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Articles

Islamic Research & Training Institute (IRTI)

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The Islamic Research and Training Institute (IRTI) was established by the Board of Executive Directors (BED) of the Islamic Development Bank (IDB) in conformity with paragraph (a) of the Resolution No. BG/14-99 of the Board of Governors adopted at its Third Annual Meeting held on 10th Rabi-ul-Thani, 1399H corresponding to 14th March, 1979. The Institute became operational in 1403H corresponding to 1983. The Statute of the IRTI was modified in accordance with the resolutions of the IDB BED No.247 held on 27/08/1428H.

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Risk, Return, and Profit-Loss Shared Lending under a Zero-Interest Financial System

SHAFI A. KHALED•

Abstract

Owing to its unique nature, writing a profit-loss shared lending (PLSL) contract for a Zero-Interest Financial System (ZIFS) bank is a challenge. Like venture capitalists and stock owners, a PLS lender faces some of the same risks as the borrower. However, as a lender and not as an investor (as opposed to the classical definition), it does not share in any increment or loss in the value of equity. While the share of profit going to capital may be constant, the absolute amount going to the lending bank is likely to diminish over a fixed period of time until the loan is paid. In economies where attempts to float a PLSL contract is strong, it is made worse by an abundance of adverse selection (AS) and moral hazard (MH) factors: lack of knowledge and training, errors in planning and projection, tardiness in identifying and reacting to problems, limitations of oversight, nepotism, favoritism, corruption, falsification, legal loopholes, tendency to cut corners, etc. So, despite its obvious benefits PLSL contracts are finding it difficult to take root and become established as a standard financing arrangement. This is vitiated by internal competition posed by mark-up financing. Pivotal to a viable PLSL contract, relevant equations incorporating AS and MH and related explicit and implicit costs are identified. Then risk-adjusted return to ZIFS bank, capital's share of profit, absolute income accruable to banks and relevant first order conditions are derived.

Keywords: *Mushārakah*, *Muḍārabah*, PLS, ZIFS, Islamic Banking
JEL Classification: G10, G11

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1. Introduction

According to the proponents of a Zero Interest Financial System (ZIFS), its robustness hinges on profit-loss shared lending (PLSL or *Mushārakah*) operated under a silent partnership (*Muḍārabah*) designed for profit-oriented businesses. Yet it is an entity rarely seen except in the literature. The model that has in the meantime taken root, and is the much-suspected and oft-maligned, is mark-up financing (MUF or *Murābaḥah*) originally designed for service goods. Both models are supported by substantial macro-economic analysis and ethical justification. It appears that owing to a vacuum of microeconomic analysis, MUF's position is unstable and PLSL are yet to be realized. The difficulty of transition from a normative existence to a positive one for PLSL has been vitiated by a very successful, long in vogue, competing conventional interest-based banking system as well as by MUF. For PLSL to gain a part, or all, of the relevant market share in Muslim countries is the challenge.

Between the authors Khaled and Khandker, this paper is the fifth microeconomic investigation in this field. Having dealt with issues related to resource allocation between MUF and PLSL, PLSL contract formation, business plan vetting for appropriate technology and optimal operational scale, and mark-up rate determination, this paper takes into consideration adverse selection (AS) and moral hazard (MH) in order to determine the ZIFS bank's asking price for capital provided under a PLSL contract. While many reasons have been cited why PLSL is absent in reality but not in thought, AS and MH are cited as prominent culprits. So the need to understand their natures as they impact on a firm's/borrower's profit-earning capacity and declaration of its true sum to the ZIFS bank cannot be overemphasized. The limitation imposed on PLSL contract by having to follow a legalistic, classical definition of partnership (*Mushārakah*) cannot be overemphasized.

2. Literature Review

2.1. A Beginning

At first glance, all negative predictions about ZIFS appear legitimate. However, currently extant MUF is really Act I, a first generation product, even though numerous critics appear to suggest that it was DOA (Dead on Arrival). It is true that ZIFS transition from a normative status to a positive one has not been easy, but it is a work-in-progress. MUF is thriving because of its similarity to interest-based lending. That should make traditionally trained bankers a natural fit to run ZIFS operations. Traditional bankers, however, lack the knowledge, understanding and empathy for anchoring a ZIFS even as it is accused of flimsiness and obfuscation.

On the other hand, nowhere is ZIFS' success attributed to demand; depositors who are flocking in by thousands sensing a spiritual affinity. Act II is supposed to be about PLSL. For this end, the script has been long under commission, the set still unrecognizable and the actors literally absconding. In fact, Iqbal et al [1998], with data spanning from 1994 to 1996 on 10 ZIFS banks, find that only two banks hold between 13 percent and 20 percent of their portfolio in PLSL, six hold under five percent, and the remaining two hold between seven percent and nine percent. Also, Khan [1995], with data spanning from 1984 to 1991 on 12 banks from 10 countries, finds that five banks have no PLSL on their books at all, another five have five percent or less, and only two rise to double digit – in Pakistan (13 percent) and Iran (37 percent). According to Farooq [2007], PLSL is not a requirement of Islamic Jurisprudence but just a figment of the imagination of scholars honor-bound to create a *ribā*-free lending mechanism to counter the compound interest based system long in vogue worldwide. And yes, scholars expound the greatness of PLSL and how it elevates a ZIFS while the industry has actually been keeping busy with MUF.

2.2. Survival of the Fittest and Say's Law

It is not clear why PLSL is absent. Naqvi [2002] suggested that in the Game of Survival of the Fittest, traditional interest-based lending has bested it! So, why not move on? One wonders whether it is either a lack of demand or supply, or both, that is disallowing this particular brand of financial instrument to evolve? Naqvi continued suggesting that the pushiness of the proponents of PLSL is tantamount to expecting the Say's Law to deliver. It is a missing market problem no doubt, but there are legions of willing and waiting faithful borrowers who make up potential demand. The widespread success of MUF, despite its criticisms, really proves the point. Could it not be the other way around: pent-up elastic demand awaits viable supply?

Regardless, why should the Say's Law not ring true? Counter-examples do abound: Telephone, X-ray, Penicillin, Small Pox and Polio vaccinations, Pac Man and Cellphone, to list a handful. Their discovery and availability did cause a market to develop by bringing in buyers. In fact, Leonid Hurwicz, Eric Maskin and Roger Myerson received the 2007 Nobel Prize in Economics on Mechanism Design for essentially countering the temperament of trained economists who tend to go with the flow by seeking to explain only what they see by asking, "Why?" not questioning "Why not?" Yes, there is a way to create a thriving PLSL system and a MUF system that is not an alter ego of the interest-based banking facing minimized risk while fetching a guaranteed, fixed, periodic payment.

2.3. Economists or Jurists to blame?

Any notion that MUF is a failure is not entirely fair for there are beneficial differences that MUF brings to the table even in its current state. Most importantly, ZIFS banks have achieved financial stability from years of MUF business. If the PLSL problem is technically solved, they will be in a strong position to literally take the leap of faith pursuing it, risk and all. In fact, Usmani [1998] cites three reasons why ZIFS banks should be spared undue criticism. One, relative to conventional banks, ZIFS banks are small. Two, they are still in their infancy and so Islamic Jurisprudence (Sharī'ah) cannot be faulted for their inadequacies. Three, government and legal systems are not usually supportive of this system. However, in all fairness, one may say in this regard that the associated Development Economics wing of Islamic Jurisprudence (Sharī'ah), Independent Thinking and Analysis (Ijtihad) has not gone far enough. The criticism that the framework of ZIFS is legally rather than analytically driven will be discussed later in this paper. While the legal opening to this form of banking was realized when the Qur'ānic verse 2:275 (Asad) was invoked, there was little reason to keep to any other jurisprudential guideline where none existed or was ever envisioned to govern a modern financial intermediary. But again, Usmani has written:

> "A new form or procedure in *Mushārakah* cannot be rejected merely because it has no precedent in the past. In fact, every new form can be acceptable to the Sharī'ah in so far as it does not violate any basic principle laid down by the Holy Qur'an, the Sunnah, or the consensus (ed. *ijmā'*) of the Muslim jurists. Therefore, it is not necessary that *Mushārakah* be implemented only in its traditional old form."

This suggests that the problem could be with Muslim economists, not Muslim jurists. While some jurisprudentially-aware economists took the initial initiative to get MUF rolling, there was hardly any notable technical innovation behind it. Further, they have not subsequently pushed hard enough despite the fact that jurists were 100% behind them. Just as with the formulation of MUF, their independent thinking and analysis adding finesse to MUF and bringing about breakthroughs on the PLSL front would have been accepted and codified into statutes by the Jurists. Now, the momentum has shifted. It would not be a surprise if abounding vested interest surrounding ZIFS banks galvanize to maintain the status quo of the current form of MUF while continually introducing mimicking financial instruments of conventional banks and expanding into PLSL territory.

2.4. Classical Definition of Partnership Impedes

The procedure underpinning PLSL has a long way to go. The tentativeness is palpable. As a result its operational definition needs to evolve. Abdul-Rahman [2009] has spoken of the presence of Islamic Banking in the USA, while Khan [1996] and Farooq have reported on the work of others. Borrowing from the classical definition of 'silent partnership' meant it had to involve permanent equity ownership with the sharing of profits and losses and with no opportunity to reinvest because it would alter the ownership ratio, because one or more parties owned all of the equity while another party was its administrator or manager (*muḍārib*). Consequently, collateral requirements were mooted. While it has been promoted as the emblem of the system, Farooq correctly thinks that it is this very legalistic definition that has restricted its functionality and evolution. He also points out that owing to the "serious problem with partnership frameworks", PLSL has been "deliberately and systematically avoided" by ZIFS banks. However, as Khan points out, an easy and necessary norm-breaker has been the realization that the PLSL has to have the features of a dual silent partnership – between the depositor and the bank as the administrator, on one hand, and the bank and the firm as the administrator, on the other.

As to the matter of rigid equity, clearly it is wrong at various levels. We do not have a *qarḍ* or loan, a Qur'ānic term used in this context! With money being lent by the ZIFS bank, and not invested, PLSL cannot be an equity-financed undertaking as far as the bank is concerned for it to take a traditional equity-owning, silent partnership position in the firm. Consequently, liability should be limited to the sum loaned, especially when no gain in equity accrues to it. Also, unlike a distress loan (*qarḍ-e-ḥasanah*) where qualification conditions are moot other than manifest distress, PLSL is a business loan to a firm to exploit income earning opportunity. So, a collateral requirement from it should work as sorting and screening mechanism against AS. Thus, under a PLSL contract, the bank and the firm are partners in that they jointly share profit and loss, however they do not share in the rise and fall in value of the firm's equity. That is reserved for equity owners. That means that following a bankruptcy and liquidation, the ZIFS bank should be paid before the equity holders are paid. So, over the life of the loan, any loss borne by the bank, in any year in the life of a loan, is not necessarily a loss of principal but a loss of income.

Farooq adds other reasons why the classically defined, equity-driven form of partnership will not work. He pointed out that in the USA, partnership is the least likely (8%) of the three forms of business organization: proprietorship, partnership and corporation; rarity being proof of its inadequacy. Further, according to a survey

that Caggiano [1992] reported and Farooq quoted, about 60% of those surveyed agreed that partnership is a bad way to do business. Of the 40% who approved of partnerships, 60% said that they were in equal partnerships. The ZIFS bank's interest will be jeopardized because PLSL would be rolled out as an unequal silent partnership. Hence, ZIFS banks are not interested in moving beyond MUF. Moreover, in furthering his case against partnership, Farooq cited Inc. Magazine [2000] which had studied 500 partnerships and found that the partners had known each other long before going into business together. Presumably bankers and firms do not have a long enough relationship to produce a reliable mutually gainful liaison. No wonder PLSL partnerships are so few and far between! Quoting Stiglitz and Weiss [1981], who themselves have likely borrowed the idea from traditional development economics literature; Farooq also suggested that, much like sharecropping, an equity-financed partnership is inefficient. Whatever the manager produces as marginal product it has to be shared with the silent partner. So, the manager's marginal disutility equals his retained marginal product below his potential hence, under-production or inefficiency results.

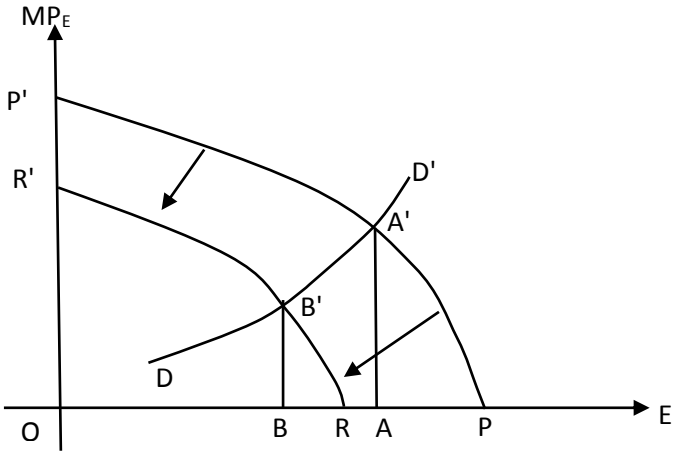
As to "virtuous" co-equal partnerships, the bank cannot worry about being entangled as a co-equal, nor would the firm want it to be so. Farooq makes the same point. Now, based on statistics cited by him, 20% of all US businesses are corporations. They function as silent partnerships, little doubt otherwise, and in aggregate, they bring in 87% of revenue and 69% of profit. So, a silent partnership is neither a failing option nor a choice-of-last-resort form of business arrangement. Also, while longitudinal relationship may act as a sound precursor to partnerships, it is moot as an argument against PLSL. In the modern banking environment, with repeated cycles of borrowing and reimbursement by an entrepreneur with the bank over an extended period of time as well as other exchanges, both parties have to maintain mutual civility and legality in their dealings. Is this not an adequate basis for a sound longitudinal relationship?

2.5. Inefficiency of Partnership

As to the argument about diminished retention of marginal product, it is based on a macro-economic perspective, not a micro one. After all, in spite of this "problem", sharecropping has been around for millennia. Do corporations with millions of silent partners not have this problem? Yet here they are, year after year, driving up the Dow Jones Index. Besides, since a ZIFS bank does not gain from any increase in the value of a firm's equity, the latter's disincentive to strive in the project will be largely mitigated. Finally, without the borrowed money in the first place, would the firm's marginal productivity be as high as it is after receiving the loan? Consider Figure

1.0[1] by Nicholson [1990]. Here, MP_E is the marginal product of the entrepreneur's (i.e. firm's) effort, E. PP' is presumably the highest level of productivity achievable without having to borrow and share profit. With a share rate, d, RR' is the retained productivity going to the firm, RR' = (1-d)PP'. The marginal disutility curve of E is DD'. It intersects PP' and RR' at A' and B', respectively. According to the critics, the total product shrinks to the area R'B'BO, instead of being P'A'AO because effort goes down from OA to OB. This paper argues that without the loan amount, PP' would have located closer to the origin, as low as RR' or lower. Also, PP' does not take into consideration, the gain in the value of equity resulting from additional work made possible by loan-based expanded capital stock.

Figure-1.0 Firm's Marginal Productivity with & without Loan



2.6. Current PLSL Contract and MUF Structure Limited

So, is it possible that an inability to fully enunciate the nature of PLSL contract has kept the activities of ZIFS bank confined to MUF? Is it also possible that MUF was not well constructed to begin with and has been hindering the development of PLSL as well?

[1] The production function's position (height and shape) in the first quadrant depends on external factors such as technology, scale of operation, employee background, managerial expertise, etc. Of course, movement along the production function is facilitated by the volume of labor force and while the marginal productivity (MP) is positive, it is first increasing and then decreasing. Generally, a profit maximizing firm will operate on the segment of its production function wherein MP is decreasing. A production function and its corresponding MP curve will dominate another if it has more, better, or both of external factors. Sometimes that is facilitated by the volume of capitalization and/or access to loan.

Let us, for a moment, look at the part of ZIFS bank that is operational, the MUF. Farooq, echoing Saeed (1996), writes MUF "ensures maximum risk avoidance and a relatively high return", and this earning is also pre-determined! The point being, where is the risk? Farooq further comments "Islamically, there is nothing wrong with *Murābaḥah*, but there is nothing Islamic about it, either". But not being wrong, is that not necessary to be Islamic? It does live up to the admonition: "*wanha 'anil munkar*" (Asad; 31:17), meaning "and forbid wrong doing". Charging *ribā* or interest is a wrong doing! If it charged interest surrogate, that would be wrong. Except for insinuation and innuendo, there is little proof there is a subterfuge afoot.

The first argument above about MUF having limited risk and predetermined earning is moot since MUF by definition is a trade transaction, albeit done on a deferred payment basis (*Bay' mu'ajjal*). However, the rejoinder is likely to be thus: is that not one of the characteristics claimed about it? As to the second part of the observation, actually, there is a lot wrong with MUF, Islamically. Khaled and Khandker [2017] explore this from a microeconomic perspective. The circumvention of microeconomics has also been problematic for developing PLSL. Now, MUF's point of departure is a verse in the Qur'ān [Asad; 2:275]. It says that trade (*tejarah*) is allowed (*ḥalāl*) and interest (*ribā*) is disallowed (haram) Warde [2000]. Henceforth, it defined the modus operandi of ZIFS banks. This has meant financing service goods (car, boat, house, household durable, private plane, pleasure yacht, etc.) by first purchasing it, then reselling it back to the credit seeker at a mark-up under an extended payment plan. Two things happened along the way: MU rate determination was not elucidated. No market structure analysis followed. Under Sans microeconomics, these omissions were natural. Could the spiritually driven ethical condition have been violated? Concluding that to be the case, Khaled and Khandker [2017] made two restrictive suggestions.

First, even though Islam allows profit maximization [being against waste (*isrāf*), preferring things that are done well and are able to project thoroughness, beauty and grace (*jamaal*) thereby making efficiency par for the course], MUF profit has to be regulated using average cost (AC) pricing[2] for the MU rate (Nicholson, 1990). The

[2] In a perfectly competitive world, social surplus (consumers' surplus + producers' surplus) is maximized when Price = Average Cost = Marginal Cost (P, AC and MC, respectively). This presumably is the most efficient market structure. Therefore, it is the ideal or standard. However, in a monopoly situation under profit maximization, we get P > MC > AC with production falling short of the level that would have been achieved under Perfect Competition. This is deemed inefficient as social surplus is not maximized while a portion of consumers' surplus is transferred to the producer. In order for a natural monopoly to be licensed by the government to be the sole producer, it has to submit to government regulation which envisages a lower price than what the monopoly firm would set by itself.

cause (*illa*) that defines trade does not nearly define the trade being conducted under MUF. So, the level of latitude allowed to trade under Islamic Jurisprudence cannot be allowed to MUF. Also, during the prophetic period, any high interest rate or high secondary interest rate imposed upon those loans that had difficulty being serviced could have only arisen in a concentrated market. So, elimination of interest was a market regulatory act. Finally, the unfairness of interest, the objective (*maqsud*) of Islamic Jurisprudence being its prohibition, is not eliminated by adopting trade rituals while the bottom-line payment remains equally high as in an interest-based lending system.

Secondly, MUF should only finance service goods and not any business or part of a business with a profit flow. Even public infrastructure projects with income flow are suspect candidates for financing under it. MUF's ever-expanding market locus has been relentlessly cutting into PLSL territory. Example: *istiṣnā'* – funding of long-term for-profit (i.e., non-service) capital projects (Zarqa, 1997). Moreover, the urgent nature of problems arising from an absence of PLSL may be going unnoticed. A new financial product called *Tawarruq* has been serviced for a while by some Southeast Asian ZIFS banks, and lately by banks in the Al Jazeera region, some under the new brand name of Taysir (Bt. Ismon, 2012).

According to Ali [2017]:

> *Tawarruq*, a financial instrument involving a series of sale contracts conducted in succession — a person purchases a commodity from a seller on deferred basis and subsequently sells it to a party other than the original seller on a cash basis for the purpose of obtaining liquidity — is "the new kid on the block".

Voices can be heard in defense of faith that *ribā* has entered the market through the back door. According to Bt. Ismon:

> Nevertheless, the validity of the application of *Tawarruq* in Islamic banking is questionable either it is permissible or not. The resistance still exist on the ground from some critics who say that *Tawarruq* based financial product bear a striking resemblance to interest based product. For instance, the Islamic Fiqh

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The government has two choices for a price point, P, off the demand curve. One, P = MC, or two,. P = AC. All three being equal is not possible. So, the government will choose P = AC (i.e. AC pricing) whereby production as well as consumers' surplus are maximized. That is because under sustained increasing returns to scale, setting P = MC will cause the monopoly to incur a loss when production could be halted altogether or the project rejected at the outset since P = MC < AC.

> Academy of Rabbitah 'Alam Islami, Mecca ruled in 2003 that any product structure based on *Tawarruq* concept should be considered as Haram, or forbidden in Islamic law.

In reality, one could argue, many faithful and practicing entrepreneurs are cash short. Under MUF, they cannot obtain operational cash. They can only have their commodity needs financed for them. So, to circumvent this inconvenience, they planned a double-trade strategy combined with a mark-down or discount. As an example, through MUF, the entrepreneur acquires precious metal (gold or silver) for, say, $10.0 million (m) against a mark-up of $0.5m. Then, in the open market, it sells it all for $9.5m, thereby taking a 5% discount. The bank continues to make $0.5m as before. The entrepreneur pays a total cost $1.0m or a net charge of 10.5 percent. Now, under traditional MUF, is a sale of a house or a car by the debtor disallowed? No, because it is just another trade, and no interest was incurred. Same is the case with *Tawarruq* and no change of contract or hike in fees on the part of the ZIFS bank has resulted. Its permissibility can also fall under ruling on Urgency or Special Circumstance (*Dhuroorat*).

2.7. Onboarding PLSL

Now for PLSL to come onboard, as discussed earlier, it must move away from the classical definition of partnership. Also, several technical and a few specialized training issues need to be resolved. One, rules need to be established for optimal resource allocation between MUF and PLSL. Two, there must be MU rate determination because it is an organic opportunity cost marker for PLSL. Three, there must be establishing bargaining zones for PLSL contracts. Four, banks must be able to determine acceptable profit share rates accruable to capital and to the bank. Finally, ZIFS banks loan officers must be able to analyze appropriate technology and optimal operational scales in firms' proposed business plans etc.

Khaled and Khandker [2014] tackle resource allocation between MUF and PLSL. While they were able to solve it, it became a daunting mathematical exercise when they assumed a unified objective function for both segments of a ZIFS bank's business.

Khaled and Khandker [2015] separate out the objective functions by ZIFS bank's business segments, having dedicated deposits for each and allowing investible funds to be transferred at the margin from PLSL to MUF, but not vice-versa. Thus, resource allocation is exogenously determined. Therein, by identifying a viable bargaining zone and a necessary condition that states that the firm's maximum bid rate must

exceed the ZIFS banks' minimum asking rate, a practical pathway to thinking about establishing PLSL is opened up. However, to solve the problem it is assumed that both the firm and the bank use the same cumulative profit estimates over the lifetime of the loan. The monitoring cost of the bank used therein could be thought of as corresponding to at least one of two similar costs (Vetting and Intervention) identified in this paper. While the current paper squarely complements the above mentioned paper, it goes beyond trying to estimate a firm's profit flow over the lifetime of a business loan. Two parties, ZIFS bank and the borrowing firm, are claimants to this sum. Without such an estimate, the earlier paper is constrained, and the more the profit estimates of parties differ, the harder it will be to contract. While in the earlier paper the authors estimate the share of profit that goes to the two stakeholders, in this paper the share of profit that goes to invested capital, as opposed to entrepreneurship, is estimated. Incidentally, Craig (2001) addressed the multi-service European Universal Bank (EUB), which is different from non-retail banking as represented by the Italian Merchant Bank or the US Investment Bank. Khaled and Khandker [2015], in combining both operations under one roof, appear to have identified the EUB as a possible arrangement for ZIFS banks. Farooq also concludes that the universal bank resembles the ZIFS bank.

Khaled [2015] argues about the importance of vetting (through appropriate technology adoption and selection of an efficient scale of operation) to achieve a viable PLSL contract and clarifies ways about doing it. Two issues that the literature suggests are confounding the development of PLSL are AS and MH. They are problems arising, respectively, pre and post contract, [Akerlof, 1970; Spence, 1973; Tag El-Din, 1991] owing to a lack of transparency created by an imperfect market. Errors in estimation of future streams of receipts due not only to Acts of God but also due to real and engineered human factors do present a conundrum for this unique arrangement. The idea is not just to sort and rank the loan applicants by qualification but also to find ways and means for them to be (more) successful. The current paper reinforces that idea by exploring the nature of AS and MH and how they are connected. In particular, it illustrates alternative formulas with which to determine ZIFS bank's risk-adjusted negotiating price of capital during bargaining for a PLSL contract.

Now, by AS we understand of a situation wherein, owing to information asymmetry, the ZIFS bank over estimates the capacity of the entrepreneur. It fails to detect and protect against managerial incompetence and moral turpitude intruding during hiring, renting, purchasing, production, marketing, and reporting phases. It could be traced to false representation, over eagerness and optimism, or misreading of unfolding circumstance by the entrepreneur. So, overestimating profit flow, the

ZIFS bank proceeds to lend a sum of money greater than it should. On the other hand, by underestimating potential risk, it asks for a lower profit share rate on capital than it should. It leads to an inefficient decision on the part of bank and jeopardizes its own profitability. It loses money even as it is lending it.

On the other hand, MH is a problem that could arise after loan dispersal. It too depicts asymmetric information situation whereby the firm is able to take advantage of the under-informed lender by obfuscating profit-related facts. Thus, par for the course would be to under-report productivity by inflating costs (e.g. over-invoicing machinery and raw materials) or deflating revenues (or both); engaging in nepotism in hiring incompetent, favored employees and dealers; willfully cutting corners; collusion; exploiting workers; compromising quality; avoiding maintenance; allow insurance policies to lapse; bloating perquisites and shirking effort; paying bribes to remove bumps on the road; while realizing that there is only a small risk of discovery and recovery by the bank or payment of a penalty for its misbehavior. Further, it may do so not only to underpay the bank but also the government and other stakeholders via reduced tax and dividend payouts.

A failure to clarify the complex nuances of this reality precludes banks, businesses, and the community from contracting such loans and gaining from their immense benefits. Khaled [2015] points this out with Figure 3.0. This paper focuses on identifying the realized and declared profit flow due to AS and MH, respectively. The bank may decide to operate under duress or attempt to alleviate their impact albeit at a cost. Currently, most ZIFS banks are doing neither.

To counteract AS and MH, the bank may resort to pre-lending Applicant Vetting (AV) and post-lending Client Intervention (CI), respectively, albeit both at a cost to itself.

AV means adhering to multiple procedures including the following: (a) thoroughly checking the credentials of loan applicants, (b) assessing the viability of the proposed project from both a resource and a market perspective, (c) adopting appropriate technology and scales of reference and, (d) committing reasonable, immobile collateral along with the presentation of favorable credit ratings or some other means of reliability assurance.

CI similarly means adhering to multiple procedures including the following: (a) assuring legal enforceability, (b) providing managerial training and support, (c) maintaining quality guidelines, (d) upholding consumer protection, (e) instituting

periodic audits, (f) adopting fair employment practices, (g) mitigating X-Inefficiency (Hassan, 2006)[3], and (h) respecting environmental guidelines, etc.

Regardless of the choice made, practically, there are two rates that are of interest to the ZIFS bank: the rate-of-return on its investment and its offshoot, profit share rate to capital. It is argued that being able to positively impact AS and MH implies that such behaviors are inversely correlated with AV and CI.

3. Analytical Approach

The ZIFS bank is operating under conditions of dual *muḍārabah*. It gains no equity interest in the firm receiving a PLS loan. Lending is not done for perpetuity. The loan is repaid over the contract period. Credibility assessment and collateral deposits are the norm. So, the PLSL contract is unlike a partnership contract that establishes a firm among two or more parties. To be understood: *Mushārakah* (partnership) is an extended-life institution for certain business relations, while a *Qarḍ* (loan) is a product with a limited life. Even as it shares risk under a PLSL contract, a loan cannot be an equity investment at the same time. So, it cannot be a product of the former institution.

The problem tackled in this paper is to find means by which to anticipate and/or mitigate both AS and MH so that PLSL takes off as a portfolio item of ZIFS banks. How might incentives and penalties cause greater self-selection by the firm so that it reduces, even avoids, hiding under pretenses that create AS in the first place, or cause the firm to enhance its professionalism allowing technical and managerial capacities to match the assessment and expectation of the lending bank?

There is still another element to the ensuing exercise: treatment of inherent risk associated with potential earning under PLSL. This is achieved by comparing its risk with that of its closest competitor MUF.

So, the section following this commences with categorization tables for AS and MH. Graphs are introduced to show the conjectured nature of interactivity between AS and MH, and how they may be reduced by incurring vetting and intervention costs. Further, numerical examples of the impact of AS and MH on borrower's profit and subsequent distribution to the bank are presented. They allow one to see how the scale of operation, amount loaned, and profit share rate to capital affect the final realized rate-of-return (ROR) for banks.

[3] Even with allocative efficiency, a poor choice of deployed resources (e.g., capital input, manpower, etc.) will lead to yet another brand of inefficiency called, X-Inefficiency.

Knowing that MH could manifest through three avenues, to be explained below, allows one to ask: Is the firm's MH circumstantial or innate and unique? If it is of the former type, there is a cause-effect and so mitigation will be easier to design. But with innateness or inherent moral failure, instituting a screening and sorting mechanism at the front end during the application process could be the best means to mitigate it. As to circumstantial causes, the situation is worsened if the political and legal systems are opportunistic, avaricious, partisan, and fraught with nepotism and favoritism. A breakdown of law and order introduces players into the banking system who would typically keep their distance. This, of course, makes even standard participants more careless and opportunistic. While this issue needs addressing, it is outside the scope of this paper.

Going forward, three successive profit outcomes to the firm are specified: (a) efficient and unburdened by AS, MH, or X-Inefficiency profit outcomes, (b) compromised by AS and (c) compromised by both AS and MH. Based on profit function's third specification, share-to-capital in general is formulated. Using this formulation, share to bank is established. This is followed by calculating the rate-of-return to bank. Then, two Sharpe ratios are compared: that of rate-of-return to PLSL to that of rate-of-return to MUF. This allows the researcher to derive capital's share of profit.

The above steps are subject to two iterations producing slightly different results for capital's share of profit. In the first instance, losses due to AH and MH are acknowledged but taken as given and not subject to amelioration. Secondly, the alternative iteration, the ZIFS bank is proactive so as to mitigate AS and MH, putting into play AV and CI while incurring corresponding costs[4]. The corresponding measures of profit are higher. This section closes with derivatives for first order conditions of both formulations of capital's profit share rate. These derivatives also have similarities with those in Khaled and Khandker [2015] that refer to a bank's profit share rate, and not share rate to capital.

4. Model

4.1. Categorization and Principles of Addressing Adverse Selection and Moral Hazard Losses

Table 1.0, on Possibility of Incidence of Adverse Selection and Moral Hazard by Firm Type, states the obvious that only qualified firms are likely to spare the ZIFS

[4] There is a similarity with the cost element to bank found in Khaled and Khandker [2015].

banks from AS issues. As to MH problem, both types of firms, qualified and under/unqualified, may manifest it. The total cost/loss to the lender due to AS is measured as a percentage of maximum possible income, 'a', where $0 < a < 1$.

Table-1.0
Possibility of Incidence of Adverse Selection & Moral Hazard by Firm Type

Problem	Qualified	Under/Unqualified
Adverse Selection	No	Yes
Moral Hazard	Yes	Yes

Table 2.0 on Possible Avenues Leading to Moral Hazard identifies circumstantial grounds and inherent or innate elements that generate a MH problem. The total cost/loss to the lender for MH is measured as an aggregated percentage, 'h', where $0 < h < 1$. Further, regardless of firm type, societal factors (h_s), entrepreneur's personal ethical shortcomings (h_p), and indirect impact of AS (h_a) are likely to induce MH outcome. So, addressing AS head-on may produce dual benefits – direct and indirect, by reducing partial loss appearing as MH. We can see all of the above represented in Figures 2.0 and 2.1 below.

Table-2.0
Possible Avenues Leading to Moral Hazard

Firm	Socio-Political, Legal & Cultural Openings	Personal Shortcoming	Impact of Adverse Selection
Qualified	Yes	Yes	No
Under/Unqualified	Yes	Yes	Yes
h =	h_S	$+ h_P$	$+ h_A$

Figure-2.0
Adverse Selection Loss & Applicant Vetting Cost

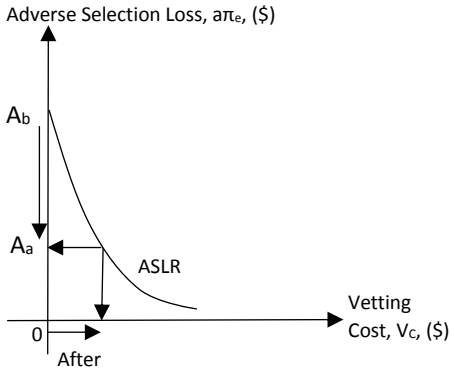
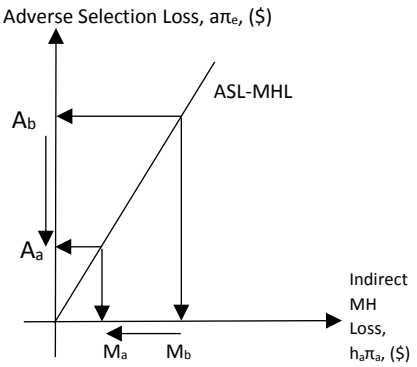


Figure-2.1
Adverse Selection & Moral Hazard Losses



Displayed in Figure 2.0, Adverse Selection Loss and Applicant Vetting Cost, owing to diminishing productivity of vetting effort, AS Loss and V_c are inversely related. The negatively sloped Adverse Selection Loss Reduction Function (ASLR) represents it. Displayed in Figure 2.1, Adverse Selection and Moral Hazard Losses, is the positive relationship between AS Loss and Indirect MH Loss. To avert AS loss, vetting effort will continue until the sum of savings obtained from a reduction of AS loss and corresponding is at least equal to one.

$$\underset{(-)}{\text{Abs.}\frac{da}{dV_C}\pi_e} + \underset{(-)}{\text{Abs.}\frac{dh_a}{dV_C}\pi_a} = \text{Abs.}\left[\underset{(-)}{\frac{da}{dV_C}} + \underset{(+)\ (-)}{\frac{dh_a}{da}\frac{da}{dV_C}a}\right]\pi_e \geq 1 \qquad \text{(i)}$$

In Figure 3.0 on Moral Hazard Loss and Client Intervention Cost, owing to diminishing productivity of intervention effort, loss due to MH (h_P) is negatively related to intervention cost (I_C) directed toward reducing it. The curve is called the Moral Hazard Loss Reduction Function (MHLR). This would, according to Table 2.0 earlier, address MH arising from personal shortcoming (h_P). The intervention effort will continue until the marginal MH loss prevented through intervention is at least equal to one:

$$\underset{(-)}{\text{Abs.}\left[\frac{dh_P}{dI_C}\right]}a\pi_e \geq 1 \qquad \text{(ii)}$$

Figure-3.0
Moral Hazard Loss and Client Intervention Cost

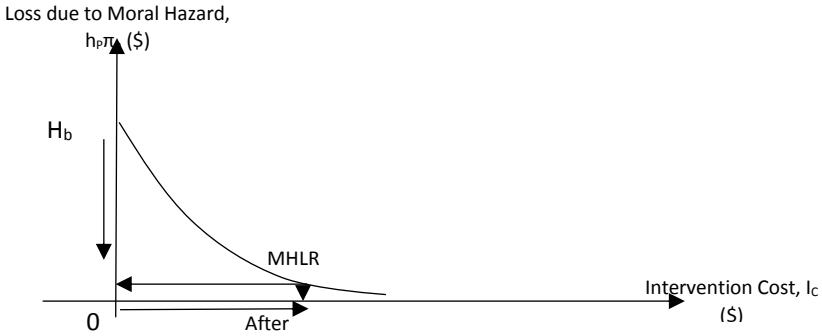


Table 3.0, Numerical Example of Losses from Adverse Selection & Moral Hazard on PLSL Contract with Economies of Scale, provides an example of a ZIFS bank that contracts two PLS loans to the tune of $100,000 and $200,000. The profit share rates are, respectively, 8% and 10%. The corresponding profit expectation of $1.0m and $2.4m indicate economies of scale. However, there are losses owing to AS and MH of 20% and 37.5%, respectively. So, the actually earned and reported profits for the two loans are, respectively, ($0.8m and $0.5m) and ($1.92m and $1.20m). Hence, the ZIFS bank instead of making expected RORs of 80% and 120% from the respective loans, actually makes RORs correspondingly of 40% and 60%. The total loss, in each case, is divided between losses suffered due to AS and MH. Clearly, with the availability of limited loanable funds, given proportionately the same AS and MH impacts, lending a larger sum to exploit economies of scale produces a greater ROR.[5]

Table-3.0
Numerical Example of Losses from Adverse Selection & Moral Hazard on PLSL Contract with Economies of Scale

Loan Amount, L ($, K)	Bank's Contracted Profit Share Rate to Capital, c	Firm's Expected Profit, π_e ($, m)	Bank's Expected ROR, r_e (%)	Actual Profit Earned under AS, π_a ($, m)	AS Loss ($, K)	Reported Profit under MH, π_h ($, m)	Total Loss Given Expectation ($, K)	MH Loss ($, K)	Bank's Realized ROR, r_r (%)
100	0.08	1	80	0.8	16	0.5	40	24	40
200	0.10	2.4	120	1.92	48	1.20	120	72	60

Note: The ROR's are exclusive of bank's business expenses undergirding the loaned amount, L.

[5] Here, a = 0.2 and h = 0.375. Also, $\pi_h = (1 - h)\pi_a = (1 – h)(1 – a)\pi_e = 0.5\ \pi_e$. Now, $r_e = (c.\pi_e)/L$ and $r_r = (c.\pi_h)/L = [c.\{h.(a.\pi_e)\}]/L$. These notations and equations will also apply to Table 4.0.

As to h_s, it may be mitigated via a public good effort where the society bears the cost. It is possible MH attributed to h_s is significantly large.

Table 4.0, Anticipating and Reacting to Losses from Adverse Selection & Moral Hazard on PLSL Contract by Changing Loaned Sum, Profit Share Rate, or both, gives alternatives to the first example in Table 3.0. After all, AS leads to more open and generous assessment and dealings with a borrower, i.e., advance a larger sum than would be warranted without asymmetric information and charge a more favorable lower rate that would be due only to a less risky firm. It displays what would happen under three alternative scenarios. First the amount loaned is kept the same while the profit share rate to capital is raised. Second, the amount loaned is reduced while the profit share rate to capital stays unchanged. Three, the amount loaned is reduced while the profit share rate to capital is raised. In each case, the final realized RORs (50%, 80%, and 100% respectively) exceed the 40% ROR realized in the earlier example in Table 3.0 wherein the loan amount is $100,000 and the contracted profit share rate to capital is 8%.

Table-4.0
Anticipating and Reacting to Losses from Adverse Selection & Moral Hazard on PLSL Contract by Changing Loaned Sum, Profit Share Rate, or both - based on Example 1 in Table 3.0

Loan Amount L ($, K)	Bank's Contracted Profit Share Rate to Capital, c	Firm's Expected Profit, π_e ($, m)	Bank's Expected ROR, r_e (%)	Actual Profit Earned under AS, π_a ($, m)	AS Loss to Bank ($, K)	Reported Profit under MH, π_h ($, m)	Total Loss to Bank Given Expectation ($, K)	MH Loss to Bank ($, K)	Bank's Realized ROR, r_r (%)
100	0.10	1	100	0.8	20	0.5	50	30	50
50	0.08	1	160	0.8	16	0.5	40	24	80
50	0.10	1	200	0.8	20	0.5	50	30	100

Note: The ROR's are exclusive of bank's business expenses undergirding the loaned amount, L.

A. No Vetting against AS or Intervention against MH

We label, respectively, π_{st}, π_{at}, and π_{ht} to represent profit as i) standardly maximized, ii) actually earned having been subject to percentage loss, a, due to AS, and iii) officially reported having been subject to percentage loss, h, due to MH. Here, t = 1…T (life of the loan). Using profit function $f_t(.)$ at time 't', equation (1) shows maximized profit, π_{st}, given p and w, the exogenous prices of output and inputs, respectively, and where L^* and q^* are optimal input and corresponding profit

maximizing output levels[6], respectively. Also, ε_t is the normally distributed error term with mean, 0, and variance, σ. Hence,

$$\pi_{st} = f_t(q^*, L^*; p, w) + \varepsilon_t \quad (1.0)$$
$$\pi_{at} = (1 - a)[f_t(q^*, L^*; p, w)] + \varepsilon_t \quad (2.0)$$
$$\pi_{ht} = (1 - h)(1 - a)[f_t(q^*, L^*; p, w)] + \varepsilon_t \quad (3.0)$$

Henceforth, x = s, a, or h. Let, c be the profit share rate sought by the bank for all capital involved in the firm's project. An example of c may be simply constructed thus. Let 'e' be the share of π that is assigned to entrepreneurship. Then, in general, $c = (1 - e)$ is the profit share rate to capital, Khaled [2015]. Also, with K_0 being book value of entrepreneur's total capital following borrowing 'L_0' amount from the ZIFS bank, $[(L_0/K_0)c]$ is the share of profit accruing to the bank against the loan advanced in the first payment period. This amount, however, is diminishing as the loan is repaid. We use (L_0/K_0) to determine a constant valued c. L_0 builds up the production capacity of the firm. This capacity neither diminishes with the sharing of profits nor the repayment of the borrowed amount over its lifecycle. Given c, the absolute level of profit possibly accruing to bank, π^b_{xt}, under regimes represented by equations (1.0), (2.0) and (3.0), respectively, would be:

$$\pi^b_{xt} = c(L_o/K_o)\pi_{xt} \quad (4.0)$$

With 'E' as the expectation operator, the corresponding rates of return to bank, r^b_x, given that cost incurred in lending the sum 'L_0' is ξ, with 'T' being the length of the lifecycle of the loan:

$$r^b_x = TE[\pi^{b*}_{xt}]/(L_0 + \xi)^7 \quad (5.0)$$

Assuming MUF has a rate-of-return, r_m, and a standard deviation of σ_m, while a zero-risk treasury or sukuk instrument has a rate-of-return, 'τ', then we have two comparable Sharpe ratios such that

$$\frac{(r^b_h - \tau)}{\sigma} \geq \frac{(r_m - \tau)}{\sigma_m} \quad (6.0)^8$$

[6] Without X-inefficiency as well.

[7] An alternative way of writing this would be: $S^b_s = \Sigma(\pi^b_{st})/(L_0 + \xi)$ per Khaled and Khandker [2015].

[8] Alternatively, assuming that r_m is a 100 percent assured receipt, i.e., no risk is involved with MUF, the bank will lend under PLSL only if the corresponding Sharpe ratio variant is at least positive: $\frac{(s^b_h - r_m)}{\sigma} \geq 0$. Then,

Here, $r_h^b > r_m > \tau$ and $\sigma > \sigma_m$. Using equations (6.0), (5.0), (4.0) and (3.0) we solve for c as being able to take any value over a range. With $E(\varepsilon_t) = 0$,

$$c \geq \frac{[\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi)]}{[L_0T(1-h)(1-a)E\{f_t(q^*, L^*; p, w)\}]} \qquad (7.0)$$

Now, if π_{rt} is the actual reported year-end profit, and L_{bt} is the outstanding loan balance that year, taking the left hand side of inequality (7.0) as an equality, the year ending income accruing to the ZIFS bank will be:

$$\left(\frac{L_{bt}}{K_0}\right)c\pi_{rt} = \frac{L_{bt}\pi_{rt}[\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}(L_0 + \xi)]}{[L_0T(1-h)(1-a)E\{f_t(q^*, L^*; p, w)\}]} \qquad (8.0)$$

On the other hand, if the bank was forced to accept a given c, it can affect s^b_h in three ways: Limit its lending cost, ξ, by improving its efficiency and x-efficiency; and seek to increase $E[\pi^b_a]$ and $E[\pi^b_h]$. To affect the latter two variables, the bank may undertake steps to mitigate 'a' and 'h'. Reducing them through vetting or intervention, accordingly, will increase s^b_h. This will likely involve incurring additional costs discussed in Section B. One matter to note, in using (L_{bt}/K_0), K_0 may have grown to, say, K_n, since incurring the loan L_0. That means $(L_{bt}/K_0) > (L_{bt}/K_n)$[9], in reality giving the bank a larger share of the profit.

B. With Vetting against AS and Intervention against MH

Earlier, Figures 2.0 and 3.0 show how 'a' and 'h' may be impacted favorably. Incidentally, there is no a priori reason to say either a > h, or vice versa.

As would be expected, both relationships depict negative correlation, exploitation of which gives desired outcome to the bank. So, we use ASLR and MHLR curves to represent the relationships. With vetting, $a^1 < a$, and with intervention, $h^1 < h$. Finally,

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$$c \geq \frac{[r_mK_0(L_0 + \xi)]}{[L_0T(1-h)(1-a)E\{f_t(q^*, L^*; p, w)\}]}$$

And, corresponding annual income in the t^{th} year,

$$\left(\frac{L_{bt}}{K_0}\right)c\pi_{rt} = \frac{r_mL_{bt}\pi_{rt}(L_0 + \xi)}{[L_0T(1-h)(1-a)E\{f_t(q^*, L^*; p, w)\}]}$$

[9] Under a classical definition of PLSL, with the bank owning a share in the borrowing entity's project for perpetuity, K_0 is restricted from growing since it would upset the ratio, L_0/K_0. This problem is moot because of how a PLSL contract is defined here.

Figure 2.1 on Adverse Selection Loss and Moral Hazard Loss refers to the indirect effect of Vetting on MH via the former's impact on AS. So, AS and MH are conjectured to be causally positively related as represented by ASL-MHL curve. Thus,

$$\pi^1_{at} = (1 - a^1)\pi_{st} + \varepsilon_t \quad (2.1)$$

$$\pi^1_{ht} = (1 - h^1)(1 - a^1)\pi^1_{st} + \varepsilon_t \quad (3.1)$$

Thus, vetting and intervention cause a change in profit levels such that $\pi^1_{xt} > \pi_{xt}$, where x = a, or h. This implies the absolute amount of profit accruing to the bank also rises. So, $\pi^{b1}_{xt} > \pi^{b}_{xt}$.

$$\pi^{b1}_{xt} = c(L_0/K_0)\pi^1_{xt} \quad (4.1)$$

The corresponding rates of return to bank, s^{b1}_a and s^{b1}_h, given additional lending costs incurred in vetting and intervention are α and θ, and in line with (8) and (9), respectively:

$$r^{b1}_a = TE(\pi^{b1}_{at})/(L_0 + \xi + \alpha) \quad (5.1)$$

$$r^{b1}_h = TE(\pi^{b1}_{ht})/(L_0 + \xi + \alpha + \theta) \quad (5.2)$$

The bank will do vetting before lending only if $\frac{(r_a^{b1} - \tau)}{\sigma} \geq \frac{(r_m - \tau)}{\sigma_m}$.

Also, both vetting and intervention will take place before lending only if:

$$\frac{(r_h^{b1} - \tau)}{\sigma} \geq \frac{(r_a^{b1} - \tau)}{\sigma} \geq \frac{(r_m - \tau)}{\sigma_m} \quad (6.1)$$

Using the equality version of the left-most inequality in (6.1), as well as equations (5.2), (4.1) and (3.1), we derive the relevant c. Hence,

$$c \geq \frac{[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0(L_0 + \xi + \alpha + \theta)]}{[L_0T(1 - h^1)(1 - a^1)E\{f_t(q^*, L^*; p, w)\}]} \quad (7.1)$$

Again, per equation (8.0), and with $\pi^1_{rt} > \pi_{rt}$, corresponding annual income in the t^{th} year,

$$\left(\frac{L_{bt}}{K_0}\right)c\pi^1_{rt} = \frac{L_{bt}\pi^1_{rt}[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}(L_0 + \xi + \alpha + \theta)]}{[L_0T(1 - h^1)(1 - a^1)E\{f_t(q^*, L^*; p, w)\}]} \quad (8.1)$$

The relevant first order conditions are in Appendices I and II[10].

[10] Now, elasticity, $E = \frac{dy}{dx}/\frac{y}{x}$. Since the derivatives in the appendices give the relevant marginal values, the point elasticities should easily follow.

5. Analysis of Results

Having categorized AS and MH (Tables 1.0 and 2.0), the paper proceeds to numerically illustrate how their presence affects a bank's profitability on loans contracted (Tables 3.0 and 4.0). Banks gain more by backing projects with economies of scale and by adjusting lending rates according to the anticipated presence of these dual problems.

Then the paper proceeds to graphically illustrate the nature of AS and MH (Figures 2.0, 2.1, and 3.0), their interaction with each other, and how they are likely respond to specific amelioration. It also formulates cost-benefit rules for undertaking such amelioration (Inequalities (i) and (ii)). Further, parsing the grounds for MH into three categories, successful amelioration effort of that problem becomes more likely (Table 2.0).

Typically, in order to receive a healthy rate-of-return on the bank's *ribā*-free loans, a PLS lender has two options with regard to firm's annual profit: (a) secure for itself a favorable share rate, regardless of the role of money in the overall scheme of things or (b) secure for the total capital invested (entrepreneur's capital plus bank's loan amount) in the enterprise a favorable share rate. Then obtain a pro-rated share of that share rate. As mentioned earlier, unlike Khaled and Khandker [2015], this paper clarifies the second option[11]. By using the limit values of inequalities (7.0) and it's variant equation (7.1). Up until now, the capital's profit share rate may have been arbitrarily determined, perhaps as a custom – with capital and entrepreneurship as co-equal, or being set equal to the fraction remaining after having paid off for entrepreneurship. However, such rates skirt around losses from AS and MH. If errors and malpractices are assigned to a firm, then the demand for a profit share rate-to-capital could exceed the co-equal figure of 50%. Further, such a rate does not take into account risk nor does it properly incorporate projected profit streams. The risk adjustment problem may be mitigated by equating the Sharpe ratio of the potential rate-of-return to the bank for PLSL with that on MUF. That means, at equilibrium, the rate-of-return on excess earned over a guaranteed return per unit of risk for both portfolios are made to be same. So, if the risk on PLSL return is 'x' times that on MUF return, the excess over the rate-of-return on the former portfolio must be 'x' times also. Thus, the minimum share of profit going to capital is given by the limit value of the left-hand-side of both listed inequalities. Having made c endogenous

[11] Incidentally, the contract rate demanded by bank in the earlier paper may utilize the rate obtained here to flesh out its actual value.

from the bank's perspective, return to entrepreneurship, e, becomes equal to (1 – c), instead of the other way around as was suggested earlier.

A. According to Khaled and Khandker [2015], once an acceptable floor value for c is determined, achieving a higher rate, albeit even this lower rate, depends on the bank's bargaining power during the contract negotiation phase. This power, in turn, is predicated upon its lending power (i.e. market concentration), scarcity of loanable funds, sector, industry, firm, the phase of the business cycle when lending is first contracted, bank's length of relationship with client and the latter's past performance, urgency of the request, novelty or innovation presented by the firm in its proposed investment project, as well as the knowledge and training of the loan officer [Khaled, 2015].
Now, with π_{rt} as the firm's ex-post reported year-end profit for any year, the actual absolute minimum yearly earnings for the ZIFS bank is given by the lower limit value of inequality (8.0). While the share-to-capital remains constant, the bank's actual share is diminishing since the loan is being periodically repaid - (L_{bt}/K_0) is a diminishing ratio over the lifetime of the loan. Even so, the bank's actual income from any such loan may not diminish at the same rate from period to period depending on the robustness of π_{rt}.

B. As indicated earlier, respectively, the bank can positively impact π_{at} and π_{ht} through proper vetting of the potential firm and the business plan, and post-lending intervention – legal, managerial, technical, etc. Thus, with improved post-vetting and post-intervention profits (π^1_{at} and π^1_{ht}, respectively), we are able to construct a new profit share rate to capital, given by the lower limit value of inequality (7.1). However, there are additional costs (e.g., α, θ) involved with such proactivity. In this case, with π^1_{rt} as the firm's reported year-end profit for any year, the actual absolute minimum yearly earnings for the ZIFS bank is given by the lower limit value of inequality (8.1).

5.1. First Order Necessary Conditions

Now, in Appendices I and II, respectively, for sections A and B above, we find the first order conditions of c derived with respect to various variables. As has been noted earlier, corresponding point elasticities are easy to obtain. These measures should be of great interest and assistance to both the bank and the overseeing central bank. The confidence in the model rises because all the signs are intuitively anticipated. As to external parameters, c increases as rate-of-return under MUF (r_m) increases (7.0.1 and 7.1.1) but decreases as rate-of-return on zero-risk instrument (τ) or standard deviation of r_m (σ_m) increases (7.0.2 and 7.0.3, and 7.1.2 and 7.1.3,

respectively). Note, the first increase here is explained by the fact that the Sharpe ratio for MUF has increased. The subsequent decrease comes about because MUF's Sharpe ratio decreases. In (7.0.4) and (7.1.4), we see that c increases as the standard deviation (σ) of the expected profit flow of the firm from PLSL increases. That is because the corresponding Sharpe ratio decreases. As bank's business management costs related to lending (ξ) increases, so does c [(7.0.5) and (7.1.5)]. Thus, an efficient bank will demand a lower share of profit for aggregated capital.

As would be expected, an increase in anticipated losses due to AS and MH [(a and h) or (a^1 and h^1)] does increase c as, respectively, demonstrated by [(7.0.6) and (7.0.7)] and [(7.1.6) and (7.1.7)]. Also, c decreases if the duration of the loan (T) or the productivity of the borrowing firm [$f_t(.)$] increase [(7.0.8) and (7.1.8) and (7.0.9) and (7.1.9)]. In either case, such an increase makes it easier to equate the PLSL Sharpe ratio with the MUF Sharpe ratio. Now, according to [(7.0.10) and (7.1.10)], as total invested capital amount, K_0, increases so does c, while according to [(7.0.11) and (7.1.11)] as L_0 or loaned amount increases, c decreases. Since these are all partial derivatives, an increase in K_0 or L_0 means the share of the capital belonging to the firm increases or decreases, accordingly. So, the profit share rate to capital has to, respectively, increase or decrease so as to maintain the bank's revenue flow. Finally, [7.1.12) and (7.1.13)], Appendix II indicates that when either Vetting Cost (V_C) or Intervention Cost (I_C) increase, so does c.

5.2. One Cautionary Flag Stands Out

Using a wrong estimate of profit - one that is too high or too low, will cause c to be correspondingly too low or too high thereby hurting the bank or the firm and produce an unstable contract. That is why, given the difficulties of estimation, using its expected value is the best way to proceed. In fact Khaled and Khandker [2015] also use cumulative projected profit to best capture any fluctuation.

6. Conclusion

PLSL is presumably central to ZIFS. It is a normative agenda long waiting for tools toward a positive economic implementation. Even its pale shadow, MUF, designed to finance service goods without any profit flow, suffers from a failure to properly transition from a normative status to a positive one. While the heuristic elements of this agenda are largely explored, its microeconomic model has fallen well short of adequate. This paper, and its four predecessors, seeks to address this shortcoming.

The PLS lender is able to partake in the accruing of profits and is liable for any losses regarding proprietorships, stock ownerships and venture capital investments. However, unlike them and based on a less legalistic and a more practical definition of a lender locked into a double *muḍārabah* arrangement, it has no right to any gain in the value of equity and its profit earnings diminish as the loan is paid. Both MUF and PLSL are faced with AS and MH issues. These problems have plenty of potential to be sharply aggravated in the presence of absent equity ownership and shared-management rights.

The expectation of ZIFS is that it removes iniquitous and inefficient, pre-determined, unearned income under an interest-based credit system – received task-free and risk-free by capital alongside other non-entrepreneurial factors of production. Critics have claimed that the ZIFS bank's most prolific portfolio MUF mimics the interest-based system so closely that it hardly rises to that vaunted expectation. Further, ZIFS bank's financing instruments for non-profit products are also increasingly encroaching upon financing for-profit businesses. Consequently, the profitability of MUF has accelerated. This has all but faded practical interest in launching PLSL. Also, arguments say that risk and profit sharing under PLSL should have a stabilizing and equitable effect on the economy. However, ironically, a failure to understand and tackle the risk inherent to PLSL has stalled its offering.

This paper uses standard financing tools including: rate-of-return to the lender, Sharpe ratio, and profit share rate accruing to capital, to devise two alternative paths for a ZIFS bank to draw up a PLSL contract when it tables an asking price namely share of profit designated for capital input. It suggests how AS and MH may relate to each other and how they react to either vetting or intervention. For both solutions, the first order condition results are as expected and provide a sense of how the profit share rate could change when any of its determinants change. This will assist the central bank, monetary and macroeconomic policy experts.

While this paper, along with the others papers in this series, should assist in the movement toward streamlining MUF as well as establishing PLSL, more focused study of AS, MH, duration of loans, legal facilitation, legal limitation (*fiqhī*) on extending MUF to for-profit businesses, AC pricing of MU rates to contain the profitability of MUF segment, etc. would remove many of the blind spots or disincentives that have historically paralyzed the ZIFS banking community in this regard.

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Appendix I

A. First Order Condition for Profit-Share Rate absent Vetting or Intervention:

[Equation (7.0) – $c = [\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\} K_0(L_0 + \xi)]/[L_0T(1-h)(1-a)E\{f_t^*(.)\}]]$

$$\frac{dc}{dr_m} = \frac{\frac{\sigma}{\sigma_m} K_0(L_0 + \xi)}{[L_0T(1-h)(1-a)E\{f_t^*(.)\}]} > 0 \quad (7.0.1)$$

$$\frac{dc}{d\tau} = \frac{(1 - \frac{\sigma}{\sigma_m})K_0(L_0 + \xi)}{[L_0T(1-h)(1-a)E\{f_t^*(.)\}]} < 0 \quad (7.0.2)$$

$$\frac{dc}{d\sigma_m} = -\frac{(r_m - \tau)\sigma K_0(L_0 + \xi)}{[L_0T\sigma_m^2(1-h)(1-a)E\{f_t^*(.)\}]} < 0 \quad (7.0.3)$$

$$\frac{dc}{d\sigma} = \frac{(r_m - \tau)K_0(L_0 + \xi)}{[L_0T\sigma_m(1-h)(1-a)E\{f_t^*(.)\}]} > 0 \quad (7.0.4)$$

$$\frac{\partial c}{\partial \xi} = \frac{\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0}{[L_0T(1-h)(1-a)E\{f_t^*(.)\}]} > 0 \quad (7.0.5)$$

$$\frac{dc}{da} = \frac{[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0(L_0 + \xi)]}{[L_0T(1-a)^2(1-h)E\{f_t^*(.)\}]} > 0 \quad (7.0.6)$$

$$\frac{dc}{dh} = \frac{[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0(L_0 + \xi)]}{[L_0T(1-h)^2(1-a)E\{f_t^*(.)\}]} > 0 \quad (7.0.7)$$

$$\frac{dc}{dT} = -\frac{[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0(L_0 + \xi)]}{[L_0T^2(1-h)(1-a)E\{f_t^*(.)\}]} < 0 \quad (7.0.8)$$

$$\frac{dc}{df_t(.)} = -\frac{[\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0(L_0 + \xi)]}{[L_0T(1-h)(1-a)E\{f_t^*(.)\}^2]} < 0 \quad (7.0.9)$$

$$\frac{dc}{dK_0} = \frac{\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}(L_0 + \xi)}{[L_0T(1-h)(1-a)E\{f_t^*(.)\}]} > 0 \quad (7.0.10)$$

$$\frac{dc}{dL_0} = -\frac{\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\}K_0\xi}{[L_0{}^2T(1-h)(1-a)E\{f_t^*(.)\}]} < 0 \quad (7.0.11)$$

Appendix II

B. First Order Condition for Profit-Share Rate with AS Vetting and MH Intervention:

[Equation (7.1) – c = $[\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi + \alpha + \theta)]/[L_0T(1 - h^1)(1 - a^1)E\{f_t(q^*, L^*; p, w)\}]$

$$\frac{dc}{dr_m} = \frac{\sigma K_0(L_0 + \xi + \alpha + \theta)}{[\sigma_m L_0 T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.1)$$

$$\frac{dc}{d\tau} = \frac{(1 - \frac{\sigma}{\sigma_m})K_0(L_0 + \xi + \alpha + \theta)}{[L_0T(1- h^1)(1- a^1)E\{f_t^*(.)\}]} < 0 \quad (7.1.2)$$

$$\frac{dc}{d\sigma_m} = -\frac{(r_m - \tau)\sigma K_0(L_0 + \xi + \alpha + \theta)}{[\sigma_m^2 L_0 T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} < 0 \quad (7.1.3)$$

$$\frac{dc}{d\sigma} = \frac{(r_m - \tau)K_0(L_0 + \xi + \alpha + \theta)}{[\sigma_m L_0 T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.4)$$

$$\frac{\partial c}{\partial \xi} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \alpha + \theta)}{[L_0T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.5)$$

$$\frac{dc}{da^1} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi + \alpha + \theta)}{[L_0T(1 - a^1)^2(1 - h^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.6)$$

$$\frac{dc}{dh^1} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi + \alpha + \theta)}{[L_0T(1 - h^1)^2(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.7)$$

$$\frac{dc}{dT} = -\frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi + \alpha + \theta)}{[L_0T^2(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} < 0 \quad (7.1.8)$$

$$\frac{dc}{df_t(.)} = -\frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(L_0 + \xi + \alpha + \theta)}{[L_0T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}^2]} < 0 \quad (7.1.9)$$

$$\frac{dc}{dK_o} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}(L_0 + \xi + \alpha + \theta)}{[L_0T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.10)$$

$$\frac{dc}{dL_o} = -\frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0(\xi + \alpha + \theta)}{[L_0{}^2T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} < 0 \quad (7.1.11)$$

$$\frac{\partial c}{\partial \alpha} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0}{[L_0T(1-h^1)(1-a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.12)$$

$$\frac{\partial c}{\partial \theta} = \frac{\left\{(r_m - \tau)\frac{\sigma}{\sigma_m} + \tau\right\}K_0}{[L_0T(1 - h^1)(1 - a^1)E\{f_t^*(.)\}]} > 0 \quad (7.1.13)$$

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Managing Climate Change: Role of Islamic Finance

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Abstract

Environmental protection and sustainability fits in nicely with the Islamic finance agenda that seeks to enhance the general welfare of society. Organizational goals such as the protection of the planet and the environment, climate management and adaptation clearly conform to the goals of the Sharīʿah *as well as with the UN-mandated Sustainable Development Goals (SDGs). This paper takes the argument further and seeks to demonstrate how Islamic finance can significantly contribute to the global search for climate finance solutions. Islamic social funds can potentially play a significant role in absorbing the incremental costs with clean technologies where subsidies are not forthcoming to absorb the same. For zakāt funds to be used for the purpose, an additional condition needs to be met. The beneficiaries must be poor. The institution of waqf, along with zakāt and ṣadaqah, can certainly play a role in coping with humanitarian crises resulting from climate change. Awqāf, like many foundations may directly engage in the provision of goods and services related to mitigation and adaptation. Awqāf may also be dedicated to research and development and towards increasing consumer awareness and creating stronger support for action to mitigate climate change. Similar to SRI Funds, the Islamic Green Funds and similar to Green Bonds, the Islamic Green Ṣukūk can contribute significantly to the agenda of climate change.*

Keywords: Environmental protection, climate change, Islamic social funds, Green *ṣukūk*.
JEL Classifications: Q54 H23 H44
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1. Introduction

Islamic economists invoke the framework of *Maqāṣid* al-Sharīʿah *(MaS)* to chart the trajectory for Islamic finance. While many classical as well as contemporary Islamic scholars have discussed and elaborated upon the *Maqāṣid* al-Sharīʿah *(MaS)* framework, the Islamic Research and Training Institute (IRTI) has undertaken pioneering research that underlines the fact that many Sustainable Development Goals (SDGs) clearly align with *Maqāṣid* al-Sharīʿah *(MaS)*[1]. The *MaS*-driven Islamic finance, therefore, would work towards achieving the SDGs.

There is a growing realization that Islamic financial institutions should align their goals with the SDGs and, therefore, would be able to protect and promote the *MaS*. Protection of the planet and the environment, climate management and adaptation, as organizational goals are clearly in conformity with *MaS* as well as with the SDGs. This paper takes the argument further and seeks to demonstrate how Islamic finance can significantly contribute to the global search for climate finance solutions. The next section of the paper highlights the alignment between *MaS* and SDGs in greater detail, particularly with respect to the environment and climate management. Section 3 focuses on climate finance as it has evolved recently across the globe. Section 4 deals with the stakeholders in climate finance and how they relate to the Islamic economic system. Section 5 discusses the instruments of climate finance – public and private. Section 6 presents a case study of the Islamic Development Bank (IsDB) and discusses how it undertakes various projects aimed at climate risk mitigation and adaptation using the tools of Islamic finance. This is followed by a summary and conclusion.[2]

2. *Maqāṣid* al-Sharīʿah, SDGs and Environmental Goals

The purpose of this section is to demonstrate the convergence of SDGs in general, and the goal of climate management in particular with the MaS. Since the MaS should determine the trajectory of Islamic finance, the latter should be geared

[1] Chapra, M.U. (2008) The Islamic Vision of Development in the Light of *Maqāṣid* al-Sharīʿah, Islamic Research and Training Institute, Islamic Development Bank

[2] An earlier version of this paper "Managing Climate Change: The Role of Islamic Finance" was published as IRTI Policy Paper No. PP/2017/01, Jeddah: Islamic Research and Training Institute. A shorter version "Climate Change Financing: Role of Islamic Finance" was contributed to the Marrakech Climate Change Conference (COP22) organized by UNFCCC in November 2016

towards achievement of the SDGs in general and climate management goals in particular.

2.1. Sharīʿah on Protecting the Planet

Any action with a view to protecting the planet and environment is also a step towards achieving the objective (*maqāṣid*) of Sharīʿah. Below I briefly highlight some key Islamic norms of human behavior that underscore the above.

According to Sharīʿah, human beings, as vicegerents of God, have the mission of faithfully observing the values given by their Creator. During their short life in this world they may utilize the scarce resources of the planet as trustees. They must interact with each other in accordance with rules. This would not only ensure the well-being of all humans but also, protect the environment, including animals, birds and insects.[3]

> Corruption doth appear on land and sea because of (the evil) which men's hands have done, that He may make them taste a part of that which they have done, in order that they may return. (Qur'ān 30:41)

In the above verse, the Qur'ān calls on human beings to recognize their own contribution to the crisis. A reversal in the deterioration of the planet would require some hard choices and change in practices.

> But waste not by excess: for Allah loveth not the wasters. (Qur'ān 6:141)
> "Eat and drink, but waste not by excess; Verily He loves not the excessive" (Qur'an:7:31)

The above verses highlights the importance of conservation and avoiding wastefulness. The same principle is underlined when a believer is required to be frugal in the use of water for ablution, an act of worship, even if s/he has a river at their disposal. Water and other natural resources are thus to be seen as divine provisions.

The planting of trees is highlighted as a significant pious deed in Islam. According to a widely known tradition, the planting of a tree is regarded as an act of continuous charity. There is another tradition, which says, if one has with him/her a

[3] Chapra, M.U (2008), p30

sapling ready to be planted and the Day of Judgment arrives one should go ahead and plant it.

Islam forbids the willful destruction of the planet as all creations of Allah, including animals and trees, glorify God in their own way and serve a certain purpose in His larger scheme of the world.

> Seest thou not that to Allah bow down in worship all things that are in the heavens and on earth, - the sun, the moon, the stars; the hills, the trees, the animals; and a great number among mankind? (Qur'ān 22:18)

This Islamic notion reinforces the scientific concept of a 'chain of life,' and interdependence among species, maintaining the balance of life on earth.

> There is not an animal (that lives) on the earth, nor a being that flies on its wings, but (forms part of) communities like you. (Qur'ān 6:38)

God reminds humans in the Qur'ān not to tamper with His divine balance (here referred to as 'measure') by reminding them:

> And the sky He hath uplifted; and He hath set the measure, that ye exceed not the measure, but observe the measure strictly, nor fall short thereof. (55:7-9)

There are numerous verses of the holy Qur'ān and the traditions of the Prophet, which establish the inviolable rule to preserve and protect the environment and conserve resources. Maintaining the balance of life on the planet is a supreme duty of humans and therefore, forms part of the divine objectives of the Sharī'ah.

Islamic finance aims to promote an economic concept that extends beyond being the component of a financial system, but as part of a total value-based social system. The Sharī'ah, which governs the Islamic financial system has ample injunctions which emphasize the need to care for the environment and forms of life on earth while ensuring the proper usage of natural resources.

2.2. SDGs and Climate Management

The majority of UN-mandated sustainability development goals (SDGs) relate to ending poverty and hunger, ensuring healthy lives, access to quality education, lifelong learning and employment opportunities, energy, shelter, and gender

equality. The goals also include promoting inclusive economic growth, industrialization, and building infrastructure with the view to reducing income disparities. The SDGs however, lay balanced emphasis on areas of critical importance for the planet as much as for the people[4]. These include: combating climate change and its impact, conservation and sustainable use of marine resources, protection and sustainable use of terrestrial ecosystems, management of forests, combating desertification, land degradation, and biodiversity loss. SDGs also have a social dimension and include promotion of peaceful and inclusive societies, with access to justice for all, and building effective, accountable, and inclusive institutions at all levels.

Mitigation and adaptation are two important terms that are fundamental in the climate change discourse. Climate mitigation is any action taken to permanently eliminate or reduce the long-term risk and hazards of climate change to human life, property.[5] Climate adaptation refers to the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damage, to take advantage of opportunities, or to cope with the consequences.[6] While mitigation tackles the causes of climate change, adaptation tackles the effects of the phenomenon. Adaptation is crucial to reducing vulnerability to climate change. A successful adaptation can reduce vulnerability by building on and strengthening existing coping strategies. In general, the more mitigation there is, the less will be the impacts to which society will have to adjust, and the less the risks for which it will have to prepare. Conversely, the greater the degree of preparatory adaptation, the less may be the impacts associated with any given degree of climate change. It should be noted that climate mitigation and adaptation are not alternatives to each other, as they are not discrete activities but rather a combined set of actions in an overall strategy to reduce greenhouse gas emissions.

Together, both mitigation and adaptation strategies should be able to meet the 2-degree target for the planet[7].

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[4] Transitioning from the MDGs to the SDGs: Accountability for the Post-2015 Era, CDP Background Paper No. 25

[5] The International Panel on Climate Change (IPCC) defines mitigation as: "An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases."

[6] The IPCC defines adaptation as the, "adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation."

[7] There is international consensus on 2-degree target, which means that if temperature rise is kept below 2 °C, catastrophic climate change can be avoided.

2.2.2. *Contemporary Islamic Response to Climate Change*

The Islamic Declaration on Global Climate Change[8] calls on the people of all nations and their leaders to –

- Aim to phase out greenhouse gas emissions as soon as possible in order to stabilize greenhouse gas concentrations in the atmosphere;
- Commit themselves to 100% renewable energy and/or a zero emissions strategy as early as possible, to mitigate the environmental impact of their activities;
- Invest in decentralized renewable energy, which is the best way to reduce poverty and achieve sustainable development;
- Realize that to chase after unlimited economic growth in a planet that is finite and already overloaded is not viable. Growth must be pursued wisely and in moderation; placing a priority on increasing the resilience of all, and especially the most vulnerable, to the climate change impacts already underway and expected to continue for many years to come.
- Set in motion a fresh model of wellbeing, based on an alternative to the current financial model which depletes resources, degrades the environment, and deepens inequality.
- Prioritize adaptation efforts with appropriate support to vulnerable countries with the least capacity to adapt. And to vulnerable groups, including indigenous peoples, women and children.

In particular, the declaration calls on the well-off nations and oil-producing states to –

- Lead the way in phasing out their greenhouse gas emissions as early as possible and no later than the middle of the century;
- Provide generous financial and technical support to the less well-off to achieve a phase-out of greenhouse gases as early as possible;
- Recognize the moral obligation to reduce consumption so that the poor may benefit from what is left of the earth's non-renewable resources;
- Stay within the '2 degree' limit, or, preferably, within the '1.5 degree' limit, bearing in mind that two-thirds of the earth's proven fossil fuel reserves remain in the ground;
- Re-focus their concerns from unethical profit from the environment, to that of preserving it and elevating the condition of the world's poor.
- Invest in the creation of a green economy.

[8] http://islamicclimatedeclaration.org/islamic-declaration-on-global-climate-change/

3. Financing Climate Management

Climate finance is at times understood in a narrow sense as the transfers of public resources from developed to developing countries, in the light of their UN Climate Convention obligations to provide "new and additional financial resources". In a broader sense, however, climate finance refers to all financial flows relating to climate mitigation and adaptation. In this paper I focus on the broader framework. In the words of the United Nations Framework Convention on Climate Change (UNFCCC)[9]:

"Climate finance refers to local, national or transnational financing, which may be drawn from public, private and alternative sources of financing. Climate finance is critical to addressing climate change because large-scale investments are required to significantly reduce emissions, notably in sectors that emit large quantities of greenhouse gases. Climate finance is equally important for adaptation, for which significant financial resources will be similarly required to allow countries to adapt to the adverse effects and reduce the impacts of climate change.

In accordance with the principle of common but differentiated responsibility and respective capabilities set out in the Convention, developed country Parties (Annex II Parties) are to provide financial resources to assist developing country Parties in implementing the objectives of the UNFCCC. It is important for all governments and stakeholders to understand and assess the financial needs developing countries have so that such countries can undertake activities to address climate change. Governments and all other stakeholders also need to understand the sources of this financing, in other words, how these financial resources will be mobilized.

Equally significant is the way in which these resources are transferred to and accessed by developing countries. Developing countries need to know that financial resources are predictable, sustainable, and that the channels used allow them to utilize the resources directly without difficulty. For developed countries, it is important that developing countries are able to demonstrate their ability to effectively receive and utilize the resources. In addition, there needs to be full transparency in the way the resources are used for mitigation and adaptation activities. The effective measurement, reporting and verification of climate finance is key to building trust between Parties to the Convention, and also for external actors."

[9] http://unfccc.int/focus/climate_finance/items/7001.php

Broadly, climate finance flows may follow the earlier distinction between climate change mitigation and adaptation. For instance, mitigation finance would target the reduction of net greenhouse gas emissions including, but would not be limited to, the production of renewable energy, energy efficiency projects and Reducing Emissions from Deforestation and Degradation (REDD) projects. On the other hand, adaptation finance would enhance the resilience to the impacts of climate change and variability. One should however, take note of the fact that specific projects may be hard to be bracketed in one or the other and institutions may differ in their definition of mitigation and adaptation projects.

3.1. Size of Climate Finance Needs

Climate finance is about making right investments. Various studies seek to quantify the size of climate finance needs.

1. A UNEP paper estimates the global investment required in water, agriculture, telecommunication, power, transport, buildings, industry, and forestry sectors to be around US$ 5-7 trillion annually to realize the aims of sustainable development.
2. The same paper quotes another estimate by the McKinsey consulting group. Based on a bottom-up analysis of how much a low-carbon revolution would cost, country by country and industry sector by industry sector, the study estimates that the shift would require incremental capital expenditures averaging 455 billion euro per annum between 2010 and 2030, which is about 2-4% of total expected capital expenditure during the period.
3. The *World Economic Forum* projects that by 2020, about $5.7 trillion will need to be invested annually in green infrastructure, much of which will be in today's developing world. This will require shifting the world's $5 trillion in business-as-usual investments into green investments, as well as mobilizing an additional $700 billion to ensure this shift actually happens.
4. In its World Energy Outlook Special Briefing for COP21, the International Energy Agency (IEA) estimates that the full implementation of climate pledges or Intended Nationally Determined Contributions (INDCs)[10] require $13.5 trillion in energy efficiency and low-carbon technologies from 2015-2030 (almost 40% of total energy sector investment).

[10] All countries were invited by the UNFCCC to submit domestic preparations to achieve the global two-degree target. The INDC submissions may be accessed from http://unfccc.int/focus/indc_portal/items/8766.php.

Against these requirements the actual financial flows show a steady increase. The Global Landscape of Climate Finance 2015 by the Climate Policy Initiative[11] estimates that in 2014, annual global climate finance flows totaled an average of $391 billion (an investment increase of 18% from 2014). Private investments account for 62 percent of this at $243 billion.

3.2. Dynamics of Climate Finance

Climate finance is about investments. Climate finance would largely require funds to flow into investments in long-life assets. Overall, experts feel that climate finance would not demand an increase investment but would require wiser investments with a move away from seeking short-term gains. A significant share of climate projects and assets to be financed involve capital intense technologies, i.e. require significant upfront investments but benefit from low and stable operating costs.

Financing costs are a key driver for the competitiveness of clean technologies. The availability of long-term capital at appropriate financing costs will therefore be crucial to meet the 2-degree target. Currently, however, short-termism dominates the financial markets. Short-termism refers to an excessive focus on short-term results at the expense of long-term interests. A global transformation towards a green economy requires a change in financing patterns – from financing operating costs to financing upfront investments and from short-term financing to long-term financing.

Besides the required shift from short to long-termism, the capital intensity of many climate finance projects also triggers other barriers. Examples are the required planning and detailed analysis before designing and implementing a project.

In addition, the planning horizons of "investors" need to match the lifetime (or at least the payback period) of the project. Innovative financing structures can play an important role in overcoming these barriers.

Unfortunately, the economic and financial crisis has further strengthened the short-termism in the global financial system. Revisions of, for example, the banking regulation "Basel" resulted in higher capital requirements for banks when providing long-term loans and consequently discouraged banks from long-term lending. While

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[11] http://climatepolicyinitiative.org/wp-content/uploads/2015/11/Global-Landscape-of-Climate-Finance-2015.pdf

banking regulation primarily needs to ensure the stability of the financial sector, the side effect with regard to climate finance is not helpful.

One key differentiation should be made between upfront financing and incremental costs. Upfront investments can be repaid over the lifetime of a clean energy project. Therefore, a capital intense clean energy project can still be more profitable than a less capital intense traditional energy project. However, during appraisal it is likely that the incremental costs or the gap between the costs of clean technologies and traditional ones may not be high enough to make the project financial viable. In addition to the incremental costs, subsidies may create financing flow, which is required to create financial viability of a project, i.e. to ensure that the capital intense project generates sufficient cash flows to pay back the upfront investment.

Private sector financers require a viable business case to get involved. Therefore, if a climate project cannot generate sufficient cash flows to repay the initial investment and interest/dividends, subsidies must be introduced to create a viable business case. Such subsidies will not be repaid by the project but can help make it financially viable.

The differentiation of financing requirements into two categories will help to approach the right financier. The private sector's role in climate finance is (with some exceptions like Corporate Social Responsibility (CSR) activities and strategic market entry projects) limited to viable business cases. Public sector sources can become involved in both categories. By using for example concessional, low interest lending, a development finance institution can "subsidize" a project and cover a component of the upfront investment. In many countries, feed-in tariff schemes built the basis for investments in renewable energy. To the extent the feed-in tariff (FiT) is above the average generation costs the difference is the element of subsidy. On the other hand, if these incremental costs are added to the ratepayers' bill, the ultimate sources of financing are the ratepayers, i.e. households and commercial customers of a utility.

4. Stakeholders in Islamic Climate Finance

Climate finance comprises multiple types of financial flows ranging from grants to investments for a very broad range of adaptation and mitigation projects over the whole lifecycle of projects. Accordingly, the sources of such financing are very heterogeneous and involve a broad range of stakeholders. Broadly, these can be divided into public and private sources of financing. Public finance uses public

funds, raised through fiscal revenues such as taxes and other government income streams to fund the production and distribution of public goods. Public finance aims to support public and private sector projects and programs through the use of public funds. They aim to close funding gaps, which would exist if only the private sector could provide financing. Public finance is also needed to provide grant money and to provide incremental cost financing.

Islamic finance as a faith-based idea has come of age. Finance professionals view it largely as asset-based finance that is free from the elements of unjust and speculative gains[12]. It involves use of a range of tools that create debt, leases, equities and guarantees. Islamic bankers use them or combinations thereof for financing the needs of economic units, such as, the government, the corporate and the household sectors in the economy. Islamic finance has experienced steady growth over the past four decades as more and more countries and markets have come forward to experiment with this faith-based idea.[13]

The frenetic pace of growth has however, raised concerns about a possible mission drift[14]. Islamic financial services providers, using debt-creating contracts have witnessed disproportionate growth, mostly addressing the needs of high-net worth individuals and corporates. Most of these institutions are perceived to be similar to their conventional counterparts displaying a preference for short-term profit maximization over longer-term goals. Islamic economists are particularly concerned that Islamic finance has to contribute a lot more towards addressing development-related issues, and societal concerns.

4.1. Development Finance Institutions

Development Finance Institutions (DFI) are financial institutions which provide finance to the public and private sector for investments that promote, for example, the transition to a low-carbon economy. They operate on a large scale to provide significant climate benefits and economy-wide support for sustainable development and emerging climate finance instruments. Using their own capital, through government and donor investments, they intermediate public funds from developed to developing countries. Bilateral financing is mostly channeled through national development finance institutions. The Islamic Development Bank (IsDB) is the

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[12] Freedom of *ribā* and *gharar* are the two ethical foundations of Islamic finance that scholars define as profits made on debt and through speculation.

[13] Some estimates place the aggregate size of Islamic finance market at over USD 2 trillion.

[14] Abozaid Abdulazeem (2010), Contemporary Islamic Financing Modes: Between Contract Technicalities and Shariah Objectives, Islamic Economic Studies, Vol. 17 No. 2, January, 2010

leader in the provision of climate finance in a way that conforms to the Sharī'ah. Section 6 presents a case study of the IsDB as it seeks to contribute to climate risk management.

4.2. Other Climate Finance Institutions

Within the multi and bilateral arrangements there are also dedicated climate finance and renewable energy funds and initiatives, some of which serve to bundle financing from various sources.

4.3. National Climate Finance Initiatives

National climate finance initiatives (NCFIs) are mechanisms that enable governments to strengthen national political and fiscal systems through mobilising and directing climate financing to implement the national climate change strategy. NCFIs are set up to source funding from the national budget and earmark it for international climate cooperation. Thematic climate funds are also established to bundle funding from various donor to support projects and programs in climate management.

Box 1: Green Investments in UAE

Enormous opportunities exist for Green *Ṣukūk* in the solar energy plans of GCC countries including the UAE. These also have significant potential for renewable energy for sustainable development, and have significant requirements for investment to protect themselves from the impacts of climate change.

The Dubai Supreme Council of Energy (DSCE) and the World Bank have joined together to design a funding strategy for Dubai's green investment programme using green bonds and *ṣukūk*. The DSCE has a green investment programme in place since 2010 as part of the Dubai Integrated Energy Strategy (DIES) 2030 that aims to secure a sustainable supply of energy for the Emirate. Dubai has a target of drawing 1% of its energy needs through solar means by 2020 and green bonds and *ṣukūk* would play a crucial role in arranging the necessary financing required to implement the various green projects. The inaugural Sustainability Report 2013 issued by the Dubai Electricity and Water Authority, notes that the 1,000-megawatt H.H. Sheikh Mohammed bin Rashid Al Maktoum Solar Park will provide 'global financial investment opportunities in green finance'.

Abu Dhabi also announced a target of generating 7% of its energy capacity from renewable sources by 2020. In January 2015, the Masdar Institute of Science and Technology released a UAE Wind Atlas, similar to its previous Solar Atlas, to support investment in renewable projects. The road seems greener for the UAE, in general as well as it expected that the newly established Dubai Islamic Economy Development Center (DIEDC) will provide support for the growth of *ṣukūk* in the UAE, which will likely include green *ṣukūk* in the future.

Source: http://www.mifc.com/?ch=28&pg=72&ac=88&bb=uploadpdf and http://meglobaladvisors.com/financing-a-greener-world-through-green-bonds-and-*ṣukūk*/

Box 2: Green Investments in Malaysia

In Malaysia, green technology was identified as a major growth area by the Malaysian government under the National Green Technology Policy in 2009. Following this, a number of government-led initiatives have been implemented with a view to positioning the country as a hub for green technology by 2020. The three major Green financing initiatives currently in place by the Malaysian Government are as follows:

Green Technology Financing Scheme: The Green Technology Financing Scheme (GTFS) involves soft loans to companies and users of Green Technology. Islamic financing accounts for over 40% of all funds granted under GTFC. Along with conventional banks, Islamic banks in Malaysia are also eligible to participate in the scheme known as Green Technology Financing Scheme Islamic (GTFS – i). Effective 2013, the scheme offers users either a rebate of 2% on the interest or profit rate, or a government guarantee of 30% on the financed amount.

Socially Responsible Investment (SRI) Ṣukūk: Malaysia's initiative in developing Sharī'ah-compliant green fixed-income instruments received a significant boost in 2014 with the release of formal guidelines for developing and issuing SRI *ṣukūk*. The SRI *ṣukūk* would be raised to fund sustainable and responsible investment projects. The SRI *Ṣukūk* guidelines would be instrumental in attracting Malaysian issuers to raise funds through green *ṣukūk* while attracting investors from Western countries who are familiar with the concept of socially responsible investing but have yet to venture into the *ṣukūk* market.

Environmental, Social and Governance (ESG) Index: Another landmark is the formation of an Environmental, Social and Governance (ESG) Index in 2014

which would list companies that demonstrate high accountability, transparency and sustainability, including inclusiveness in diversity encompassing gender, age, and ethnicity. This Index will enable investors to divert their capital into companies that instill high levels of environmental, social and governance standards. Effectively, the ESG Index will enable green investors to channel their funds into eligible companies that comply with the green economic growth and developmental requirements along with upholding social and governance responsibilities.

Source: Islamic Finance Ready to Finance a Greener World, Report by Malaysia International Islamic Financial Centre Community accessed from http://www.mifc.com/?ch=28&pg=72&ac=88&bb=uploadpdf

4.4. Banks

The availability of long-term capital, including long-term debt is of outstanding importance for the realization of mostly capital-intensive green projects. The tradition of long-term finance provided by commercial banks varies significantly from region to region. In general, financial regulation has curbed the ability of commercial banks to provide long-term capital and transform maturities. Notwithstanding the bottlenecks, Islamic banks have increasingly turned their attention towards green financing and towards supporting renewable energy including hydropower, solar and wind energy. For example, through the UK-based Islamic investment bank Gatehouse Bank Plc people can now invest in sustainable-oriented companies that offer technology, products and services throughout the water industry.

4.5. Microfinance Institutions

A number of MFIs are diversifying their products and services to dedicated climate finance products; e.g. for clean energy products. Energy efficient or renewable energy solutions such as solar home systems and anaerobic digesters (biogas) are important to low-income families as they provide affordable access to clean energy and sometimes even new income-generating opportunities. Local access to respective clean energy products is sometimes challenging and MFIs need to build up internal capacities and develop loan products that reflect the characteristics of applied technologies. For many MFIs a large share of their clients is engaged in subsistence farming and is highly susceptible to external shocks such as droughts and flooding which may lower productivity significantly. Agricultural activities including farming (crops), livestock and forest-based livelihood systems

are particularly affected by climate variability and need to adapt; i.e. reduce the sensitivity to climate variability and improve the capacities of individuals to cope with the impact.

Islamic microfinance institutions have specifically relied on Islamic social funds – *zakāt*, *ṣadaqah* and waqf to absorb certain costs related to the administration of microfinance and thereby succeeded in making microfinance affordable to clients. They can play a similar role in absorbing the incremental costs with clean technologies where subsidies are not forthcoming to absorb the same. For *zakāt* funds to be used for the purpose, an additional condition need to be met, i.e. the beneficiaries must be poor.

4.6. Institutional Investors

Institutional investors are the largest group of private sector financiers and comprise a multitude of actors ranging from insurance companies to investment funds and including asset owners and asset managers. Institutional investors potentially could supply a significant share of the total climate financing requirement globally but factors like financial regulation of institutional investors and lack of standardization impede their investment capacity. Within the broad range of climate finance avenues institutional investors are particularly active through listed equity shares and corporate bonds. Direct investments in renewable energy (RE) projects are less common (but increasing) due to transaction sizes as well as skills required, and expenses related to proper due diligence and monitoring.

Whilst institutional investors manage a large amount in assets, their potential as a growing source of climate finance is restricted. The ability of asset managers to invest in climate finance depends on their investment strategy, restrictions agreed upon with their clients as well as the regulatory framework. Life insurance and pension funds are especially constrained by the latter. It is felt that green bonds can help to attract institutional investors' capital by using a well-known transaction structure.

4.7. Private Equity (PE) and Venture Capital (VC) Funds

PE/VC funds can play a crucial role in the development and scaling up of new green technologies and/or business. In the context of RE generation assets, PE/VC investments can accelerate the development of projects by investing in the early development stage. Conventional bank financing cannot usually be attracted because of the risk profile of these projects. With the support of donors, a significant number

of double bottom line PE/VC funds have been established over recent years. Their investment horizon is usually longer than the one of a conventional PE/VC fund. Islamic PE/VC funds are perceived to be closer to Islamic norms of risk-sharing and participation than debt-focused Islamic banks and, as such, offer greater potential for climate finance.

4.8. Strategic and Corporate Investors

Strategic investors provide significantly more climate finance than households, and in fact they are estimated to have contributed 38% of total private climate finance. Providing financing for low carbon projects is a core revenue generating mechanism for these investors. Included within the category of strategic and corporate investors are corporations and energy sector actors that act as dedicated vehicles with the capacity to design, commission, operate and maintain emissions reduction, and climate financing projects. These corporate actors or strategic investors include those that engineer, procure and construct projects, namely, power and gas utilities, independent power producers, energy companies, contractors and independent developers of projects. The Islamic Declaration on Global Climate Change[15] calls upon corporations and the business sector to:

- Shoulder the consequences of their profit-making activities, and take a visibly more active role in reducing their carbon footprint and other forms of impact upon the natural environment;
- In order to mitigate the environmental impact of their activities, commit themselves to 100 % renewable energy and/or a zero emissions strategy as early as possible and shift investments into renewable energy;
- Change from the current business model which is based on an unsustainable escalating economy, and to adopt a circular economy that is wholly sustainable;
- Pay more heed to social and ecological responsibilities, particularly to the extent that they extract and utilize scarce resources;
- Assist in the divestment from a fossil fuel driven economy and the scaling up of renewable energy and other ecological alternatives.

4.9. Households

Households are the driver of massive investments in decentralized RE generation assets. Besides realizing their own climate project, they play a crucial role in

[15] http://www.ifees.org.uk/declaration/

providing savings to intermediaries. Households either invest on their own, for example in decentralized renewable energy generation, or provide financing to climate projects by investing savings. It is estimated that household contributions to climate financing and renewable energy stands at around 18% of total global climate finance flows, invested almost entirely into solar PV and thermal systems (typically rooftop and small-scale solar installations). Households include families, family-level economic vehicles and entities, high net worth individuals and associated intermediaries. Microfinance schemes can help to turn households into investors in decentralized electricity generation.

Crowd-funding aims to collect a high number of small investments to realize a project. Crowd funding can be a valuable instrument in locally driven projects. The collective pool of money, usually done over the internet, is initiated by people or organizations to support a variety of activities including disaster relief support of charities, political campaigns, etc. Crowd-funding comes from crowdsourcing, the broader concept of leveraging small contributions from many parties to reach a goal. The recent successes of Islamic crowd funds to mobilize resources for achieving various social goals, e.g. poverty alleviation, point towards their potential in climate finance.

4.10. Foundations and *Awqāf*

Foundations are non-profit organizations that will either donate funds or provide the source of funding for its own charitable activities. In some countries like Germany, charitable foundations can only donate the return on their investments but need to keep their capital stock (similar to Islamic endowments or *awqāf*). Consequently, on the one hand they are a source of grant financing while on the other hand, they invest their capital to generate returns for their charitable activities and are consequently a source of investment financing. Foundations can ensure that their assets are invested in a sustainable way.

Climate change is already happening; it can already be observed in many regions of the world and already affects selected industry sectors. The consequence of extreme climatic events such as droughts and floods in developing countries pose an increasing threat to rural and peri-urban communities and their farming activities. Islamic social funds – *zakāt*, *ṣadaqah* and waqf - can play a role in coping with humanitarian crises resulting from climate change.

Awqāf may directly engage in the provision of goods and services related to mitigation and adaptation. Such green *awqāf* may be established as dedicated entities for conservation of soil, water, plants, disposal of waste etc.

Awqāf may be dedicated to research and development that induces a movement along the learning curve resulting in a fall in clean technology prices. With an increasing deployment of clean technologies and the resulting scale and learning curve effects, many clean technologies became cost-competitive with traditional electricity sources. This increases the market potential for clean energy technologies.

Awqāf may be dedicated towards increasing consumer awareness and stronger support of action to mitigate climate change. A change in consumer behavior can bring in desired changes without regulatory intervention. This will change the market for companies by creating new opportunities for green businesses. However, it will also pose a risk to companies who have not prepared themselves for the green transformation.

4.11. Socially Responsible Investment (SRI) and Green Islamic Funds

Socially Responsible Investment (SRI) refers to the practice of integrating environmental, social and governance criteria into financial investment decisions. Characteristics of SRIs include longer-term investment returns and investor's attention to the wider contextual factors, including the stability and health of economic and environmental systems and societies. The social investment forum defines SRI as an investment process that considers the social and environmental consequences of investments, both positive and negative, within the context of rigorous financial analysis. SRI may refer to portfolios resulting from a deliberate exclusion of specific investments. For example, 'green investing' usually refers to the exclusion of firms with environment damaging operations (like strip mining) or products (for example, hazardous chemicals) that lead to environmental pollution, or the inclusion of firms with business strategies that help the environment (for example, alternative energy). Investment choices can also be grounded on moral beliefs such as excluding companies that produce weapons, tobacco, and alcohol (also referred to as 'sin stocks'). The SRI approach is to 'screen' (positive screen) companies with strong environmental and management records (i.e. looking for sustainable business), instead of screening out (negative screen) investments connected to alcohol, tobacco and weapons.

A Green Islamic Fund is a mutual fund or other investment vehicle that will only invest in socially aware companies/assets that promote environmental responsibility

and at the same time are Sharī'ah-compliant. Such a Fund can target ethical and socially responsible investors. Traditionally Islamic equity funds have used negative screens that use "rules" based on *fatāwá* of Islamic jurists to screen out companies that are not Sharī'ah-compliant. It may be noted that the SRI approach of using positive screens for portfolio construction would be both novel and effective.

Available research shows, companies that address environmental and other ethical concerns are associated with higher market valuation and therefore, the Funds that invest in such companies may be producing superior returns. At the same time, the number and volume of green investment opportunities with appropriate risk-return-profiles are rather limited. Large financial intermediaries and institutional investors have already stressed that it is currently nearly impossible to avoid some allocation of their capital to brown investments due to a lack of green investment opportunities.

5. Instruments of Climate Finance

5.1. Instruments of Public Finance

These public finance instruments raise resources for climate finance through taxes, user fees, tradable permits, and fines. It may be noted funding for climate finance does not necessarily have to come from sources that are related to climate change. Some funds may be raised through broader fiscal instruments that have no direct benefits in terms of climate mitigation. An Islamic government can always impose these charges to recover operational costs and to generate additional revenues.

5.1.1. *Environmental Taxes (Eco-taxes)*

This instrument involves imposing a tax on energy products, motor vehicles and other transportation, waste management, ozone-depleting substances, and other polluting goods and activities. Eco-taxes are justified by the 'polluter pays' principal and are imposed on those who produce and purchase a good or service that discharges pollution and/or inflicts environmental damage.

5.1.2. *User Fees*

User fees take the form of commodity charges, burden offset charges, and regulatory fees. Commodity charges are imposed to pay for the provision of commodities or services of direct benefit to consumers, e.g. road tolls, parking,

public water charges and park entry fees. Burden offset charges are imposed to offset cost of handling burdens on others on public resources (externalities) caused by the payer's activities, e.g. for waste management. Regulatory charges are imposed to pay any costs the government incurs when handling payers' applications or requests, or to pay for inspections and control of payers' activities, e.g. for licenses, permits, vehicle registration, and inspections.

5.1.3. *Tradable Permits*

Emission trading is a market-based approach that provides economic incentives for achieving reductions in CO2 or other pollutants. Firms are required to hold a number of permits (or carbon credits) equivalent to their emissions of, for example, CO2. The total number of permits cannot exceed the 'cap'. The transfer or trade of permits ensures the buyer is paying a charge for increased pollution, while the seller is rewarded for emitting less.

Green Certificates are a form of energy saving trading scheme that is based on energy consumption reductions achieved through energy efficiency improvements rather than reductions in the amount of carbon emitted. Renewable energy certificate schemes provide proof of consumption of renewable energy and act as a currency for renewable energy markets. It is generally electricity consumers/suppliers (excluding the energy-intensive industry), who are obliged to purchase green certificates.

5.1.4. *Fines*

Civil fines, or civil penalties, are charges imposed by a government agency in response to the failure to comply with set rules and can take the form of parking fines, penalties for failing vehicle emission standards and illegal solid waste disposal.

5.2. Instruments of Private Finance

Private financing instruments used by various stakeholders (as highlighted in section 4) include equity, debt and mezzanine or hybrid instruments. Mezzanine instruments include subordinated debt instruments as well as preferred equity instruments. While equity is fairly simple and straightforward, debt instruments can be structured with many variations. Bonds where the proceeds are used address environmental concerns are called Green Bonds. At a policy level, governments can use various forms of "capital steerage" to shift investment into areas of urgent policy

priority. Capital steerage may involve tools ranging from policy and regulation to credit enhancement, guarantees, and tax credits.

Compared to conventional finance, Islamic finance offers a much larger range of instruments that are debt-based (e.g. *qarḍ*, *qarḍ* with service charge), sale-based (*murābaḥah*, *muswama*, *bay'bi al-thaman al-ājil*, *salam*, *istiṣnā'*, *istijrār*), leasing-based (*ijārah*, *ijārah-thummal- bay'*), and partnership-based (*muḍārabah*, *mushārakah*, *mudhara'a*). There are also products based on guarantee (*kafālah*), agency (*wakālah*) and service charge (*ujr*) that are often combined to design composite products. Islamic green bonds or *ṣukūk* is one such composite product. While a discussion of all the modes and their possible application in climate finance is beyond the scope of this paper; section 5.2.1 focuses on selected products such as green *ṣukūk* in view of their huge potential. Section 5.2.2 briefly presents the Islamic modes being in use at the Islamic Development Bank, the pioneer in the field of Islamic development finance as well as climate finance.

5.2.1. *Green Ṣukūk*

'*Sakk*' (*ṣukūk* is the plural) signifies an instrument evidencing financial obligations. A *ṣakk* represents a proportionate beneficial ownership in an underlying pool of assets, or 'usufruct'. *Ṣukūk* are Sharī'ah compliant securities backed by a specific pool of assets. Typically, *ṣukūk* returns are linked to returns and cash flows generated by the assets purchased or created through the proceeds of the *ṣukūk*. Most *ṣukūk* to date have been asset-backed (e.g. infrastructure projects), where credit of the originator has been the decisive factor for ratings and investor analysis, in accordance with Sharī'ah principles. A 'green *ṣukūk*' is the Sharī'ah-compliant version of a green bond and represents Sharī'ah-compliant investments in renewable energy and other environmental assets. Green *ṣukūk* notably addresses the Sharī'ah concerns for protecting the environment.

Box 3: The Green *Ṣukūk* Working Group

In an effort to facilitate the Green Bond concept, a Green *Ṣukūk* Working Group had been established in 2012 by the Climate Bonds Initiative, the Clean Energy Business Council (CEBC) of the Middle East and North Africa, and the Gulf Bond and *Ṣukūk* Association. This working group had been mandated to:

- Identify green energy projects that fall under Sharī'ah-compliant categories for potential investors.
- Design Green *Ṣukūk* architecture, so that product issuers can offer, and investors can access, products with confidence about their compliance with Sharī'ah law and ethical standards.
- Promote the concept of Green *Ṣukūk* and other green Islamic finance products to governments, investors, product originators, and other interested parties.
- Engage with Governments and development banks about supporting appropriate project development and the growth of a Green *Ṣukūk* market.
- Inform the market by promoting best practice, convening industry forums and developing template models.

Green projects funded by *ṣukūk* include clean energy, mass transit, water conservation, forestry, and low-carbon technologies. These green financing initiatives also include socially responsible investments designed to improve the lives of people and communities. They are also designed to encourage investors to move capital into companies that instill high governance standards for diversity, accountability, and transparency. Eligible assets for Green *Ṣukūk* as defined by Climate Bond Standards certification include: solar parks, biogas plants, wind energy, ambitious energy efficiency and renewable transmission and infrastructure, electric vehicles and infrastructure, and light rail. *Ṣukūk* proceeds may be used to finance construction, to refinance construction debt, or to finance the payment of a government-granted green subsidy. They may involve securitizing future income cash flows from ring-fenced projects or assets with specific criteria attached. Proceeds may also be used to finance a government green payment/subsidy.

There is a growing demand in the Middle and Far East for Sharī'ah-compliant or Islamic bonds. There is a preference for *ṣukūk* where it is easy to understand the underlying assets, how the return is generated and how secure that return is. The green *ṣukūk* are well-suited to address investor needs and channel the growing global pool of Sharī'ah-compliant capital to fund renewable energy and climate change projects.

6. Climate Finance by the Islamic Development Bank (IsDB)

Since its inception the IsDB Group has always supported the promotion of environment protection and its sustainability through financing mitigation and adaptation projects in its member countries. It makes special provision for environment protection in all its project documents as highlighted in section 6.3 below.

6.1. IsDB Initiatives for Climate Risk Mitigation

Since its inception the IsDB has contributed to the development of renewable energy projects in its member countries (MC) by providing total financing of about US$ 2.75 billion. Its actions to support environmental protection and mitigate climate change risk include: (i) making provision for environmental protection in all its project documents, (ii) launching the Renewable Energy for Poverty reduction (REPoR) program to tackle the energy challenges in MC via application of renewable energy resources, and (iii) adopting the Energy Policy calling for more Renewable Energy Financing. The REPoR Program is implemented through decentralized renewable electrification projects, with particular focus on solar off-grid solutions in Sub-Saharan Africa. There has been a significant increase in projects contributing to climate change mitigation during the last decade reaching a maximum of 16% in 2016 as against a figure of 6% of its portfolio of projects since inception. These projects include: renewable energy projects, hydropower projects, power transmission projects related to the evacuation of electricity from hydropower plants, transport projects related to urban transport modal change and transport oriented urban development. IsDB projects related to climate change mitigation are distributed in four regions: Sub-Saharan Africa (SSA), Asia, Countries in Transition (CIT), and MENA. About 57% of these projects are located in Asia primarily due to the abundance of hydro resources. The emerging trends in financing however, show the growing importance of the SSA region that has abundant hydro, solar and wind resources as well. Some of the success stories in this segment include:

a) Mini hydropower plants in Tajikistan,
b) Renewable-energy development projects and energy-efficiency projects in Turkey,
c) Manantali hydropower project involving the cross-border cooperation of Senegal, Mali, and Mauritania,
d) Mini Solar Home Systems in Bangladesh.

6.2. IsDB Initiatives for Climate Risk Adaptation

Since inception, around 11% of the IsDB's investments have gone into activities that collectively enhance adaptation to climate change measures of farmers and agro-pastoral communities in member countries.

There are a wide variety of adaptive measures, both at farm and sectoral levels, in the IsDB's investments in agriculture and rural development. They include, inter alia, the following:

a. Appropriate agronomic practices, such as, inter-cropping, agro-forestry and conservation agriculture that improve productivity, enhance resiliency and in water management, both at farm level and in dams for supplementary irrigation, and
b. Provision of capacity and institutional development support mechanisms.

IsDB interventions vary from one region to another. Its investment is highest in Africa, followed by Arab and Asia regions. The greater investment in Africa reflects IsDB's commitment to addressing the problems of climate change in this region where agriculture is largely rain-fed with the percentage of irrigated land being less than 7% as compared to over 30% in Asia. While Africa is responsible for only 4% of global GHG emissions, it is the most affected region in terms of climate change. Some of the success stories in this segment include:

a. Seven-country program for Building Resilience to Recurring Food Insecurity in Sahel,
b. Access to Quality Seeds program in Bangladesh,
c. Water-harvesting project in Sudan.

6.3. Environmental Protection in Project Documents

How the IsDB incorporates environmental concerns at the project design phase, based on a small sample of 13 agricultural and rural development projects, can be seen in Table 1.

A thorough examination of all project-related documents reveals that the issue of environmental impact was explicitly addressed in most cases at the project design stage. Of the 13 agricultural projects under study, one successful project explicitly included environmental protection through the establishment of trees nurseries at village level, forming cooperatives with forestry producers, the planting of various

forestry and fruit tree species, establishing training programs in ecosystems management, and bush-fire control. Another project sought environment protection through the development of arboriculture (plantation of fruit trees) and reforestation (plantation of forest trees). The tree plantations replaced the already degraded plant cover and favored the regeneration of fauna and flora. A third agricultural development project also had a positive environment impact against desertification through reforestation.

Table-1
Sample of projects in the study

#	Project Name	Mode of Finance	Country
1	Scan Tomato Project	Line of Installment Sales Financing	Cameroon
2	Beyla Kerouane Agro-Pastoral Project	Loan	Guinea
3	Forecariah Land Development Project	Loan	Guinea
4	Kolente Agricultural Project	Loan	Guinea
5	Orumiyeh & Bijar Grain Silos Construction Project	*Istiṣnā'*	Iran
6	Asswani Flour Mills Project	Leasing	Libya
7	Johore Palm Oil Mill	Line of Installment Sales Financing	Malaysia
8	Goubo Plain Development Project	Loan	Mali
9	Special Support Program for Food Security	Loan	Niger
10	Tivaouane Agro-pastoral Development Project	Loan	Senegal
11	Anambe Kayanga Rice Project	Loan	Senegal
12	Grain Silos Project	Leasing	Syria
13	Sidi M'Hadheb Plateau Agricultural Development Project	Loan	Tunisia

One project focuses on the improvement of soils in the project area as a reduction in soil erosion, due to increased vegetal cover, has a positive environmental impact. The project seeks to obtain underground water resources in an environmentally friendly manner.

The sample also includes two silos projects that explicitly dealt with environmental issues in the design stage itself. The projects do not involve any significant environmental effects other than those associated with normal building construction, excavations works, etc. No relocation or resettlement was required for the project implementation. Furthermore, the project has the necessary equipment to

internalize air emission resulting from the treatment of stored grains. It has also helped to minimize environmental pollution through a reduction in the use of disinfectant pills as applied in standard silos.

The sample also included a palm oil project that was considered environment-friendly, since palm tree plantation maintains and protects the climatic and physical environment through the provision of oxygen.

6.4. Modes of Islamic Finance in use at the IsDB

The following provides a brief snapshot of the modes of Islamic finance that are being used by the IsDB for development finance. This section heavily draws on *Islamic Development Bank: Modes of Finance (2014)*[16]. It may be noted here that the IsDB is a major player in the clean energy sector, with investments of around US$ 1 billion between 2010 and 2012. It will be increasing its financial support to realize Sustainable Development Goals to more than US $150 billion over the coming years.

6.4.1. *Grants*

Grants are of two types:

Technical Assistance (TA) Grant: These grants are provided for technical assistance and capacity building activities in MC, with priority given to Least Developed Member Countries (LDMCs).

Special Assistance (SA) Grant: These grants are provided for social projects (schools, hospitals etc.) for the exclusive benefit of Muslim communities in Non-Member countries. They are also provided for disaster relief in Member countries.

Subsequent to approval by the IsDB and its agreement with the recipient of grant, the recipient signs a contract with a supplier/contractor/consultant to procure the goods/services to whom the IsDB then disburses the funds directly. The supplier/contractor/consultant then delivers the goods/service to the recipient.

[16]http://www.isdb.org/irj/go/km/docs/documents/IDBDevelopments/Internet/English/IDB/CM/Projects/Financing%20Instruments/IDB-Modes_of_Finance_28Sep14.pdf

6.4.2. *Loans*

A loan is a long-term concessional facility that the IsDB provides for financing development in its MC. The IsDB charges a service fee to cover its administrative expenses. The different types of loans are as follows.

Ordinary Capital Resources (OCR) Loans - these loans are classified into two types depending on their scope of activities. The source of funds for these loans is the IsDB's Ordinary Capital Resources (as defined in Article 9 of the IsDB's Articles of Agreement)

- Ordinary Loans are long-term concessional loans provided for financing development and infrastructure projects.
- Technical Assistance (TA) Loans are loans with soft terms to assist MC in obtaining consultancy services to conduct feasibility and other such studies for major projects.

Islamic Solidarity Fund for Development (ISFD) Loans – these are loans with soft terms mainly directed at projects and programs that aim for poverty alleviation and micro-finance programs in various sectors (e.g. education, health) in MC, especially LDMCs.

Subsequent to approval of the loan by the IsDB and its agreement with the recipient of grant, the borrower signs a contract with a supplier for procurement of goods/services to whom the IsDB disburses directly. The borrower repays the IsDB the principal loan amount plus service fee. The IsDB charges the service fee to cover its administrative costs. The fee ranges from a minimum of 0.75% to a maximum of 2% per annum of the principal amount. The loan product is modeled after the *qarḍ-al-ḥasan* contract on which a service charge based on actual cost is permissible and does not tantamount to *ribā*.

6.4.3. *Leasing*

The IsDB operates a 'Lease-to-Own' structure on a medium to long-term basis. This product is used to provide for fixed assets and capital equipment (movable assets in certain cases) such as machinery and equipment for projects. The lessee acts as an agent on behalf of the IsDB and procures and maintains the assets.

Subsequent to approval of leasing arrangement, the IsDB appoints the client as it's agent to sign a contract with a supplier to procure the assets, and supervise,

monitor and take delivery of the assets. The client maintains the assets, takes care of insurance and repairs in the name of the IsDB during the lease period. The IsDB pays the supplier directly for the assets and the client (now the lessee), as an agent of the IsDB, takes delivery of the assets. The lessee pays fixed periodical rentals to the IsDB over the agreed lease period. At the end of the lease period the IsDB transfers ownership of the assets to the lessee as a gift. The calculation of the rental is based on the capital cost of the IsDB, plus a fixed or floating mark-up. In the situation of a floating mark-up there is a floor and a cap and the rental of the first six months is known to the parties concerned.

6.4.4. *Istiṣnā'*

The IsDB operates *Istiṣnā* on a medium to long-term basis, wherein the IsDB appoints the purchaser (client) as it's agent who gets the asset constructed/manufactured. When the asset is constructed/manufactured and accepted by the purchaser, the IsDB transfers the title of the asset to the purchaser. The purchaser then pays the sale price of the asset in deferred payments. The IsDB uses this product to finance infrastructure projects and trade in capital goods within and among member countries. The purchaser, as IsDB's agent, ensures that until the final acceptance of the asset, it is comprehensively insured with an acceptable Islamic insurance company and that the IsDB is named as a loss payee under the insurance policies.

6.4.5. *Instalment Sale*

The IsDB operates an 'Instalment Sale' on a medium to long-term basis. Under this arrangement, the IsDB purchases the assets for its client against a promise by the latter to purchase the assets once they are delivered. The IsDB appoints the client as its agent, to procure the asset from the supplier and supervise, monitor and take delivery of the assets. The client insures the assets in the name of the IsDB during the transit period. The IsDB pays the purchase price of the assets directly to the supplier. The purchaser, as the IsDB agent, takes delivery of the assets from the supplier. Then, upon delivery, the IsDB sells the assets to the purchaser at sale price on a deferred basis in instalments. The IsDB uses this product to provide for assets such as equipment and machinery for developmental projects. The Instalment Sale agreement provides for the procurement function of the client (as an agent of the IsDB), the terms and conditions of the arrangement as well as the sale price.

6.4.6. *Restricted Muḍārabah*

Restricted *Muḍārabah* is a variant of *Muḍārabah* that is used by the IsDB, wherein the *Muḍārib* (the entity) is bound by certain restrictions on the sectors/areas/projects into which it can invest the *Muḍārabah* capital. These restrictions are agreed upon upfront in the Restricted *Muḍārabah* Agreement (RMA), which lists the terms and conditions of the operation, the investment plan, profit-sharing ratio, duration etc. The IsDB uses this arrangement for investment in specific sector projects such as sustainable agriculture, renewable energy, youth employment programs etc.

Upon maturity of the *Muḍārabah* arrangement, the *Muḍārib* will liquidate the assets of the *Muḍārabah* operation. Following the liquidation by the *Muḍārib* the IsDB will receive the *Muḍārabah* capital plus the IsDB's share of the profits. If the profit is greater than what was agreed upon, the *Muḍārib*, as an incentive, will retain the excess. The authority and responsibilities of the *Muḍārib* include the following:

- Conduct the relevant feasibility studies to determine the financial viability of the projects that will be invested in;
- Ensure that the financing will be used only for Sharīʿah-compliant ventures;
- Invest only in those projects whose return will not be less than the anticipated profit as mentioned in the Agreement; and
- Submit progress reports to the IsDB, as and when requested.

It should be noted that Restricted *Muḍārabah* financing effectively eliminates the need for the IsDB to enter into individual financing agreements for each sub-project being financed. It also gives a lot of freedom to the local executing agency (*Muḍārib*) to use its own procedures for appraisal, quality assessment and risk assessment, as well as the procurement of goods and services.

6.4.7. *Mushārakah (Equity Participation)*

The IsDB uses a variant of the classical *Mushārakah* under which it makes strategic long-term investments with the objective to maximize its development objectives. These investments are usually in the equity of Sharīʿah-compliant industrial, agro-industrial projects, Islamic banks and financial institutions of its MC. The IsDB does not acquire a majority or controlling interest in the share capital of a company. Its investments do not exceed one-third of the company's capital and does not provide the IsDB with control or the ability to exercise any significant influence

over the financial and operating policies of such companies. Investments are sold at a time when the IsDB considers it appropriate.

7. Conclusion

Islamic finance has substantial synergies with the 'green' economic concept and fits in well with the ethical requirements of green projects. As such, environmental protection and sustainability fits in nicely with the Islamic finance agenda that seeks to enhance the general welfare of society. Organizational goals such as the protection of the planet and the environment, climate management and adaptation clearly conform to the goals of the Sharī'ah as well as with the UN-mandated Sustainable Development Goal. This paper takes the argument further and seeks to demonstrate how Islamic finance can significantly contribute to the global search for climate finance solutions.

Climate finance refers to all financial flows relating to climate mitigation and adaptation. It largely requires funds to flow into investments in long-life assets. Overall, experts feel that climate finance would not demand increased investment, but rather wiser investments with a move away from seeking short-term gains. A significant share of climate projects and assets to be financed involve capital intense technologies, i.e. requires significant upfront investments but benefit from low and stable operating costs. Private sector financers require a viable business case to get involved. Therefore, if a climate project cannot generate sufficient cash flows to repay the initial investment and interest/dividends, subsidies must be introduced to create a viable business case. Such subsidies will not be repaid by the project but can help make it financially viable.

Islamic microfinance institutions have specifically relied on Islamic social funds – *zakāt*, *ṣadaqah* and waqf to absorb certain costs related to the administration of microfinance and thereby succeeded in making microfinance affordable to clients. They can play a similar role in absorbing the incremental costs with clean technologies where subsidies are not forthcoming to absorb the same. For *zakāt* funds to be used for the purpose, an additional condition need to be met, i.e. the beneficiaries must be poor.

The recent successes of Islamic crowd funds to mobilize resources for achieving various social goals, e.g. poverty alleviation, point towards their potential in climate finance.

The institution of waqf can play a major role in climate finance. Along with *zakāt* and *ṣadaqah* it can certainly play a role in coping with humanitarian crises resulting from climate change. *Awqāf*, like foundations, may directly engage in the provision of goods and services related to mitigation and adaptation. Such green *awqāf* may be established as dedicated entities for the conservation of soil, water, plants, disposal of waste etc. *Awqāf* may also be dedicated to research and development that induce a movement along the learning curve and a fall in clean technology prices. *Awqāf* may be dedicated to towards increasing consumer awareness and providing stronger support for actions designed to mitigate climate change.

Similar to SRI Funds, Islamic Green Funds, and Green Bonds, the Islamic Green *Ṣukūk* can contribute significantly to the agenda of climate change.

Unlike conventional finance, Islamic finance offers a wide array of modes based on debt, sale, lease, and participation that could be used for climate finance. The Islamic Development Bank, as a pioneer in the field, has been successfully using a range of Islamic products for development finance in general and climate finance in particular. New players in Islamic climate finance can benefit from the rich experience of the Islamic Development Bank in the field.

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Factors Influencing Customers' Acceptance Towards Diminishing Partnership Home Financing: A Study of Pakistan

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Abstract

The purpose of this study is to identify the determinants that influence customers' intention towards the use of diminishing partnership home financing offered in Pakistan using the theory of planned behaviour. Total of 306 respondents who are the staff of 3 Universities and are potential users of Diminishing Partnership (DP) home financing were selected for analysis from two cities of the Sindh province, including, capital city Karachi and Hyderabad located in South of Pakistan. The findings suggest that customers' attitude, social influence their awareness level and above all self-efficacy are instrumental to their intention to use DP home financing. For the current study, customers had a positive attitude towards Islamic mortgage and it reflects that customers of Islamic banks are optimistic about the products available to them in Pakistan. The first limitation of this research work is that it is confined to only two cities, which are Karachi and Hyderabad

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respectively. Secondly, this work is limited empirically in terms of identifying the factors that might help to fully understand the customers' intention. This work adds awareness construct and substitute perceived behavioural control. To the best of authors' knowledge, perceived behavioural control was not substituted with self-efficacy using TPB model in the Islamic mortgage context.

Keywords: Diminishing Partnership, Home financing, Pakistan
JEL Classification: M00, M30, M31
KAUJIE Classification: LO, K3, I46

1. Introduction

Housing needs are an integral part of one's ultimate desire. Approximately, 1.2 billion people in the world today live in a rented house (Gilbert, 2016). Looking in a broad perspective there are a variety of products available in the market, offered by either conventional banks or their rivalry Islamic banks in the dual banking economies around the world. The Islamic home financing products are interest-free.

The Accounting and Auditing Organisation for Islamic Financial Institutions (AAIOFI) standards, define Diminishing partnership as "the partnership in which one partner agrees to other that he will undertake the shares of the party/parties in instalment/s periods to ensure that project is the subject matter of the partnership and it is transferred to the party that demands the financing" (Odabaş & Aktepe, 2012). Given the fact that Pakistan has one of the worst housing market in the world and it is less than 1 percent of GDP, (Ziauddin, 2016). Furthermore, the Government of Pakistan and the central bank of the country are putting combined efforts in order to allocate a handsome share of housing. In this feat mortgage refinance company was formed in 2015 with the assistance of the World Bank (SBP, 2015c). In Pakistan there is a dual banking system alike Malaysia, the UAE and other GCC countries around the globe. In Pakistan conventional banking system remains popular than the Islamic banking system (Sayyid, 2003; Butt *et al.*, 2011).

Housing finance is one of the determinants to be considered when judging the economic health of a country at both macro and micro level. Having a well-functioning housing finance system will gear households towards saving and creates a fruitful economic atmosphere wherein investors have opportunities to gain stable, long-term returns (MBL, 2004). Besides, it guarantees massive numbers of jobs in ancillary and construction industries for both unskilled and skilled workers and thus creating opportunities for potential investors to invest in the housing industry, which in return will help in the augmentation of economic growth of the country (SBP, 2015b). The country's housing market is a main indicator of the economic growth

but regrettably, this important segment of development was overlooked in Pakistan leading to a backlog of 9 million housing units in the country (SBP, 2015a).

To the author's wonder, mainly in the context of Pakistan, the large chunk of the mortgage industry is still in the hands of conventional banks (SBP, 2015b). Having a thorough look at the housing market conditions in the context of Pakistan it deems necessary to consider the factors that are responsible to attract more consumers to engage themselves in Islamic mortgage activity.

Taking note of prevailing market situation, the present study aims to identify the determinants that influence customer's intention to use DP home financing products in Pakistan. The previous studies including (Abduh & Razak, 2011; Amin, 2008; Amin *et al.*, 2014c; Ayesha & Omar, 2011; Hamid *et al.*, 2011, Usman & Mohd, 2016, Amin *et al.*, 2013, Amin *et al.*, 2014b, Amin *et al.*, 2014a, Amin *et al.*, 2016; Amin *et al.*, 2009; Amin *et al.*, 2017; Mohammed & Mehmet, 2012; Taib *et al.*, 2008; Razak & Taib, 2011) contribute to the factors of customer's intention to use Islamic home financing but there is no research that used awareness and self-efficacy construct to explain the relationship between the aforementioned constructs with intention to use DP home financing. Therefore, this study will incorporate these construct in the context of Islamic home financing and modify the framework using the theory of planned behaviour (TPB).

This research will further investigate the factors, namely, awareness, self-efficacy, attitude and social norm for DP home financing acceptance in Pakistan and push forward the frontiers of literature to fill in the existing gap. Many researchers have conducted a study of customer's intention towards Islamic home financing but the construct of awareness and self-efficacy are yet to be tested. Therefore, this research paper will be beneficial for the practitioners, managers, and academicians as a reference point and will help to enhance the current facility offered for Islamic home financing in Pakistan. Further, the remaining paper consists of different sections. Section 2 contains the literature review, section 3 discuss the theory of planned behaviour and hypothesis development followed by section 4, which is model development and methods used. Section 5 presents findings, followed by section 6 the discussion and conclusions.

2. Literature Review

2.1. Studies on Islamic Home Financing

A considerable body of research work has been conducted to investigate Islamic home financing from different contexts. From legal perspective, the light is shed on

the issues related to the bank ignorance to give rebate to the customers which, led to accusing Islamic finance of being abusive and expensive, consequently, the spirit and intent of justice of Islamic finance under the Sharī'ah law were open to question (Abu-Backer, 2002; Yasin, 1997). Within the context of consumers' behaviour, mounting interest to examine Islamic home financing is noted following a sequence of studies, (Alam *et al.,* 2012; Amin *et al.*, 2014b; Amin *et al.*, 2014a; Amin *et al.*, 2014c). These studies have collectively brought to the fore the importance of the customers as the main stakeholder of Islamic home finance products. They unanimously discover that consumer behaviour is a key element to ensure the compatibility of the Islamic mortgage products with customers' needs.

Alam *et al.* (2012) examine how religiosity influences customer's intentions towards undertaking Islamic home finance in Klang Valley, Malaysia. Based on the TPB constructs, their findings suggest that attitude, perceived behavioural control, subjective norms and religiosity are important predictors to the intention of consumers. To examine the customer's acceptance of Islamic home finance profoundly, Amin *et al.* (2013) use an integrative approach, which combines both the innovation diffusion theory (IDT) with TPB. Amin *et al.* (2014), parallel to Alam *et al.(*2012), underpin their investigation of customers acceptance of Islamic home financing on TPB. Using ordered probit model, they found that attitude, subjective norms, perceived behavioural control along with Islamicity of products are advantageous determinants of consumers acceptance. Above all these factors, Islamicity of products lends itself to be the strongest in affecting consumers acknowledgment of Islamic home financing products. Extending the same theory, TPB, Amin, *et al.* (2014) seek to understand how willing the stakeholders are to become a partner in the arrangement of *Mushārakah Mutanāqiṣah* home financing. By drawing up their results from structural equation modelling (SEM) and TPB constructs (subjective norms, perceived behavioural control and attitude), a significant relation to customer's willingness is arrived at; and from the same findings attitude stands out as the strongest determinant factor.

Amin *et al.* (2014b) go beyond the previous studies and put forward a theory of Islamic consumer behaviour (T*i*CB) to predict factors affecting Islamic mortgage preference among consumers. They differ from (Amin *et al.,* 2014a) and (Amin *et al.,* 2014c) in that they use an Islamic framework rooted in objectives of Sharī'ah coupled with religious satisfaction. Their findings revealed that both education and religious satisfaction are pivotal to determine Islamic home financing preference. It is worthy to add that T*i*CB is at infancy stage due to the lack of empirical underpinnings to justify its contribution.

Amin *et al.* (2017), on the same note, investigate consumer's attitude towards Islamic mortgage by examining the service quality effects, Islamic debt policy, and product choice, which have not been explored in precedent studies. Distinguishably, consumers' attitude is introduced as a mediating factor for the relationship between service quality, product choice, Islamic debt policy, and consumer's preference. The results of this study indicated a significant influence of the aforementioned variables on the customer's preference, additionally; consumers' attitude mediated the effects of the examined factors on the Islamic mortgage preference.

Aligning the findings of the previous studies discussed earlier with each other shows a convergence as well as a divergence in many aspects. To begin with the former, the common denominator is that the findings of the previous studies have empirically asserted the significance of TPB constructs particularly attitude and subjective norms, in predicting the intention of Islamic home finance target customers. However, the previous literature varies in adding different variables which have not been attested before then examining its significance in determining consumer's intention. With this in mind, the uniqueness of this study lies in involving two predicting variables (self-efficacy and awareness level) in the context of Islamic home financing, which is obviously lacking in the formerly visited literature.

3. Theory of Planned Behaviour and Hypotheses Development

3.1 Theory of Planned Behaviour

In an endeavour to identify the determinants of the likelihood of performing a specific behaviour, Fishbein and Ajzen (1977) developed the theory of planned behaviour (TPB) by extending the theory of reasoned action (TRA). TPB and TRA models consider the predictors for behavioural intention and actual behaviour, while the behavioural intention is predicted by social normative perceptions and attitude towards the behaviour (Glanz *et al.*, 2008). In addition to the two constructs of TRA, i.e. attitude, and subjective norms, Fishbein and Ajzen (1977) introduced the third determinant of behavioural intention known as the perceived behavioural control (PBC).

An attitude toward a behaviour is conceptualized by Ajzen (1991) as for whether the individual performs that behaviour positively or negatively, whereas subjective norms pertain to the individual's perception of what is significant to others who are potential to think about the behaviour (e.g. family or friends).

The perceived behavioural control according to Ajzen (1991), is the extent to which the individual considers that he gets hold of the resources and opportunities desirable to engage in the behaviour. According to (Armitage & Conner, 2001; Kraft *et al.,* 2005), PBC has come under criticism therefore, it was replaced with self-efficacy variable. Kraft *et al.* (2005) explained, self-efficacy indicates the emotional reaction besides the physical power thus its ability to explain the intention to behave is higher than PBC.

The two constructs of TPB aforementioned (attitude and social influence) coupled with self-efficacy and awareness serve as the theoretical grounding upon which the hypotheses for this study is based. A brief account of each is given in the following sections.

4. Development of Hypotheses

4.1. Awareness

Hall (1977), describes awareness as an individual expression of little concern or involvement with the product or service. Individual's level of awareness is found to be an influential factor, (Tyagi & Kumar, 2004; Mohammed & Ortmann, 2005), by which the potential decision of the consumer to whether or not he is willing to buy a product. The state of knowledge possessed by the consumers, Yuan and Jang (2008) points out, is denoted by how aware they are. In other words, they add, the more the consumer exposed to the product, the higher the possibility that his inclination to the product in the future will increase. Previous studies' findings report a direct relationship between awareness and behavioural intention (Dinev & Hu, 2009, Yuan & Jang, 2008, Mohammed & Ortmann, 2005).

In light of this, it is anticipated that the customer's awareness could have an effect on Islamic mortgage. Thus, the following hypothesis is then proposed:

H1. There is a positive relationship between awareness and customers' intention to use of DP, Islamic home financing.

4.2. Self-efficacy

Self-efficacy is related to an individual's judgments of his skills and capabilities to perform the behaviour (Bandura, 1977). It is reflected in the way an individual perceives his performance to a particular behaviour. In other words, Ajzen (1991) added, an individual's confidence in doing a specific task has a significant bearing

on behaviour. The central idea of self-efficacy according to Barling and Beattie (1983) is that the foundation of the people's action is the personal beliefs they have in themselves. Hence, self-efficacy has a pivotal role in influencing their decisions about what behaviour to undertake and how much efforts to be put in attempting those behaviours. As an external factor, Md Husin and Ab Rahman (2016) find an indirect relationship between self-efficacy and consumers' willingness to participate in a takaful scheme offered in Malaysia. Given the deficient disproportion of literature on the role of the self-efficacy in influencing consumers' behavioural intention toward Islamic mortgage, this study introduces self-efficacy as a predictor of customers' intention. Consequently, the following hypothesis is proposed:

H2. There is a positive relationship between self-efficacy and customers' intention to use of DP, Islamic home financing.

4.3. Attitude

Ajzen (1991), defines attitude as a psychological inclination that is articulated in the course of a favourable or an unfavourable evaluation of an entity. By and large, the more favourable this tendency towards a particular behaviour, the higher is the likelihood that the person will want to engage in that behaviour. Scanning through previous studies which employ TPB and DTPB model in the context of Islamic financial products reveal that attitude is at the heart of predicting individuals' intention (Md Husin & Ab Rahman, 2016; Amin *et al.*, 2014a; Amin *et al.*, 2011; Alam *et al.*, 2012; Echchabi & Aziz, 2012). Accordingly, it is hypothesised that:

H3. There is a positive relationship between attitude and customers' intention use of DP, Islamic home financing.

4.4. Social Influence

Ajzen (1991), gives a definition of social influence as the perceived social pressures borne by an individual and direct him to either perform or not to perform the behaviour. It implies that people do have expectations on how significant their engagement in a particular behaviour is thought of by the others. Several studies provide evidence of this construct (Amin *et al.*, 2014a; Amin & Chong, 2011; Olaniyi & Echchabi, 2012; Gopi & Ramayah, 2007; Hansen *et al.*, 2004). It is interesting to add that mixed results are arrived at in the domain of IT acceptance, Chau and Hu (2001) report no direct relationship between subjective norm and intention to use IT products, whereas Teo and Pok (2003) have their hypothesis of the significant relationship between subjective norm and behavioural intention

supported. In line with the above-mentioned results, the following hypothesis is proposed:

H4. There is a positive relationship between social influence and customers' intention to use of DP, Islamic home financing.

5. Proposed Research Model

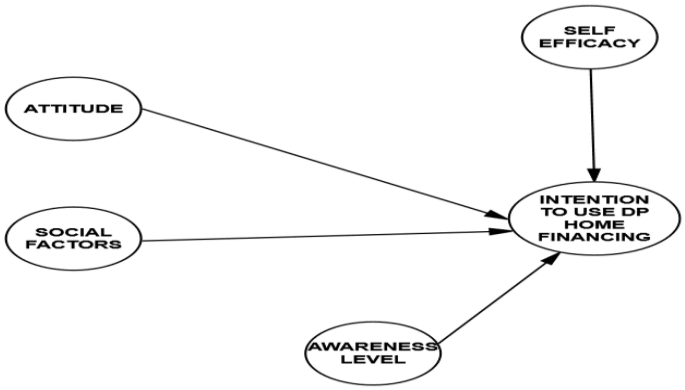
5.1. Proposed Model

This study developed the model which is derived from Ajzen (1991) for TPB. The model for current study is modified and perceived behavioural control (PBC), originally used in TPB, is substituted with self-efficacy proposed by Bandura (1977), who asserts that prospects related to the feeling of performance, motivation, as well as frustration, are likely associated with the repeated failures and they are essential to the effect as well as behavioural reactions. The model of TPB has been previously tested in the context of Islamic mortgage by Amin *et al.* (2014a), which used subjective norms, Islamicity of product, perceived behavioural control and attitude as predictors for Islamic home financing adoption. Earlier work used TPB model to understand the behaviour in the marketing, management and psychology studies (Amin *et al.*, 2011). In this study, along with using attitude, social influence and a new construct, consumer awareness are added in the context of DP Islamic home financing. Furthermore, likewise (Armitage & Conner, 2001, Kraft *et al.*, 2005) the variable PBC is substituted with the self-efficacy in the current study.

Furthermore, in the context of the current study, the construct subjective norm is renamed as a social influence (Amin *et al.*, 2011). In addition, the variable consumer awareness has yet to be tested in the context of Islamic mortgage using TPB specifically in the setting of Pakistan. This study is more focused towards predicting customer's intention, social influence and excludes "actual behaviour", the similar approach by Amin *et al.* (2014a) is adopted for this study model. The figure 1 below depicts the proposed conceptual model used in this study.

For the purpose of analysis of the above relationship shown in Fig.1 structural equation modelling (SEM), AMOS 21.0 software was used to identify which constructs are the predictors of the Pakistani customer's intention to use DP, Islamic home financing. Moreover, for the sake of reliability analysis and other descriptive statistics SPSS 20.0 software was used.

Fig-1: The Conceptual Model



6. Research Method

6.1. Sample Size

The online survey was conducted and a total of 2143 university staff members were sent an invitation to participate in an online survey. All the staff members of Mehran University of Engineering and Technology, University of Sindh and Bahria University were invited to participate via an online survey using their official e-mails. It was mentioned in the survey that if they are interested to participate in a survey and are currently using or wish to apply for DP, Islamic home financing. At universities, all the professional and nonprofessional groups are available based on age, position, and grade (Amin *et al.*, 2017).

The total of 306 responses were recorded and used in the analysis of this study. This response is deemed sufficient based on the recommendation by Comrey and Lee (1992). Census sampling is used in the current study as the entire population is considered. Amin *et al.* (2013), argue that it is not possible to estimate how many respondents are potential users of the DP, Islamic home financing. Therefore, by using the census the data is gathered from every member of the population.

6.2. Research Instrument

For the purpose of data collection, an online questionnaire was administered using the Google forms, which is a feature by Google. It is deemed very useful for survey involving large population but it is normally accepted that online survey is

slow to respond (Dommeyer* *et al.,* 2004). In Google forms, the section one was set to gather the demographics of the respondents, such as age, gender, education, and profession. In section two, the responses were drawn for measurement of independent variables; attitude, social influence, self-efficacy, awareness level and dependent variable; customers' intention towards DP, Islamic home financing based on the Likert scale ranging from 1-Strongly disagree to 5-Strongly agree. The new variable is added to the TPB with the notion that it might enhance the predictive capabilities of the theory in certain circumstances (Conner & Armitage, 1998).

Further, the current study adopted measures from previous research and adapted for the use in the present study:

- Attitude was adopted from (Taib et al., 2008);
- Social influence (Gopi and Ramayah, 2007);
- Self-efficacy (Khalil, 2005);
- Awareness level (Hall, 1977);
- Intention to use DP, Islamic home financing (Amin *et al.,* 2011)

Three experts were consulted for the measurement items to be used in the online questionnaire and 40 questionnaires were sent via e-mail to selected lecturers of the aforesaid 3 universities for the purpose of the pilot study. All the queries and comments were looked into and some modifications in terms of language and length of the questionnaire were considered. There were 22 observed endogenous variables, which were analysed and four constructs were latent, which includes attitude, social influence, awareness level and self-efficacy, which are unobserved exogenous variables and customer's intention to use DP an unobserved endogenous variable.

7. Results

Table-1 depicts the demographic profile of the respondents. The percentage and the frequency are listed based on the questionnaire set. The percentage of an individual variable along with the frequency is exhibited in the sequence as in questionnaire. The demographics, which include gender, age, education level and occupation, were placed in the part A of the questionnaire. It was depicted from the findings that 198 (65%) of the respondents were Male and rest of 108 (35%) were Female.

Table-1:
Frequency Statistics

		Pakistan	
Demographic information		Frequency	Percentage
Gender	Male	198	65.0
	Female	108	35.0
Age	20-40	201	66.0
	41 and above	105	34.0
Education	Advance Diploma	8	3.0
	Master Degree	112	37.0
	Ph.D. Degree	186	60.0
Occupation	Full-Time	272	89.0
	Part-Time	34	11.0

Source: Primary data

Most of the respondents are middle age group between 20-40 comprising (66%) of the total respondents. The total of 186 (60%) of the respondents have a Ph.D. degree, while 112 (37%) were Master degree holder and the rest (3%) are an advance-diploma. holder 168(42%). Similarly, with regard to occupation 272 (89%) of the respondents are a full-time employee of the various universities and only (11%) of the total were part-time academic staff.

In Table-2 above, it is reported that the Kaiser-Meyer-Olkin (KMO) index is 0.944 with significant (ρ=.000) Bartlett's Test. It can, therefore, be concluded that the factor analysis is appropriate and finds that data is adequate. In this study, the structural equation modelling is of particular importance because this study is covariance-based. In addition, the covariance-based approach was used over component-based approach because in this study authors were interested to test predictive power as well as research fit (Mäntymäki et al., 2014).

Table-2:
Factor Analysis

	Attitude	Intention	Social Influence	Self-Efficacy	Awareness Level
ATT5	.765				
ATT4	.726				
ATT2	.723				
ATT3	.688				
ATT1	.666				
INT2		.774			
INT3		.766			
INT4		.744			
INT5		.691			
INT1		.591			
SI2			.853		
SI1			.802		
SI3			.752		
SI4			.669		
SE3				.758	
SE1				.740	
SE2				.720	
SE4				.710	
AL3					.743
AL2					.712
AL1					.700
AL4					.696
Kaiser-Meyer-Olkin Measure of Sampling Adequacy .944					
Bartlett's Test of Sphericity Approx $\chi 2$ Chi-Square=4424.220					
			Df = 231		
			Sig.=.000		

Source: Primary data

Table-3:
Mean, Standard Deviation, Factor Loadings and Reliability Statistics

	Mean	Std. Deviation	Factor loading	Cronbach's alpha	Composite Reliability	AVE
SI1	3.9379	0.96805	0.821	0.895	0.908	0.844
SI2	3.9150	0.89037	0.844			
SI3	3.8203	0.93232	0.859			
SI4	4.0000	0.84543	0.790			
ATT1	3.9248	0.85559	0.702	0.889	0.895	0.793
ATT2	3.9314	0.87508	0.777			
ATT3	3.8562	0.85252	0.811			
ATT4	3.8922	0.84045	0.790			
ATT5	3.9281	0.85396	0.736			
SE1	3.9346	0.92096	0.795	0.850	0.854	0.771
SE2	3.9281	0.82267	0.786			
SE3	3.8660	0.84447	0.747			
SE4	3.8235	0.86550	0.720			
INT1	3.8627	0.95512	0.725	0.883	0.894	0.793
INT2	3.9608	0.83279	0.764			
INT3	4.0033	0.80774	0.781			
INT4	3.9412	0.83163	0.716			
INT5	3.9150	0.91578	0.786			
AL1	3.8922	0.81671	0.757	0.866	0.875	0.798
AL2	3.9216	0.84953	0.826			
AL3	3.8758	0.87456	0.798			
AL4	3.9314	0.87882	0.779			

Source: Primary data

Table-3 above reports the mean, standard deviation, factor loadings and reliability statistics. Using, SEM the correlation between the latent construct, squared multiple correlations and factor loading of the measuring item can be determined. The value of Cronbach's Alpha is above the threshold value of 0.70 for the measurement of internal consistency, which is achieved based on the recommendation of (Nunnaly & Bernstein, 1994). Thus, it shows there is a sufficient internal consistency and all

the constructs have good reliability. Thus, all the constructs used in this study are reliable. The convergent validity of the current study was scrutinized by calculated and examining the average variance extracted (AVE), indicator factor loadings and composite reliabilities.

Further, the convergent validity was confirmed as indicator factor loadings were ideally above the threshold value of 0.70, the AVEs were above 0.50 and CRs were above 0.75 (Hair *et al.*, 2010). The table 3 summarizes that all the constructs have high composite reliabilities and high (AVE) value exceeding 0.50 indicates good convergent validity.

The discriminant validity was examined by comparing the square root of average variance extracted (square of AVE) for each (diagonal) construct to all inter-factor correlations (below the value in bold). Almost all the factors demonstrated adequate discriminant validity as reported in (table-4) all the diagonal values (square root of AVE) are more than the correlations.

Table-4:
Reliability and Validity Testing of the Measurement Model

	CR	AVE	MSV	ASV	INT	SE	ATT	AL	SI
INT	0.894	0.629	0.536	0.498	**0.793**				
SE	0.854	0.594	0.563	0.478	0.730	**0.771**			
ATT	0.895	0.630	0.563	0.512	0.726	0.750	**0.793**		
AL	0.875	0.637	0.536	0.502	0.732	0.673	0.722	**0.798**	
SI	0.908	0.712	0.500	0.425	0.629	0.604	0.662	0.707	**0.844**

Source: Primary data

The above results confirm the convergent and discriminant validity. Therefore, we furnish that adequate reliability and construct validity have been achieved.

Table 5.0 reports the values for correlation for (self-efficacy, attitude, awareness level and social- Influence) constructs are lower than 0.85 as suggested by (Kline, 2011). Hence there is no strong correlation between the items and this implies that discriminant validity for the research model is achieved and there is no problem of multicollinearity among the items.

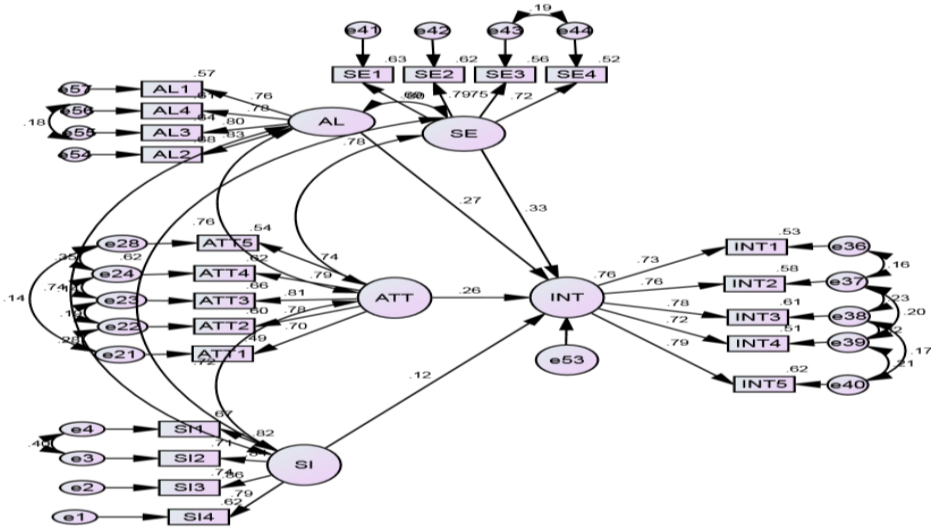
Table-5:
The Correlation Estimate for Each Pair of the Exogenous Construct

Latent construct	Estimate
ATT<-->SE	.782
SF<-->ATT	.720
SE<-->AL	.689
ATT<-->AL	.759
SI<-->AL	.737
SI<-->SE	.624

Source: Primary data

Figure-2 below depicts path diagram. According to the results, Squared Multiple Correlations (R^2) value is 0.76. It indicates the contribution of awareness level, attitude, self-efficacy and social influence and awareness explains 76 % variance of customer's intention towards the use of DP home financing. The test of the structural model includes estimating the path coefficients, which indicate the strengths of the relationship between the exogenous and endogenous variables.

Fig-2:
Path Model



According to the results, it is indicated that the acceptable goodness-of-fit model depicted in Table 6 and Table 7. The $\chi 2$ is significant ($\chi 2$=381.597, $\chi 2$/ degree of freedom($\chi 2$/df) ratio 2.063, ρ =0.000 as sample size is large and large sample cause ρ to be significant(Hair et al., 2010).The value of GFI= 0.944, NFI=0.957 and CFI=0.977 meet the minimum threshold of 0.90.

Table-6:
Goodness-of-Fit Statistics for Modified and Initial Model

Variable	GFI	CFI	$\chi 2$ /df	RMSEA	Sig.
Measurement model	.935	.971	2.298	.048	.000
Structural model	.944	.977	2.063	.043	.000

Source: Primary data

Bentler (1990) and Hair *et al.* (2006) recommended that both NFI and CFI be the index of choice and were found reliable in signifying the hypothesised model with an adequate fit to the data. Meanwhile, the model had an RMSEA of 0.043 and this value is close to the threshold and consequently, an acceptable model fit is represented.

Table-7:
Model Fit

CMIN/DF	GFI	AGFI	CFI	RMSEA	PCLOSE	IFI	TLI	SRMR
2.298	.944	.923	.977	.043	.967	.977	.982	.0276

Source: Primary data

Table-8 indicates weights of regression among customer awareness, self-efficacy, attitude and social influence and customer's intention to use DP Islamic home financing. The result of customer's awareness indicates that the probability to get CR is as large as 4.023 in absolute value is lower than 0.001. To put it differently the weight of regression for awareness is significantly different at 0.001 (two-tailed) level from 0 in predicting consumer intention to use DP home financing. Moreover, for the prediction of consumer intention towards DP and consumers' awareness, it is further attested that when the level of consumer awareness increases by 1 then the consumer intention to use DP, home financing will augment by 0.259.

Furthermore, it is elucidated that there is a positive significant effect of awareness on customers' intention to use DP home financing. Interestingly, customers' find it important that if they have awareness about the DP home financing product it will be more likely for them to use Islamic mortgage. Thus, Hypothesis 1 is supported, which indicates that customer awareness influence intention to use DP, home financing.

Table- 8:
Regression Weights for Hypotheses Testing

Weights of Regression	B	S.E.	C.R.	P	Result
H1 INT <--- AL					
	0.259	0.064	4.023	***	Significant
H2 INT<--- SE					
	0.315	0.065	4.871	***	Significant
H3 INT<--- ATT					
	0.295	0.094	3.141	0.002**	Significant
H4 INT<--- SI					
	0.116	0.058	1.988	0.047*	Significant

Notes *** Significant at 0.001, ** Significant at 0.01, * Significant at $\rho < 0.05$
Source: Primary data

As for the self-efficacy, the probability to get CR is as large as 4.871 in absolute value is lower than 0.001. To put in simply, the weight of regression for self-efficacy is significantly different at 0.001 (two-tailed) level from 0 in predicting customer intention to use DP home financing. Besides, for the prediction of customer's intention towards DP and self-efficacy, it is further attested that when the level of customer's awareness increases by 1 then the customer's intention to use DP, home financing will enhance by 0.315.

Moreover, it is expounded that there is a positive significant effect of self-efficacy on customer's intention to use DP home financing. Surprisingly, the results achieve the objective of substituting perceived behavioural control for self-efficacy. It is obvious from the results in table 9, which indicates that among all the factors self-efficacy is the strongest, significant predictor for predicting customer's intention to use DP home financing. Thus hypothesis 2 is strongly supported. This opens a new chapter of discussion in the context of Islamic mortgage to consider self-efficacy as a strong predictor of perceived behavioural control. It also implies that Islamic bankers should live up to the customer's expectations for DP home

financing of being trustworthy regarding its compliance with Sharīʿah. To this end, the authors opine, Islamic banks products quality should be weighed against the level of confidence that the customers have in it in terms of the product image.

In the similar vein attitude, the probability to get a CR is as large as 3.141 in absolute value is lower than 0.002. To make it different, the weight of regression for attitude is significantly different at 0.01 (two-tailed) level from 0 in predicting customer's intention to use DP home financing. Besides, for the prediction of customer's intention towards DP and attitude, it is further confirmed that when attitude towards DP home financing increases by 1 then the customer's intention to use DP will increase by 0.295. It can be explained that customers' consider that using DP home financing is a beneficial, useful and good idea. Consequently, it signifies that attitude is a significant positive effect on intention to use DP home financing. Hence, it means that Hypothesis 3 is also supported.

Likewise, the social influence, the probability to get a CR is as large as 1.988 in absolute value is lower than 0.047 or it can be said that the weight of regression for social influence is significantly different at 0.05 (two-tailed) level from 0 in predicting consumers' intention to use DP home financing. Further, for the prediction of customer's intention towards DP and social influence, further confirms that when social influence towards DP home financing increases by 1 then the customer's intention to use DP will increase by 0.116. Hence, therefore we conclude that Hypothesis 4 is also supported. This implies that customer who intends to use DP, home financing is likely to be influenced by their peers, family members, and acquaintances. Hence, hypotheses *H1, H2, H3,* and *H4* are supported.

Table-9:
Summary of Hypothesis Testing

Hypotheses	Results
H1: Awareness-Intention (+)	Supported
H2: Self-Efficacy–Intention (+)	Supported
H3: Attitude– Intention (+)	Supported
H4: Social influence– Intention (+)	Supported

Source: Primary data

8. Discussion and Conclusions

This study aims at determining the factors that influence customer's intention to use Islamic home financing in Pakistan. Furthermore, findings reveal that among all the factors the most statistically significant factor is self-efficacy followed by

awareness, attitude, and social influence; as illustrated in table 9. It implies that policymakers and bank managers of the Islamic banks need to take customer's self-confidence and awareness level into consideration. This can be done by prior market survey and educate the potential customers about the features of the product. Prior to devising further Islamic mortgage products, the Islamic banks may need to gain the confidence of their current and potential customers. For the current study customers had a positive attitude towards Islamic mortgage and it reflects that customers of Islamic bank are optimistic about the product available to them in Pakistan.

On the same note, this study provides the theoretical framework that expounds the intention of the customer's towards Islamic home financing in Pakistan. In the current study new relationship is proposed between awareness and intention to use Islamic home financing. Interestingly, the relationship seems to influence the customers' intention towards Islamic home financing next to self-efficacy. This study breaks new ground in applying two new constructs namely self-efficacy and awareness in the framework sourced from TPB. In the earlier empirical work on Islamic home financing using TRA and TPB respectively (Amin, 2008, Amin *et al.*, 2014c, Usman and Mohd, 2016, Amin *et al.*, 2009, Taib *et al.*, 2008, Abduh and Abdul Razak, 2011) did not test such a significant variable of awareness and neither substitute perceived behavioural control to self-efficacy.

Hence this study validated the self-efficacy and awareness construct in the TPB model. Furthermore, the result implies that awareness, self-efficacy, attitude and social influence have direct relationship towards customers' intention to use Islamic mortgage. As seen in table 9 it is evident that all the aforementioned variables have positive relationships and all the hypotheses are supported. This demonstrates that the greater the variable the more is a possibility that Islamic bank customers will intend to use Islamic home financing product.

This study alike any research has limitations. Firstly, this research work is confined to only two cities which are Karachi and Hyderabad. Secondly, this work is limited empirically in terms of identifying the factors that might help to fully understand the differences that may exist. Lastly, this work is limited to only 3 universities, which are located in the south of Pakistan and capital of the Sindh. Further, work needs to be carried out in other cities in order to test the difference as a whole. The findings further explain that the improvements are required to support diminishing partnership home financing which, in turn, may help the policy makers and managers of Islamic banks to better understand the factors which may determine the intention of customers to use Islamic mortgage in Pakistan.

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Innovative Islamic Social Finance for Housing Microfinance

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Abstract

For a long time, microfinance was considered an appropriate tool to accomplish social and financial goals simultaneously. Over time microfinance has become more commercialized, transforming into a financially efficient industry, allowing more *customers to have access to more sophisticated banking products (e.g. small housing loans). Despite interest from the commercial sector, the industry has yet to find a workable market-based solution to fund (housing) microfinance and to improve access to finance.*

Microfinance in member countries of the Organization of Islamic Cooperation (OIC) face three challenges: (i) affordable funding, (ii) financial exclusion due to religion and limited access of consumers to financial services, and (iii) constraints in the area of risk and management capabilities. Growing populations and rising urbanization have impeded the access of low income groups to housing finance. Housing costs *in relation to incomes and the lack of formal title have forced people to live in informal settlements.*

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≠ International Finance Corporation (IFC).
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The objective of this paper is to describe and assess the introduction of an innovative way to leverage Islamic social finance instruments combined with a market-based mechanism, e.g. ṣukūk, (Islamic bond), that aims to enhance access to finance at a *lower and* more *affordable cost. Microfinance institutions have tapped capital markets by securitizing their housing microfinance portfolios however, due to the high risk of underlying portfolio conventional mechanisms of credit enhancements fail. The paper proposes a unique way to overcome credit enhancement issues in absence of outright credit guarantees through the use of Islam's redistributive social finance instruments such as waqf (trust*) and *qard hasan), qarḍ ḥasan (benevolent loan*). *The result is a viable option to develop a market-based financing solution to address core problems of financial inclusion and non-bankable segments in OIC countries.*

Keywords: Housing Finance, Sukuk, Waqf, Social Finance
JEL Classification: G21 , G23 , Z12.
KAUJIE Classification: I68, K16, E23, K3.

1. Introduction

For a long time, microfinance has been considered an appropriate tool to accomplish social and financial goals simultaneously. Over time, microfinance has become more commercialized, transforming into a financially efficient industry, allowing more customers to have access to more sophisticated banking products (e.g. small housing loans). The experience with microcredit or microfinance has been mixed, as there is a growing consensus that expectations were overestimated and that there are serious challenges in achieving a sustainable impact on poverty alleviation.[1] One of the key criticisms of commercial and conventional approaches to microfinance is the high cost of borrowing as a result of high interest rates.[2] These high rates are justified because of high transaction and operating costs and the high risk premium. However, this imposes undue stress on the recipient to engage in activities that produce returns higher than the cost of funding—which may not be possible in many cases. In the case of housing microfinance (HMF), high interest rates make housing less affordable and thus prevents the poor from building a valuable asset.

[1] For example, see Chawdhury (2005), Amendariz De Aghion and Morduch (2005), Fischer (2010)
[2] Interest rates in the range of 20-35% are common in the conventional microfinance industry.

Investments in the housing and housing finance sector of an economy have several multiplier effects that will systematically lead to more jobs, and improve health and education. As far as the impact on job creation is concerned, anecdotal evidence shows that for every job created directly in construction, it is likely that at least one to two more jobs are generated in the industries feeding materials, transportation, sustenance and parts into the construction process. These effects are independent of the provider of housing loans – be it a microfinance institution (MFI) or a commercial bank.

Providing the framework for the expansion of human capabilities provides a foundation for the generation of additional resources with which public and private efforts will flourish. The provision of such resources will lead to increased welfare and living standards. For most low-income people their home is a place of living and production. A solid and clean home improves the quality of life and increased well-being. As a result, people will become more productive, creative, and satisfied.

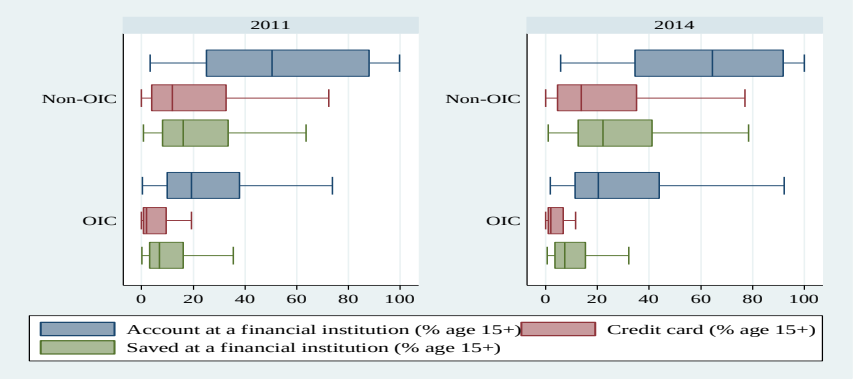
The purpose of this paper is to describe and assess the introduction of a market-based model aimed at combining Islamic finance principles with the objective of addressing "market-failure" in the microfinance industry and to enhance access to finance at an affordable cost in OIC countries.[3] The core economic principles of Islam places great emphasis on social justice, inclusion, and the sharing of resources between the haves and the have-nots. Islamic finance addresses the issue of financial and social inclusion from two directions: one by promoting risk-sharing contracts that provide a viable alternative to conventional debt-based (risk-transfer) financing, and the other through voluntary and involuntary instruments of redistribution of wealth in society, i.e. instruments of social finance. Both risk-sharing financing instruments and social finance instruments complement each other to offer a comprehensive approach to enhance financial and social inclusion, eradicate poverty, and build a healthy and vibrant economy. The second set of instruments meant for redistribution are used to redeem the rights of the less able in the income and wealth of the more able.[4]

In OIC countries, the majority of low income earners often do not have access to formal financial services. Figure 1 shows the relative state of OIC countries with respect to non-OIC countries in different indices that intend to capture the level of financial inclusion, such as account ownership, credit card ownership and saving

[3] OIC stands for Organization of Islamic Cooperation, an organization consisting of 57 Muslim countries.
[4] Iqbal and Mirakhor (2013).)

habits at a financial institution. We see that the OIC countries are worse off than their non-OIC counterparts in all three metrics. The biggest gap between OIC and non-OIC countries seems to be in the category of owning an account at a financial institution. Even though OIC countries have made some progress on that metric during the period between 2011 and 2014, they still have a long way to go. In the other two categories, saving in a financial institution and use of credit card, it is striking that the state of OIC countries has not improved at all between 2011 and 2014. In 2014, account penetration was the highest in East Asia and the Pacific with 69% and lowest in the Middle East with just 14%.

Figure-1:
Different Proxies for Comparing Financial Inclusion Between OIC and Non-OIC Countries



Source: Findex database and authors' calculations

One of the major initiatives that the World Bank Group (WBG) has targeted is to make it more likely to achieve its twin goals (ending extreme poverty and boosting shared prosperity) as well as to increase the welfare of the people living in the world is to achieve Universal Financial Access (UFA) by 2020. The UFA goal envisions that by 2020, adults that are currently not part of the formal financial system have access to a transaction account or an electronic instrument to store money, send and receive payments to manage their financial lives, and help to manage risks and escape poverty.[5] To achieve the UFA goal, 25 focus countries, which represent 73% percent of the world's unbanked adult population, were identified. Out of the 73%

[5] http://www.worldbank.org/en/news/feature/2013/11/07/achieving-universal-financial-access-by-2020-requires-the-wbg-to-think-about-what-we-need-to-do-differently

percent of the world's unbanked, 22.2 percent are Muslim-majority countries, indicating that access to finance is a major problem in OIC countries.

The World Bank's traditional goal has been to eradicate extreme poverty. Recently it has increased its metric for defining people living under extreme poverty from $1.25 ($2.0) to $1.9 ($3.1).[6] The official goal of the WBG is to reduce extreme poverty to 3% (or less) by 2030. In addition to the World Bank, the United Nations (UN) has also given the highest priority to poverty reduction and has listed poverty eradication as the first Sustainable Development Goal.[7] In Figure 2, we see the state of OIC countries with respect to non-OIC countries. It could be observed that both OIC and non-OIC countries have managed to reduce poverty levels in recent years, however OIC countries are lagging behind their non-OIC counterparts in reducing extreme poverty.

Increasing financial and social inclusion would not only enable the extreme poor to better cope with negative income shocks but also help overall economic growth by creating a countercyclical economic policy and helping the poor to maintain their human capital for the future and to assist in the recovery of the economy. Furthermore, increasing financial access to marginalized groups and increasing the financial literacy of low income groups is important in order for the extreme poor to maximize their usage of financial services.

HMF intersects housing finance and microfinance and incorporates elements of both.[8] As a result, HMF products combine on the one hand traditional microfinance elements (e.g. creditworthiness assessment methodologies), and on the other hand, they include features common in housing finance. Typically, HMF loans are long term and loan amounts are larger.[9] Being asset-based HMF loans are a good candidate for securitization transactions of a microfinance (MF) portfolio.

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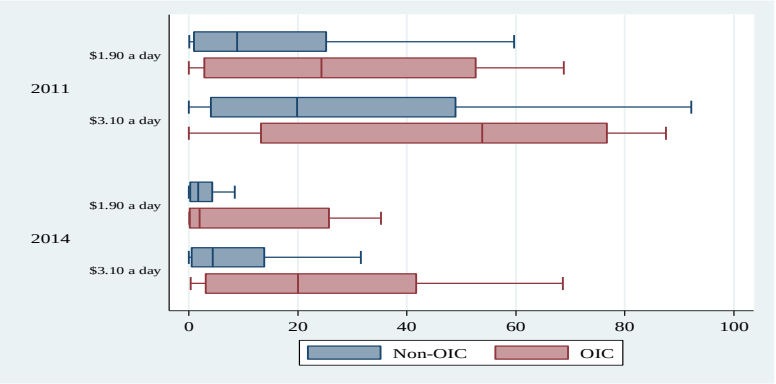
[6] http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq

[7] http://www.un.org/sustainabledevelopment/poverty/

[8] F. Daphnis, Bruce Ferguson (2004). Housing Microfinance: A Guide to Practice. *Kumarian Press Inc.*, p. XV.

[9] For a summary of the differences between microfinance loans and HMF loans, see S. R. Merrill (2009). Microfinance for Housing: Assisting the "Bottom Billion" and the "Missing Middle". Urban Institute Center on International Development and Governance, IDG Working Paper No. 2009-05, p. 2.

Figure-2:
Poverty Headcount Ratio at $1.90 and $3.10 a day (2011 PPP) (% of Population)



Source: World Development Indicators and authors' calculations
2011 represents the averages of available values for the period from 2005 to 2011 while 2014 represents the average of the available values from 2012 to 2014

This paper focuses on designing funding mechanisms to support the expansion of such products with the use of commercial as well as social finance instruments of Islamic finance. The proposed market-based solution entails the structuring of an Islamic bond (*ṣukūk*) through securitization of micro-portfolios. Given the high risk of the underlying portfolio, conventional mechanisms of credit enhancements would fail. In addition, such credit enhancement mechanisms may not be aligned with the Sharī'ah principles. Therefore, this paper proposes to utilize two of Islam's redistributive instruments, i.e. *waqf* (trust) and *qarḍ ḥasan* (benevolent interest-free loan) to serve as credit enhancements, which facilitate the use of securitization as a funding vehicle for HMF portfolios.

The paper is structured in the following way: after the introduction, the second part provides an analysis of the challenges of (housing) microfinance in MENA countries, the third and fourth part presents the model. The last two sections discuss the feasibility of the proposed model according to pre-defined criteria and propose an approach for the implementation of the model.

2. Low Income Groups in OIC Countries Struggle to Access Financing at an Affordable Costs to Meet their Housing Needs

Most OIC countries including those from the Middle East and North Africa (MENA) region face considerable housing shortages due to changing demographics.[10] Young and rapidly growing populations are driving an increased rate of household formation. Population growth is twice the global average of 1.1 %. About 30 % of the populations are below 15 years. These trends have put considerable pressure on housing markets. LaSalle (2011) estimates the housing deficit at about 3.5 million dwellings. A further increase in this deficit is expected in the next five years.[11] As the region is already highly urbanized (on average 63%), urbanization is of less importance as a reason for the increased demand for housing.[12]

In particular low income groups are particularly exposed to this housing backlog because they are often forced to find shelter on the fringes of cities or in an informal settlement with suboptimal construction standards and no access to clean water. Besides weak and dysfunctional legal and regulatory conditions, a major challenge for countries is to provide and allocate sufficient financial resources to meet the financing needs to enable the provision of decent housing conditions for the majority of their citizens.[13]

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[10] The Middle East and North Africa (MENA) is an economically diverse region that includes both the oil-rich economies in the Gulf and countries that are resource-scarce in relation to their population. This region includes the following countries Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen. See http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,menuPK:247619~pagePK:146748~piPK:146812~theSitePK:256299,00.htmlSee http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,menuPK:247619~pagePK:146748~piPK:146812~theSitePK:256299,00.html for more information. As applicable, reference is also made to South Sudan and Sudan.

[11] Jones Lang LaSalle (2011). Why Affordable Housing Matters? Page 5

[12] O. Hassler (2012). Overview and background of housing finance developments in MENA. Presentation given at the Conference on "Developing Housing Finance in the MENA Region", Arab Monetary Fund and World Bank, Abu Dhabi, April 4-5, 2012.

[13] N. S. Shirazi, M. Zulkhibri, S. S. Ali (2012). Challenges of Affordable Housing Finance in IDB Member Countries using Islamic Modes. *Islamic Research and Training Centre*, page 3.

Low income groups typically access financial services from relatives, friends or informal lenders (e.g. loan sharks) or MFIs.[14] MFIs have benefitted from the concept among investors, policy makers and academics that granting loans at fair conditions is an acceptable approach to alleviate the financial constraints of the poor.[15] The industry has expanded over recent years, extending loans to approximately three million clients throughout the region. At the same time the offer of Sharīʿah-compliant microfinance products has also increased, albeit at a much smaller rate.[16]

Coupled with expansion, the microfinance industry has become more commercialized, allowing more customers to have access to a wider range of different products, especially small housing loans. However, the growth in access to finance has uncovered a number of challenges and weaknesses in the MFI's model:

(i) *High cost of borrowing.* Conventional MFIs are often criticized for charging very high interest rates on loans to the poor. These high rates are justified because of high transaction and operating costs and the high risk premium. However, this imposes undue stress on the recipient to engage in risky activities that produce returns higher than the cost of funding—which may not be possible in many cases. Microfinance providers claim that profit margins of small entrepreneurs are high enough to cover high cost of borrowing. However, this justification leaves a very small margin of survival in the face of unexpected loss of business due to adverse circumstances due to family, health, and natural calamity.

(ii) *Diversion of funds.* The possibility exists that funds will be diverted into nonproductive activities such as personal consumption. In some cases, micro-credit may lead the poor into a circular debt situation, where borrowing from one micro-lender is used to pay off the borrowings from another lender. Poor households clearly have other needs, such as school fees, risk mitigation against adverse events such as illness, disability, or failed crops, and even personal consumption.

(iii) *Excessive exposure*. In the wake of the fast expansion of microfinance, many MFIs have extended finance to riskier borrowers without having adequate risk

[14] The term microfinance institution (MFI) is used in a broader sense, comprising besides the typical MFIs, NGO, co-operatives or other non-bank financial institutions, which specialize in lending to low income groups.

[15] C. Luetzenkirchen, C. Weistroffer (2012). Microfinance in evolution. *DB Research*, Current Issues, page 2.

[16] For example, see Mohieldin, Iqbal, Rostom, and Fu (2011) and various reports on Islamic Social Finance by IRTI, i.e. IRTI (2014), IRTI (2015), and IRTI (2017)

management capacities which increases their exposure. In addition, there is a growing realization that every micro-borrower is not an entrepreneur and therefore, may not manage their borrowings in an optimal fashion.

(iv) *Deteriorating effectiveness*. Microfinance was often introduced as a development tool in a largely non-competitive setting. But with increasing commercialization and competition, the instruments used to overcome moral hazard and adverse selection have become less effective. This has weakened incentives to repay on the part of borrowers, increasing the probability of multiple borrowings and strategic default by borrowers.

(v) *Absence of a market-based solution.* As mentioned early, the effectiveness of MFIs is often compromised because of limitations on the supply of funding at affordable rates, coverage, mix of products, and funding by the informal, semi-formal, and noncommercial sectors. There is a need to move towards a market-based or private sector-based solution within the formal financial sector or capital markets. Without participation by the private sector, some of the core issues may not be overcome.

As a result, the industry experienced some difficulties: asset growth has slowed markedly, profitability has declined, and portfolio risk rose. The microfinance crisis in Morocco in 2008 was a prominent example of the industry's difficulties.[17] The future development of the industry will therefore depend on the implementation of sound lending and risk management standards as well as offering products which put client needs back in focus. It also requires a culture of social responsibility among MFI owners, managers, and staff.

Another important aspect is the access to stable funding sources to allow a balanced expansion. The US subprime mortgage crisis of 2007 revealed the risks of 'slicing and dicing' underlying portfolios and brought the development of market-based funding solutions to a complete standstill. Markets are only slowly recovering. For example, securitization volumes in 2012 amounted to approximately EUR 200 billion, a fraction of the more than EUR 800 billion in 2008.[18] Before the financial crisis, leading investment houses began to take a serious look at the microfinance market with a view to entering into this market. Several efforts were made to provide financing from financial markets as the market appeared to offer viable investment opportunities. However, the complexities of the microfinance sector and the

[17] Grameen – Jameel (2012). The Microcredit Sector in Morocco – Pre and Post Crisis.
[18] R. Atkins (2013). ECB's Draghi in drive to revive slicing and dicing. *Financial Times*, Thursday May 9, 2013, p. 21.

financial crisis halted the introduction of a market-based solution to financing this sector.

3. Challenges of Islamic Microfinance: A Small Industry with Limited Product Offering, Serving only A Fraction of the Potential Clientele

The aggregate population of the MENA region is about 381 million. About 23% (76 million people) live below the poverty line of $2 USD per day.[19] As poverty is widespread, access to financial services is limited. According to estimates by the CGAP there are only 602,000 Islamic microfinance clients, representing approximately 0.16% of the total population of MENA countries. Additionally, most of the clients are concentrated in Sudan (426,694 clients). The remaining number (175,306 clients) is distributed among other MENA countries.[20]

The number of customers with microfinance loans is even smaller. The total portfolio of Islamic microfinance loans amounts to USD 29 million for 53,503 customers. This results in an average loan amount of $608 USD. The majority of loans are granted in the form of *murābaḥah* (deferred payment sale) and *qarḍ ḥasan* (benevolent interest-free loan) contracts. The percentage of these loans, which are used for housing purposes, is not known. Anecdotal experience from conventional MFI lenders suggests that only 5 to 10 % of MF loans (a fraction of the amount borrowed) is used for housing purposes. For many microfinance clients, the home is often the place of production. Therefore, it is evident that customers also invest in the home to facilitate the production process.

Concurrently, the number of financial service providers which offer Islamic microfinance products is quite small. The number is estimated at 72. The slow growth of Islamic microfinance is attributed to a number of reasons: (i) Islamic MF Programs are provided by small institutions (NGOs, village or rural banks) with limited outreach and (ii) limited access to funding at reasonable cost.[21]

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[19] Data from A. Mohseni-Cheraghlou (2013). Islamic Finance and Financial Inclusion: A Few Must-know Facts. GFDR Seminar, World Bank, p. 1.

[20] M. El-Zoghbi, M. Tarazi (2013). Trends in Sharia-Compliant Financial Inclusion. CGAP Focus Note, No. 84, p. 7

[21] B. K. Grewal (2011). Constraints on Growth in Islamic Finance. IFSB 4th Public Lecture on Financial Policy and Stability, p. 13. IFSB (2013). Islamic Financial Services Industry Stability Report 2013 Kuala Lumpur: Islamic Financial Services Board, p. 142.

As information on demand for microfinance products is incomplete and contradictory, it is difficult to provide estimates of the demand for these products (including demand for small housing loans or HMF loans). As already mentioned in the introduction, changing demographics are driving the demand for housing. More than 60% of the roughly 300 million population in the Arab world is under the age of 25. One of their biggest concerns is the access to affordable housing.[22]

In conclusion, it appears justified to assume that some borrowers of Islamic MFIs use their borrowings for housing purposes. HMF product offerings are likely to be well absorbed by the market given the needs of low income groups to improve their housing situation.

4. Building the Model: Ingredients to Establish A Sharī'ah-Compliant Structure for Securitizing Islamic Microfinance Portfolios

4.1. Securitization of (Housing) Microfinance Assets

MFIs have successfully tapped capital markets to raise funding by issuing domestic or international bonds or via equity funds. In India, for example, MFIs regularly raise funds by securitizing their loan portfolios.[23] In the international context, Morgan Stanley was the first to arrange and place its first securitization of loans to MFIs in 2006. The second securitization deal in 2007 had wider participation and was the first rated securitization of loans to MFIs.[24] With the financial crisis, securitization of micro-loans was hampered which saw a decline in the issuances. In contrast, there is hardly any capital market activity by Islamic MFI providers. This absence is due to the small size of the industry, lack of awareness of MFI providers, and lack of an enabling legal and economic environment. In general debt markets in OIC countries are not very well-developed, but particularly, Islamic capital markets are still in an emerging phase. In some countries, Islamic capital markets are developing at a faster pace than the conventional debt markets. Credit enhancement

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[22] J Drummond (2011). Youths fear housing shortage. *Financial Times* April 1, 2011.

[23] Accion (2006). Who will buy our Paper: Microfinance Cracking the Capital Markets. Number 18, p.1; CRISIL (2012). CRISIL – rated MFI securitization transaction expected to continue demonstrating robust performance.

[24] M. Jayadev, Rudra Narasimha Rao (2012), Financial resources of the microfinance sector: Securitisation deals – Issues and challenges Interview with the MFIs Grameen Koota and Equitas, IIMB Management Review, Volume 24, Issue 1, March 2012, Pages 28-39, ISSN 0970-3896, http://dx.doi.org/10.1016/j.iimb.2011.12.002.
(http://www.sciencedirect.com/science/article/pii/S0970389611001248)

plays a critical role in building trust and confidence in asset based and asset backed transactions such as securitization transaction. In this respect, an important factor is the absence of an institutional credit guarantee system in most OIC countries [25] which could provide credit enhancement to securitization transactions.[26]

Securitization involves the collection of homogeneous assets with a known stream of cash flows into a pool, or portfolios, which are independent from the creditworthiness of the financier. This pool or portfolio of assets is used to issue securities, which can be marketed to different classes of investors. The securities are structured in such a way so that all payoffs in terms of risks and returns are "passed through" to the investors or the holders of the securities. As a result, this is similar to direct exposure of the investor to the underlying assets; he or she shares the returns from the assets and is exposed to all associated risks. The securities are traded on organized exchanges. This general framework of a conventional securitization is also applicable to securitization within an Islamic financial system.[27] Of course securitization in Islamic finance context would require that the risk sharing principles are observed and the investors have exposure to cashflows of underlying pool of assets.

Sukūk (Islamic bonds) are examples of successful securitization in Islamic finance.[28] *Ṣukūk* are based on several different structures and come in different flavors. *Ṣukūk* markets have been seen as one of the fastest growing segments of the Islamic financial industry. The volume of annual *ṣukūk* issuances reached 75 billion USD in 2016, bringing the volume of outstanding *ṣukūk* close to 320 billion USD[29]

The main structural difference between the Islamic securitization process and that applying to conventional securitization is the way in which returns and risks are shared with the investors. In the conventional system, the buyer and holder of the security is exposed to a number of risks which are passed on to the investor (including credit risk, market risk, and interest rate risk) but enjoys some protection

[25] The Kingdom of Saudi Arabia and The Islamic Republic of Pakistan are two examples of having institutional credit guarantee mechanisms for SMEs in place.
[26] M. Obaidullah, T. Khan (2008). Islamic Microfinance Development – Challenges and Initiatives. *Islamic Research and Training Institute*, Policy Dialogue Paper No. 2, p. 34.
[27] H. Askari, Z. Iqbal, N. Krichne, A. Mirakhor (2012). Risk Sharing in Finance – The Islamic Finance Alternative. *John Wiley & Sons (Asia) Pte. Ltd*. p. 125.
[28] See Z. Iqbal (2015). The Appeal of *Ṣukūk* as Asset-backed Financing. JKAU: Islamic Econ., Vol. 28 No. 2, pp. 185-198.
[29] IFSB (2017). Islamic Financial Services Industry Stability Report 2017. Kuala Lumpur: Islamic Financial Services Board

given by the underlying assets which "back" the security ("asset-backed security"). However, there is no direct link to asset payoff. Such structure does not transfer any rights or control or ownership over these assets to the investor. The function of the asset backing is a credit enhancement mechanism so that in the case of a default, the assets will be seized and the proceeds from foreclosure will be used to repay the investors.

In contrast, in theory, the Islamic finance structure suggests the establishment of an ownership stake in the underlying assets. Such an "asset-backed" structure leads to (i) an ownership interest by the investor in the underlying asset, (ii) a link between securities payoff and the payoff of underlying asset, and (iii) exposure to uncertainties in the security's cash flows to the investor. The security's payoff will depend on the performance of the underlying asset. The repayment of the principal will not necessarily be guaranteed. Additionally, the holder of the security establishes an ownership or beneficial ownership claim against underlying pool of assets (whereas in a conventional securitization structure, the holder of a security establishes a claim against the performance of assets in a pool).[30]

Figure 3 depicts a simplified model of securitization as used in an *ijārah* (lease)-based *ṣukūk*. The core legal entity in the securitization is a Special Purpose *Muḍārabah* (SPM) or Special Purpose Vehicle (SPV) which is bankruptcy remote and has Sharī'ah-compliant assets on the asset side against liabilities of *ṣukūk* or marketable securities.[31] Although, fund mobilization, pooling of assets, setting-up of SPMs or SPVs, placement, and servicing is structured similar to conventional securitization, credit enhancement which gives the certificates an investment grade rating is complex to replicate. As a key notion of Islamic finance is risk-sharing and passing-through of assets' payoffs to investors, providing financial guarantee-style credit enhancement is difficult. This is particularly critical in the case where the underlying assets are exposed to high risk similar to microfinance portfolios.

Table 1 shows the main differences between conventional and Sharī'ah-compliant securitized assets. The comparison is with a conceptual view of Sharī'ah-compliant securitization and may be different from the actual securitized product currently practiced in the market. In a conventional asset-backed or mortgage-backed security (MBS), the typical pricing model uses variables such as the probability of

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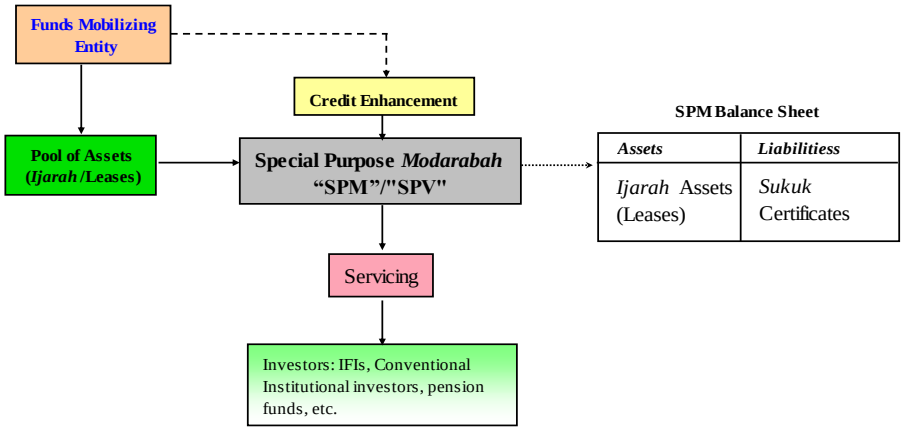
[30] Y. Zöngür, "Comparison between Islamic and Conventional Securitization: A Survey", Review of Islamic Economics, Vol. 13, No. 2, 2010, pp. 81-118, p. 90.

[31] *Muḍārabah* is a well-established principal/agent contract where an agent undertakes management of capital for the investors on the basis of profit and loss sharing principles.

prepayment or refinancing, which depends on the expected interest rate levels in the future, the loan-to-debt ratio, the credit score of the borrower, and other considerations. Since the principal of the security is guaranteed through credit-enhancing mechanisms, the security is priced in the same way as a coupon-bearing debt security with an early prepayment option.

Figure-3:
Anatomy of a Sharī'ah-Compliant Securitization



Source: Iqbal and Mirakhor (2011)[32]

In the case of *ṣukūk* (Islamic bond), however, the price will depend on variables determining the expected periodic cash flows in the future, but in addition it will have to take into consideration the expectation of future market values or the residual values of the underlying assets. In the absence of any guarantee of the principal, the redemption value of the security will depend on the expected market value of the asset at the time of maturity of the security. Another factor which influences the pricing of an Islamic security is the underlying risk-sharing agreement. In an asset-backed security, the price of the security will also incorporate the riskiness of the underlying assets and the investor will be sharing the risk through fluctuations in the price of the security. Investors will be exposed to the risks associated with the portfolio of assets and will share the losses. This will put greater emphasis on the need for prudent selection of the underlying assets and close monitoring of the assets'

[32] Z. Iqbal, A. Mirakhor (2011). An Introduction to Islamic Finance, 2nd ed., John Wiley & Sons (Asia) Pte. Ltd.

performance, and should motivate securitization specialists to structure good-quality securities that offer valuable and secure investment opportunities.

In a Sharī'ah-compliant securitization, moral hazard would be minimized. For example, the *Mushārakah* (equity partnership) arrangement with pre-determined profit-loss-sharing ratios aims to regulate incentive structures.[33] Additionally, the Sharī'ah requirements to maintain high moral values and ethics by the stakeholder would discourage practices such as "predatory lending" or "walking away."

Table-1:
Comparison between Conventional and Islamic Securitized Securities[34]

	Conventional asset-backed security	Sharī'ah-compliant, asset-based security
Type of security	Fixed income (debt based)	Hybrid structure depending on contract and underlying asset
Intended risk allocation	Risk transfer	Risk sharing
Ownership	No ownership in underlying assets	Security owner has outright or beneficial ownership interest in underlying pool of assets
Linkage with asset value	No direct link to market value of underlying asset	Final or other payoffs may be linked to market value of underlying asset
Principal protection	Principal is protected irrespective of the value of underlying real estate	Principal is based on the market value of underlying asset
Pricing variable	Based on expected yields, current interest rates, creditworthiness of asset owner and issuer or guarantor	Based on expected yields, current levels of return, market value of underlying asset, expected value of underlying asset at maturity
Recourse	No recourse to asset of security holder in case of distress	Recourse to underlying asset in case of distress
Principal agent problem	May exist depending on the role played by originator, structurer, and credit enhancer.	Moral hazard could be minimized as SPV ring fences the pool of assets.

Source: Iqbal (2014)[35]

Sharī'ah-compliant securitization is not without its challenges. An Islamic financier which wishes to securitize its housing mortgage loan portfolio (we assume

[33] A. Jobst (2009). Islamic Securitization after the Subprime Crisis. *Journal of Structured Finance*, Vol. 14, No. 4, pp. 41-57

[34] The table highlights the differences from a theoretical perspective. At present, *sukuk* issues resemble in most cases conventional securitization structures.

[35] Z. Iqbal (2014), "Economics of *Sukuk,"* in Zamir Iqbal and Zurina Shafii (eds.) State of Islamic Finance: A Retrospective Assessment and Looking Forward, Universti Sans Islam Malaysia (USIM), Malaysia.

that the underlying contractual arrangements are Sharīʿah-compliant) faces a number of challenges in structuring a Sharīʿah-compliant security:

(i) Ownership and linkage with the assets. Typically, a conventional MBS issue comprises many small mortgage loans which are collateralized against individual properties. They serve to back the security. In case of Islamic security, it could be difficult to establish a distribution of ownership rights among investors in the case of Islamic security based on proportion of their investment. This question could become critical in the case of a rising number of foreclosures. The issuer or SPV may be required to establish an investor registry to establish a link between the underlying assets and the investors. This would be challenging when the security is bring actively traded in the market.

(ii)Linkage with the asset value. As already mentioned above, the valuation of the security depends to a great extent on the quality of the underlying assets as expressed by such as market value of the asset, the type of financing contract, and other factors. As the market value of the underlying assets also has a considerable impact on the value of the security, there may be considerable uncertainty in the security value, depending on the location and quality of the properties as well as availability of fair and transparent market value. These could be a deterrent for some investors.

(iii) To price a housing *sukuk*, additional ratios must information would be determined required which could add a further element of complexity in the fair price of the security.[36] For example, the determination of the market value and the expected value of the underlying assets at maturity may lead to stark differences depending on the scenario selected for the valuation (rising house prices or declining house prices). It is likely that the issuer may overstate the expected value.

(iv) In the Particularly, in case of securitizing microfinance portfolios which consist of high credit risk borrowers, the key problem is higher expected returns by the investors to compensate for the high risk. Given the underdeveloped state of capital markets and the financial sector of the majority of MENA region countries, this becomes a key impediment to finding a market-based solution for microfinance.

[36] For developed markets, tools like S&P/Case-Shiller Home Price Indices can serve as benchmark for the valuation of real estate. However, such tools are yet to be developed for other markets and particularly for areas dominated by poor segments of the society.

(v) Duration mismatches.[37] Depending on the structure of the security, any duration mismatches within the security may be directly passed onto the investor as the issue has to remove pre-paid parts from the underlying assets. Duration mismatches could be reduced in a pass-through structure such as *ṣukūk*.

(vi) Finally, as mentioned earlier, credit enhancement is a challenge. Direct guarantees of performance especially by the originator faces constraints as they impose restrictions on risk-sharing. In addition, an outright guarantee in the form of conventional option writing may not be acceptable by Shariah scholars if such blanket guarantees are given by an entity that may not have a direct stake in the underlying pool of assets but who provides guarantee only against option premium. Therefore, finding a third party guarantor without a stake in the asset and without any financial reward would become a challenge.

4.2. Credit Enhancements to Securitize Housing Microfinance Portfolios

Credit enhancements bridge the gap between the stand-alone quality of the portfolio of assets transferred by the originator, and the target rating of the instrument based on the needs of various investors. Credit enhancement is comparable to equity in a business as it determines the extent of leverage in transactions and the layer of protection against expected and unexpected losses. There are three common types of credit enhancements.[38] Not all of them are necessarily Sharī‘ah-compliant due to various reasons depending on the form and the structure of the credit enhancement arrangements:

A. Originator[39] provided credit enhancement.

The originator assumes part of the credit risk through:

- Excess spread or profit. It represents the excess of the inherent rate of return in the securitized portfolio over (i) the expenses of the transaction, (ii) senior servicing fees and (iii) the rate of return offered to investors. Excess spread retention is considered the most common credit enhancement.
- Cash collateral. It refers to the SPV retaining a cash balance, which is subordinated to the interests of the investors. The cash reserve can be created

[37] Duration is a common measure of interest rate sensitivities.
[38] V. Kothari (2006). Securitization. The Financial Instrument of the Future. *John Wiley & Sons (Asia) Pte. Ltd.*
[39] An originator is an institution which undertakes to form a pool of assets to be securitized.

either up front by retention of a part of the funding of the transaction by the SPV, or by the originator making a subordinated loan to the SPV.

- Over-collateralization. It refers to the originator transferring a higher value of receivables, but being paid for a lesser value and leaving the balance as a security interest with the SPV.

B. Structural credit enhancements.

They arise from the structure of the liabilities. They refer to the redistribution of risks among the investors, so that one section of the investors provides credit enhancements to the other. The most common form is the stratification of securities into senior, mezzanine and junior or subordinated securities. The senior securities are protected by the subordinated securities. They are considered the safest and, consequently, have to be content with a very low rate of return. The subordinated securities are those paid after settling the claims of the senior and the mezzanine security holders. Cash flows are organized in a waterfall structure. The definition of the individual tranches and their rights is contained in the waterfall clause of the securitization contract. In terms of ratings, the stratification of liabilities is done to provide a triple A rating for the most senior class. Consequently, the other tranches receive a lower rating. The junior class, which is retained by the originator, is typically not rated.

C. Third party credit enhancements.

Third parties assume specific risks of a securitization transaction. The most common form of third party credit enhancements are:

- Pool insurance. It provides cover for the assets in the pool. It is frequently used with the securitization of housing loans. Policies often cover the risk of foreclosure of the underlying housing loan. There are two forms of pool insurance: (i) primary insurance covering a particular loan and (ii) portfolio insurance covering a pool of housing loans.[40]
- Letters of credit. The originator arranges for a letter of credit from a third party, usually from an acceptable bank. It can be considered a more advanced form

[40] In addition, there are monoline insurance companies which are not engaged in traditional insurance functions but merely provide insurance against defaults in financial transactions. They are most common in the US.

of credit guarantee where the insurer may cover such risks as interest rate variations.

- Credit derivatives. They are one of the most common forms of third party credit enhancement and involve the transfer of credit risk to a counterpart by way of a credit default swap transaction. Typically, derivatives are not in compliance with Islamic finance principles.

5. Potential Credit Enhancing Tools Enabling the Securitization of Islamic Housing Microfinance

Conventional and Islamic MF have very similar features and objectives, but each uses different instruments. Table 2 serves as an illustration. They mainly differ in the mode of financing (for example risk-sharing elements as well as prohibition of interest (*ribā*) and certain sale-based transactions) and the emphasis on ethical and religious principles.[41] Therefore, it appears feasible to arrange a securitization of MF portfolios using the same structures and methodologies as a conventional securitization.

Whereas securitization of pool of assets based on Islamic instrument is being done, the real challenge comes in providing credit enhancements especially where the underlying assets are risky. Since micro-housing finance assets would be considered risky, structuring of credit enhancements at low cost would be essential. A securitization structurer using Islamic instruments may not be able to use all of conventional credit enhancements as some of them may not be considered Sharī'ah-compliant by the scholars. For example, providing guarantee to perform is allowed in Sharī'ah but there is difference of opinion if the guarantor can charge a fee for such guarantee.[42] Given the associated risks with the securitization of HMF portfolios, a credit enhancement is necessary to attract lower risk premiums to be paid to investors and allow for the offering of products which are affordable to households.

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[41] Islamic finance prohibits unsecured interest-based debt and calls for risk-sharing through asset-based financing and partnerships. It uses a variety menu of sale and leasing- based financial instruments. For further details, see Iqbal and Mirakhor (2011).

[42] For example, in Malaysia operations of Credit Guarantee Corporation which provides credit guarantee for small and medium enterprises for a fee is approved by Malaysian scholars. BNM (2010) *Shariah* Resolutions in Islamic Finance, 2nd ed., Bank Negara Malaysia (BNM), Kuala Lumpur, Malaysia.

Table 2:
Comparison between Islamic and Conventional Microfinance

Items	Islamic Microfinance	Conventional Microfinance
Liabilities (sources of funds)	External funds, Islamic charitable sources	External funds (e.g. deposits, or donations)
Assets (deployment of funds)	Islamic financial instruments based on sale, leasing, or partnerships.	Interest-based financing
Nature of contractual agreement	Risk-sharing, asset-backed, leasing/rental agreement	Risk-transfer, lending-based
Target group	Family (or individual) or groups	Individuals or groups
Disbursement	Purchase of real assets / Cash	Cash
Repayment incentive	Monetary, compliance with religious obligations	Monetary, peer pressure
Dealing with default	Group/family/mosque intervention, Islamic ethics regarding obligations.[43]	Group/center pressure may be used (in case of group lending schemes)
Social development program	Can be included and may have a religious component (social and ethical behavior)	Can be included

Source: Authors and Ahmed (2002)

Whereas when the securitization of a pool of assets based on an Islamic instrument is being done the real challenge comes in providing credit enhancements especially where the underlying assets are risky. Since micro-housing finance assets would be considered risky, the structuring of credit enhancements at a low cost would be essential. A securitization structurer using Islamic instruments may not be able to use all of conventional credit enhancements as some of them may not be considered *Shariah*-compliant by scholars. For example, providing a guarantee to perform is allowed in *Shariah* but there is difference of opinion if the guarantor can charge a fee for such a This paper proposes unique model for credit enhancement for structuring a *Shariah*-compliant HMF securitization and requires the understanding of two Islamic instruments which play a critical role in this model:

[43] Debt obligations are taken very seriously by Muslims and traditionally, one would try to avoid not been able to meet any debt obligations before one passes away.

5.1. *Qarḍ ḥasan* (= beautiful loan)

Qarḍ ḥasan (QH) is a loan granted to the needy and is mentioned in the *Quran* as "beautiful" (*al- ḥasan*). It is a voluntary loan without the creditor's expectation of any monetary return, but the loan is granted to please Allah (s.w.t.) with the expectation of His Blessing. Additionally, while the debtor is obligated to return the principal, the creditor, of his or her own free will, does not press the debtor for an exact timing of its return. In the case where despite the debtor's best efforts, the debtor's circumstances make it difficult to repay the loan, the creditor would forgive the loan. In the case of *qarḍ ḥasan*, God promises multiple returns on such a "beautiful loan." *Qarḍ ḥasan* is called "beautiful" (*ḥasan*) probably because in all the verses of the Quran, in which this loan is mentioned, it is stipulated that it is made directly to Allah (s.w.t.) and not to the recipient (see, for example, Quran Verse 17, Chapter 64).

QH has been used for Islamic microfinance in several countries. For example, a microfinance organization called *Akhuwat* based in Pakistan is operating fully on the QH model.[44] There are several NGOs in Malaysia and Indonesia which are helping the poor through offering QH. QH funds have supported micro as well as SME lending in several MENA countries successfully. They are regular source of funds for many MFIs in South-East Asia.[45] In Iran, there are established dedicated financial intermediaries or banks specializing in the intermediation of QH funds. Typically, MFIs attract QH funds in the form of deposits which can be structured as savings, current and time deposits. As already mentioned above, the depositor does not receive any return on her/his deposits. In some cases, she/he may pay a fee to the MFI for the administration of the QH deposits. The depositor is entitled to claim them back from the MFI.

5.2. *Waqf* (endowment)

A *waqf* is a trust or endowment in which the contributor endows a property in perpetuity for specific benevolent purposes. No property rights can be exercised over

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[44] http://www.akhuwat.org.pk/

[45] M. Obaidullah, T. Khan (2008). Islamic Microfinance Development – Challenges and Initiatives. Islamic Development Bank, Policy Dialogue Paper No. 2, p. 19.

the corpus (privately owned property). Only the *usufruct* or return will be applied towards the objectives of the *waqf* (typically charitable).

Extensive research by Cizakca (1998) has documented the historical significance of this Islamic instrument.[46] Although *awqāf* (plural of *waqf*) has been known in civilized human societies prior to Islam, it was Islam which put this institution to versatile uses especially for the benefit of poorer segments of society. Consequently, *awqāf* flourished in several Muslim communities especially during the Ottoman civilization and provided important social services especially in the form of mosques, schools, hospitals, potable water sources, and support for the poor. Very early in the history of Muslim societies, a practice emerged where a person could contribute up to one third of his/her wealth at the time of his/her death. An important characteristic of *waqf* relates to its objective, that is, the idea of *birr* (doing charity out of goodness).[47]

The concept of *waqf* functions as follows: a founder who has accumulated private wealth decides to endow his personal property for a specific, often pious, purpose. The amount of the original capital (or *corpus*), the purpose for which it is endowed, and all other conditions of management are clearly registered in a deed of endowment submitted to the authorities. In this way, the privately accumulated wealth of a pious Muslim becomes God's property. The founder strictly stipulates how the annual revenue of the *Waqf* should be spent. This revenue (*usufruct*) may be allocated completely for a social welfare purpose such as health, education, civil services to the poor, (*Waqf khayri*), or to a group of specified beneficiaries. Typically, *awqāf* institutions (AIs) provide such services at no cost without being a burden on the government. On the macroeconomic front, AIs can be seen serving the ultimate goal of reducing government spending, which contributes to reducing the budget deficit, inflation and government borrowing (other things being equal).[48]

The cash *waqf* is a special type of endowment and it differs from the ordinary real estate *waqf* in that its original capital, *asl al-māl* or, *corpus*, consists purely or partially, of cash. A key feature of cash *waqf* is that it generates income which in turn supplies the capital necessary to provide social services or poverty alleviation

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[46] M. Çizakça (1998). *Awqāf* in History and its Implications for Modern Islamic Economies, Islamic Economic Studies, Vol. 6, No. 1, November 1998.

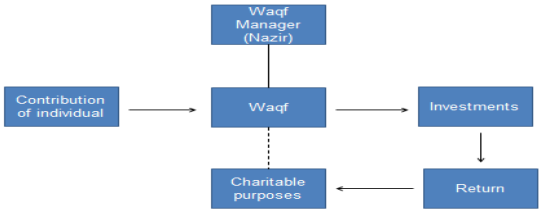
[47] H. Ahmed (2007) *Waqf*-Based Microfinance: Realizing the Social Role of Islamic Finance, Islamic Research and Training Institution (IRTI), Proceeding of International Seminar on "Integrating *Awqāf* in the Islamic Financial Sector" Singapore, March 6-7, 2007.

[48] M. Çizakça (1998). *Awqāf* in History and its Implications for Modern Islamic Economies, Islamic Economic Studies, Vol. 6, No. 1, November 1998.

services. The concept of cash *waqf* opens the door to an innovative use of such capital. The management of the *waqf* is entrusted to trustees, whose functions may be fulfilled by the founder him or herself during his or her lifetime. Thus, there are four major components of any *waqf*: the three groups of individuals; the founder, the beneficiaries, the trustees and the endowed capital itself, or the corpus.

Figure 4 depicts a simplified structure of a cash *waqf*. The *waqf* manager or *Nazir* collects the contributions from the *waqif* (founder) or contributors and makes investments (e.g. housing, SMEs, etc.). The returns from the investments (after the deduction of all costs) will be allocated by the *Nazir* to charitable programs (e.g. improvement of health services, infrastructure for the poor). As in the original *waqf* design, it is important that the value of the contributions made by the *waqif* will remain constant to fulfill the criterion of perpetuity.[49]

Figure-4:
Simplified Structure of a Cash *Waqf*



Source: Authors

6. Structuring: Putting it Together

6.1. The starting point: general prerequisites for securitization

Sharī'ah-compliant securitization has specific requirements following Sharī'ah-rules (as already outlined above) and general requirements which are the same as for conventional securitization. The most important are:[50]

[49] M. Khademolhoseini (2008). Cash-*Waqf* – a new financial instrument for financial issues: an analysis of structure and Islamic justification of its commercialization. Imam Sadiq University, p. 3.
[50] F. Roy (2011). Primary Mortgage Market Development in Emerging Markets – Is the Central and Eastern Europe Experience Replicable in Sub-Saharan Africa, in D. Koehn, J.D. v. Pischke (editors), Housing Finance in Emerging Markets. Springer Verlag Berlin Heidelberg, p. 171.

(i) Conducive legal and tax framework. Securitization must be supported by basic security laws, clear and reasonable off-balance sheet valuation guidelines for securitized assets and the guarantee of the bankruptcy remoteness of the SPV or SPM among others. As necessary, it also includes a specific securitization law.

(ii) Significant asset volumes. Lenders should have sufficiently large pools of loan portfolios for securitization to achieve economies of scale to justify the advantage of securitization over alternative funding sources. Ideally, these loan portfolios correspond to certain standards to facilitate the assessment of the credit quality of the underlying portfolio backing the bond issued by the SPV/SPM.

(iii) Lender preparedness. The originator's organization (MFI) must be prepared for securitization, especially the departments in charge of underwriting, servicing, information management, and treasury.

(iv) Investor demand. Various factors influence investor demand for securitized assets. These include the performance of loan pools, liquidity in the market, and the availability of a benchmark or yield curve. Typically, investors compare the return on an asset-backed security issue with that of government bonds as the quasi risk-free alternative investment and expect an attractive risk-adjusted return to compensate for the higher risk.

6.2. Structuring a securitization using waqf and *Qarḍ ḥasan* funds as credit enhancement

The major impediment to a market-based solution for microfinance is the high risk of portfolio leading to the high cost of funding. A market-based solution could attract investors if the credit risk or risk-of-default is reduced. Such default risk can be reduced by providing credit enhancement utilizing QH and/or *waqf* funds. In the case of QH, the argument is simple. QH funds are meant for poor people with the understanding that if despite their best efforts, the borrower cannot return the principal, the lender can write it off. If investors are assured that the first line of defense against default risk is covered by QH funds, then they would be willing to invest at lower returns. Similarly, *waqf* assets are meant for helping the poor to improve their living conditions and the return from such assets is utilized for the benefit of the poor. *Waqf* assets could be used to invest in a securitized pool with claims second to market-based investors which would enable the structure to offer a lower coupon rate to the market. *Waqf* may also be willing to forego returns if the borrower is not able to repay. As a result, the overall weighted cost of funding would be lower and affordable for micro-borrowers. The concept of using *waqf*-based

structures as catalysts to facilitate the financing of development-oriented projects, i.e. infrastructure or social finance projects has been presented in the literature and holds promising potential.[51]

As the nature of QH and *waqf* funds differs, both fund types can be applied at different levels of an asset-backed security. By structuring the MBS issue as a waterfall, *waqf* and QH certificates could be integrated into the issuance in a way that they provide credit enhancement to the senior notes. Similar to QH deposits currently being used by some Islamic MFIs, QH certificates could be issued with the same objective. These certificates can be even traded at par in the secondary market to maintain liquidity of such certificates. Being better protected against default, the senior notes would have a lower coupon rate which is expected to lead to a lower borrowing cost charged to the borrower (individual households having a HMF loan), thereby increasing affordability.

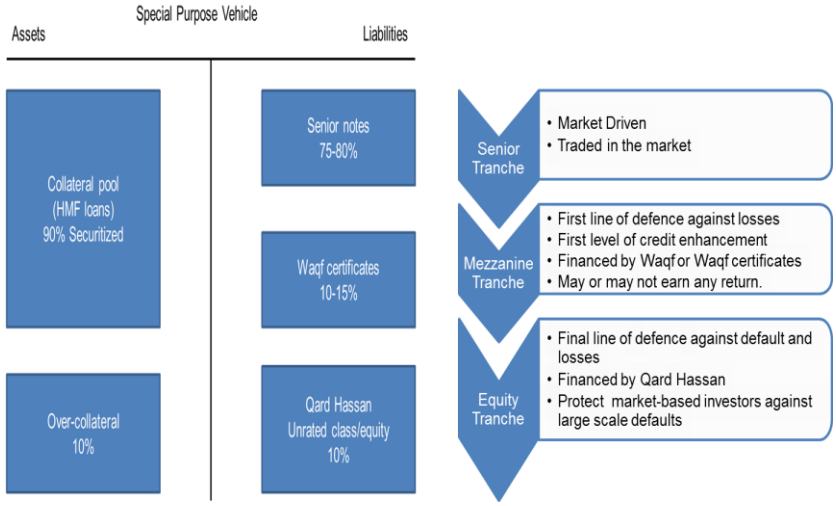
To comply with the perpetuity principle of the *waqf* funds, they should be invested at a level where the probability-of-default could be higher than that of a senior note but still lower than of junior note (which is typically held by the originator). As the QH investors do not necessarily expect the return of her/his deposits, they can be used at the junior tranche level. Figure 5 depicts a simplified structure of the waterfall of the MBS issue as well as the structure of the SPV's balance sheet. Referring to the conventional credit enhancement structure, we will find the following elements:

(i) Originator provided: overcollateralization of the SPV's receivables,
(ii) Structural credit enhancement: waterfall structure with mezzanine and junior securities,
(iii) Third party protection: *waqf* and QH funds. The use of a *waqf* fund as mezzanine tranche which will give a first level of defense against any default risk of the underlying HMF portfolio. The third and the last tranche could be financed by QH funds which also serve as quasi-equity. This tranche will absorb credit risk and loss of principal in case of defaults. It serves as the final buffer against any credit risk and provides a cushion against losses to *waqf* investments.

Figure 5 shows the balance sheet of a SPV/SPM model to structure Islamic securitization with the following structure:

[51] For further details, see Ali (2018).

Figure-5:
Simplified Structure of the Use of *Waqf* and QH Funds As Credit Enhancement and Simplified Structure of the SPV's Balance Sheet



Source: Authors

This model has the following noteworthy features:

i. There are two layers of protection: (i) on the asset side through the over-collateralization and (ii) on the liability side through the QH certificates and *waqf* funds.
ii. On the asset side: The share of over-collateralization amounts for example to 10% (e.g. the outstanding principal value of the loan is $110 USD which will be transferred to the SPV but the SPV will raise funding for $100 USD. The balance of the assets will be retained as collateral).
iii. On the liability side: The QH funds assume the role of the originator holding the "unrated piece". From the Islamic finance perspective, the QH funds enable the lending to low income groups by offering the QH deposits by Islamic financial intermediaries. In this way, Islamic financial intermediaries become channels to organize and distribute QH financing to deserving projects.
iv. Proposed percentages for the liability side: 10% for the QH funds and 5 - 10 % for *waqf* funds. The remaining funds can be sold to investors preferring senior notes. Although the proposed percentages for the credit enhancements are quite high, this extra credit enhancement is considered necessary to attract market-based financing as investors are likely to

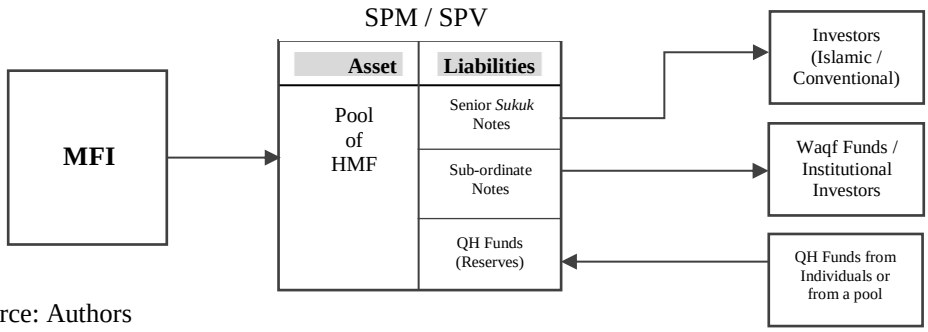
perceive such a security as quite risky given the nature of the underlying loan portfolio.

v. Additional credit enhancement could be built into the structure by using the return from the *waqf* certificates. In this case, the returns will not be deployed for charitable purposes and will be withheld by the *waqf* manager.

vi. Alternatively, returns from the *waqf* certificates could be used for administration of SPV/SPM to lower the overall transaction cost of securitization.

Figure 6a and 6b summarizes the proposed structures of securitization using *waqf* and QH funds as credit enhancements. Figure 6a shows the summarized form of the model according to which initially, a MFI sells its HMF portfolio to an SPM/SPV which issues senior notes in the form of *ṣukūk* and *waqf* certificates to investors. *Waqf* certificates could be issued as subordinated notes but in case there are any objections by Sharī'ah scholars, special certificates with cash *waqf* features could be issued. The objective is to have another class of investors who are willing to bear more risks.[52] The SPV also receives QH funds to offer additional protection to investors against default of the underlying portfolio. Such QH funds could serve as reserves to provide credit enhancements and to give the certificates investment grade credit ratings. By incorporating *waqf* certificates and QH funds to the transaction, the contributors fulfill their social and religious commitments which also help the provision of affordable financing to the poor segment of society.

Figure-6a:
Securitization Structure Using W*aqf* and QH Funds as Credit Enhancement



Source: Authors

[52] Some *Shariah* scholars raise objections to existence of multiple investor classes on the same pool of assets and giving preferential treatment to one class over the other.

Figure 6b shows a variation of the basic model. This version of the model is based on developing closer relationships with the financial intermediaries who could become a channel for individuals and institutions to screen originators and monitor the performance of the pool. These financial intermediaries could provide this service as corporate social responsibility (CSR) initiatives or for a small fee based on cost recovery. Financial intermediaries could deal with SPVs in three ways—first as a regular investor in the *ṣukūk* issuance, second as investors in *waqf* certificates, and third, as custodian of QH funds. The financial intermediary will serve as an investor in *waqf* certificates and custodian of QH funds on behalf of its customers. The key difference between the simplified version (figure 6a) and modified version (figure 6b) is the potential role of the financial intermediary.

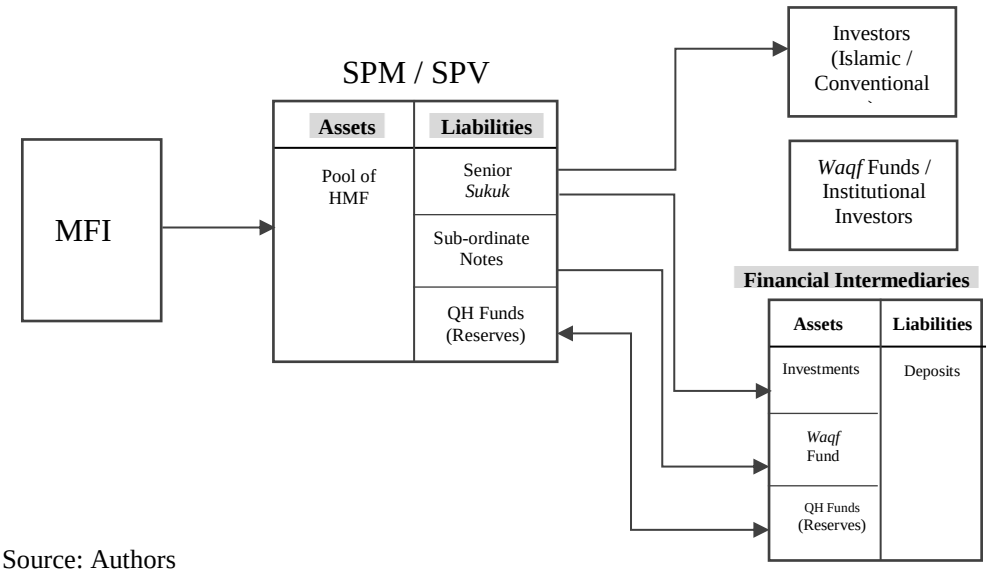
The modified version of the model is more viable and sustainable especially in those OIC countries where Islamic financial intermediaries have a sizeable presence in the financial sector. Models based on *waqf* mutual funds have already been established in Indonesia and operate as following:[53]

(i) The contributor divides his or her contribution into a mutual fund and *waqf* fund. A potential breakdown could be to invest 30 % of her/his contribution into the *waqf* fund and 70 % into the mutual fund. Whereas the mutual fund aims to achieve a market based return, the *waqf* fund will operate under the same principles as outlined in the paper.
(ii) The *waqf* manager manages both the mutual fund and the *waqf* fund.

Our proposed model could also target the socially responsible investor who aims to make some return on his or her investment but is ready to share part of the returns and funds for a good purpose. In this way, the investment model would be in a position to broaden its appeal beyond the classical charitable investor. In addition, it allows the *waqf* fund manager to build up a more liquid and sustainable investment vehicle over time. In addition, the returns from the *waqf* fund could be used to increase the volume of available QH funds to be used for the junior tranche in the securitization transaction. In this way, they can compensate for the eroding value of QH funds or they serve as replenishment for those QH funds which have not been returned to the QH certificate holders as loans of the underlying HMF portfolio have defaulted.

[53] M. Khademolhoseini (2008). Cash-Waqf – a new financial instrument for financial issues: an analysis of structure and Islamic justification of its commercialization. Imam Sadiq University, p. 11.

Figure-6b:
Securitization Structure Using *Waqf* And QH Funds As Credit Enhancement and Financial Intermediaries



Source: Authors

7. Feasibility of the Proposed Model: Technically Feasible but Islamic Housing Microfinance Markets are at Present too Small for its Sustainability

To assess the feasibility of the proposed structure, the following criteria will be applied. As the member states of the OIC are in very different stages of development, the analysis provides a perspective from the MF industry and refers to individual OIC countries in selected cases only. Table 3 provides a simplified overview:

Enabling environment. It comprises not only a conducive regulatory framework for securitization, but also conditions which allow the Islamic microfinance industry to flourish.

Market preparedness. This criterion assesses the preparedness of investors to invest in the securities offered as well as investors to provide funding for the establishment of *waqf* funds as well as a sufficient number of QH investors.

Sharī'ah-compliant standards and HMF products. Questions of relevance are whether there is a demand for Sharī'ah-compliant HMF products or whether there are already well established standards which are known to the investor community.

Although Table 3 indicates a weak capital market infrastructure, the set up from a purely technical standpoint appears feasible, especially in those markets which have some capital market activities (e.g. Saudi Arabia). Some countries like Jordan have also established liquidity facilities which mimic securitization structures,[54] which could help stimulate the appetite among investors to buy Islamic HMF-backed securities. These issuances are likely to benefit from the assigned reputation of MF portfolios having good credit quality as MFIs are considered as being good at servicing their loan portfolios.[55]

The implementation of such a model is likely to face several obstacles which range from a very small industry (USD 30 million) concentrated in countries with a weak enabling environment (e.g. Sudan) to a weak and inadequate infrastructure to establish a continuous flow of securitization transactions to allow for liquidity, transparency and visibility.

Table-3:
Simplified feasibility analysis of proposed *waqf*/QH securitization model

	Criterion	**Overall status**	**Emerging markets in Islamic countries which is considered a comparatively high performer for this criterion**
1. Enabling environment	Capital market infrastructure	Most OIC countries do not have necessary infrastructure to allow for the securitization of loan portfolios	Malaysia, Turkey, Indonesia
	Financial sector development	Underdeveloped financial sector with a small MF industry	Malaysia, Turkey
	Size of MF industry	Very small size	
2. Market preparedness	Originator and investor preparedness	Potentially limited	
	Availability of *waqf* and QH funds	Most countries have established *waqfs* and banks collect QH deposits	Indonesia, Pakistan, Iran, Saudi Arabia
3. Sharī'ah-compliant standards and HMF products	Prevalence of Sharī'ah-compliant standards and regulation	Especially in GCC countries, Pakistan, Iran, and Indonesia. Some countries lack legal framework for *waqf*	

[54] D. Diamond (1998). Creating a Secondary Mortgage Facility for Jordan, in M. Lea (editor). Secondary Mortgage Markets – International Perspectives. International Union for Housing Finance. Page 131 -136. A liquidity facility offers refinancing to partner financial institutions for their mortgage lending activities. Alternatively, the liquidity facility buys the mortgage loans from these lenders. The liquidity facility finances its activities through bond issuances in the capital market.

[55] R. Cull, A. Demirguc-Kunt, J. Morduch (2008). Microfinance meets the Market. World Bank Policy Research Paper No. 4630.

The implementation of such a model is likely to face several obstacles which range from a very small industry ($30 million USD) concentrated in countries with a weak enabling environment (e.g. In addition, the number of charitable investors is probably limited as well.

Although some countries have considerable QH deposit volumes (e.g. Iran), a viable model requires a continuous flow of QH deposits into the SPV as the value of the QH deposits is likely to erode over time due to the relative high and volatile inflation rates in many OIC countries.

One point which requires further clarification is how to ensure that the selling MFI will have "skin in the game". A mechanism must be established which requires the selling MFI to take back any defaulting loan which it has previously sold to the SPV/SPM. The MFI is also likely to remain the servicer of the HMF loans sold. Thus, the proposed model supports the funding side, but does not provide capital relief.

Another point deals with the management of the SPV/SPM. The *waqf* fund manager could be in charge of it; however, it may lead to a potential conflict of interest. Depending on which type of institution is in charge of the overall securitization process, increased transaction costs can arise.

The development of a feasible approach requires substantial improvement in the enabling environment and the market infrastructure in most MENA countries. In addition, stronger development of the Islamic MF industry is warranted to raise the profile and the attractiveness of further investment flows into the industry.

6. Conclusion: A Potential Model for the Way Forward

The model proposed in this paper is a technically and practically viable one for the following reasons:

(i) The proposed model addresses the issue of “market-failure” in conventional microfinance where a market-based solution would not provide financing at affordable rates.

(ii) Both QH and *waqf* are well-established and time-tested instruments in Islamic civilization where these have played a significant role in economic development, alleviating poverty, and being the source of finance for social

welfare of Muslim societies. There is a renewed interest in reviving these instruments in several Muslim countries.

(iii) Unlike conventional microfinance where a community or social-based collateral is used for lending, HMF utilizes a tangible asset as collateral. No additional collateral is required.

(iv) The underlying housing assets serve as collateral which can trigger lower funding costs and, therefore, lower borrowing costs.

(v) Islamic securitization, which is based on asset ownership, is a natural fit for securitizing microfinance housing.

In conclusion, this proposed structure is a way of integrating Islamic social finance instruments to enhance the access to affordable housing for low income groups. As the markets for HMF loans are quite small, the fund manager may also consider direct investments into MFIs and developing the securitization model over time once higher volumes are available. The returns from the *waqf* funds can be used in several ways: (i) to support the volume of available QH funds; (ii) to offer construction support to low income households and (iii) to offer advisory services to the MFI to improve risk management and corporate governance capacities as well as to help build standardized HMF portfolios and facilitate their securitization at a later stage.

In this way, the fund manager supports the expansion of the Islamic MF industry in a responsible manner. Simultaneously, it allows for the combination of innovations in finance with the goal of financial inclusion in compliance with *Shariah* principles. A marketable instrument would be introduced to provide funding for much needed housing finance in OIC countries to be offered to low income groups. With the introduction of securitization of HMF loans, financial institutions would be able to pool their assets and issue marketable securities. In this way, they will share the risks with the market as well as free-up capital for further mobilization of housing finance.

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M. Umer Chapra

This paper asserts that comprehensive vision of human well-being cannot be realised by just a rise in income and wealth through development that is necessary for the fulfilment of basic needs or by the realization of equitable distribution of income and wealth. It is also necessary to satisfy spiritual as well as non-material needs, not only to ensure true well-being but also to sustain economic development over the longer term.

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Mohammed Saleh Ayyash

This book attempts to analyse the essential aspects of social responsibility of Islamic Banks and the means to achieving them. Apart from encapsulating the Sharī'ah formulation of the social responsibility and its relation to the objectives of Sharī'ah, the book also addresses the linkage between social responsibility and the economic and social development of Muslim communities. Furthermore, it demonstrates the impact of the nature of social and developmental role which should be undertaken by Islamic banks, not only for achieving socio-economic development but also for making the earth inhabitable and prosperous.

☐ **ISLAMIC BANKING STRUCTURES: IMPLICATIONS FOR RISK AND FINANCIAL STABILITY, (1432, 2011),** pp 50 **Price $ 10.00**
Abd Elrahman Elzahi Saaid Ali
The results of this research are expected to be valuable to the management of Islamic banks and to those who are engaged in the fields of Islamic banking and finance.

☐ **HANDBOOK OF ISLAMIC ECONOMICS, Vol. 1, Exploring the Essence of Islamic Economics, (1432, 2011),** pp.348 **Price $ 35.0**
Habib Ahmed & Muhammad Sirajul Hoque
This "Handbook of Islamic Economics" is part of the project to make important writings on Islamic economics accessible by organizing them according to various themes and making them available in one place. The first volume of this Handbook subtitled "Exploring the Essence of Islamic Economics" collects together the eighteen important articles contributed by the pioneers of the subject and presents them under four broad themes: (i) Nature and Significance of Islamic Economics, (ii) History and Methodology, (iii) Sharī'ah and *Fiqh* Foundations, (iv) Islamic Economic System.

☐ **BUILD OPERATE AND TRANSFER (BOT) METHOD OF FINANCING FROM SHARĪ'AH PERSPECTIVE, (1433, 2012),** pp.115 **Price $ 15.00**
Ahmed Al-Islambouli
Literature on BOT techniques from Shariah perspectives are few and far between. This book surveys and reviews the previous studies as well as experiences of BOT financing by individuals and institutions and concludes with a Sharī'ah opinion. It finds BOT to be a combination of *Istiṣnā'* and other contracts. The BOT would be a valid method after appropriate modifications

☐ **CHALLENGES OF AFFORDABLE HOUSING FINANCE IN IDB MEMBER COUNTRIES USING ISLAMIC MODES (1433, 2012),** pp.266 **Price $ 20.00**
Nasim Shah Shirazi, Muhammad Zulkhibri Salman Syed Ali & SHAPE Financial Corp.
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Rapport d'un séminaire sur les modes de financement islamiques tenu en Mauritanie en 1413H (1992).

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Boualem Bendjilali (éd.)
Actes de séminaire sur les sciences de la Chari'a pour les économistes dont l'objectif principal est de servir comme outil de base aux chercheurs, étudiants et enseignants en économie islamique sur les sources du *Fiqh.*

Recherches

☐ **LA COOPERATION ECONOMIQUE ENTRE LES PAYS DU MAGHREB (1985),** 138 pages **Prix $ 10.00**
Ridha Saadallah
Cet ouvrage traite de nombreux thèmes dont les ressources naturelles et humaines au Maghreb, le potentiel de coopération agricole et industrielle au Maghreb, etc.

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Cet opuscule traite de l'intérêt bancaire face au profit en tant que mécanismes de gestion de l'activité économique. Une analyse de deux points de vue différents, celui de l'économie conventionnelle et celui de la Chari'a.

☐ **LA MOUDHARABA SELON LA CHARI'A ET SES APPLICATIONS CONTEMPORAINES (1994),** 83 pages — **Prix $ 10.00**
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Cette étude traite de nombreux aspects pratiques: légal, économique et bancaire.

☐ ***JOUALA* ET *ISTISNA,*** — **Prix $ 10.00**
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L'intérêt de cette recherche réside dans le fait qu'elle aborde un nouveau domaine d'application des transactions économiques islamiques se basant sur deux contrats, à savoir "La Jouala et L'Istisna".

☐ **LA PROPRIETE FONCIERE EN ISLAM (1994) *(Enquête),*** 52 pages — **Prix $ 10.00**
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Le but de cette étude est d'examiner les questions les plus importantes concernant le droit de propriété foncière en Islam.

☐ **LES RELATIONS COMMERCIALES ENTRE LE CONSEIL DE COOPERATION DU GOLFE ET LA COMMUNAUTE EUROPEENNE (1995),** 152 pages, — **Prix $ 10.00**
Du Passé Récent au Lendemain de 1992
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Cette étude procède à une analyse minutieuse des statistiques passées, des échanges commerciaux entre les pays du CCG et ceux de la Communauté Européenne en vue de dégager les tendances profondes et les caractéristiques structurelles du commerce Euro-Golfe.

☐ **ERADICATION DE LA PAUVRETE ET DEVELOPPMENT DANS UNE PERSPECTIVE ISLAMIQUE (1995),** 180 pages — **Prix $ 10.00**
Abdelhamid Brahimi
Cette recherche, divisée en deux parties, traite dans la première des facteurs internes et externes de blocage et de l'impasse. La seconde est consacrée à la conception et à la mise en oeuvre de politiques économiques dans une perspective islamique.

☐ **JUGEMENT DU TRIBUNAL FEDERALISLAMIQUE DU PAKISTAN RELATIF A L'INTERET *(RIBA)* (1995),** 478 pages — **Prix $ 25.00**
Ce document constitue un outil de travail et une référence indispensables à tous ceux, parmi les décideurs politiques et chercheurs dans les pays membres de la Banque, qui sont désireux de voir se développer l'alternative d'un système financier exempt d'intérêt.

Eminents Spécialistes

☐ **LES CONDITIONS MONETAIRES D'UNE ECONOMIE DE MARCHES DES ENSEIGNEMENTS DU PASSE AUX REFORMES DE DEMAIN (1993),** 64 pages — **Prix $ 10.00**
Maurice Allais (Prix Nobel d'Economie - 1988)
L'auteur, dans son examen, critique du système monétaire international, appelle à des réformes tant économiques que morales.

☐ **JURISPRUDENCE DE LA *MAṢLAḤAH* ET SES APPLICATIONS CONTEMPORAINES (1995),** 92 pages **Prix $ 10.00**
Hussein Hamed Hassan
L'étude, présente le point de vue islamique se rapportant à la question de l'intérêt publique, son lien avec la législation, ses conditions et ses dimensions juridiques; avec un certain nombre d'applications contemporaines.

☐ **JURISPRUDENCE DE LA NECESSITE (*FIQH* DE LA *DHARURA*) ET SON APPLICATION DANS LA VIE CONTEMPORAINE : PERSPECTIVE ET PORTEE (1996),** 259 pages **Prix $ 20.00**
Abd al-Wahab I. Abu Sulayman
Cette recherche sur le *Fiqh de la Ḍarūrah* aborde le point de vue de la Chari'a islamique par rapport à la notion de *Ḍarūrah* (nécessité), ses conditions et ses perspectives juridiques.

☐ **COOPERATION ECONOMIQUE POUR UNE STABILITE REGIONALE (1996),** 37 pages **Prix $ 10.00**
Bacharuddin Jusuf Habibie
Cet ouvrage porte sur l'importance coopération économique entre les pays en développement en général et entre les pays islamiques en particulier.

☐ **LE QIYAS ET SES APPLICATIONS CONTEMPORAINES (1996),** 139 pages **Prix $ 10.00**
Mohamed Mokhtar Sellami
Uni conférence qui traite de l'une des sources de la jurisprudence, reconnue dans la science des fondements du droit sous le nom d'analogie (Qiyâs) et reconnue par l'ensemble des écoles juridiques comme preuve légale et méthode d'extraction des jugements.

Prix de la BID

☐ **LE SYSTEME BANCAIRE ISLAMIQUE : LE BILAN, (1996),** 65 pages **Prix $ 10.00**
Ziauddin Ahmed
Le but de ce papier est d'examiner et d'évaluer la situation actuelle dans le domaine des banques islamiques aussi bien du point de vue théorique que pratique.

☐ **QU'EST-CE QUE L'ÉCONOMIE ISLAMIQUE? (1996),** 81 pages **Prix $ 10.00**
Mohammad Umer Chapra
Conférence donnée par Dr. Chapra lauréat du Prix de l'économique islamique 1409H (1989) sur : l'économie conventionnelle et l'économie islamique.

☐ **EVOLUTION DES ACTIVITES BANCAIRES ISLAMIQUES: PROBLEMES ET PERSPECTIVES (1998),** 30 pages **Prix $ 10.00**
Saleh Kamel
Conférence donnée par Cheikh Saleh Kamel lauréat du Prix de la BID en système bancaire islamique pour l'année 1416H (1995/96). Elle constitue une grande contribution à la compréhension de l'économie et du système bancaire islamiques et à leur évolution.

Traductions

☐ **VERS UN SYSTÈME MONÉTAIRE JUSTE, (1997),** 352 pages **Prix $ 20.00**
Mohammad Umer Chapra
Ce livre développe avec habilité la logique islamique de la prohibition du *Riba*, et démontre avec rigueur la viabilité et la supériorité du système de financement basé sur la participation au capital.

Documents occasionnels

☐ **DEFIS AU SYSTEME BANCAIRE ISLAMIQUE, (1998),** 90 pages **Prix $ 10.00**
Munawar Iqbal, Ausaf Ahmad et Tariquallah Khan
Le but de ce document occasionnel est que les théoriciens et praticiens dans le domaine bancaire islamique doivent explorer les voies et moyens permettant au système bancaire islamique de soutenir son rythme de progrès au moment où il entre dans le 21ème siècle.

TRANSLITERATION TABLE

Arabic Consonants

- Initial, unexpressed medial and final:

ء	’	د	d	ض	d	ك	k
ب	b	ذ	dh	ط	t	ل	l
ت	t	ر	r	ظ	z	م	m
ث	th	ز	z	ع	[	ن	n
ج	j	س	s	غ	gh	هـ	h
ح	h	ش	sh	ف	f	و	w
خ	kh	ص	s	ق	q	ي	y

- Vowels, diphthongs, etc.

Short	ـَ	a	ـِ	i	ـُ	u
Long	أ	a	ي	i	و	u
Diphthongs	ؤ	aw	ئ	ay		

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