Accelerating Risk Sharing Finance via FinTech: NextGen Islamic Finance

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Abstract
From New York and San Francisco to London, Dubai, Singapore and beyond, the emergence of financial technology (FinTech) start-ups promises a change in the face of finance as we know it. The purpose of this paper is to provide a view on how FinTech can accelerate the adoption of risk sharing Islamic finance. It does so by first explaining today’s business buzzword. The paper then considers the Islamic view of finance as support for real sector transactions through risk sharing and suggests a way forward to modelling a more globally and intrinsically viable Islamic financial system.

Keywords: FinTech, Islamic finance, risk sharing, globally viable model.

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I. Introduction

Defined broadly as the use of technological innovation in the provision of financial services, FinTech is not a new phenomenon. Wire transfers, Automatic Teller Machines (ATMs), internet and mobile banking are all examples of technological innovations that have transformed financial services thus far. The novelty of this wave of innovations, however, lies in its largely dis-intermediated model and much praised democratisation of finance.

Take peer-to-peer finance, also known as crowdfunding, for example. Innovation has made it possible for small surplus units to pool resources online in order to fund deficit units without the need to go through a traditional financial intermediary, such as a bank. This is done “without the friction, cost or heavy regulatory hurdles of traditional banking” (Wall Street Journal, 2015). Moreover, innovative risk assessment models allow for assessing risk where banks have not been able to do so, based on non-traditional data and analyses, such as social media, phone records, satellite data and psychometric analysis. As a result, crowdfunding has been successful in filling the funding gap for previously underserved markets of Micro, Small, and Medium Enterprises (MSMEs). Data shows that online lending platforms raised USD23.7 billion in 2014 globally.

Beside overcoming traditional financing obstacles (collateral, KYC, high interest rates, for example) that would have otherwise excluded MSMEs from the formal banking sector, crowdfunding’s direct and dis-intermediated model has created new investment opportunities for the general public. Previously, such investments were available only to banks, investment funds or venture capital firms. The remainder of the population had to do with saving accounts that offer minimal rates of return.

In a similar fashion, other manifestations of fintech is making traditionally top-notch services accessible to a wider range of financial customers, without sacrificing efficiency or effectiveness at lower scale. This includes services such as insurance, wealth management and investment advisory as well as more basic payment and remittance services for unbanked populations in rural areas.

The success of fintech has propelled global investments. According to KPMG, the thriving industry attracted more than USD19 billion during 2015. Going forward, the rapid adoption of fintech by tech-savvy consumers leads expectations of a triple growth by a further USD60 billion in 2017. This should not come as a surprise: new digital technologies, stricter banking regulations and increasing consumer demands for convenience and immediacy amidst falling trust in banks due to the legacy of the 2008 financial crisis have strengthened the case for innovative alternatives in the fourth industrial revolution. All in all, the marriage of finance and technology is disrupting mainstream finance and threatening the substitutability of all of its services. The spectrum runs the gamut from deposits and lending to fundraising and wealth management, including invoice financing, supply chain financing and trade finance.

Rather than looking at the FinTech revolution as a strategic threat to many of the core

1. In 2009, Paul Volcker, former chairman of the US Federal Reserve, is reported to have said: “The most important financial innovation that I have seen the past 20 years is the automatic teller machine, that really helps people and prevents visits to the bank and it is a real convenience.”

2. A remarkable quote from Walter Bagehot’s Lombard Street (1873) is worth repeating here: “The peculiar essence of our financial system is an unprecedented trust between man and man; and when that trust is much weakened by hidden causes, a small accident may greatly hurt it, and a great accident for a moment may almost destroy it.”

3. Notwithstanding this, some commentators, including Deloitte, do not perceive fintech as a serious challenge to banks, on the grounds that they lack economies of scale and significant competitive advantage.
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Competitive advantages that banks once had over new market entrants and their net interest margins, banks ought to embrace it as an opportunity. The adoption of financial technologies can bypass the complexities and rigidities of traditional banking model (significant regulatory overheads, legacy IT expenses and outdated collections and recoveries functions that are needed to service an aged book). Effective collaboration and partnership with technology-enabled startups can help reduce transaction costs, improve transparency, enhance customer experience and increase overall access to finance.

Turning to Islamic banking and finance, the important question remains as to whether FinTech is an opportunity or a threat to the industry. This paper addresses the pressing question with reference to the axiomatic characteristics of Islamic finance and the unique paradigm the ideal Shari’ah compliant model provides, with risk sharing at its core. To this end, the paper starts with a brief summary of how Islam conceives finance as primarily serving the real sector of the economy based on risk sharing, and explicates the core principles of a stabilizing Islamic financial system. Next, it presents a leading view on the causes of financial crises. Section four concludes by proposing a way forward to modelling a more globally and intrinsically viable Islamic financial system.

II. Islamic Finance: a Risk-Sharing-Centred Paradigm

Based on 2:275 of the holy Qur’an, it has been argued that the organising principle of Islamic finance rests on two conditions: al Bay’ (exchange) contract and no Riba. The first constitutes the necessary and second sufficient conditions that render a financial system Islamic (Iqbal and Mirakhor, 2013; Askari et al., 2012; The Kuala Lumpur Declaration, 2012). Furthermore, the legal maxims “al-Ghunmu bi al-Ghurmi” and “Al-Kharaju bi adh-Dhaman” necessitates the inseparability of risk bearing and gain entitlement and have important implications as to the nature and mode of compliant financial undertakings1 (Laldin et al., 2013).

The ideal banking structure of the Islamic system is, thus, envisioned as “two-tiered”. Commercial banks that serve the payment system hold 100 percent reserves against their Amanah-based short-term demand deposits, in conformity with the Islamic law of contract. Investment banks, on the other hand, operate on the basis of risk sharing without deposit guarantees. They accept surplus funds on a profit-and-loss sharing basis (Mudharabah), and channel them to the real economy through projects that match depositors’ risk and return profiles. Since the principal in profit-and-loss sharing contracts are not protected; no reserve is required for this segment of banking. The risk of bank runs is, thus, inherently muted and there is no role for fractional reserve system (Mirakhor et al., 2012; Askari et al., 2012). As a result, the inherent instability, associated with the latter, is likely to be eliminated. At the same time, the Shari’ah requirement of real sector anchor and restrictions on the sale of debt and short selling keep any possibility of adverse financialization and “decoupling” of finance from the real economy at bay. This, in effect, reinforces the stabilizing characteristic of Islamic finance and cap leverage in Islamic banks (Van Wijnbergen et al., 2013).

1. The centrality of risk sharing was confirmed by Kuala Lumpur Declaration, where internationally reputable Shari’ah scholars, Muslim economists and industry practitioners declared on September 20, 2012 that “Shari’ah emphasizes risk sharing as a salient characteristic of Islamic financial transactions”, with further clarification that “this is not only exemplified in equity-based contracts, like Musharakah and Mudarabah, but even in exchange contracts, such as sales and leasing, whereby risk is shared by virtue of possession.” Signatories denounced the practices of risk transfer and risk shifting as violating Shari’ah principles. The same view echoed in Jeddah declaration in April 2013 and was reemphasized more recently in the Kuala Lumpur declaration 2016.
III. Financial Crises: a Toxic Nexus

Unlike risk sharing, other modalities of finance, i.e., risk transfer and risk shifting, produce systems that are inherently unstable and susceptible to cyclicality. Risk transfer leads to banking crises that destabilize the financial system. Risk shifting, on the other hand, creates massive public and private debt that exhausts consumers and producers’ ability to sustain levels of aggregate demand and GDP needed to validate debt claims.

The present financial system of the world economy is dominated by risk transfer and risk shifting. Beginning with post-crisis analysis (in books such as Reinhart and Rogoff to books by policy makers such as Lord Adair Turner and now Mervyn King and a host of academic papers) much research has focused on the causes of the crises. What has emerged is a toxic nexus of: fractional reserves-credit-debt-leverage-crisis.

Central banks create credit but banks allocate it by transforming short-term loan deposits into long-term financial and real investment multiples of the initial credit created by the central banks through leverage. During periods of stability, banks’ high-leverage risk-shifting strategies contribute to a build-up of debt and a weakening of the link between the financial and real sectors of the economy. This further distorts market anomalies and inflates bubbles (Rajan, 2006) that aggravate the depth and breadth of the crisis once it hits. They effectively “sow” systemic fragility (Minsky, 1977, 1982). When close to or in bankruptcy, risk-shifting banks “gamble for resurrection” (Brunnermeier and Oehmke, 2012). If successful, struggling banks remain solvent. Otherwise, losses are ultimately shouldered by tax payers through the deposit insurer and/or the lender of last resort facilities, under the veil of limited liability (Boyd and Hakenes, 2012; Mason and Swanson, 1998).

The view that the fractional reserve system is a source of instability, creating a financial system dominated by interest rate based debt, in which the credit multiplier and leverage ratios mechanisms are operative, found its most forceful expression during the years of the Great Depression. This recognition led a famous group of the University of Chicago economists to advocate a bifurcated system with a 100% reserve against demand deposits and no deposit insurance for investment deposits in what has became known as “the Chicago Plan” (see Zaman, 2015; Mirakhor et al., 2012; Askari et al., 2012; Benes and Kumhof, 2012, and Garcia et. al, 2004 among others). Following the recent financial crisis, a system change was also coined as necessary to prevent periodic crises and realign risks with potential returns. This saw the revival of Chicago Plan by Benes and Kumhof and the floating of other proposals for the restoration of full-reserve banking, such as Iceland’s plan for monetary reform, Positive Money and New Economics Foundation’s (NEF) plans for monetary reform, Kay’s Narrow Banking, and Kotlikoff’s Limited Purpose Banking (Sigurjonsson, 2015; Dixhoorn, 2012).

IV. NextGen Islamic Finance

Against this backdrop, it’s important to note that the prerequisites to full implementation of the axiomatic risk-sharing based model are at best partially met (Mirakhor and Askari, 2010). These include “a developed financial system; rule of law; legal institutions that protect investors, creditors, and property rights; good governance; policy discipline to ensure macroeconomic stability;” and transparency, trust and faithfulness to terms and conditions of contracts (Mirakhor, 2007). Islamic banks currently operate under a fractional
In fact, all institutional arrangements within the modern financial architecture, including the fractional reserve banking system and deposit insurance, were meant to facilitate the transfer of risk originating from finance. They are detrimental to risk sharing. As a result, the present form of Islamic finance itself, “diverges markedly from its paradigm version” (Errico and Farahbakhsh, 1998, p.3). A study by Lajis et al (2016) noted that the design of the regulatory framework meant to govern Islamic banks has been based on the conventional banking framework. An unintended consequence of this is the natural biasness to favor risk transfer/shifting over risk sharing.

In a related study, Alaabed et al. (2016) empirically investigated risk shifting behaviour in Islamic banks in dual banking systems of OIC member states. Whereas conventional banks were found to shift risks unequivocally, Islamic banking had a limiting effect on risk shifting\(^2\). The effect, however, was not sufficient to fully nullify the overall risk-shifting incentives. As a result, Islamic banks were found to engage in risk shifting to a variable extent. Reputational and Shari’ah non-compliance risks aside, deviations from the theoretical model and its risk-sharing essence may entail a sacrifice of some of the most important features of the ideal Islamic financial system, including close link between the real and financial sectors, financial inclusion, financial system stability, poverty alleviation and sustainable economic development and growth (Askari et al., 2012).

To this end, the Shari’ah compliant industry has arguably more to gain from adopting technological innovations than its conventional counterpart. FinTech is more aligned with the spirit of Shari’ah as it eliminates two fundamental risks in banking: mismatched maturities and leverage. Whereas banks convert short-term deposits into long-term loans through leverage, their digitized counterparts match assets and liabilities in terms of maturity, value and risk profile in a direct flow model, for a fee. Adoption of such technology can further strengthen Islamic banks’ contribution to financial stability and ends an “Alchemy” that has long sown the seeds of Radical Uncertainty in mainstream finance\(^3\).

Equally important, “FinTech solutions have the opportunity to tackle one of Islamic finance’s oldest critiques: being a white label for conventional financial products” (Hossein, 2016). In particular, FinTech may differentiate Islamic banking and finance by creating a quantum leap in the design and adoption of truly risk-sharing Islamic financial instruments. Trust and social capital are cornerstones of risk sharing finance. However, an empirical examination of the current state of affairs in the contemporary Muslim world reveals lack of prerequisite trust and sub-optimal levels of social capital (Ng, et al. 2014). Both of which have hindered the development of truly risk sharing Islamic banking and finance hitherto.

Creating trustful societies in the Muslim world of today could be enormously challenging. For these reasons, blockchains, distributed ledgers and smart contracts technologies have the potential to revolutionize Islamic finance and revive stabilizing risk sharing. What Satoshi’s blockchain does is to build-in trust in the ledger entries so that, in combination with a smart contract, the probability of trust-based contract violation is mitigated (The Economist, 2015). The ledger is distributed more widely, making it more reliable and immutable. This can reduce adverse agency issues, negative externalities and moral hazard.

\(^1\) Dangulbi et al. (2012) and Meera and Larbani (2009) argue the incompatibility of this system from a Shari’ah point of view, among others.

\(^2\) Except in Malaysia and Turkey.

\(^3\) Recently, the former Governor of the Bank of England, Mervyn King, published a book called “The End of Alchemy: Money, Banking, and the Future of the Global Economy,” in which he calls the power of banks to create money out of thin air Alchemy. King argues that banking lives in a state of Radical Uncertainty.
amongst financial industry participants without the need for explicit (inter-personal) trust or third party guarantees. The binding and fully enforceable smart contracts, then, pave the way for risk sharing. In turn, this will considerably reduce private debt, as money creation no longer requires simultaneous debt creation. Risk sharing limits credit expansion and leverage to the potential and expected growth of the real sector of the economy, thereby offering better control of major source of business fluctuations, that of sudden increases and contractions of bank credit and of supply of bank-created money\(^1\). Overall, the resulting equilibrium would be stable.

In addition to improved governance and transparency, the argument for blockchain is also framed around speed, efficiency, cost savings and improved capital utilisation. A lot of redundancies, reconciliation work and information asymmetry that exists in banking today are removed by this technology. Blockchain-enabled sharing of back office financial infrastructure is expected to eliminate significant components of banks’ cost base. Proponents estimate meaningful savings of not 5 percent, but 30, 40 or even 50 percent. In monetary terms, McKinsey & Company (2017) estimated that global financial services can save USD110 billion over the next three years operating on blockchain infrastructure. A study on 10 largest investment banks, Accenture and McLagan (2017) estimated a potential saving of USD8-12 billion. Meanwhile, regulatory burden in terms of financial reporting could also be significantly reduced as a result of better data quality, transparency and in-built internal controls. Despite it being relatively nascent, blockchain’s value propositions are indeed promising where businesses processes and record keeping can now be modernized. Expected end results include regulatory efficiency\(^2\), operational efficiency\(^3\) and new innovations of products and services\(^4\).

Based on these new discoveries, several countries are undertaking research projects on specific niche areas as listed in the Appendix. Indeed, this could be a further game changer for Islamic banks, especially that Islamic intermediation costs are even higher than conventional counterparts due to legal costs and more complicated product structures.

### Unique features of blockchain

<table>
<thead>
<tr>
<th>Features in blockchain</th>
<th>Application in business processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership register</td>
<td>Tracks ownership of physical/ virtual assets. Eg. Diamond ownership</td>
</tr>
<tr>
<td>Entitlement register</td>
<td>Tracks entitlements granted to individuals/ organizations. Eg. Music copyrights</td>
</tr>
<tr>
<td>Attestation register</td>
<td>‘Smart contract’ (self-reinforcing) ledger that attests agreements, commitments or statements – executed when outcome of the event is known. Example - warranties</td>
</tr>
<tr>
<td>Synchronization ledger</td>
<td>Use consensus process for reconciling records of contracting parties – replace double entry accounting reconciliation.</td>
</tr>
<tr>
<td>Agreement ledger</td>
<td>Use richer consensus process to allow negotiation / counter proposals before reaching agreement. Eg. Tax &amp; audit processes</td>
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</tbody>
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Source: Deloitte (2016)

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1. Currently, commercial banks create over 95 percent of the economy’s money on which they charge interest.
2. Enables close to real-time monitoring of financial activity of regulates and opportunities to reduce commercial fraud and cybersecurity threats inherent in centralized infrastructures
3. Reduces manual processes required to perform reconciliation and disputes. Lowers counterparty risk as agreements are shared and immutable
4. Usage of smart contracts to enables automated execution of multiparty agreements.
Last but not least, the core markets for Islamic finance, that is the Organization of Islamic Conference group of 57 countries, have the lowest rates of financial inclusion worldwide. More than one billion Muslims are unbanked and remain financially-excluded, according to World Bank estimates. FinTech, therefore, provides a means for Islamic banks to capitalize on innovations in financial technology, to better deliver on their promise of inclusive financial services and real economic activities.

Malaysia leads innovations in the Islamic FinTech spectrum. The Southeast Asian country launched the world’s first Shari’ah compliant bank-intermediated financial technology platform that combines the expertise of Islamic banks and the efficiency of technology to finance entrepreneurship in the real economy in February 2016. The initiative is better known as the Investment Account Platform (IAP). While it may still be early to assess the success and impact of IAP, its adaptation is envisaged to increase manifolds if it migrates to blockchain technology. The centralised multi-bank platform, which comprises a consortium of six Islamic banking institutions, is ideal for a private blockchain that could serve as a trust machine. Malaysia marked another milestone by issuing a FinTech Regulatory Sandbox to encourage collaborations between traditional finance providers and FinTech companies in a regulatory-light space, with special provisions for Islamic finance.

NextGen Islamic Finance is no less than a reconfiguration of the financial architecture for the internet age. Not only would the resulting system be safer and ensures that the financial sector grows in tandem with the real economy, it would also fulfil the value propositions of Islamic finance and strengthen its position as a viable alternative in the aftermath of the financial crisis.
References


### Appendix: Initiatives Exploring Potential of Blockchain in Finance

<table>
<thead>
<tr>
<th>FOCUS AREA</th>
<th>INITIATOR</th>
<th>COUNTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade finance (smart contract in open account trade, supply chain tracking, matching of invoices and purchase orders)</td>
<td>HKMA</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Payments, clearing and post-trade settlement</td>
<td>Federal Reserve Board, Washington DC</td>
<td>USA</td>
</tr>
<tr>
<td>Inter-bank payments system</td>
<td>MAS partnering with R3 (blockchain technology company) &amp; a consortium of financial institutions</td>
<td>Singapore</td>
</tr>
<tr>
<td>Payments &amp; settlement</td>
<td>Consortium of 42 banks.</td>
<td>Japan</td>
</tr>
<tr>
<td>Securities settlement system</td>
<td>Bundesbank &amp; Deutsche Boerse</td>
<td>Germany</td>
</tr>
<tr>
<td>Platform for SME commerce (domestic &amp; international)</td>
<td>Seven European banks (Deutsche Bank, HSBC, Natixis, KBC, Rabobank, Société Générale &amp; UniCredit)</td>
<td>EU</td>
</tr>
<tr>
<td>Mortgage loan application (property evaluation, property owners verification, mortgage count)</td>
<td>HKMA</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>Capital market infrastructure</td>
<td>Tokyo Stock Exchange, Osaka Exchange &amp; Japan Securities Clearing.</td>
<td>Japan</td>
</tr>
<tr>
<td>Banking system “SmartMoney”</td>
<td>Attic lab (fintech startup) &amp; Alpari Bank</td>
<td>Ukraine</td>
</tr>
<tr>
<td>Global money transfer / cross border payments (open source SWIFT like network)</td>
<td>Stellar partnering with key institutions</td>
<td>India, Philippines, Europe, Kenya, Ghana &amp; Nigeria</td>
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<tr>
<td>Digital currencies</td>
<td>Reserve Bank of India</td>
<td>India</td>
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<tr>
<td>Digital identity management</td>
<td>HKMA</td>
<td>Hong Kong</td>
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Source: various