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Integrating Islamic and Conventional Project Finance

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ABSTRACT

The first objective of this paper is to translate the basic modes of Islamic financing in the context of conventional security design principles and to illustrate how these can be structured as a package to finance a complex project. The modes should be consistent with Islamic law as well as be economically efficient. The modes examined include debt (*murabaha* and *ijara*), hybrid (*mudaraba*), and equity (*musharaka*) instruments. The second part of the paper emphasizes the traditional *mudaraba* security. It can be adapted to cater to the financial objective and the risk profile of the clientele. This fact is important in the design of Islamic debt facilities and Islamic long-term growth instruments.

I. INTRODUCTION[i]

First, this article elucidates the traditional modes of Islamic project financing in the context of modern financial engineering. The modes of financing selected should not only avoid *riba*, *gharar*, and *maysir* but also be economically efficient.[ii] The vehicles elaborated include debt, hybrid and equity instruments. The first category entails the careful structure of *murabaha* (markup) and *ijara* (leasing) facilities; the second incorporates the classical *mudaraba* (profit sharing) contract, while the third category comprises the *musharaka* (equity) vehicle.

II. ELUCIDATION OF THE BASIC MODES OF ISLAMIC FINANCING

A. Islamic Debt Facilities

Since exchanging money for more money (or monetary equivalents) over an extended period of time is interpreted as *ribawi* and hence forbidden in Islam, debt instruments have to be carefully structured so that the exchange involves goods for money or partnership shares for money over time. The intention is to facilitate trade or business and not to get around the religious injunction. It might be noted that conventional finance literature attributes *ribawi* loan transactions to the presence of (i) asymmetric information between insiders (managers) of firms and outside investors (see Ross (1977) and Myers and Majluf (1984)); (ii) conflict of interest (agency effect) between managers and shareholders of firms (see Jensen and Meckling (1976)).[iii] If corporate insiders were required to reveal vital information such as profitability and their stake in the firm on an ongoing basis and if managers were given performance incentives such as stock options, conventional debt instruments would lose much of their financial rationale in capital markets.

Debt instruments in Islam comprise the following: (i) the deferred contracts of *bai' murabaha* (cost plus)/*bai' mua'jjal* (deferred installment sale) and (ii) *ijara* (leasing)/*ijara wa l-iqtina'* (lease-purchase).

In *bai' murabaha* (cost plus), an Islamic bank facilitates purchase of equipment/ goods for an economic agent and charges a fee for its services. The title of the goods is passed to the client subject to a lien on it. This is removed on final payment to the Islamic bank. This contract is a very contentious issue with some denominations in Islam, which have classified it as borderline *ribawi* (see Cizakca (1996)). However, other notable scholars in Islam such as Ibn Al-Arabi, Al-Qurtabi, and Al-Jassas have allowed it based on their commentaries of the Qur'an (see Ismail (1992)). Khoja (1995) also provides the *daleel* (religious endorsement) for the legality of this vehicle. The two conflicting views on the legality of *murabaha* are reconciled by Rahman (1969), who cites instances in the life of Prophet Muhammad (PBUH) and his exemplary companions where credit sales were practiced. However, later scholars, afraid that it would serve as a loophole to get around the restriction of *riba*, did not sanction the custom.

Al-Omar and Abdel-Haq (1996) provide the rationale for the additional compensation to the Islamic banks based on (i) providing a needed service in locating/ buying goods from a vendor for a cash strapped agent in the economy, (ii) cost incurred by the banks in servicing their clientele and (iii) exposing the bank to risk of the transaction explained as follows: The buyer (client) may refuse to take delivery of the goods thereby leaving the financing entity (bank) stuck with unnecessary goods. The financial intermediary may also encounter other

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expenses such as storage costs and hence be exposed to damage in storage and /or transit. Furthermore, the client could default and the financial intermediary would have to expend resources to recoup its capital. The markup in the *murabaha* facility is thus designed to compensate the financial intermediary for the above three reasons.

Bai' bi-thaman ajil (BBA)/*bai' mua'jjal* (deferred installment sale) is similar to *bai' murabaha*. The main distinction here is that it is the seller or an Islamic bank that allows the deferment in payment by installment to facilitate the asset purchase. He again charges a higher fee in lieu of the service provided, expenses incurred, and exposure to risk.

From the perspective of modern finance, a *murabaha* facility is equivalent to an asset-backed risky loan. If the capital markets are perfect and all agents in the economy have equal access to information, then competition between Islamic banks and conventional (*ribawi*) banks would result in *murabaha* having the same expected return as that of *ribawi* loans. Thus, due to integration of global capital markets, Islamic banks are constrained to price their loans on an ex-ante basis as a function of the prevailing interest rates, as lamented by Thomas R. (1995) and Siddiqi (1995). However, their realized return would not be like that of conventional *ribawi* banks which can go after the other assets of the borrower and impose *ribawi* penalty for delayed payment. Islamic banks are exposed to cash-flow risks that can easily erode the capital base of the depositors of Islamic banks.[iv] A way around the above dilemma as suggested by Siddiqi (1995) is to price loans based on a profit margin that does not covary with the *ribawi* market rate. This author agrees with Siddiqi (1995) and adds that if Islamic banks aim for a higher productivity (through optimal use of resources such as technology), they can easily underprice *ribawi* banks and become market leaders, determining the benchmark for the allocation of funds.

When an *ijara* (operating lease) is employed, the Islamic financial intermediary again facilitates the use of equipment or a productive asset by a client. The Islamic bank buys the asset and rents it to the client. The client is thus able to pay for the services of the asset from its operating income and is able to avoid an excessive initial capital outlay. The client is the lessee and the Islamic bank is the lessor. The lessor retains title of the asset till the end of the term. The lessee continues to benefit from the asset (by making regular lease payments) till the asset fails to perform the services it was originally intended to do. The lease contract remains in force even if the asset is damaged. The asset can be sold to the lessee at the end of the lease term. However, the price of it cannot be pre-determined at the beginning of the lease term.

In lease-purchase (financial lease) agreements (*ijara wa l-iqtina'*) the lessor designs the lease payment to contain a portion of the price of the asset.[v] The title of the asset can be transferred at the end of the lease as a gift (see Khoja (1995), Al-Omar and Abdel-Haq (1996)).

Leasing provides benefits such as "tax savings, flexibility of lease contracts, savings in financial transaction, information costs, valuable options in lease contracts and risk-sharing opportunities with leasing (see Schallheim (1994))." Financial economists conceptualize leasing as a financial contract akin to that of an asset-backed risky loan. This is because leases require the lessee to make a set of fixed payments similar to a loan contract. In the worst case of default, the lessor can file a lawsuit against the lessee to repossess the asset and impose penalties for any possible deficiencies. In fact there is a plethora of articles in the leasing literature that discusses the extent to which leases supplement or substitute for the debt capacity of a firm (see Schallheim 1994). This article modifies the basic model for pricing a lease from the well-known Myers, Dill, and Bautista (MDB, 1976) study. It describes the mathematical relationship between expected after-tax return on a lease and equivalent loan amount in terms of sum of after-tax lease payments, depreciation tax shelter, and expected salvage value, offset by after-tax operating cost savings such as maintenance, insurance etc. provided by the lessor.

Although leasing firms price the asset rental payments on an ex-ante basis based on a *ribawi* benchmark such as London Interbank Offered Rate (LIBOR) (see Thomas R. (1995) and Siddiqi (1995)), they may not realize their expected return as the lessee may not pay on time and the lessor may not realize the anticipated salvage value - a wild card in the estimation process. Lease, McConnell and Schallheim (1990) offer an excellent study of the divergence between realized rates of return and contractual (ex-ante) yields based on prevailing interest rates. Islamic banks are in fact exposed to cash flow risks analogous to those faced in their deferred installment sales.

In the context of conventional project finance both *murabaha* and *ijara* can be illustrated by Figure 1. The cost of goods financed or asset leased is Q. The bank breaks even at s_1. However, the incremental payoffs in terms of a profit is only realized after a critical level s^*_c, below which the Islamic bank receives a negative discounted return. The transaction is not *ribawi* as the incremental payoffs to the Islamic bank is not fixed but is random and dependent on several factors including the success of the project.

B. Islamic Hybrid Facility of *Mudaraba*

Muslims are extremely nostalgic about *mudaraba* financing, as the Prophet Muhammad (PBUH) himself resorted to this facility as a trader. His eminent companions and his family members also selected this for investing surplus funds of orphans (see Kahf and Khan (1992) and Siddiqi (1985)). The Prophet (PBUH) endorsed this security with the following statement narrated by his companion Sahib and recorded in Ibn Majah:

> "There are three things that have the blessings of *Allah* (the Glorious): deferred payment sale, *al-Muqaradah* (*al-mudaraba*), and mixing of barley with wheat for home consumption (not for sale)." (Ibn Majah: *Tijarah* Chapter: 63)

The *mudaraba* security combines the features of both equity and Islamically allowed debt contracts. Here the investor (*rabb al-mal*) has a junior position with respect to debt investors discussed above. However, it has a preferred position over that of an equity investor (*musharik*). Figure 2 below illustrates this feature showing that under the state s_1, the *rabb al-mal* (financier) is not able to re-coup his capital and suffers a loss. Between the states s_1 and s^*_c, he breaks even. However, beyond the critical state s^*_c the *rabb al-mal* shares in 'θ' fraction of the profit. In most of the Islamic banking and economics literature this is termed a profit-sharing principle (PSP). The modern finance equivalent to this instrument is a participating preferred stock with no contractually promised interest. Inclusion of participation clauses in a financial contract mitigates the stockholder-bondholder conflict, enhances the value of a project and serves to control the under-investment problem (see Haugen and Senbet (1981, 1987), Green (1984) and Schnabel (1993)).

Proposition: A *mudaraba* facility can be synthesized as a combination of a *murabaha* (cost-plus) facility and fractional (θ) shares of *al-ikhtiyarat* (European call option) such that the profit from the *murabaha* in the good states of the economy offsets the call price.[vi]

The above proposition determines the pricing relationship of a *mudaraba* and is a major contribution in this article. It has some crucial ramifications. It defines the profit sharing ratio (θ) as a simple ratio, which dynamically varies with the expected return from an equivalent *murabaha* facility as well as with the option premium. This result is contrary to some researchers of Islamic economics who have assumed this ratio to be invariant to specificity of the project and across time.

C. Equity Security: *Musharaka*

Musharaka, derived from the Arabic term *shirkah*, implies partnership in a venture. The classical Islamic business literature lists many forms of business enterprises (see Chapra (1986) and Siddiqi (1985)). The one implied by this study is *shirkah al-'inan*, i.e., partnership with unequal contribution of capital and with different profit- and loss-sharing ratios. The conventional financial instrument that is closest to the above Islamic concept is equity as it connotes ownership (control) of an enterprise. This offers the highest potential reward at the expense of highest possible risk. This is because an equity owner is a residual claimant in any venture. He hopes to gain the most under favorable economic conditions but loses the most under unfavorable conditions. This is the reason why this contract is referred to as the profit- and loss-sharing (PLS) contract. Figure 4 illustrates this fact by showing that equity owner suffers a loss below the future critical state s^*_c, breaks even at s^*_c and profits from the venture if the future state is better than s^*_c. In a situation where both *mudaraba* as well as *musharaka* fund the project, the *musharik* retains only (1-θ)% of the profits.

The mathematical pricing of the *musharaka* facility is described in this article by resorting to the Zero-Beta version of the capital-asset pricing model (see Black (1972) and Lintner (1969)).

III. THE TWO-DIMENSIONAL MALLEABILITY OF THE *MUDARABA* FACILITY

Mudaraba is a very versatile instrument in two separate dimensions described below in combination with the *musharaka* vehicle.

A. Adapting the *Mudaraba* Instrument to Cater to the Financial Objective of the Clientele

The classical *mudaraba* facility can be explained as a growth instrument where a trader would reinvest the proceeds of all trade until the termination of the contract where the principal amount would be returned to the *rabb al-mal* and the excess (profits) would be shared according to the agreed ex-ante profit sharing ratio. In case of a loss, the balance or residual would accrue to the *rabb al-mal*. In the context of modern finance, this device can imply sharing or allocating a fraction of income and/or the appreciation of a project (business venture). Instead of terminating a *mudaraba* contract at an inopportune moment, it is preferable to sell it in the secondary market. The profit sharing parameters of income and appreciation can be reset by a custodian bank (in consultation with the management of the company which represents the *musharik*, i.e., equity investor) according to the changes in (i) economic conditions, (ii) risk of the project (business ventures) and (iii) clienteles of this vehicle. Thus in modern times, one can financially engineer a *mudaraba* instrument to suit the financial goals of the investor in several forms as described below:

1. Income *Mudaraba*

Here the investor shares in the income or revenue of the project only and is paid back the principal (preferably in real terms) at the termination of the contract. This is similar to the income/ revenue bond described in the previous subsection.

2. Growth and Income *Mudaraba*

Here the investor shares in a fraction of NOI as well as the appreciation of the project (venture). Both the fractional parameters of income and appreciation need not be equal. In terms of conventional finance, this can be interpreted as a participating bond.

3. Growth *Mudaraba*

This is similar to the classical *mudaraba* where it is assumed that the project (business venture) has an optimal policy of paying no dividends. All the earnings are retained in the business and distributed at the termination of the business. This is rather cumbersome and restrictive in contemporary times as incorporated businesses or ventures are assumed to have an infinite life.

B. Adapting the *Mudaraba* facility to Cater to the Risk Profile of the Clientele

This is perhaps one of the most contentious issues confronting the Islamic financial engineer. It can be addressed as follows: Is it Islamically feasible for the *rabb al-mal* (of the *mudaraba*) to transfer part of the risk of the venture to the *musharik* in exchange for a lower profit sharing ratio and vice versa? This can be accomplished by partially combining the *mudaraba* discussed above with a protective put option such that the premium of the put is offset by the call premium in the *mudaraba* resulting in a lower profit sharing ratio. When the buyer of the protective put is the *rabb al-mal* (and the seller obviously is the *musharik*), the situation resembles Figure 5. Here the *musharik* guarantees to bear the risk of part (λ) of the funds of the *rabb al-mal* in return for a higher participating ratio ($1 - \theta + \phi$). Thus, for future states of the economy below s_1, the *rabb al-mal's* payoff schedule shrinks inwards parallel to the original schedule and for states above s^*_c, it rotates clockwise. For the *musharik*, the risk now increases by the amount guaranteed (λ) for states below s_1 and for states above s^*_c, the payoffs (in terms of the profit sharing ratio) increase by ϕ. In the limit as λ approaches Q (nominal risk becomes zero for the *rabb al-mal*), ϕ approaches the limit ϕ^* s.t. θ^* tends to $(\theta - \phi^*)$ and the *mudaraba* instrument tends to become a fully hedged vehicle. It should be noted that even though risk is reduced in nominal terms, there is still residual risk due to inflation. Finally, the opposite scenario can also be configured when the *musharik* transfers part of the risk of equity to the *rabb al-mal* in return for a lower profit sharing ratio. The payoff schedule of the *rabb al-mal* below s_1 would expand outwards and above s^*_c rotate anti clockwise. The crucial debatable *fiqhi* (Islamic jurisprudential) issue is as follows. To what extent is this risk-return tradeoff allowed in Islam? Note that the reduction in risk is arrived at by creating a portfolio of a *mudaraba* facility and a *takaful* (insurance) policy in the form of a put option, both of which are permissible in Islam (see Kahf and Khan (1992) and Kamali (1997)). This is an *ijtihadi* issue left for the *'ulama'* of the *fiqh* academies to resolve.

IV. CONCLUSION

This study interpreted and modeled Islamic project finance instruments in the language of a conventional banker. A *mudaraba* is envisioned as a combination of a *murabaha* facility and a call option. This leads to an endogenous estimation of the profit-sharing parameter. The *mudaraba* is pliable along two separate dimensions: the financial objective and risk tolerance of the investor. This is of prime importance in the design of Islamic debt facilities, ranging from commercial paper to bonds, because due to the current lack of theoretical development, some Muslim practitioners construe Islamic debt instruments as a portfolio of *murabaha* instruments packaged and sold to investors in the secondary market. The majority of the *'ulama'* spurn this practice inasmuch as it violates the Islamic injunction of *bai' al-dayn*[vii]: it involves sale of a debt (*murabaha*) facility at a discount, which is interpreted as entailing *riba al- nasi'ah*. The design of a *mudaraba* facility as an income bond, discussed in this study, avoids the issue of *bai' al-dayn*. It is also important to Islamic long-term growth instruments for venture capital financing.

Finally, this study illustrates that if dual-purpose vehicles of *mudaraba* and *musharaka* finance a project, one can provide some cushion to highly risk-averse *mudaraba* investors in lieu of a guarantee, which is not permissible in Islam.

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[ii] *Riba* is interpreted by Ibn Qayyim (n.d.) to imply (i) any form of unfair trade, market manipulation or engaging a market participant to trade under duress (*riba al-fadl*) and (ii) interest based debt contracts (*riba al-nasi'ah*). In the context of modern financial economics, *riba al-nasi'ah* can be defined as a real risk-free return from an investment vehicle or strategy. The element of *gharar* in a contract entails deception (see Ibn Taymiyyah (n.d.) and Thomas A. S. (1995)). Promoting it preempts *maysir*, which is gambling (*qimar*).

[iii] In the first instance debt serves as a signal to convey the future prospects of a firm and in the second case debt pre-commits the cash flow of a firm and reduces the chances managers will squander it in frivolous activities.

[iv] This is a major difference between Islamic banks and conventional banks. There can be no guarantee of profit or even of depositors' capital. Conventional (*ribawi*) banks on the other hand, guarantee depositors capital and promise a fixed return. Any negative deviation from promised liability is absorbed by the conventional bank's capital (equity).

[v] In the basic *Ijara* (operating lease) agreement, the lease payment typically incorporates the depreciation of asset over the term of the lease.

[vi] Kamali (1997) extensively discusses the controversy surrounding *Al-Ikhtiyarat* (Options) based on the Islamic perspective. He is of the view that options do not involve *gharar* and can be traded for a premium (price).

[vii] I am in debt to Mr. Taha bin Hasan Abdul-Basser for enlightening me on this issue.