ii) *identifiable characteristics and certainty about delivery results (in terms of quantity and quality).* In order to avoid *gharar* ("that with hidden consequences" or "that whose nature and consequences are unknown") and *jahl* (ignorance), sales must be immediate and absolute, which requires that the object of a *bona fide* trade or exchange must exist (or come into existence based on demonstrated real capital input) and its characteristics clearly identifiable before the transfer of title takes place. Exchanges involving asymmetric information between contracting agents imply the risk of delusion or deception (Al-Suwailem, 1999-2000), especially if payment obligations and delivery results differ from rational expectations. Such *contractual* uncertainty could lead to exploitation (Vogel and Hayes, 1998) if they generate unilateral (or zero-sum) gains from state- or time-contingent prices, resulting in divergent impacts on different agents. Agreements that attribute sales to future dates, sales contingent on future events, or promises of future sales are not considered enforceable contracts – with the exception of forward contracts on agricultural commodities *(salam)* or manufactured goods *(istisna'a)* with delayed delivery and payment respectively, whose premise of creating commercial value ("diversity of trade") overrides the prohibition of term contingencies until fulfillment of the contract;[16] and

[16] Fulfilling unilateral promises *(wa'ad)* is considered honorable by all Islamic schools of thought *(madh'hab)* under *Sunni* and *Shia* Islam, but not necessarily a legal requirement. Note that the general permissibility of forward contracts under *shari'ah* could be deduced from the concept of *salaf* (forward trade), which requires the identification of a specific quantity, specific weight and for a specific period of time – conditions that a generally met in contemporary futures market trading.

(iii) *asset ownership* and *prohibition of leverage (underfunding*). *Shari'ah* principles align financial claims with investments in real assets, which marginalizes the possibility of underfunding through leverage while fostering equity ownership (in lieu of financial leverage from debt creation without underlying asset values).[17,18] Thus, any reference asset is required to be in the (constructive) ownership and possession of the creditor (or, in the context of risk management, the protection seller) at the inception of a transaction in order to ensure the asset-backing of financial obligations (which also "collateralizes" the performance of contractual obligations) and the risk and reward sharing that follows from it.

With these considerations in mind, it is possible to examine the reasons that several scholars have assessed the suitability of derivative instruments in Islamic finance.

B. Current Discussion on Derivatives under Shari'ah Law

Since the object of a transaction may not exist at the time a contract is signed, Islamic scholars argue that derivatives could lead to excessive uncertainty, unnecessary risks *(gharar)* or speculation that verges on gambling *(maisir)* due to state-contingent pricing and the absence of predetermined object characteristics and—points (i) and (ii) in Section II.A above. In particular, there is concern about the fact that absence of an absolute reference

[17] Note, however, that financial and/or economic leverage in Islamic finance can arise from one (or more) contracts with unilateral deferment of payment, delivery or both. For instance, a long (short) position in a *bay bithaman ajil* (*istisna'a*) contract implies the right to buy (sell) an asset at a specified maturity date at a pre-agreed price for spot delivery (payment) but delayed payment (delivery), which generates leveraged returns compared to spot settlement. In the case of unilateral promises *(wa'ad)*, the contract terms are fixed while both payment and delivery are delayed to some future date subject to willingness of the promisee to exercise the option to buy or sell.

[18] Also covered short-selling (without prior endowment) can occur if short and long positions in *salam* and *murabaha* contracts are combined to replicate profit from borrowing an asset that is assumed to decline in value in the future. In this case, the acquisition of an existing asset in a cost-plus sale from a third-party *(murabaha)* contract is funded by a short position of a *salam* contract, which implies the obligation to sell the asset at a specified future date. The seller realizes a profit from a decline in value of the asset over a pre-determined maturity term if the spot price received for the forward sale of the deliverable asset via the *salam* contract exceeds the spot price paid for purchase of the asset via the *murabaha* contract (or the discounted fair value of the asset at maturity). While this transaction does not satisfy the strict definition of short selling, which involves the sale of an asset that is not owned by the seller, its economic result is the same. Alternatively, for uncovered short-selling, the *murabaha* contract could be replaced with a long position in a *bay bithaman ajil* contract to buy the asset at the maturity date of the *salam* contract, which would leverage the transaction (with the short seller holding both the asset and the proceeds from sale until the final settlement of both contracts). Similarly, a short position in a leaseback-repurchase agreement *(ijara thumma al-bay)* implies profits (to the seller) from a decline in the value of the reference asset if the repurchase price is higher than the future value of the spot price at the time of repurchase (after controlling for interim lease payments). See also Mohamad and Tabatabaei (2008).

value could result in zero-sum payoffs of both sides of the bargain (Kamali, 2007) and possible exploitation of the ignorant (Smolarski and others, 2006). That being said, standardized contract specifications, advanced market conduct, and supervisory controls may render the latter argument invalid, which leaves only the question of how the *ex ante* protection against downside risk via premium payments can be reconciled with the potential for unlimited upside potential in contracts that may pay off at a pre-determined time in the future, such as options.

Another key argument presented against derivatives in Islamic finance pertains to the counterparty risk (and associated potential of avertable uncertainty) from the sale of a nonexistent asset or an asset not in the possession of the seller *(qabd)* (i.e., taking possession of the item prior to resale, which negates the *hadith* "sell not what is not with you"). Derivatives supplement cash markets as alternatives to trading underlying assets by providing hedging and low-cost arbitrage opportunities. However, many derivatives contracts are used for speculation (and are deficient of actual hedging need), which belies equal risk sharing *(sharik)* in actual ownership of the reference asset(s) by all contractual parties subject to religious restrictions governing lending and profit-taking (Jobst, 2007b; Ahmad, 2000).[19]

A majority of scholars continue to reject futures and options as unconcluded contracts, because unfunded or partially funded transactions do not imply legal ownership (and possession) of the reference asset, which would guarantee the delivery of the contractual asset with certainty at a future date (Usmani, 1999). Although Khan (1995) concedes that even in the contemporary 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 [the ones] laid down by the Prophet [Mohammed *(sallallâhu 'alayhi wasallam)*] for forward trading," he also cautions about the potential of unnecessary risks arising from speculation, exploitation (given that payment obligations are contingent on the intertemporal valuation), and the perceived lack of a physical asset ownership, which render conventional futures nonpermissible under *shari'ah* law.[20,21]

Other criticism that has been raised by a number of Islamic scholars relates to the deferment of both actual asset delivery and final payment in conventional derivatives contracts, such as

[19] See also ISRA (2011).

[20] Khan (1995) substantiates the permissibility of futures contracts on the grounds of the accepted forward trade *(salaf)* for a specific quantity, specific weight and for a specific period of time—much like modern day futures contracts. However, this line of argumentation ignores the fact that unless the price to be paid at a future date is pre-specified the payment event is not considered to occur with certainty. See Bacha (1999) for a more detailed summary of some inconsistencies in arguments among scholars in this regard.

[21] In his discussion of different types of transactions in currency markets, Khan (1991) concludes that conventional contracts in forward, futures and swaps markets do not accord with Islamic principles.

futures. Futures are generally priced *marked-to-market* (MTM),[22] which requires interim payments ("margin calls") by the party whose contingent claim has lost value ("out-of-the-money").[23] In addition, parties to the transaction tend to cash settle the price difference upon close-out or maturity. While such arrangements typically help mitigate contingency risk of asset delivery and ensure definite performance by means of cash settlement (if physical delivery fails or one party defaults), they have been deemed noncompliant with Islamic law, given that same object of exchange cannot be bought and sold between two parties at different prices and with time delay of payment, delivery or both (due to the use of the object over the contract period) (*bay al' inah*). Scholars find that the interim cash payments due to margin requirements and cash settlement (rather than physical delivery of underlying assets) do not meet the *shari'ah* principles of underlying asset transfer and certainty about final payment obligations.[24] Intertemporal (re-)pricing[25] turns the contract into a debt sale without the element of a genuine transfer of asset ownership. Similarly, offsetting a contractual obligation via cash settlement (contingent on a particular economic outcome) would portend to a pure cash exchange without asset ownership and/or the creation of real assets, which violates *shari'ah* principles, and, thus, would be without proper cause *(illah)*.[26]

However, futures-like instruments do exist in Islamic finance. For instance, the exchange of currencies or means of payment in a *sarf* contract requires the transaction to take place at spot before the contracting parties disperse (see Table 1). Also future delivery of

[22] MTM defines the process of constantly matching the valuation of an asset to the current market price, which involves monitoring the effect of variations to contingencies (e.g., market conditions, micro- and macroeconomic indicators, price volatility, quality considerations, political risk, etc.) on the forecasted spot price (i.e., expected future price) of an asset on a specified delivery date in order to price a derivatives contract. For instance, if the asset price falls below (increases above) the contracted strike price a call option would be "out-of-the-money" ("in-the-money").

[23] Thus, these derivatives almost never involve delivery by *both* parties to the contract and "... in most [...] transactions [,] delivery of the commodities or their possession is not intended" (Usmani, 1996).

[24] In a similar manner, the issue of close-out netting in derivatives contracts long delayed the draft guidelines of the ISDA-IIFM master agreement (Khasawneh, 2008). It appears, however, the valuation of certain positions in derivatives contracts rather than settlement concerns seem to have been the root cause of much of the debate prior to the current proposal.

[25] A *shari'ah*-compliant solution to this problem could be the periodic adjustment of total (re-)payment commensurate with any deviation of the underlying asset value from a pre-agreed sales price at pre-agreed points in time.

[26] In contrast to the majority of scholars, the Sharia Advisory Council of the Securities Commission of Malaysia, however, has certified the permissibility of futures trading of commodities as long as the underlying asset meets *shari'ah* requirements.

commodities is permissible (as in *salam* and *istisna*), but payment must be immediate, which rules out MTM pricing (Jobst, 2008b).[27]

Box 1. The Five Axioms of Shari'ah-compliant Financial Derivatives[1]

In principle, financial derivatives may be compatible with *shari'ah* law if they:

(i) address genuine hedging demand associated with effective and intended ownership *(qabd)* in an identifiable asset or venture,
(ii) guarantee certainty of payment obligations arising from contingent claims on assets with clearly defined object characteristics,
(iii) disavow deferment of contractual obligations *(nasi'a)* from the actual and direct transfer of a physical asset as the object of an unconditional transaction, except for cases when the doctrine of extreme necessity applies,
(iv) contain collateralized payment for the use of risk protection but rule out provisions aimed at generating unilateral gains from interim price changes of the underlying asset beyond the original scope of risk sharing *(sharik*) among counterparties parties, which favors win-win situations from changes in the value of the reference asset,[2] and
(v) eschew all prohibited sinful activities *(haram)*, in particular those deemed similar to gambling *(maisir)* and speculation due to uncertainty *(gharar)* by means of clearly stated object characteristics and/or delivery results, which mitigate the risk of exploitation from ignorance *(jahl)*.

In addition, *shari'ah*-compliant derivatives must also be employed in keeping with the precept of maintaining an equitable system of distributive justice as a public good *(maslahah)*.

[1] See Jobst (2007b).
[2] For instance, the issuance of stock options to employees would be an ideal candidate for a *shari'ah*-compliant derivative. While grating such contingent claims involves a transfer of wealth from firm owners to employees, it carries the potential creating incentives for higher productivity, resulting in larger corporate profits, which, in turn, would offset the marginal cost of greater employee participation in stock price performance.

For similar reasons, several scholars also consider options in violation of Islamic law. Options redress the contingency risk of definite asset delivery (and the associated exposure to discretionary nonperformance) in forward and futures in return for the payment of an upfront, nonrefundable premium. Holders of a call (put) option ("promisees") acquire from the seller ("promissor") the right (but not the obligation) to acquire (sell) the underlying asset at a pre-determined price during a specific period of time. Therefore, options do not only serve to hedge adverse price movements and take advantage of favorable price movements at low transaction cost, but they also cater for contingencies regarding the delivery or receipt of the asset. Usmani (1999) observes that "according to the principle of the *shari'ah*, an option is a

[27] However, it is worth noting that under the rules of *sarf*, the concept of *al-muqasah* allows the settlement of debts in different currencies between two parties.

promise to sell or purchase a thing on a specific price within a specified period. Such a promise in itself is permissible and is normally binding on the promisor [like a *wa'ad* contract]. However [,] this promise cannot be the subject matter of a sale or purchase. Therefore, the promisor cannot charge the promisee a fee for making such a promise."[28]

Nonetheless, it seems that the question of whether there is scope for options under Islamic law has not been answered conclusively so far (see Box 1).[29] In many instances, *arbun* (down payment) and *wa'ad* (unilateral promise) have been used to design *shari'ah*-compliant instruments that resemble call options (El-Gamal, 2006; Uberoi and others, 2009). Given that the intrinsic value of an option is determined by changes in the fair value of the reference asset with zero-sum payoffs, however, only the time value of an option (independent of the realization of unilateral gains) appears permissible. The inherent leverage in options and their detachment from the reference asset(s) remain controversial. Nonetheless, Bacha (1999) suggests that disqualifying options on the grounds of *gharar* and *maisir* presumes that they are primarily transacted for speculative gains and not genuine hedging – a claim that may not be accurate in most cases.

In summary, insufficient (or absent) asset-linkage and the potential of unilateral gains in many derivatives seem to supplant the concept of equitable risk sharing and contractual certainty, which define the perimeter of religiously acceptable risk management behavior under Islamic law. Although the avoidance of counterparty risk of periodic payments and contingency risk of definite performance is essential to establishing possible *shari'ah* compliance of derivatives, conventional remedies to these contractual uncertainties (using futures or options) seem to controvert Islamic principles. For instance, the assurance of both payment and delivery through state-contingent (periodic) cash settlement (in the case of futures) and provisions for unilateral deferment (in the case of options) imply a zero-sum proposition *ex ante* and intertemporal debt creation without underlying asset transfer (Jobst, 2008a).

In addition, some controversial features of conventional derivatives, might have been more relevant in the past, when simple, unsupervised, and unorganized capital markets implied considerable counterparty and contingency risk. This could make conditions of mutual gain, value creation and asset ownership—which are motivated by the same stability-enhancing

[28] Even if options were considered permissible under Islamic law, there are further aspects to be considered. An interim value change of the reference asset during the maturity term of an option contract implies unilateral gains from shared business risk, which would only be *shari'ah*-compliant if the option had no intrinsic value at inception for a pre-specified strike price in the future. The realization of these gains, however, is conditional on eventual asset ownership (after execution of the option) rather than the sale of the option.

[29] Kamali (2001) finds 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 Qur'an has granted."

rationale but implemented differently—less binding on *shari'ah*-compliant risk management strategies if the underlying intent of Islamic principles were revisited under current market conditions. In today's more developed financial markets, where transactions are easier to document and enforce, a more flexible interpretation of some of these principles that preserves the main moral tenets of Islam might be warranted.

III. Implicit Derivatives in Islamic Finance

The debate on the religious permissibility of conventional derivatives often fails to acknowledge that the main Islamic contracts already contain derivative-like elements from which contractual parties can benefit. This is because *shari'ah*-compliant lending establish structural arrangements of contingent (payment) claims based on either (i) some asset transfer from lenders to borrowers or (ii) the future value of asset risk shared by two (or more) parties, which relate to conventional finance principles. The three different ways of profitable lending and investment in Islamic finance,

(i) synthetic loans *(debt-based)* through sale-repurchase agreements (or back-to-back sales) of borrower- or (third party-)held assets with instantaneous title transfer (e.g., *murabaha*),
(ii) lease contracts *(asset-based)* through sale-leaseback agreements (operating lease) or leases of third-party-acquired assets with purchase obligation components (financing lease) (e.g., *ijara*), and
(iii) profit-sharing contracts *(equity-based)* of future assets in the form of partnerships, private equity investments or management contracts (e.g., *musharakah*, *mudarabah* and *whakala*),

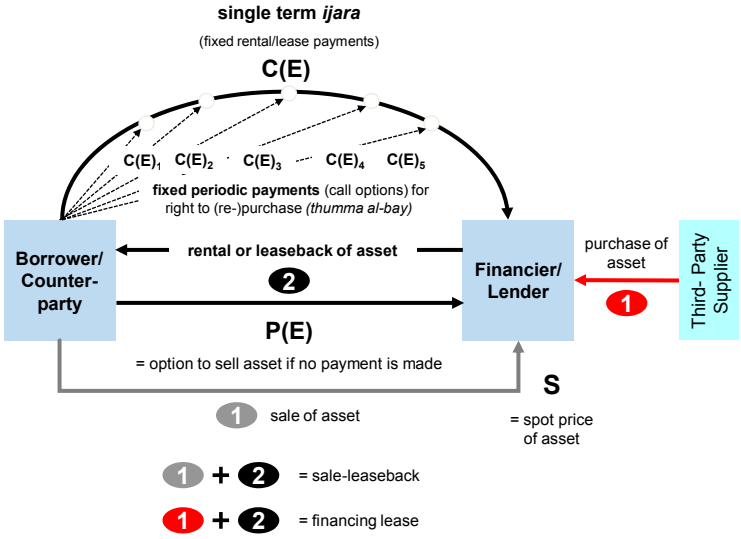
can be shown to contain "implicit" derivative-like features via "put-call parity".[30] For instance, the basic structure of a financing lease contract *(ijara)*, the borrower leases from the lender one or more assets that have previously been acquired from either the borrower ("sale-leaseback") or a third party ("financing lease") at spot price S. The lender entitles the borrower to (re-)gain ownership of the assets *(thumma al-bay)* at time T by writing a call option $-C(E)$ with constant strike price E (which equals the notional future purchase price) in return for rental payments. At the same time, the lender retains the right to sell A (in the form of a put option $+P(E)$) due to asset ownership throughout the life of the transaction.[31] In

[30] The relation between the put and call values of a European option on a non-dividend paying stock of a traded firm can be expressed as $PV(E)+C=S+P$. $PV(E)$ denotes the present value of a risky debt with a face value equal to exercise price E, which is continuously discounted by $exp(-rT)$ at a risk-free interest rate r over T number of years. In our case of a lending transaction, the share price S represents the asset value of the funded investment available for the repayment of terminal value E.

[31] The asset-based lending arrangements provide collateralization until the lender relinquishes asset ownership at the maturity date.

substance, this "creditor-in-possession"-based arrangement with *ex ante* payoff is *S-C(E)+P(E)* amounts to a conventional loan with present value *PV(E)* (Jobst, 2007a and 2007b). [32] In a more realistic depiction, this put-call combination represents a series of cash-neutral, maturity-matched, risk-free (and periodically extendible) *synthetic* forward contracts $\sum_{t=1}^{T}\left(P_t(E)-C_t(E)\right)$ over a sequence of rental payment dates *t* (see Figure 1).

Figure 1. Basic *Ijara* Contract[33]



Both creditor and debtor have the incentive to honor the terms of the contract irrespective of changes in asset value (in accordance with the prohibition of *gharar* and *maisir*).[34] By holding equal and opposite option positions on the same strike price at inception, there are no objectionable zero-sum gains or contractual uncertainty of either asset characteristics or delivery results, except in the case of counterparty default. The bilateral nature and asset-

[32] The lease payments received from the borrower wash out in this representation.

[33] The "implicit derivative" in basic Islamic contracts, such as *ijara*, with permanent asset transfer constitutes a series of individual (and periodically extendible) cash-neutral (i.e., self-funding), risk-free forward contracts (-*C(E)+P(E)*) ensures definite performance.

[34] Derivative elements are also part of *debt- and equity-based* Islamic finance. In *debt-based* Islamic finance, lenders create borrower indebtedness from the lender's purchase of a tangible asset from a third party on behalf of the borrower. Borrowers pay the call option premium *C(E)* as periodic payment to the lender for the use of the reference asset over the investment period *T*. In profit-sharing (*equity-based)* agreements, the lender receives a pay-out *C(E)* in accordance with a pre-agreed disbursement ratio only if the profits from the investment exceed the initial investment amount at maturity *T*.

backing of such "implicit derivatives" (i) guarantee that the purchase (or sale) associated with agreed asset delivery can be effected for a future date (definite performance) and (ii) preserve entrepreneurial investment (i.e., asset ownership) consistent with the *shari'ah* principles. Moreover, neither the creditor nor the debtor stands to benefit from asset price fluctuations before maturity. The inability of creditors (debtors) to cash in on a higher (lower) asset price relative to the contractually agreed repayment amount prevents interim unilateral gains (which could otherwise arise from margin requirements in conventional derivatives).[35]

Table 2. Classification Scheme of Derivatives in Islamic Finance

Type of Derivative[1]	**Implicit Derivatives**	**Legacy Derivatives**	**Explicit Derivatives**
Forward[2]	*ijara thumma al-bay*, *murabaha*[3], diminishing equity-*musharaka*	*salam*, *bay mu'ajal, bay bithaman ajil* (BBA), *istisna*	various commodity hedges and "wrappers"
Option	–	*wa'ad, arbun*, *al-shart, (kyiyar al-tarwih)*	foreign exchange option contracts
Swap	–	*tawarruq, al-muqasah*	*wa'ad*-based swap, profit rate swap, cross-currency swap
1.	2.	3.	4.	5.

[1] Examples of Islamic contracts in each cross-classification are listed according to their main economic objective. Some contracts may have additional features that are missing in their conventional finance analog, e.g., *arbun* vs. options.
[2] All existing *shari'ah*-compliant derivatives are bilaterally negotiated and are traded over-the-counter (OTC) without a formalized, exchange-based clearing and settlement. There are not Islamic futures contracts due to the prohibition of cash settlement without underlying asset transfer and profit-taking from an exchange of the same category of asset (see Table 1).
[3] As sale-leaseback transaction.

However, the forward element of Islamic lending contracts, like conventional forwards, involves problems of double coincidence and counterparty risk. Parties to forward agreements need to have exactly opposite hedging interests that coincide in the timing and amount of protection sought against adverse price movements ("double coincidence"). In light of the privately negotiated terms of forwards and the absence of centralized (or third-party) clearing and settlement, there is also a high risk of one party defaulting if the spot price of the underlying asset were unlikely to converge to the forward price (i.e., the originally agreed repayment amount) after a significant increase (decrease) in value prior to the maturity date. Although the non-defaulting party would have legal recourse (up to the

[35] That said, any deviation of the future asset value from the final repayment amount constitutes accepted business risk at inception.

reliance interest of any deviation from the pre-agreed price),[36] the process of seeking contractual enforcement can be lengthy, cumbersome and expensive, especially in areas of conflicting legal governance of commercial law vs. *shari'ah* law as a *matter of form*.[37]

IV. EXISTING ("EXPLICIT") DERIVATIVES IN ISLAMIC FINANCE

While the historically accepted, *implicit* derivative elements in standard Islamic contracts ensure definite performance and equitable risk sharing between borrowers and lenders, and, thus, are not deemed objectionable on religious grounds, the *explicit* use of derivatives remains highly controversial—as argued in section II—and is still in a nascent phase. The main obstacles to *shari'ah*-compliance of conventional derivatives are: (i) the state-contingent valuation, (ii) the absence of underlying asset transfer and/or pre-existing ownership, and (iii) the profitable exchange of the same commodity (possibly in combination with some delay in delivery and/or payment) to settle transactions (see Table 1).

Several forms of Islamic finance, however, contain contingent provisions that go beyond the synthetic forward element ("implicit derivative") to a point where they do no longer fully meet all conditions stipulating *shari'ah*-compliance. While some may involve either future delivery of the contractual good or the delayed payment of an agreed sales price,[38] the use of these contracts is germane to particular assets subject to precise religious interpretation, which restricts the extent to which these derivative-like structures can serve as general hedging tools. The most prominent examples of such "legacy derivatives" (see Table 2) are contracts with different installment rates as well as delayed repayment or asset delivery schedules, such as *salam*[39] (deferred delivery sale), *bay bithaman ajil* (BBA)[40] (deferred

[36] In general, reliance interest defines the losses which the innocent party has sustained as a consequence of relying on the wrongdoer's promise. If payments have been made, this could also involve interest in recovering the amount by which one party has enriched or benefited the other ("restitution interest").

[37] In conventional finance, these obvious shortcomings of forwards have motivated the use of futures, which are standardized forward contracts in terms of size, maturity and quality. In Islamic finance, however, futures appear to contravene *shari'ah* principles in the way they limit counterparty risk through cash settlement without underlying asset transfer.

[38] A commodity *murabaha* is a frequently used form of wholesale debt-based Islamic finance between a bank and its client to replicate short-term money market deposits and medium-term syndicated loans. Such a contract involves the sale on a deferred payment basis of a commodity, usually metals, at the market price plus an agreed profit margin to the borrower, who raises the required funds by immediately selling the asset to a broker or a financial institution.

[39] *Salam* contracts are mostly used in agricultural finance. They closely resemble conventional futures contracts and are sometimes considered an independent asset class outside the asset spectrum of *murabaha*. *Salam* contracts are exempt from the requirement that the seller of the good must be in possession of the good at the time of signing the contract. On the other hand, the concept of *salam* applies only to commodities. See Batchvarov and Gakwaya (2006) for a more detailed discussion of *salam* from a market perspective.

payment sale), and *istisna* (purchase order). Forward contracts under *salam* (*BBA*) allow deferred delivery (payment) of agricultural commodities. Similarly, an *istisna* contract provides pre-delivery (project) finance for some yet *nonexistent* manufacturing goods the borrower promises to deliver over the term of the lending agreement according to contractual specifications. Installment payments are also a possibility in this context. Other lesser known *shari'ah*-compliant alternatives to conventional derivatives are *arbun*, *al-shart, kyiyar al-tarwih* and *wa'ad*.

The concept of *arbun* could be invoked to justify the design of option-like securities. In *arbun*, the buyer offers a forfeitable down-payment as an option on the conclusion of a sales contract. As opposed to a conventional conditional sales contract, the down-payment for *arbun* is deducted from the sales price if the option is exercised, which results in the same economic outcome but possibly two different valuations of a call option and *arbun* on the same reference asset.[41] Like a conventional option, an *arbun* contract provides an element of contingent insurance in that the buyer of a commodity can lock in a specific price by signing a call option. However, the use of *arbun* remains contested.[42] While Ayub (2002 and 2007) cites a resolution by the *Fiqh Academy* (May 9–14, 1992) stating that "option contracts as currently applied in the world financial markets ... are not permissible in *shari'ah*," in 1993, the Fiqh Academy ruled in favor of down-payment sales (El-Gamal, 2006).

The *wa'ad* contract is a unilateral promise and contains option characteristics. According to the Fiqh Academy in Kuwait (December 10–15, 1988), a *wa'ad* in the context of a *murabaha* sale represents a morally binding and legally enforceable contract if the promise is unilaterally binding on one party and the promisee has incurred liabilities. Similar to *arbun*, *wa'ad* gives rise to an asset claim but does not necessarily involve an upfront cash outlay, and, thus, is essentially unfunded. *Al-shart* represents a contractual provision that allows either party (or one of them) to confirm or cancel the contract within a pre-specified time frame. Also the right to undo a purchase if the seller allows such a warranty as part of the terms of the sale amounts to an option that is considered permissible under *shari'ah* law. A specific version of this is the option of reflection *(kyiyar al-tarwih)*, which allows a party to withdraw from a contract within three days if misrepresentation or negligence of the other party materially affected the object of the contract (Obaidullah, 1998). While such warranty

---

[40] A *bay bithaman ajil* (BBA) contract is primarily used for long-term financing and does not require the lender to disclose the profit margin.

[41] The valuation difference between a call option and *arbun* arises from the deduction of an ex *ante* down payment from the strike price, which increases the likelihood of the option "being in the money" in return for an initial investment.

[42] Three schools of thought *(madh'hab)* under *Sunni* and *Shia* Islam have declared *arbun* contracts void.

would not meet the definition of a separate and distinct contractual right, it derives economic value from the availability of legal recourse.

Amid weak reliance on capital market financing in many Islamic countries and the unresolved debate on risk management among *shari'ah* scholars, other types of derivatives ("explicit derivatives," see Table 2) remain few and far between. Most approved derivatives are either adaptations of standard Islamic contracts or involve new hedging technologies ("wrappers") offered by banks to issuers rather than investors of Islamic securities. Only a few products have been developed by various banks for managing currency and interest rate risk. While recent innovation in this area has focused mostly on highly customized option contracts as well as commodity hedges, cross-currency swaps and so-called "profit rate swaps" constitute the most widely accepted forms of newly established *shari'ah*-compliant derivatives.[43]

Given the prohibition of interest income and the exchange of the same assets for profit (which includes the cost-plus sale of debt), for Islamic investors to execute a swap, both parties instead agree to sell assets—usually commodities—to each other for deferred payment. In the case of cross-currency swaps, the contractual parties exchange commodities in the form of a cost-plus sale and settle their mutual payment obligations in different currencies according to a pre-defined installment schedule (see Box 2, Figure 2). If the parties wanted to hedge term risk (i.e., the risk of the fair market values of the exchanged assets to diverge over the life of the transaction)—either in addition to the cross-currency swap or as a separate transaction—they would enter into a profit rate swap. In this Islamic version of an interest rate swap, the two sides exchange periodic fixed-rate for floating-rate payments (see Box 2, Figure 3). After selling a designated commodity to the protection seller, the protection buyer receives periodic fixed-rate payments in return for floating rate installments. Both types of swaps are crucial hedging mechanisms for Islamic issuers with business interests in several countries. For instance, if a corporate in the GCC would want to raise funds in Malaysia without incurring the local currency (and interest rate) risk, it would naturally choose to complete a *shari'ah*-compliant currency (and profit rate) swap transaction with a Malaysian counterpart.

[43] In conventional finance, we generally distinguish between two main types of swap contracts: (i) "interest rate swaps," wherein interest payments are made in the same currency, and (ii) "currency swaps," which involve different currencies. The swapped interest rate payments can either be floating, fixed, or a mixture of floating and fixed.

Box 2. Islamic Swap Transactions—Cross-Currency and Profit Rate Swaps

Shari'ah-compliant swap transactions are traded bilaterally (i.e., non-standardized) and combine opposite, maturity-matched *murabaha* contracts with instantaneous (or periodic) transfer of similar assets in order to create mutual (and fully collateralized) payment obligations (inclusive of the premium payment for the use of the asset) until the maturity date.[1] The two most prevalent contracts are cross-currency and profit rate swaps, with the latter one shari'ah-compliant version of interest rates swaps.

The basic structure of a cross-currency swaps (CCS) combines two commodity *murabaha* sale contracts that generate offsetting cash flows in opposite currencies with maturities desired by the contracting parties (Tredgett and others, 2008). In July 2006, Standard Chartered arranged the first ever derivative structure of this kind for Bank Muamalat Malaysia.

Figure 2. *Murabaha*-based Cross-Currency Swap.

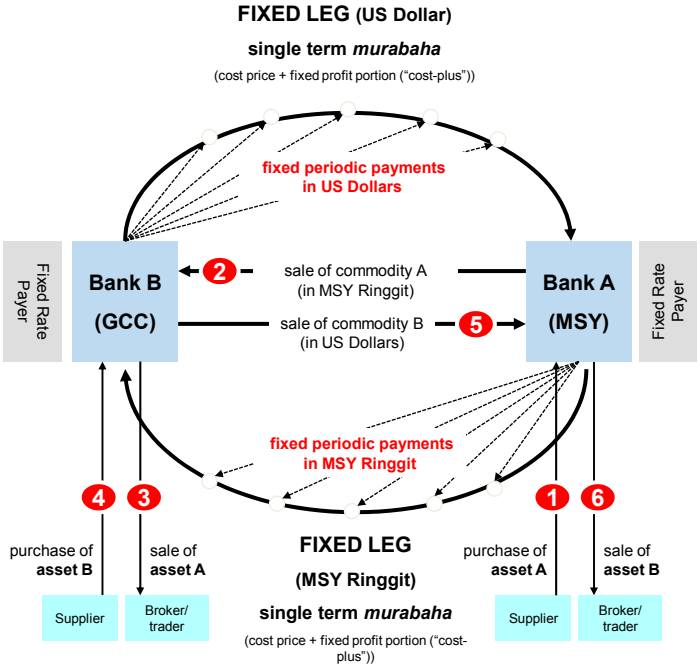


Figure 2 above illustrates the functioning of a CCS. Consider the case of a Malaysia-based Islamic bank that raises revenue in Malaysian Ringgit but faces payments in U.S. dollars over a certain period of time. To eliminate this foreseeable currency mismatch, the bank could substitute its future outflows in U.S. dollars for outflows in Malaysian Ringgit by entering into a CCS with a U.S. dollar-paying counterparty. Under this contract, the Malaysia-based Islamic bank purchases an amount of commodity A denominated in Malaysian Ringgit and sells it to a GCC-based Islamic bank on a *murabaha* basis (i.e., against future installments). Simultaneously, the GCC-based bank also completes a *murabaha* agreement for commodity B, but denominated in U.S. dollars. By combining the two *murabaha* contracts, each denominated in a different currency, both parties receive cash flows in the desired currency by selling their respective commodities denominated in their local currency. The fair value of each commodity (A and B) should wash out at the prevailing exchange rate.

The profit-rate swap (PRS), pioneered by Commerce International Merchant Bank (CIMB) of Malaysia in 2005, allows financial institutions to manage their exposures to fixed and floating rates of return. As in the CCS, profit rate swaps are based on the combination of two commodity *murabaha* contracts.

Figure 3. *Murabaha*-based Profit Rate Swap

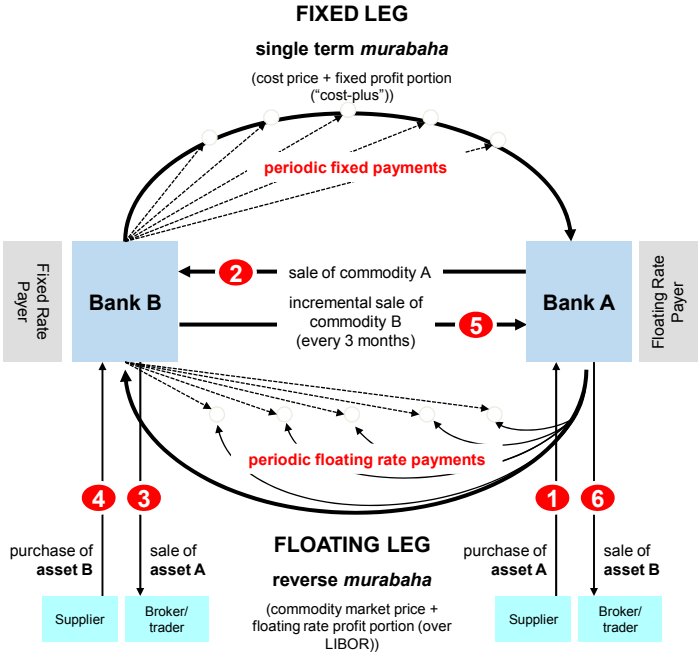


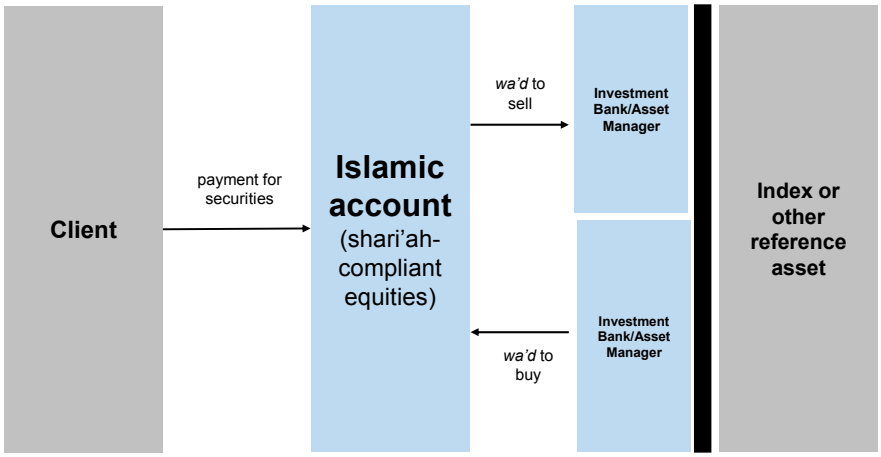
Figure 3 above illustrates the functioning of a PRS. Consider the example of the risk protection buyer, Islamic bank A ("floating rate payer"), which intends to convert a certain amount of payments from floating to fixed rate. It would acquire and sell via a *murabaha* contract commodity A in exchange for a stream of pre-determined, periodic payments from the protection seller, Islamic bank B ("fixed rate payer"), over a specified period of time. Islamic bank B, in turn, periodically completes a *murabaha* sale of a commodity in exchange for future installments at the fair value (market) price plus a *floating rate profit portion* ("cost-plus") that varies according to changes in some pre-agreed benchmark (e.g., some inter-bank funding rate like the London Interbank Offering Rate (LIBOR)).[2] The floating rate payer purchases commodity B in periodic increments – unlike the fixed rate payer, who receives commodity A in full at inception. The CCS includes full payment and physical settlement each period, with both parties selling their commodities in order to recoup their initial disbursement (and, thus, replicate what would otherwise amount to closing out a transaction in conventional derivatives trading).

[1] In a *murabaha*-based swap transaction, both contract parties hold mutually offsetting payment obligations against each other, which mitigates the contingency risk of periodic payments (but does not preclude economic risk from changes in the value of the underlying asset. In general, the degree of collateralization of a standard *murabaha* (cost-plus sale) contract itself depends on the original ownership of the underlying asset, which defines the level of creditor indebtedness. The creditor has either (i) full recourse (i.e., involving both the underlying asset and the periodic payments) if the borrower was the original owner of the asset (sale-repurchase agreement), or (ii) limited recourse (i.e., to periodic payments only) if the seller acquired the asset from a third party (back-to-back sale).

[2] Note that while some pre-agreed interest rate benchmark is permissible under *shari'ah* law, it should be distinguished from the use of non-*shari'ah*-compliant assets as a determinant for returns (DeLorenzo, 2007).

Attempts to design other *shari'ah*-compliant derivatives, such as total return swaps, have been mired in controversy. One particularly contested structure is based on a dual *wa'ad* contract, which swaps returns of a *shari'ah*-compliant asset portfolio with those of a designated index or reference investment portfolio, which can contain conventional assets. This Islamic total return swap would allow investors to access returns from assets that are prohibited under *shari'ah* principles. DeLorenzo (2007) has argued that, in practice, this swap structure does not conform to *shari'ah* norms, because the returns from the alternative portfolio are not derived from religiously acceptable activities.

Figure 4. Islamic Total Return Swap *(Wa'ad)* Arrangement



V. Legal Challenges and Standardization Efforts

Governance issues, especially related to the consistent assessment of *shari'ah* compliance and generation of commonly binding principles and rules, still constitute a major challenge for Islamic finance (Jobst and Solé, 2009). Although *shari'ah* rulings *(fatwas)* (and their underlying reasoning) are disclosed, they are not consolidated, which inhibits the dissemination, adoption, and cross-fertilization of individual interpretations of the *shari'ah* and the establishment of coherent jurisprudence across different countries and religious schools of thought *(madh'hab)* under *Sunni* and *Shia* Islam. Thus, the absence of unified principles (and no precedent) on which *shari'ah* scholars decide on the religious compliance of products and activities has spawned a plurality of interpretations of *shari'ah* principles. The fragmented opinions of *shari'ah* boards remain a source of continued divergence of legal opinion.

Concerns about the impact of heterogeneous prudential norms and diverse interpretations of *shari'ah* compliance are amplified by the impact of legal contingencies on business conduct. The absence of definite guidance on *shari'ah* compliance and universal enforcement based on common standards also affects the legal integrity of transactions in the case of dispute resolution. While the conclusion of financial transactions under different legal regimes can lead to the same outcome (i.e., substance), the legal process (i.e., form), and possibly the associated rights and obligations of the contractual parties, might vary considerably depending on whether Islamic law governs the transaction by substance or form. If the transaction were governed solely by *shari'ah* law as a matter of form, the opinion of *shari'ah* courts could override commercial legal concepts, which might re-qualify the legal nature of a transaction. This is particularly relevant in the context of dispute resolution through courts or arbitration, where the potential of *shari'ah* law challenging the supremacy of a commercial law as a matter of form could undermine conventional market conduct and contract enforceability.

Given the general controversy about risk management instruments in Islamic finance, there is considerable heterogeneity of scholastic opinion about *shari'ah* compliance of derivatives, which testifies to the difficulties of reconciling financial innovation with a principled interpretation of different sources of religious doctrine – via analogous deduction *(qiyas)*, independent analytical reasoning *(ijtihad),* and scholarly consensus *(ijma)*. General benchmarks for Islamic derivatives are yet to emerge, largely due to divergent market practices, the lack of a consolidated and unified *shari'ah* approval process, and the legal risk associated with the nonbinding character of precedent in Islamic jurisprudence affecting universal enforceability of contracts.

Efforts to develop legal standards and uniform market practices for *shari'ah*-compliant derivatives have started only recently. Regulatory consolidation and supervisory harmonization through standard setting is still at an early stage. Leading organizations in Islamic finance, such as the Accounting and Auditing Organization of Islamic Finance Institutions (AAOIFI), the Islamic Financial Services Board (IFSB), the General Council for Islamic Banking and Finance Institutions (GCIBFI), the Islamic International Rating Agency (IIRA), and, most of all, the Fiqh Academy in Jeddah, have been working on new regulatory norms.[44] However, these efforts have not addressed various risk management techniques that involve derivatives.[45] In the meantime, some industry initiatives are already showing

[44] One example is the recently issued Master Agreement for Treasury Placement (MATP), which will contribute to the standardization of documentation rules for the *shari'ah*-compliant commodities market with a view to enhancing cost, time, and operational efficiencies of deposit arrangements for liquidity management.

[45] The voluntary adoption of standards issued by various relevant international bodies such as IIFM, AAOIFI, and the IFSB is very underdeveloped, with national practice taking precedence over the less well-established international organizations.

promising results. In October 2006, the International Swap and Derivatives Association (ISDA) and the International Islamic Financial Market (IIFM), in cooperation with the International Capital Markets Association (ICMA), had signed a memorandum of understanding to develop a master agreement protocol for Islamic derivatives, which eventually led to the publication of the multi-product ISDA/IIFM Tahawwut (Hedging) Master Agreement (TMA) on swap transactions (with standardized documentation) in March 2010 (see Box 3). However, as a financial industry framework document, the TMA does not establish universally binding market rules.[46] Although its adoption remains subject to the legal and governance processes determined by national practice as a matter of private law, its innovative character as a pan-*madhab* agreement that spans all five major schools of Islamic jurisprudence is a first for *shari'ah*-compliant derivatives. This initiative was preceded by the successful introduction of currency and profit rate swaps by Bank Islam and Bank Muamalat in Malaysia,[47] which had already executed a pro-forma derivative master agreement for documentation of Islamic derivatives as early as 2006.

[46] Almost all standards issued by various relevant international bodies, such as International Islamic Financial Market (IIFM), Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), and the Islamic Financial Services Board (IFSB), are voluntary unless they have been incorporated in national law.

[47] In November 2006, the Malaysian banks, Bank Islam Berhad and Bank Muamalat Malaysia Berhad broke new ground by agreeing to execute a master agreement for the documentation of Islamic derivatives transactions (Jobst, 2008a). This standardization initiative was sponsored by the Malaysian Financial Market Association *(Persatuan Kewangan Malaysia)* with the participation from both Islamic and conventional Malaysian banks.

Box 3. Key Elements of the ISDA/IIFM *Tahawwut* (Hedging) Master Agreement (TMA)[1]

The launch of the Tahawwut Hedging Master Agreement (TMA) in March 2010 by the International Islamic Financial Market (IIFM) in cooperation with the International Swaps and Derivatives Association (ISDA) has been welcomed as an important step towards the standardization of bilateral hedging arrangements in Islamic finance.[2] The TMA is designed to be used between two principal counterparties that make representations as to the fact that they enter into *shari'ah*-compliant transactions only. The TMA spans all five major schools of *shari'ah* jurisprudence, making pan-*madhab*, a first in the Islamic derivatives market.

The TMA is a completely new framework document but the structure of the document is similar to the conventional 2002 ISDA Master Agreement (MA), a hedging framework agreement governing the contractual relationship between the parties, with transactions documented by way of confirmations. In particular, it incorporates the three pillars of the ISDA technology – the flawed asset concept, the single agreement concept, and the close-out mechanism and netting. However, the key mechanisms and provisioning such as early termination events, close-out and netting are developed based on *shari'ah* principles. Thus, the TMA differs in six key areas from the conventional MA: (i) the architecture of the agreement, (ii) the close-out mechanism, which includes the net present value of future receipts/payments, (iii) the events of default, (iv) the forum of dispute resolution, (vi) additional representation as to *shari'ah* compliance, and (vi) the treatment of contractual payments (which exclude payable interest in the TMA). The current version of the agreement is multi-product, covering *murabaha*, *wa'ad*, *salam*, and *arbun*-based swap agreements, with a clear intention to expand its scope and amend its structure (if necessary) to include other transaction and contract types under *shari'ah* law.[3]

The most salient deviation of the TAM from the conventional ISDA MA is the treatment of early termination. Since the concept of net present value is not recognized in *shari'ah* law, the TAM permits parties to enter into transactions that may be documented immediately as well as transactions due to occur in the future so that parties are able to create cash flows similar to the cash flows created in conventional derivatives products. The TAM distinguishes between (i) "concluded transactions" (from inception to the end of the first payment period, e.g., the first year of the contract) and (ii) the "non-concluded transactions" or "designated future transactions" (covering the remaining maturity term), which converts into a "concluded transaction" year by year.[4] In a default scenario (or "credit event" in the conventional context),[5] the early termination of the TMA requires a close-out mechanism that contemplates separate confirmations for current transactions and arrangements relating to future, which results in a parallel (rather than consecutive) mark-to-market (MTM) valuation of the concluded and the designated future contracts.[6]

The TMA modifies existing market practices for the concluded transaction and introduces new concepts pertinent to establishing *shari'ah*-compliance of closing-out the designated future transaction. While the close-out of the concluded transaction follows provisions for early termination according to the 2002 ISDA MA, for the close-out of the designated future transaction(s), *musawama* contracts are used to crystallize the close-out amount payable.[7]

The parallel close-out mechanism generates a net amount from offsetting both the concluded and the designated future contract as much as the conventional MA would. Each party issues an undertaking to enter into a contract in the future for the sale of assets at a pre-agreed price following the designation of an early termination date. The parties trigger offsetting payments by selling a good or asset to the counterparty at a pre-agreed price (which is calculable using a specified formula to establish a price payable at which *shari'ah*-compliant assets would be bought and sold). More specifically, the party to whom a payment is due may exercise the *wa'ad* (promise) given in its favor and sell pre-agreed assets in exchange for the cost price of such assets and the difference in asset values plus the mark-to-market value of the designated future transaction(s), expressed as an index level.[8]

The close-out process also defines specific provisions for both concluded and future designated transactions, seeking to reach mark-to-market valuation. On the close-out of the concluded transaction, the full amount (and not the net present value) is payable and receivables are to be accelerated and paid out (without discounting). For designated future transaction(s), the non-defaulting party is free to choose the *shari'ah*-compliant assets that are subject of the *musawama* contract on a close-out.[9,10] If one party were insolvent at the time of close-out, or, in breach of the *wa'ad* it has issued, a party fails to purchase the assets at the net cost of

the *musawama*-based close-out, liquidated damages on the *musawama* price are determined and payable.

Cross-default provisions and the stipulation of secular governing law are important elements of the new master agreement. Islamic scholars have accepted the concept of cross-default provisions, which states that any default on another swap will be considered a default on the issue.[11]

Moreover, the choice of secular law as the forum of dispute resolution[12] (through courts or arbitration) acknowledges concerns about investor protection as regards the re-classification risk by *shari'ah* courts (Jobst, 2007a).

The agreement follows New York or English law[13] as *matter of form*, which maintains commercial interest under conventional principles of bankruptcy and property law irrespective of *shari'ah* compliance as a *matter of substance*.[14] Conversely, the violation of *shari'ah* principles would not preclude legal enforceability of claims under TMA. Disclaimers throughout the TMA, however, assert that there is no guarantee of *shari'ah* compliance for any amendments or additions to the agreement or related underlying transaction documents, which also implies that non-compliance cannot give rise to legal challenges.[15]

Despite the groundbreaking character of the TMA, its applicability as a voluntary industry standard hinges on its permissibility under private law in various jurisdictions. In fact, past evidence suggests that many times the adoption of uniform standards is complicated by national practice that takes precedence over recommendations by less well-established international organizations. Parties wishing to transact under the TMA would still need to develop confirmations to document transactions. Moreover, for binding parties to enter into, and to give a value to, designated future transactions, separate documents (each a designated future transactions terms agreement) would be required.

There are also other areas of concern. Although that the TMA clearly states that no interest shall be payable or receivable, and no settlement based on valuation or without tangible assets is allowed, it is not clear how the time value of money is assessed in cases when payments may be deferred. Moreover, the election of secular governing law removes *shari'ah* principles from legal enforcement under the terms of the TMA, because parties are required to ascertain *shari'ah* compliance outside the contract, which renders *shari'ah* compliance immaterial to potential dispute resolution (in absence of *shari'ah* board approval for transactions).

Finally, there also remains some ambiguity arising from several legal contingencies: (i) the netting of future designated transactions is not covered (except in a footnote that contemplates that parties may provide for similar netting in those agreements); (ii) the replacement of the term "transfer" in the conventional MA with "redesignation" of rights and obligations in the TMA introduces uncertainty about the ability of the affected party to change substantive rights in connection with changing the obligor office; and (iii) the removal of creditworthiness in determining price quotations could distort the economics of a transaction where there is early termination or otherwise.

---

[1] We thank Priya Uberoi, former Director for Islamic Derivatives at Clifford Chance (London), and Peter Werner, Policy Director at ISDA (London), for important feedback and suggestions on this Box.

[2] In fact, the TMA also represents the first standard documentation for *shari'ah*-compliant global cross-border transactions.

[3] Thus, the current master agreement is designated as "Version 1".

[4] The difference between a "concluded transaction" and a "non-concluded transaction" is analogous to the difference between an "agreement" and an "agreement to agree" under English law. For instance in the case of a *murabaha*-based swap agreement, the transaction would be considered (i) "concluded" if the commodity has been delivered yet no deferred purchase price has been paid, and (ii) "non-concluded" if neither the commodity nor the purchase price have been delivered.

[5] In this context, the definition of events of default or termination, such as failure to pay or deliver, breach of agreement, credit support default, and breach of contract (e.g., misconduct), also includes misrepresentation of *shari'ah* compliance.

[6] According to an early assessment of Islamic scholars, it is not permissible under *shari'ah* to consolidate the early termination amount and the net cost of the *musawama* contracts into a unified transaction.

[7] In a typical *musawama* contract, a bank usually purchases assets and holds them until they are sold at a mark-up to the client subject to repayment in installments. As opposed to a *murabaha* contract, a bank using a *musawama* contract does not

disclose to client either the profit margin or the actual cost of acquiring the assets.

[8] The index level is calculated using a similar basis to that used in the conventional 1992 ISDA Master Agreement.

[9] However, the type of assets to be used in the derivatives transactions can be specifically agreed upon by both counterparties.

[10] Since the valuation and pricing of designated future transactions(s) are agreed at the outset, *musawama* arrangements cannot create an objectionable "transaction at an undervalue."

[11] The purpose is to protect a creditor or counterparty from actions favoring another creditor.

[12] The master agreement includes a governing law clause that refers exclusively to the relevant secular law, which does not cross-refer to, or seek to incorporate, *shari'ah* principles. This provision assumes that the satisfaction with *shari'ah* principles was a material pre-condition for entering into the relevant transaction, and, thus, does not impact on the construction of the contractual terms.

[13] In addition, parties have the ability to elect arbitration as a means to resolve disputes.

[14] The condition for *shari'ah* compliance is assumed to precede the agreement. The contractual parties are required to expressly record their intention to enter only into a *shari'ah*-compliant transaction and represent their satisfaction as to the *shari'ah* compliance by certifying their own due diligence (e.g., based on a copy of the relevant *fatwa* or documentation of their own internal consideration) or, at least, by confirming their independent assessment with regard to the *shari'ah* compliance (without reliance on assurances by the other party).

[15] However, the TMA also cautions that any amendment or addition should be contemplated only after the parties satisfy themselves as to the *shari'ah* compliance of such amendment or addition and of the TMA incorporating such amendment or addition.

VI. CONCLUSION

With about US$1 trillion of assets lodged in Islamic financial institutions and capital markets, the swift post-crisis recovery of demand for *shari'ah*-compliant structured transactions, such as *sukuk*, points to a real and inescapable demand for religiously acceptable risk management solutions (Jobst and others, 2008). The scarcity of *shari'ah*-compliant instruments to hedge risks arguably comes at an inauspicious time for many leading Islamic financial institutions as they expand their activities well beyond their original jurisdictions (Solé, 2008). The international diversification of Islamic banking activities will certainly require new (and more flexible) instruments with which to manage currency and other risks.

As Islamic finance comes into its own, and more companies turn to capital market-based sources of finance, *shari'ah*-compliant derivatives will become ever more essential to enhance liquidity management, supplement cash markets at lower funding cost, and ensure an efficient transmission of funds from savers to investors (Hesse and others, 2008).

However, derivatives in Islamic finance are still very much contested. The fundamental features of derivatives, including the uncertainty of payoffs, the absence of risk-sharing, and the potential of speculative use, are not accepted in the tradition of Islamic finance. The credit crisis has demonstrated that derivatives are complex and frequently opaque instruments that might be used by market players to take on excessive risk, avoid prudential safeguards, and manipulate accounting rules. While the problem of misuse is perceived to be

more acute where prudential regulation, transparency, and risk management practices are not fully developed, the opinion of *shari'ah* scholars is an additional consideration that policy makers and regulators in Islamic countries need to take into account.

At first glance, the restrictive treatment of derivatives under *shari'ah* law seems to deprive Islamic financial institutions and corporates of many advantages associated with risk transfer mechanisms. In this paper, we have argued that Islamic finance already includes a considerable number of contracts and instruments with derivative-like features that can help agents reduce risks or that could form the basis for designing *shari'ah*-compatible derivatives. It is in fact the absence of clearly articulated operative principles for *shari'ah*-compliant derivatives transactions that have left the Islamic capital market incomplete. The standardization of the few customized hedging tools now in use into universally comprehensible and accepted terms would establish clarity about the rationale of their restrictive use, ensure consistent application, and, thus, would attract a wider range of participants (including conventional participants seeking to expand their presence of Islamic finance) and help establish congruence of derivatives in both conventional and Islamic finance. The release of the ISDA/IIFM Tahawwut (Hedging) Master Agreement (TMA) represents a first step in the right direction but it remains to be seen how widespread this transaction standard will be used as other risk management techniques are being devised to better account for *shari'ah* principles.

REFERENCES

Ahmad, Kurshid, 2000, "Islamic Finance and Banking: the Challenge of the 21st Century," *Review of Islamic Economic Studies*, Vol. 9, pp. 57–82.

Ayub, Muhammad, 2002. *Islamic Banking and Finance: Theory and Practice*. Karachi, Pakistan: State Bank of Pakistan Press.

_____, 2007. *Understanding Islamic Finance*. John Wiley & Sons Ltd., Chichester, pp. 209f.

Al-Suwailem, Sami, 1999-2000, "Towards an Objective Measure of Gharar in Exchange," *Islamic Economic Studies*, Vol. 7, Nos. 1 and 2, October–April, pp. 66f.

Bacha, Obiyathullah Ismath, 1999, "Derivative Instruments and Islamic Finance: Some Thoughts for a Reconsideration," *International Journal of Islamic Services*, Vol. 1, No. 1, April-June, pp. 9–25.

Batchvarov, Alexander, and Nicolas Gakwaya, 2006, "Principles and Structures of Islamic Finance," Merrill Lynch, European Structured Finance—ABS (September), London.

DeLorenzo, Yusuf Talal, 2007, "The Total Returns Swap and the 'Shariah Conversion Technology' Stratagem," *Dinar Standard* (available at: www.dinarstandard.com/finance/DeLorenzo.pdf)

El-Gamal, Mahmoud A., 2006. *Islamic Finance: Law, Economics, and Practice*. Cambridge University Press, Cambridge/United Kingdom.

Hesse, Heiko, Jobst, Andreas A., and Juan Solé, 2008, "Trends and Challenges in Islamic Finance," *World Economics*, Vol. 9, No. 2, pp. 175–93.

International Shari'ah Research Academy for Islamic Finance (ISRA), 2011, "The Financial Crisis and the Role of Derivatives," Proceedings of the Second Oxford Islamic Finance Round Table (April 15, 2009)—*The Frontiers of Innovation in Islamic Finance*, pp. 47–59.

Iqbal, Zamir, and Hiroshi Tsubota, 2006, "Emerging Islamic Capital Markets," *Islamic Finance Review*, Euromoney Handbook, Euromoney Institutional Investor PLC, London, pp. 5–11.

Iqbal, Zamir, and Abbas Mirakhor, 2006. *An Introduction to Islamic Finance – Theory and Practice*. Wiley Finance Editions, John Wiley & Sons, Inc., Hoboken/NJ, pp. 203–50.

Jobst, Andreas A., 2007a, "The Economics of Islamic Finance and Securitization," *Journal of Structured Finance*, Vol. 13, No. 1, pp. 1–22. Also published as IMF Working Paper No. 07/117 (Washington: International Monetary Fund).

_____, 2007b, "Derivatives in Islamic Finance," in: Salman, Ali (ed). *Islamic Capital Markets—Products, Regulation and Development*. Islamic Development Bank, Islamic Research and Training Institute (IRTI), Jeddah.

_____, 2008a, "Double-Edged Sword: Derivatives and Shariah Compliance," *Islamica* (July-August), pp. 22–5.

_____, 2008b, "Islamic Derivatives," in: Gregoriou, G. N. and P. Ali (eds.) *The Credit Derivatives Handbook —Global Perspectives, Innovations, and Market Drivers.* McGraw-Hill, New York.

Jobst, Andreas A., and Juan Solé, 2009, "The Governance of Derivatives in Islamic Finance," *Journal of International Banking Law and Regulation*, Vol. 24, No. 11, pp. 556–64.

Jobst, Andreas A., Kunzel, Peter, Mills, Paul, and Amadou Sy, 2008, "Islamic Bond Issuance – What Sovereign Debt Managers Need to Know," *International Journal of Islamic & Middle East Finance and Management*, Vol. 1, No. 4, pp. 330–344.

Kamali, Mohammad Hashim, 2007. "Commodity Futures: An Islamic Legal Analysis," *Thunderbird International Business Review*, Vol. 49, No. 3 (April), pp. 309–39.

_____, 2001. *Islamic Commercial Law—An Analysis of Futures and Options*. Islamic Texts Society, Cambridge, UK, Chapter 10.

_____, 1999, "Uncertainty and Risk-taking (Gharar) in Islamic Law," Paper presented at the International Conference on Takaful/Islamic Insurance (July 2–3), Kuala Lumpur.

Khan, M. Fahi, 1995, "Islamic Futures and Their Markets," Research Paper No. 32, Islamic Research and Training Institute (IRTI), Islamic Development Bank, Jeddah, Saudi-Arabia, pp. 12.

Khan, Muhammad Akram, 1991, "*Commodity Exchange and Stock Exchange in an Islamic Economy*," In A. H. M. Sadeq and others (eds.) *Development and Finance in Islam*. Kuala Lumpur, Malaysia: International Islamic University Press, pp. 191–212.

Khasawneh, Radi, 2008, "No Agreement," *Risk Magazine* (August) (available at: http://www.risk.net/risk-magazine/feature/1526321/no-agreement).

Mohamad, Saadiah, and Ali Tabatabaei, 2008, "Islamic Hedging: Gambling or Risk Management?," Islamic Law and Law of the Muslim World Paper No. 08–47 (August 27).

Obaidullah, Mohammed, 1998, "Financial Engineering with Islamic Options," *Islamic Economic Studies*, Vol. 6, No. 1, pp. 73–103.

Smolarski, Jan, Schapek, Michael and Tahir Mohammad Iqbal, 2006, "Permissibility and the Use of Options for Hedging Purposes in Islamic Finance," *Thunderbird International Business Review*, Vol. 48, No. 3, pp. 425–43.

Solé, Juan, 2008, "Introducing Islamic Banks into Conventional Banking Systems," *Journal of Islamic Economics, Banking and Finance*, Vol. 4, No. 2. Also published as IMF Working Paper 07/175 (Washington: International Monetary Fund).

Subhani, Azeemuddin, 2011, "Wither Islamic Finance? '… Allah Permitteth Bay' and 'Forbiddeth Riba …'," *NewHorizon*, No. 178 (January-March), pp. 15–8.

Tredgett, Richard, Uberoi, Priya, and Nick Evans, 2008, "Cross-Currency Swap," *Derivatives Week* (June 16), pp. 7–9 (available at: www.derivativesweek.com/pdf/DW061608.pdf).

Uberoi, Priya, Chatterji, Rahul, and Dany Bidar, 2009, "The Wa'ad on the Street," *Risk Magazine* (August) (available at: http://www.risk.net/risk-magazine/feature/1530759/the-wa-street).

Uberoi, Priya, 2010, "An Introduction to Islamic Derivatives," Practice Note, Practice Law Company (March 25) (available at: http://us.practicallaw.com/8-501-6191).

Usmani, Maulana Taqi, 1996, "Futures, Options, Swaps and Equity Investments," *New Horizon*, Institute of Islamic Banking and Insurance, No. 59 (June), pp. 10.

Usmani, Maulana Taqi, 1999, What Shari'ah Experts Say: Futures, Options and Swaps," *International Journal of Islamic Financial Services*, Vol. 1, No. 1.

Vogel, Frank E., and Samuel L. Hayes III, 1998. *Islamic Law and Finance: Religion, Risk and Return*. Kluwer Law, International The Hague and Boston, pp. 72f.