CHAPTER 12

Fintech and Risk-Sharing: A Catalyst for Islamic Finance

Siti Muawanah Lajis

12.1 Introduction

Risk-sharing is believed to have originated from the insurance space and subsequently applied to almost all the other aspects of economic affairs. In insurance, risk-sharing refers to the 'risk distribution in which the premium and losses of each member of a group of policyholders are allocated within the group based on a predetermined formula. Risk is shared if there is no policyholder-specific correlation between premiums paid into a captive, and losses paid from the captive's reserve pool'.[1] In business, risk-sharing refers to 'risk management method in which the cost of consequences of a risk is distributed among several participants in an enterprise such as in syndication'.[2] Meanwhile, in project management, risk-sharing is a 'risk response technique for positive risks or

[1] www.irmi/online/insurance-glossary/terms/risk-sharing.aspx.

[2] www.businessdictionary.com/definition/risk-shring.html.

S. M. Lajis (✉)
Islamic Banking and Takaful Department, Bank Negara Malaysia, Kuala Lumpur, Malaysia
e-mail: sid@bnm.gov.my

M. Zulkhibri and T. A. Abdul Manap (eds.), *Islamic Finance, Risk-Sharing and Macroeconomic Stability*,
https://doi.org/10.1007/978-3-030-05225-6_12

opportunities that involve assigning partial or complete ownership of the risk to a third party who is in a better position to make sure the opportunity is realized. An example of risk-sharing in project management is the joint ventures with strategic partners who have the relevant technical expertise'.[3]

This chapter discusses in detail the concept of risk-sharing in the context of Islamic finance. It covers the definition, parameters, economic rationales and the Islamic perspective of risk-sharing. It then discusses the early and contemporary applications of risk-sharing, followed with a discussion on the challenges in implementing it in the financial sphere. Hence, the analysis contributes in demystifying the risk-sharing concept and in disseminating its value propositions. Greater understanding of the concept and paradigm shift from risk transfer to risk-sharing among all stakeholders of Islamic banking is paramount to ensure meaningful enhancement of Islamic finance in moving forward.

12.2 Risk and Uncertainty

Although risk management has long been a major part of banking, the concept of risk-sharing as a proactive risk management tool is yet to be fully understood. Often the misconception of risk-sharing arose when it is confused as a position of taking on risk as opposed to dissipating risk. This led to misinterpretation and hence perhaps is the main reason for the lukewarm response from the banking fraternity to consider risk-sharing as a viable model for Islamic finance. Another reason for the misconception is perhaps the assumption that 'risk' is synonym to 'uncertainty' and hence they are used interchangeably as the basis for considering if a business proposition is investment worthy. Understanding the difference is necessary in operationalizing risk-sharing financial intermediation (RSFI) model. Generally, risk can be measured and managed appropriately. Uncertainty, on the other hand, is difficult to measure due to its ambiguity and the changing form or magnitude over time. In this respect, risk-sharing promotes calculated risk-taking and discourages transactions that are laden with uncertainties. In dealing with modern-day ambiguities, Lajis (2017) asserts that risk-sharing concept can be a potent tool

[3] www.projectmanagementlexicon.com/risk-sharing/.

to reduce the uncertainties of future ventures, yet at the same time would not reduce the undertaking of risk. This proposition is in line with the Islamic virtue '*al-Ghunum bi al-Ghurum*' (entitlement to gain is accompanied with liability for associated expenses and possible losses). According to Askari et al. (2012, p. 70) regardless of how it is defined and in whatever form it is organized, the key element of risk-sharing is the 'mutuality' to bear risk.

12.3 Risk-Sharing and Risk Transfer

One should also take note of the differences between risk-taking, risk loving and risk avoidance. Risk-taking element is necessary for human development hence is highly encouraged in Islamic. Risk loving, on the other hand, relates to one's choice/preference towards excessiveness and hence it is discouraged (Rosly 2005, p. 57). Risk avoidance however is considered an immoral act and thus is abhorred in Islam as it entails 'earning money without effort'. In modern Islamic banking today, the application of risk-sharing concept is still limited. Although risk-taking investment is considered a virtuous act in Islam, the acts of risk avoidance are rampant by way of transferring and shifting of the risk exposures to others (Alaabed et al. 2015).

Risk-sharing requires the contracting parties to mutually share the risk and the reward of a contract and that all parties do not violate the Islamic property rights principles. Property rights would be violated when the claim on a property is attained without commensurate work such as in the case of dishonesty, theft, bribery, interest and gambling. What constitutes risk-sharing financial contracts that are permissible by *Shari'ah* are all the nominated contracts approved by Prophet Muhammad (pbuh), namely the equity-based contracts (*Musharakah* and *Mudarabah*) and the debt-based exchange contracts (sales and leasing). The associated risks of these contracts however need to be assumed accordingly among the counterparties. Thereafter each party is highly encouraged to engage a robust risk management strategy to minimize one's exposure should the risk materialize, hence optimizing any reward potentials.

Shari'ah on the other hand prohibits risk transfer. What is the basis for the prohibition of risk transfer? The charging of rent by lender without the transfer of property rights claims is as good as shifting the entire risk of transaction to the borrower. Risk transfer is defined as the

shifting of risk from one party to another.[4] Examples include the use of credit enhancements such as *wa'ad*, collateral and guarantees as conditional requirements imposed on counterparties as part of the financial contracts. The main objective of these credit enhancements is to effectively shift the risks of one party to the counterparty with or without the knowledge of the latter. The rationale for the origination of credit enhancements is believed to have been motivated by the need to achieve the same effect of conventional products.

12.4 Risk-Sharing Parameters

What does it take for a transaction to be considered risk-sharing based? For any transaction to be risk-sharing based, it must feature all these four components; (a) property rights, (b) contracts, (c) trust, and (d) governance.

(a) Property rights

Property rights refer to a bundle of rights, duties, powers and liabilities which comes with one's ownership of an asset. Though in the Western definition, the concept of ownership infers absolute entitlement, in Islam, ownership is somehow limited and absolute entitlement is not given to an asset. Islam defines property ownership based on these seven principles which must be observed. Once these principles are appropriately discharged, including that of sharing in the prescribed amount and manner, property rights are held inviolate (i.e. no one can appropriate or expropriate their rights): (Askari et al. 2012, pp. 53–54).

- The Supreme Creator is the ultimate owner of all properties and assets but in order that humans can become materially able to perform duties and obligations prescribed by Allah, they have been granted a conditional right of possession of property; this right is granted to the collectivity of humans.
- The right of collectivity to created resources.
- Individuals are allowed to appropriate the products that they produce by combining their labour with the provided resources,

[4] www.investowords.com/4311/risk_transfer.html.

without the collectivity losing its original rights either to the resources or to the goods and services that are produced by individuals.
- The only two ways in which individuals accrue rights of property (1) through own creative labour, and (2) through transfers via exchange, contracts, grants, inheritance.
- The principle of 'immutability or invariance of ownership' in which once labour has been applied to natural resources, individual who applies his labour gains a right of priority over the resources but the rights of the needy in the sale proceeds of the end product remains.
- The duty of sharing the sale proceeds. Private property ownership is regarded as a trust not an absolute ownership.
- The limitations on the right to dispose of the property. Individuals have an obligation not to waste, destroy, squander, or use property for unlawful purposes.

(b) Contracts

According to *Shari'ah*, contracts bind humans to the Creator and bind human-to-human together through contractual obligations. Fulfilment of contracts is the central anchor of a complex relationship between (1) the Creator and His created order including humans; (2) the Creator and His human collectivities; (3) individual and the state which represents the collectivity; (4) human collectivities; and (5) individuals. As such, the *Quran* has an incentive structure to ensure fulfilment of contracts, where such acts are ranked as the highest achievements and noblest virtues (2:172). The following are the preconditions before a contract can take place:

1. Before parties can enter into a contract of exchange, they must have property rights in what they are going to exchange.
2. The parties need a place or a forum to consummate the exchange: a market.
3. The market needs rules for its efficient operation.
4. The parties to share production, transportation, marketing, sales, and price risk. It is affected through a complete mutual exchange of property rights of each transacting party. Through this, each party will have to own up to his own part of the risk.

(c) Trust

Trust is another key institution that ensures fulfilment of contracts. Without trust, contacts are difficult to enter into and costly to monitor and enforce. When and where trust is weak, it is expensive to enforce contracts. To emphasize its importance, Islam ranks trust as one of the criteria to validate one's faith.

(d) Governance

Governance matters to ensure optimal risk-sharing takes place. Optimal risk-sharing is not possible when along with uncertainties, the two parties have unequal information, i.e. an information asymmetry exists (Haque and Mirakhor 1986). Through proper governance, risk-sharing allows converging incentives between contracting parties. The institution of governance typically falls under the ambit of a ruler of state whose objective is to ensure that the interests and property rights of all stakeholders, community, society and state are recognized and protected.

12.5 Why Risk-Sharing?

The merits of risk-sharing as catalyst for increased prosperity are many. According to the World Bank,[5] no society can achieve its potential or meet the vast challenges of the twenty-first century without the full and equal participation of its entire people. To this end, it recently announced the need for countries to build more equitable and inclusive societies with opportunities for everyone to achieve his or her potential as the central aim to end extreme poverty and boost shared prosperity.

The disadvantage of risk transfer on the other hand has been highlighted by Keynes (1932). He argued that through interest rate mechanism, risk transfer creates two evils of capitalism—worsening income distribution and unemployment. The study by Piketty (2013) confirmed Keynes' proposition in that the debt-based risk-transfer system does indeed has destabilizing force, where income gap gets worsened as the system encourages money rentiers. In such system, 'the entrepreneur

[5] *World Bank Annual Report 2015*, p. 22.

inevitably tends to become a rentier, more and more dominant over those who own nothing but their labour' (p. 571). Therefore, even if the economy appears to prosper year-on-year, the prosperity is not equitably distributed, the lower income group did not share the prosperity, only the rich get richer (Alaabed et al. 2015).

One important value proposition of risk-sharing compared RSFI model is stability. RSFI is distinctly different from risk-transfer system. Risk-sharing offers an inherently stable financial system because it is based on mutuality in accountability and responsibility where both parties are duty-bound to strive towards ensuring favourable outcome of entrepreneurial ventures. Through risk-sharing, one would necessarily reduce his individual risk in producing something (Iqbal and Mirakhor 2011, p. 101). The combination of resources and skills of participants and technologies would result in greater output and larger profits than operating individually. Engaging in risk-sharing also mitigates one's idiosyncratic risk and weakens correlation between income and consumption, essentially minimizing the impact of reduced well-being should idiosyncratic risks materialize. It was further suggested that profit-sharing system is superior to traditional capitalism, on the basis that the profit-sharing system is better able to counteract contractionary or inflationary shocks while maintaining the advantages of decentralized decision-making.

Risk-transfer financial intermediation is effectively a debt-based system which manages risks by transferring them to the counterparties or the public at large (when risk is shifted as in the financial crisis of 2007/2008). A lender shifts his risks to the borrower in the form of undertakings, collateral, guarantees or transfers the risks to the public (e.g. via deposit insurance). A borrower transfers his risks to the lender by defaulting on the loan. Minsky (1986) considered financial instability to be endogenous to a conventional financial system, given that the risk-transfer feature magnifies the impact of booms and busts. Risk-transfer mode, because of its non-participative nature is confronted with fundamental issues of moral hazard, information asymmetry and non-inclusion. The economic downside of risk-transfer system has been massive in value. The 2007/2008 financial crisis caused US$19.2 trillion loss of household wealth and 8.8 million jobs were lost. A further US$24 trillion was allocated for financial rescues efforts (US Treasury 2012). The IMF (2009) estimated the cost of the US government response to the tune of 12.7% of GDP.

Fisher (1933) was among the early thinkers who linked the occurrences of financial crises with high debt accumulation in the system, based on the bank runs and financial panic observed just prior to the Great Depression and the Great Recession. Recent studies by Reinhart and Rogoff (2009), Kumhof and Rancière (2010) and Schularick and Taylor (2012) concurred with Fisher's view that high debt levels are indeed an important predictor of major crises. Calomiris and Haber (2014) also noted that the risk-transfer system which operates on fractional reserves is by design inherently fragile and unstable.

The main reason why debt can lead to crises is traced to the fractional reserve system, where banks are required to hold reserves in the amount equal to a fraction of their deposits to meet demands for withdrawals by depositors. This practice essentially enables the banks to exert significant influence over the money supply in the system since the banks need to keep only a fraction of deposits they receive as reserves. Due to the fact that bank deposits are considered money in their own right, such system permits the money supply to grow beyond the amount of the underlying reserves of base money originally created by the central bank. The banking practices all around the world today are largely based on fractional-reserve banking (Mishkin 2012). Recent research has established a linkage between fractional reserve, credit, debt, leverage, financial crisis and its consequent damage to people's lives and properties as well as increasing inequality of income and wealth.[6] Fractional-reserve banking works in normal situations. It only becomes fragile when there are bank runs or generalized financial crises, resulting in sudden surge of demands for withdrawal, which exceed the bank's funding buffer. Thus, the fear of a bank run can actually precipitate the crisis. To mitigate such risks, central banks typically impose several measures including reserve requirements, capital adequacy requirements, liquidity management and deposit insurance scheme.

The other value proposition of risk-sharing is its contribution towards sustainable economic growth. Shiller (2003) recognizes the potential benefits of risk-sharing for humankind. He argues that 'Massive risk-sharing can carry with it benefits far beyond that of reducing poverty and diminishing income inequality. The reduction of risks on a greater scale

[6]See, for example, Kumhof et al. (2015) as well as relevant entries in this chapter's lists of references. See also, de Soto, J. H. (2009). *Money, Bank Credit and Economic Cycles* (2nd ed.). Auburn: Ludwig Von Mises Institute.

would provide substantial impetus to human and economic progress'. Risk-sharing leads to positive outcomes (i.e. increases unity and social integration) and risk transfer leads to negative outcomes (i.e. breeds disunity and distrust) as was seen in the global financial crises. For illustration, the emergence of digital economy that is premised on risk-sharing is paving the way in breaking boundaries beyond geography, race, national, religion, culture and language.

Risk-sharing keeps financial sector anchored to the real sector and be driven by the latter. Sheng (2009, p. 400) contends that '… if finance is a derivative of the real economy, no financial structure is strong unless the real economy is strong. We cannot allow monetary theory to dazzle us away from the common-sense fact that finance must serve the real economy, rather than drive it'. Askari et al. (2012, p. 67) foresee that equity finance and hence risk-sharing will gain prominence with the public's raised awareness on the fragility of the conventional system. The legal and institutional developments along with good governance and adoption of standards of best practices in transparency and accountability at the level of individuals, firms, the state and reinforced by information technology advances will mitigate informational problems and lead to less reliance on debt-based contract. The emergence of decentralized ledger technology and smart contracts was largely driven by the inspiration to create a 'trusted' environment for real economic transactions to take place.

Premised on Islamic scholars' conviction that the ultimate objective of Islamic finance is to promote sustainable growth, risk-sharing would spur responsible investments. Risk-sharing encourages investment intermediation based on equity or participative financing. It focuses on projects that bring real economic benefits to the well-being of the society, fuels economic growth yet without neglecting the profitability aspect. To achieve maximum risk-sharing, profit-sharing and equity participation are considered as first best instruments of risk-sharing (Askari et al. 2012; Mirakhor 2007, 2014). Proper implementation of risk-sharing and its institutional framework would reduce uncertainty and ambiguity to ensure predictable behaviours. Islam also prescribes rules regarding income and wealth sharing to promote income-consumption smoothing. Risk transfer-based system on the other hand makes no distinction between consumption and investment financing. In this system, financiers perform the role of financial intermediation, which requires minimal monitoring and intervention as long as the loan is repaid or well collateralized. As a result,

debt financing encourages excessive spending, consumption beyond one's means and magnifies the differences between the rich and poor. This mode deprives efficient channelling of resources to finance economic growth and development that could create employment and real economic activities. Indeed, low growth performance would unduly penalize future generations (Askari et al. 2012, p. 197).

Risk-sharing promotes financial inclusion. Under risk-sharing financial system, access to financing is premised on the viability of projects, information flow, business ventures and hard work. Risk-sharing model operates on proactive risk management by the investors and managers of investors' fund. The rapid rise of fintech could accelerate the financial inclusion of the micro-entrepreneurs and SMEs previous excluded in risk-transfer system. An example is the issuance of retail low-denominated risk-sharing securities through a digital platform would provide access both to previous excluded business entities and the low- to medium-income people to financial market (Lajis 2017). The present risk-transfer system, the micro-entrepreneurs and SMEs have limited access to financing due to their perceived high-risk profile by the financial institutions and access to financing is largely driven by creditworthiness, collateral and political connections of borrower. In this respect, risk-sharing has the potential to contribute towards enhancing growth, reducing poverty, increasing employment and improving income distribution (Askari et al. 2012, p. 196).

12.6 Application of Risk-Sharing

In ancient civilization, risk-sharing contracts had predated the debt-based agreements. Economic historians including Postan (1928) discovered that commenda (*Mudarabah*) and maona (*Musharakah* or *Mudarabah*) have been used since the Mesopotamian period. Goitein cited in Askari et al. (2012, p. 58) described trade in the Middle Ages as 'both extensive and intensive, financed by risk-sharing partnership'; partnership was used in industrial, commercial and public administration projects; based on mutual trust and friendship rather than cash benefits or legal guarantees; interest-based lending was prohibited and its usage insignificant. Risk-sharing techniques prevailed in Europe until the mid-seventeenth century eclipsed by interest-based financing, which started in the mid-sixteenth century. The main reason for the loss of dominance of risk-sharing financing was the breakdown of trust in

Europe and elsewhere as induced by wars and invasions. Other reasons included (1) upliftment of prohibition of usury; (2) rapid growth of fractional reserve banking; (3) inflow of gold and wealth induced lending on fixed interest rate contracts; (4) governments could only offer fixed interest financing terms for their war funding; and (5) innovation of securitization.

In modern times, risk-sharing investment model is taking roots and gathering tractions. Europe introduced Risk-sharing Finance Facility in 2007 to support higher risk and reward investment in research, development and innovation. It was on the basis of cooperation agreement between the European Commission (EC) and the European Investment Bank (EIB), and was the very first 'European scale programme' using debt-based finance, where the financial risk is shared between the EC and EIB. Their risk-sharing financing activities cover a broad range of sectors including medical, energy, technology and science research.

In the USA and Canada, traditionally conservative investors are taking up risk-sharing products as a new class of investment opportunity. The risk-sharing ventures can be in the form of equity or debt arrangement depending on the risk appetite of investors. Fannie Mae in December 2013 inaugurated the issuance of risk-sharing securities to investors. Meanwhile, in Canada, some big pension plans have already made some moves towards sharing investment risk between both the plan sponsor, or employer, and the beneficiaries. The concept is to move the risk to the benefits side. When there is a poor performance, members bear the investment risk rather than the employers. The Employer Provident Fund of Malaysia has in early 2017 launched a RM10 billion (Ringgit Malaysia) *Shariah*-compliant fund which is managed with risk-sharing element. Unlike the conventional account, which has a guaranteed dividend of 2.5% per year, the fund does not promise a guaranteed dividend but the dividend rates will be based on the portfolio performance of *Shari'ah*-compliant investments.

In the banking space, many banks have started offering risk-sharing financial products and services. Australia paved the way in introducing customer-owned banking in July 2013. Bankmecu, BankVic, Defence Bank, Heritage Bank and ME Bank are among those providing customer-owned banking. They are operating on the concept of mutual banking and have attracted 4.5 million Australians. Services provided are the same as those provided by consumer banking services including credit cards, personal loans, home loans, online savings accounts, Internet and

mobile banking and term deposits. The point of difference is these banks are owned by their members.

The emergence of online peer-to-peer crowdfunding market places across the globe makes risk-sharing model less unfamiliar. In the UK, risk-sharing financing is being offered as part of public sector initiatives to promote entrepreneurship. Participating institutions include the British Business Bank, Enterprise Investment Scheme (EIS) and Seed Enterprise Investment Scheme (SEIS). Crowdcube, a UK-based crowdfunding platform is perhaps a contemporary example of risk-sharing-based investment intermediation. It functions as an Internet-based equity participation crowdfunding platform matching investor with entrepreneurs who need to mobilize funding to grow (www.crowdcube.com). To the investors, this platform provides investment portfolio diversification. Via this platform alone, crowd financing has spurred investment intermediation of GBP23 million. It is based on risk-sharing concept and has attracted 69,486 investors who jointly funded 116 business start-ups.

In the Islamic finance space, Malaysia has established an Internet-based multibank investment portal called the Investment Account Platform (IAP).[7] It is a wholly-owned subsidiary of Raeed Holdings Sdn Bhd (Raeed), which is a consortium of several Islamic Banks in Malaysia[8] and has started its operation since 2015. The portal matches the financing requirements of ventures with investment from the retail and institutional investors via Investment Account maintained in the participating Islamic banks. Sponsoring banks will retain all fiduciary responsibilities towards participating investment account holders. The IAP is integrated with the existing payment infrastructure and IT systems of Islamic banks to facilitate the transfer of funds during raising of fund and distribution of profits and principal invested. Over a longer duration, the IAP is expected to play a cross-border investment intermediation role in various foreign currencies, thereby promoting international risk-sharing.

[7] https://iaplatform.com/aboutIap.

[8] Affin Islamic Bank Berhad, Bank Islam Malaysia Berhad, Bank Muamalat Malaysia Berhad, Maybank Islamic Berhad, Bank Kerjasama Rakyat Malaysia Berhad and Bank Simpanan Nasional.

12.7 Challenges of Operationalizing Risk-Sharing

Despite the recognition of risk-sharing as the 'should be' model for Islamic banking, operationalizing it faces various challenges. This study looks at Malaysia as a case study based on its attempt to build the necessary ecosystem comprising the law, standards, guidelines and operating infrastructure to operationalize RSFI.

In the case of Malaysia, although appreciation of the ideal system has enhanced, consumer awareness on the value propositions of risk-sharing seems to be the biggest challenge. The existence of dual banking system and the well-entrenched risk-transfer centric regulatory and supervisory framework are key factors that influence the inclination of consumers towards risk transfer. In their study on 'Islamic banking in Malaysia: Uncharted waters', Rosly and Ariff (2011) urge for the current regulatory, legal and fiscal infrastructure for Islamic banking be enhanced in order to boost the industry's competitiveness and efficiency. They contend that while the prevailing infrastructure is conducive to reverse engineering (creating Islamic banking products that replicate their conventional counterparts), the purpose of the law (*Maqasid al-Shariah*) in product development should not be overlooked. Indeed, the compliance to *Shariah* is much more to Islamic banking than the elimination of interest. A study by Abdul-Rahman and Mohd-Nor (2016) found that the limited use of *Mudarabah* and *Musharakah* in Malaysia was due to several factors—(1) the perception of these contracts carrying high risk levels; (2) unfamiliarity of the Islamic banks to take part as partner; (3) complexity of the products; (4) stringent regulations; and (5) lack of expertise and skilled staff.

Thus far, Islamic banking is the product of financial engineers trying to design structures that can deliver the same economic outcome of conventional banking products while meeting requirements of *Shariah*-compliance. The result is the mere modification of an already existing system to meet constraints. It cannot be argued that this is not permissible according to the *Shari'ah*, for it is. However, one can contend that it is only second best and that it is even 'negative' in that it only considers 'legalistic' limitations by observing the constraint of haram. A 'first best' then would be 'positive'. On the one hand, it would encompass the macro objectives of the Islamic economic system, while on the other, result from the natural evolution of the system itself rather than being

imposed or imported from outside. According to Elgari (2007),[9] "no matter how successful Islamic banking is today, we must confess that a contemporary model of Islamic banking is not exactly the 'first best' that we were hoping for – one that can unleash the goodness of the Islamic economic system, its capacity for equity, stability and growth." Also, worth highlighting is the comment by IMF that the "paradigm version of Islamic banking is based on risk-sharing. However, the paradigm version is not (yet) deeply embedded globally" (IMF 2014, p. 11).

The other factor that hinders the adoption of risk-sharing model is the absence of technology that could mitigate voluminous paper-based processes, fraud risk, adverse selection risk and high cost of operation.

12.8 Moving Forward

Moving forward, the future development of Islamic finance in the digital era will rely on the widespread adoption of new financial technologies. Islamic financial community needs to consider devising a *Shari'ah*-compliant digital business strategy in order to stay relevant (Lajis and Idris 2017, p. 451). The financial institutions, regulators, ancillary service providers in collaboration with fintech communities need to relook at present value propositions in view that the whole financial industry is gradually digitalizing its front-end services and back-end processing activities. The time is therefore ripe for Islamic banking to leverage on technology to shift from risk transfer to risk-sharing-based model. To this end, the paper proposes for further research on the development of digital solutions for RSFI, social finance, trade finance and discretionary mutual (DM) *Takaful*. Leveraging on emerging technologies including distributed ledger technology, Internet of things, artificial intelligence and others should be considered.

The RSFI combines elements of risk-sharing, crowdfunding and value-based investment principles. Entrepreneurs (needing the financing) would share with investors (financier of viable projects) the upside and downside risk of the projects, the return on investment based on the actual outcome of the project. The party managing the RSFI scheme would charge a *wakalah* fee. The digital investment marketplace would bring together investors and entrepreneurs in a 'trusted' environment.

[9] Elgari, M. A. (2007). A Position Paper Presented at a Workshop on *Tawarruq*: A Methodological Issue in *Shariah*-Compliant Finance.

The solution should ensure that (1) the transfer of property rights is traceable, auditable and secure at all times, (2) it operates in line with recognized *Shari'ah* standards and triple 'P' bottom line principles, (3) it provides unique transaction identification, (4) it preserves the sanctity of contracts and minimizes the need for third party verification, and (5) it provides online advisory service to aid retail investors in selecting investment options (e.g. robo-advisor).

Social finance in the Islamic economy promotes shared prosperity and poverty reduction. It comprises institutions based on philanthropy (e.g. *zakah*, *sadaqah* and *waqf*), cooperation (e.g. *qard* and *kafala*) and microfinance to support vulnerable groups. The platform will match targeted communities (representing the recipients needing financial support) and potential givers. The party managing the platform may charge a *wakalah* fee to cover operating cost. The digital platform should provide seamless channelling of funds to communities in need of support. The solution should (1) increase accountability, efficiency and transparency of channelling of funds over current systems, (2) result in permanent digital recordings of pooled funds (*waqf*, charity and *zakat* donations), (3) enable donors to track their contributions online, and (4) observe *Shari'ah* principles accorded to each *Shari'ah* concept (e.g. perpetuity element in *waqf*, the eight *asnaf* eligible to be *zakat* recipients) and promote inter-generational value-creating activities.

The role of trade finance in the Islamic economy has yet to be fully explored. Some have highlighted operational impediments which include complicated process flow, highly paper-based and extensive control measures to mitigate fraud risks as being causes for this. A digital platform should be developed to simplify the operating model and lower the cost of Islamic trade finance. The solution should (1) allow for autonomous verification of trade documents, (2) enable real-time tracking by stakeholders in the entire supply chain ecosystem, (3) provide for interactive communication between traders and financiers, (4) result in a seamless trade document and logistic process flow, (5) address common cross-border trade issues (e.g. information asymmetries arising from language barriers and local trade requirements), and (6) take into account ethical, value-creating and *Shari'ah* principles.

Discretionary Mutual (DM) model is a viable alternative solution in providing *Takaful* protection to consumers, which empowers consumers to set own terms of protection under the mutuality concept while sharing the risks among themselves. Best serving affinity groups, the members

make the decision on admission of new members, scope of coverage and entitlement of claims. Premised on the element of discretionary, members may appeal to receive some compensation from damages that would otherwise be declined in conventional insurance/*Takaful* practices. Presently still under-explored, DM aims to widen the application of *Takaful* as it provides protections customizing to the needs of the consumers, which are currently unserved or offered at high price. It complements the existing offerings of the industry and promotes greater inclusion. Based on *wakalah* model, *Takaful* operator would be entitled to an administration fee for managing the DM. The digital solution for DM would be a platform that is equipped with (1) full digitization of data collection for fraud detection (e.g. demographic/biometric info and claim underwriting), (2) online underwriting to screen admission of new members and validity of claims, (3) real-time claim processing, (4) member's right to vote for claim approval, (5) real-time update on the use of funds for greater trust and transparency (e.g. notification to all members whenever there is a claim payment), and (6) online sharing of information for better risk management to minimize damages (e.g. best practices of farming).

12.9 Conclusion

The risk-sharing concept remains an elusive phenomenon in the Islamic financial sphere. It is often mistaken as a position of taking on risk as opposed to dissipating risk. Recently, there have been ample debates by leading Islamic scholars and thought leaders on the need to adopt risk-sharing as the operating model for Islamic finance but the argument centres on overcoming the challenge in operationalizing it in an environment where the system is so well entrenched with risk-transfer paradigm. This paper explains some of the misconceptions on risk-sharing and discusses its positive value proposition from an economic perspective as to why it would be practical for Islamic finance. The paper also highlights the challenges in operationalizing risk-sharing and recommends for the development of technology-enabled virtual marketplace as a means to facilitate the adoption of risk-sharing concept. To this end, the paper explores the potential of using digital platform/marketplace to deliver risk-sharing-based financial intermediation, social finance, trade finance and DM *Takaful*. The digital platforms should aim towards providing trust and reliability, lower operating costs and support financial inclusion.

References

Abdul-Rahman, A., & Mohd-Nor, S. (2016). Challenges of Profit-loss-sharing Financing in Malaysia Islamic Banking. *Malaysia Journal of Society and Space, 12*(2), 39–46.

Alaabed, A., Masih, M., & Mirakhor, A. (2015). Undermining Shared Prosperity? Risk Shifting and Islamic Banking. Paper Presented at the World Bank and Islamic Development Bank Inaugural Annual Symposium on Islamic Finance 2015, Istanbul, September 9.

Askari, H., Iqbal, Z., Krichene, N., & Mirakhor, A. (2012). *Risk-Sharing in Finance: The Islamic Finance Alternative*. Singapore: Wiley.

Calomiris, C., & Haber, S. (2014). *Fragile by Design*. Princeton, NJ: Princeton University Press.

de Soto, J. H. (2009). *Money, Bank Credit and Economic Cycles* (2nd ed.). Auburn: Ludwig Von Mises Institute.

Elgari, M. A. (2007). *Tawarruq*: A Methodological Issue in *Shariah*-Compliant Finance. Paper Presented at Harvard-LSE Workshop London School of Economics, London, February 1.

Fisher, I. (1933). The Debt-deflation Theory of Great Depression. *Econometrica*, 337–357.

Haque, N. U., & Mirakhor, A. (1986). Optimal Profit-Sharing Contracts and Investment in an Interest-Free Islamic Economy. *IMF Working Paper No. WP/86/12*. Washington, DC: International Monetary Fund.

IMF. (2009). The State of Public Finance: Outlook and Medium-term Policies After the 2008 Crisis, p. 17.

IMF. (2014). Malaysia: Financial Sector Assessment Program: Financial Sector Performance, Vulnerabilities and Derivatives—Technical Notes. *IMF Country Report No. 14/98*. Washington, DC: International Monetary Fund.

Iqbal, Z., & Mirakhor, A. (2011). *An Introduction to Islamic Finance: Theory and Practice* (2nd ed.). Singapore: Wiley.

Keynes, J. M. (1932). Saving and Usury: A Symposium. *The Economic Journal*, 42(165), 123–141.

Kumhof, M., & Rancière, R. (2010). Inequality, Leverage and Crisis. *IMF Working Paper No. WP/10/268*. Washington, DC: International Monetary Fund.

Kumhof, M., Ranciere, R., & Winant, P. (2015). Inequality, Leverage and Crisis. *American Economic Review*, 105(3), 1217–1245.

Lajis, S. M. (2017). Risk-Sharing Securities: Accelerating Finance for SMEs. *Islamic Economic Studies*, 25(2), 35–55.

Lajis, S. M., & Idris, A. (2017). Fintech: Game-Changer for Islamic Finance. In A. H. Baharom, M. H. Ibrahim, & K. Sazalina (eds.) *Islamic Finance—The New Normal*. Kuala Lumpur, Malaysia: RAM Holdings Berhard.

Minsky, H. P. (1986). *Stabilizing an Unstable Economy*. New Haven, CT: Yale University Press.
Mirakhor, A. (2007). Islamic Finance and Globalization: A Convergence? *MPRA Paper 56026*. Munich, Germany: University Library of Munich.
Mirakhor, A. (2014). Regulatory Framework for Islamic Finance. *Islamic Banker Asia*, 11, 50–53.
Mishkin, F. S. (2012). *Economics of Money, Banking and Financial Markets* (10th ed.). Upper Saddle River, NJ: Prentice Hall.
Piketty, T. (2013). *Capital in the Twenty-First Century* (A. Goldhammer, Trans.). Cambridge, MA: The Belknap Press of Harvard University Press.
Postan, M. (1928). Credit in Medieval Trade. *Economic History Review*, 1(2), 234–261.
Reinhart, C. M., & Rogoff, K. S. (2009). *This Time Is Different: Eight Centuries of Financial Folly*. Princeton: Princeton University Press.
Rosly, S. A. (2005). *Critical Issues on Islamic Banking and Financial Markets: Islamic Economics, Banking & Finance, Investments, Takaful and Financial Planning*. Kuala Lumpur: Dinamas Publishing.
Rosly, S. A., & Ariff, M. (2011). Islamic Banking in Malaysia: Uncharted Waters. *Asian Economic Policy Review*, 6(2), 301–319.
Schularick, M., & Taylor, A. M. (2012). Credit Booms Gone Bust: Monetary Policy, Leverage Cycles and Financial Crises, 1870–2008. *American Economic Review*, 102(2), 1029–1061.
Sheng, A. (2009). *From Asian to Global Financial Crisis: An Asian Regulator's View of Unfettered Finance in the 1990s and 2000s*. Cambridge: Cambridge University Press.
Shiller, R. (2003). Social Security and Individual Accounts as Elements of Overall Risk-Sharing. *American Economic Review*, 93(2), 343–347.
US Department of The Treasury. (2012). The Financial Crisis Response: In Charts, April 2012.
World Bank. (2015). *World Bank Annual Report 2015*. Washington, DC: The World Bank.