

On the Ethicality of Islamic Banks' Business Model

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This paper scrutinizes the ethicality of Islamic banks' (IBs') business model by employing the 'objectives of Islamic law' (*Maqāsid al-Sharī'ah*). This necessitates developing an ethical framework to construe two primary injunctions of Islamic finance, namely *ribā* and *gharar*. The former embodies financial decoupling (aggravating risk-shifting) and unjust price gouging (provoking economic stagnation and financial exclusion), while the latter involves asymmetric information and excessive risk-taking behaviour (exacerbating financial fragility and thus systemic risk). We empirically and theoretically illustrate that these unethical issues are still prevalent in the IBs' modes of financing, despite the *Sharī'ah*-compliant endorsement of religious scholars (i.e. *Sharī'ah* supervisory boards). This affirms that ethicality is merely an impression management exercise of IBs instead of their true business identity. The way forward is to conceptualize IBs' modes of financing beyond just *Sharī'ah* compliance by scrutinizing their ethical impact on society at large. This would require updating centuries-old Islamic rulings (*Fatāwā*) on financial transactions and consulting finance academics and practitioners.

Introduction

The 2007–2009 global financial crisis (GFC) has exposed the unethical risk-taking behaviour of conventional banks (CBs) (Ayadi *et al.*, 2021; Delis, Hasan and Tsonas, 2015; Nguyen, Nguyen and Sila, 2019). This allowed CBs to generate excessive profits for themselves while transferring the downside risk to society at large, that is, via taxpayers' bailout. However, Islamic banks (IBs) used this as an opportunity to actively promote and differentiate themselves as being ethically oriented (Belal, Abdelsalam and Nizamee, 2015; Muhamad, Melewar and Faridah Syed Alwi, 2012; Priola and Chaudhry, 2021). Their claim is rooted in Islamic ethics (IE), which prohibits interest-based transactions of *ribā* and the excessive risk-taking behaviour of *gharar*.^{1,2}

This study aims to investigate the so-called ethical business model of IBs contradicted by Al Rayan Bank, which obtains a much lower ethical score (11.5/20) than the leading conventional 'B Corporation' banks such as Charity Bank (16/20), Ecology Bank (15.5/20) and Triodos Bank (15.5/20). IBs especially fall short on environmental responsibility, animal welfare, corporate ethos and product sustainability.³ It is for this reason that the Central Bank of Malaysia has recently introduced value-based intermediation (VBI) as a correction mechanism (Bank Negara Malaysia, 2018).

to asymmetric information or excessive risk, as elaborated in the fourth section (*Gharar* in IBs).

²Our paper segregates ethics from legal requirements. Ethics involve moral principles that guide a person or society to distinguish right from wrong, whereas law represents a systematic set of enforceable rules and regulations. This study considers *ribā* and *gharar* as ethical issues (Chapra, 2008a; Khan, 2010).

³See 2018 Ethical Consumer ranking of savings accounts at <https://www.ethicalconsumer.org/money-finance/shopping-guide/savings-accounts> (accessed 13 September 2022).

¹*Ribā* is derived from the Arabic word *rabā*, implying growth or increase. It is a 'premium' that must be paid by one counterparty to the other for the exchange of assets or claims on the spot or in the future (i.e. deferred). *Gharar* (lexically meaning uncertainty) pertains to legal ambiguities in fulfilling contracts. It can be due

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These shortcomings are expected as IBs focus mainly on delivering *Sharī'ah* (Islamic law)-compliant versions of financial facilities offered by CBs (Khan, 2010).⁴ In this context, the *Sharī'ah* supervisory boards (SSBs) merely signal their strategy to finance legitimate businesses by avoiding the proscribed elements of *ribā* and *gharar* (Ullah, Harwood and Jamali, 2018), without incorporating the religious ethos stemming from the objectives of Islamic law (*Maqāsid al-Sharī'ah*).⁵ Thus, IBs fail to construe the prohibitions of *ribā* and *gharar* from the ethical philosophy of Islam, as elaborated in the next section (The ethical framework of IBs).

This infringement of *ribā* (financial decoupling-led risk-shifting and price gouging-led underinvestment) and *gharar* (excessive risk-taking) contributes to financial fragility (a technical issue), leading to a loss in welfare (an ethical issue) and IBs' distress (and even collapse) around the world. For example, Denmark's Islamic International Bank (IIB) lost 30% of its equity between 1985 and 1986 due to its vulnerability to a single borrower (Graiss and Pellegrini, 2006). The Islamic Bank Ltd (IBL) of South Africa defaulted in 1997 because of unsecured insider loans and no provisions for non-performing facilities (Nathie, 2010). Ilhas Finance House (IFH) of Turkey was liquidated in 2001 due to its unethical lending and reckless expansion (Graiss and Pellegrini, 2006). Muamalat Bank of Indonesia has been under severe strain since 2015, primarily because of excessive exposure to the mining industry (Maulia, 2019).

Studies on the ethicality of IBs remain scarce. They mainly focus on the application of corporate social responsibility (CSR) in IBs. Arbi and Arum (2015) uncover that IBs' managers have fallen flat on implementing IE in CSR. Platonova et al. (2018) show the positive relationship between CSR and the future performance of IBs. Haniffa and Hudaib (2007) and Mergaliyev et al. (2021) document vast discrepancies between the ideal and the disclosed moral identity of IBs. However, these studies fail to incorporate the real integrity of IBs as they rely on corporate annual reports that are prone to earnings management (Zainuldin and Lui, 2020).

Our study is different as it focuses on the *financing* offered by the IBs and attempts to examine their

real (instead of communicated) ethical performance. It employs the framework derived from the *Maqāsid al-Sharī'ah* (*Maqāsid*) to evaluate the rectitude of the debt-based mark-up facility of Murabaha and its two variants, *Inah* and *Tawarruq* (Baele, Farooq and Ongena, 2014).⁶ These three facilities have been the dominant contractual financing agreements of IBs worldwide, with supposedly few exceptions, as illustrated in Figure 1. Prior literature (Khan, 2010; Kuran, 2018) casts doubt on the 'other' financing modes employed by IBs involving quasi-equity facilities (such as the *Mudharabah* and *Musharakah*). We ignore them as their overall proportion in IBs' assets is relatively low. Our study makes several contributions. First, unlike prior studies, we advance the ethical framework of IBs by integrating ethics, Islamic law and the economic rationale of the prohibitions of *ribā* and *gharar*. Here, we derive values from the *Maqāsid* and link them to virtue ethics (Solomon, 2003). Our study is different from those of Parker (1998) and Ullah et al. (2019). For example, Parker (1998) lays down an ethical framework based on nostalgia and modernization. He does not distinguish between action-based ethics and agent-based virtue ethics like ours. In the context of theory, Ullah et al. (2019) contribute on the legitimacy and institutional strand of ethics from social and environmental perspectives. In contrast, we develop our theoretical model (in the next section) in a framework of agent-based virtue ethics by examining the Islamic value-loaded morality. In the context of empirics, we address the ethical vulnerability of IBs' business model in the financial and real sectors, whereas Ullah et al. (2019) compare the non-financial firms that experienced a corporate scandal in a particular year with their control group. Therefore, Ullah et al. (2019) cover firms across different sectors of the economy. However, we concentrate on cultural-based corporations like IBs, who exclusively market themselves as ethical institutions.

Second, we evaluate whether the Islamic Interbank Benchmark Rate (IIBR)⁷ used in banking has encroached on immoral *ribā*-based issues of financial decoupling and price gouging by using Toda–Yamamoto and GARCH–BEKK tests, which have not been employed in this context in the prior literature. Furthermore, while previous research (e.g. Azad et al., 2018; Nechi and Smaoui, 2019; Tlemsani, 2020) might have uncovered how the IIBR mimics LIBOR (London Interbank Offer Rate), it does not necessarily prove the IIBR's deviation from the real sector of the economy,

⁴We focus primarily on the ethicality of the main product (Murabaha financing) and distinct structure (i.e. the *Sharī'ah* Supervisory Boards, SSBs) of IBs given the constraints of academic journals in terms of focus, length of paper, etc. No doubt, this is a valid point raised by an anonymous referee and we aim to 'engage with the conversations on other areas of Islamic finance' in our future studies.

⁵The objectives of Islamic law (*Maqāsid al-Sharī'ah*) are to ensure the preservation of faith, life, intellect, lineage and wealth of human beings (see Kamali, 2008).

⁶These contracts are discussed further in the third section (*Ribā* in IBs).

⁷IIBR, created in 2011, was a daily average of rates contributed by 18 international IBs, mainly operating in the Middle East region.

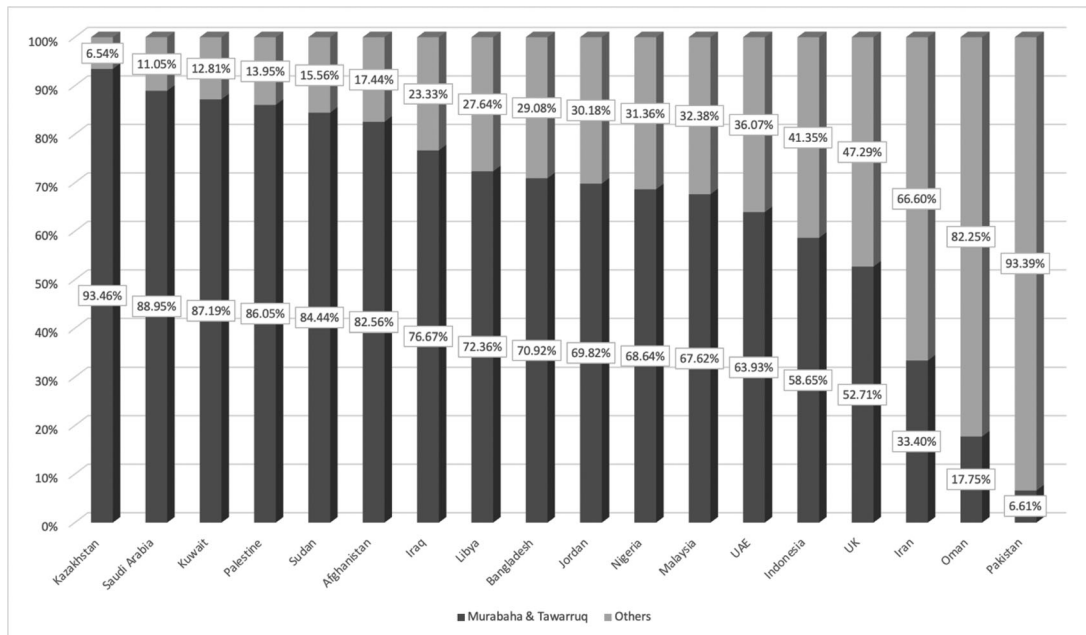


Figure 1. Domination of debt-based financing in IBs across territories. Note: The figure illustrates the percentage of IBs financing by type of contract worldwide. The dark bar represents the debt-based Murabaha, Inah and Tawarruq facilities. The light bar supposedly captures other contractual methods, including the 'quasi-equity' facilities (i.e. Mudharabah and Musharakah) doubted by Khan (2010) and Kuran (2018). We employ the 2021-Q4 data reported by the Islamic Financial Services Board, except for Libya (2021-Q3), the United Kingdom (2018-Q4) and Iran (2018-Q2). The data is available at https://www.ifsb.org/psifi_03.php.

hence 'unjust price'. Our study extends the literature by evaluating the dynamic correlation between the IIBR and proxies of the performance of the real sector of the economy, namely the Consumer Price Index (CPI), the real estate indices of the FTSE and Dow Jones (DJ) and the Industrial Production Index (IPI) (of Malaysia).

Third, we develop a theoretical method to audit IBs' idiosyncratic balance sheet structures to see if they outperform CBs in alleviating the unscrupulous *gharar* issues of asymmetric information and excessive risk-taking. Here, we integrate our study with theories of financial market frictions (Stiglitz and Weiss, 1981) and bank runs (Diamond and Dybvig, 1983) to portray an economic intuition of both banking systems as they extend the maturity of their facilities. This result complements the empirical approaches of Delis, Hasan and Tsonas (2015), Nguyen, Nguyen and Sila (2019) and Ayadi *et al.* (2021). Finally, we point out SSBs' flaws in reinforcing the ethical issues of *ribā* and *gharar* in IBs and question SSBs' need, in contrast to Hayat, Den Butter and Kock (2013) and Ullah, Harwood and Jamali (2018).

The rest of the paper proceeds as follows. The next section constructs IBs' ethical framework, which is applied to scrutinize their morality in the light of *ribā* in the third section and *gharar* in the fourth section. The fifth section elucidates the institutional weakness of SSBs. Finally, the sixth section concludes.

The ethical framework of IBs

Testing organizational ethicality is intricate due to the complex theoretical underpinning and lack of data. This is even more prevalent within the context of IBs, where the institutional values are far from settled. We thus derive our framework by integrating the *Maqāsid* with business ethics literature, as shown in Figure 2.

Normative ethics can be classified into 'action' and 'agent'-based theories (Collier, 1998). The former emphasizes actions as the moral standard, including teleology (consequentialism) and deontology. Teleology argues that deeds should be adjudicated based on the consequences of one's actions. This approach endorses activities that satisfy one's future interest (egoism) or provide benefits to the highest number of individuals (utilitarianism). Instead, deontology argues that morality involves contractual duties and responsibilities rather than outcomes. It rejects the idea of exceptions before the law in the name of greater benefits (Macdonald and Beck-Dudley, 1994).

Virtue ethics focuses on a principled agent instead of actions and relies on righteous persons' motives, disposition and character (Solomon, 2003). This emerging theory is often hailed for its patronage of sustainability, inclusivity and environmental parity in business (Whetstone, 2001). Here, profit maximization is no longer the

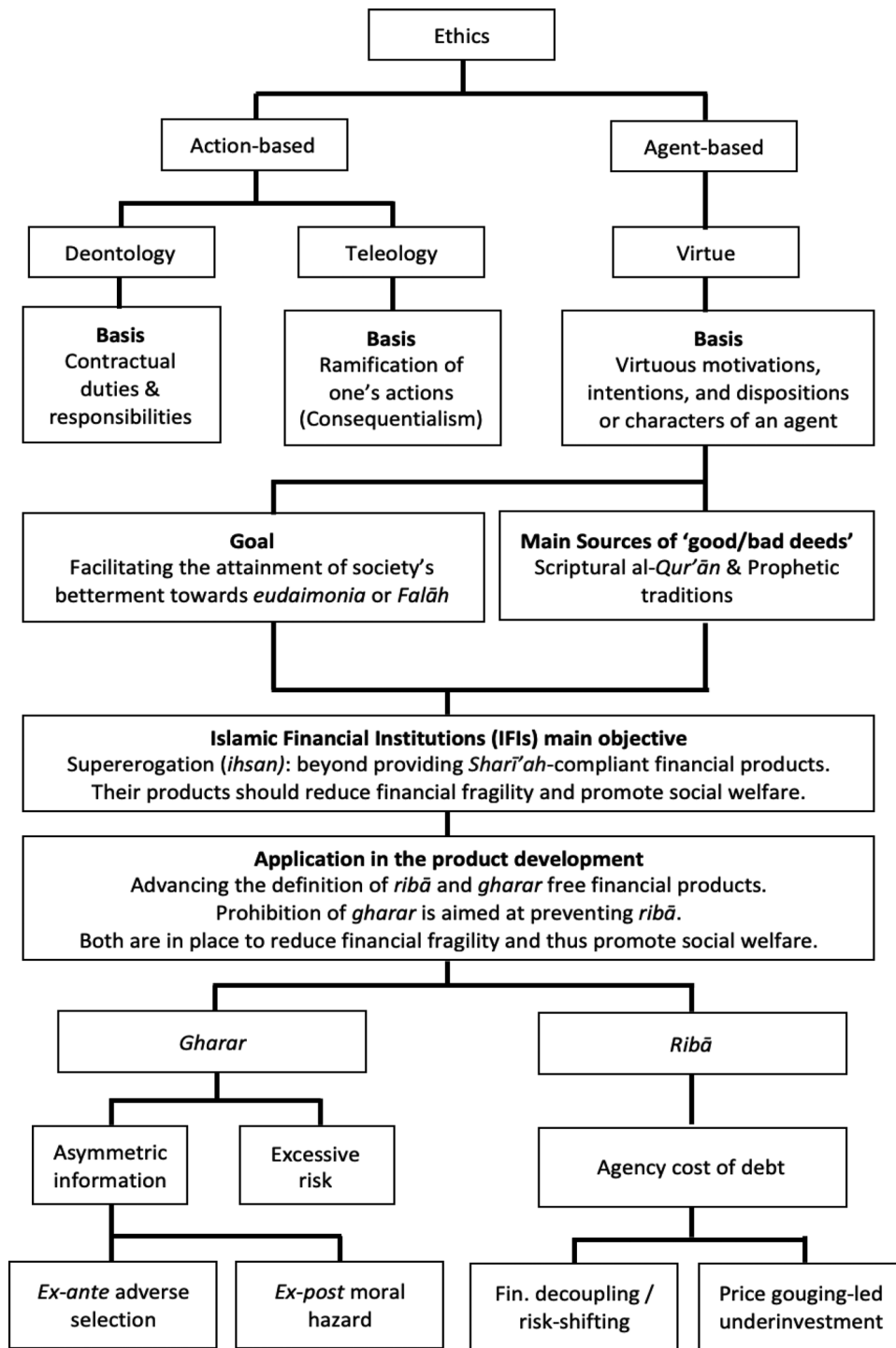


Figure 2. Ethical framework for Islamic financial institutions

sole goal of business, as it puts more weight on the attainment of the public interest (*eudaimonia*). Contrarily, the action-based approach has been criticized for opening the gate of ‘moral schizophrenia’ in business (Duska, 2000). Based on this theory, economic agents may compromise their values in exchange for firms’ economic efficiency.

Islamic ethics is derived from the scriptural source of the Holy Qur’ān and the authentic Prophetic traditions (*ahādith*). Beekun (1997) illustrates how these two sources differentiate IE from action-based approaches. First, moral actions should be accompanied by a combination of good intentions (see Sahih al-Bukhari – Volume 1, Book 1, Hadith No. 1) and virtuous deeds.

Second, unlike utilitarianism, IE 'is not a numbers game' (Qur'ān 5:32; Beekun, 1997, p. 20). Finally, egoism is also alien in IE as the Islamic value system encourages social welfare instead of individual interest (Kamali, 2000).

We thus argue that conceptualizing business ethics from the lens of the agent-based framework, consistent with Wade (2010), Ali (2014) and Bucar (2018), is more compatible with the values edified by the above two sources. IE, focused on the betterment of moral agents and their society, is rooted in the axioms of unity (*tawhid*), justice and parity (Rice, 1999). It advocates equity within the interaction of production factors and places the market as an integral part of a value-loaded society. Therefore, consistent with the agent-based approach, businesses exist for purposes beyond profit (Sidani and al-Ariss, 2015).

The above discussions illustrate that agent-based ethics is in harmony with the *Maqāsid* aimed at achieving *Falāh* (referred to as social eudaimonia) by preserving human beings' benefits in this world and the hereafter (al-Raysuni, 2006; Chapra, 1992). The agent-based theory also implies that the compliance of the IBs to the Islamic jurisprudence (form) does not necessarily mean the righteousness of their operations. However, the motivation behind the development (substance) of those financial products is the primary determinant of IBs' principles. They are expected to engage in 'supererogation' (*Ihsan*) by offering supra *Sharī'ah*-compliant products. This is consistent with the prominent Muslim philosopher al-Ghazali, who defines *Ihsan* in business transactions as 'something beyond mere adherence to legal and market requirements' (Sidani and al-Ariss, 2015, p. 853). In the context of our study, IBs are supposed to contribute to the betterment of society by providing an improved financing facility to alleviate the endemic problems of resource expropriation (price gouging), financial fragility (risk-shifting) and financial exclusion. This can be conducted by incorporating *Maqāsid* into the product development process.

Similarly, Ibn 'Ashur (2006) emphasizes safeguarding a community's property rights by preserving individuals' rights. Among the crucial *Sharī'ah* injunctions to protect property rights are the prohibitions of *ribā* and *gharar*, as addressed in the sections below.

Ribā in IBs

Construing ribā from the moral objectives of Islam

Narrowly interpreting the word *ribā* as mere interest is an ignorance fallacy. While its literal meaning implies increase or growth (see Thomas, 2006), the philosophy of its prohibition goes beyond an interest-based transaction, including those of unjustified gain or profit

(Coulson, 1984), excessive price over the market value (Chapra, 2000; Choudhury and Malik, 1992), trading-in credit as unbundled commodities (El-Gamal, 2006) and expropriation of a counterparty's assets (Ebrahim *et al.*, 2016) (see Table 1 for more definitions of *ribā*). This paper endorses the view of Ebrahim *et al.* (2016), which is consistent with *Sharī'ah's* objectives and emanates from the Qur'ānic verse (4:161) reproving the wrongful expropriation of others' assets, supported by early jurists like Ibn Rushd (Averroes), Ibn Taimīyah and Ibn Qayyim, yet de-emphasized later for political reasons (Chapra, 2008b).

The above conceptual definitions reveal at least two critical provisions for *ribā*-free transactions. First, the product (or credit agreement) should be collateralized against tangible (or *real*) asset(s). This arrangement prevents the decoupling of the *financial* sector from the *real* economy. It supposedly mitigates the issue of risk-shifting as it protects the lender's (seller's) capital from being usurped by the borrower (buyer) in a strategic default when the equity goes 'underwater' (see Figure 3). This may imbue financial fragility and exacerbate systemic risk, thereby negatively impacting the real sector of the economy.

Second, *ribā*-free transactions should deliver the so-called 'just price'⁸ to protect the borrower ('buyer' of an asset) from the underinvestment issue. Here, the lender ('seller' of an asset) claims most of the wealth increase from the project (or asset's utilization) by charging excessive fixed payments (i.e. price gouging).⁹ This incentivizes the borrower (buyer) to reject profitable projects when its net operating income (NOI) is lower than the debt obligation (DO), as illustrated in Period 3 in

⁸Debates on the definition of 'just price' (i.e. *justum pretium*) are far from settled. Neoclassical economists defend the self-regulating market price as the just price (Elegido, 2015), while Marxian scholars rather favour the cost-covering price (De Roover, 1958). This study emulates Ibn Taimīyah, who argues that the 'just price' can only be achieved 'by forces of supply and demand' in the real sector of the economy (Islahi, 1988, p. 83), where Islamic values prevail. However, unlike the neoclassical economics approach that regards society as a subordinate of the market (Polanyi, 1944), Ibn Taimīyah contends that the market is only a part of a value-loaded society. Therefore, the price revealed by supply and demand is not necessarily 'just' should Islamic values be absent from the market. We have also employed this notion to empirically test the premium over the market rate charged by IBs as akin to 'unjust price'.

⁹The self-regulating market fails to rule out the unethical price-gouging behaviour from its definition of just price. Escalating the price for the most needed customers (such as those in the coronavirus pandemic) is deemed reasonable by neoclassical economists as long as it is determined through the market mechanism, that is, the interaction between high demand and short supply (Elegido, 2015). This behaviour is, however, not acceptable within the deliberation of Islamic values. The expropriation of the counterparty's assets makes this 'market price' unjust and unethical, aggravating the underinvestment issue (Koehn and Wilbratte, 2012).

Table 1. Definitions of ribā

Definition	Reference
Increase, addition, expansion or growth	Literal meaning
Unjustified gain	Coulson (1984)
Excessive price (compared to the market one)	Choudhury and Malik (1992)
Expropriation of counterparty's assets	Choudhury and Malik (1992), Ebrahim et al. (2016)
Trading in credit as unbundled commodities	El-Gamal (2006)
Absence of asset-based collateralization	El-Gamal (2006)
Injustice transactions (inequity prices)	Chapra (2000), El-Gamal (2006)

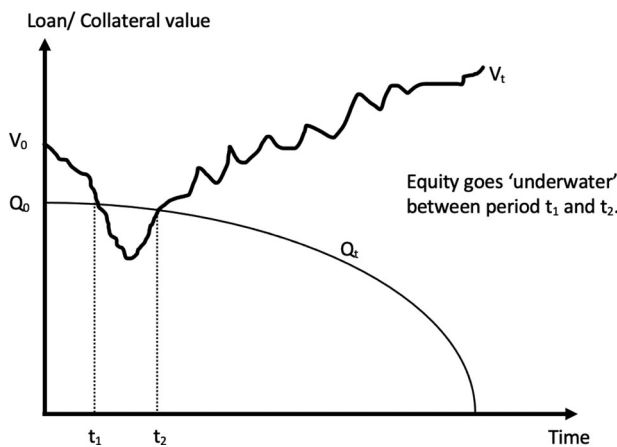


Figure 3. Risk-shifting. Note: Risk-shifting is the first element of ribā. It is a form of expropriation where the borrower transfers the downside risk of the asset to the financier when the equity goes 'underwater'. That is, when the value of the asset (V_t) is lower than the debt obligation (Q_t), as observed in the interval (t_1, t_2). This prompts the borrower to default, leading to the financier seizing the collateral and selling it to recover their capital. However, the collateral may not recoup all the losses due to the destruction of the assets (Wojakowski et al., 2019). Therefore, this expropriation of assets leads to financial fragility and the loss of the welfare of society (an ethical issue). Thus, the negative equity ensuing from a contract involving ribā also becomes a moral problem instead of merely a credit risk for the lender.

Figure 4. This can lead to financial exclusion of the poor and underprivileged.

Hypothesis development

Drawing on the above notions of ribā, we examine the morality of IBs by delving deeper into the pricing of Murabaha, *Inah* and *Tawarruq* (see Figure 5). Murabaha, deemed ethical, is structured as a buy–sell agreement where the IB purchases an ordered real asset and sells it immediately to the buyer (borrower) at a 'profit' (see Figure 5a). *Inah* and *Tawarruq*, widely used in the Middle East and Malaysia, do not use the collateralized asset as part of the transaction, making the contract a synthetic plain vanilla loan (see Figures 5b and c).¹⁰

¹⁰Despite the absence of collateral, both *Inah* and *Tawarruq* may have recourse to borrowers' personal assets.

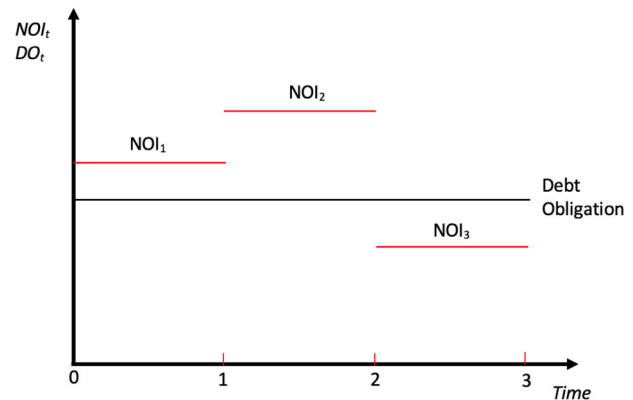


Figure 4. Underinvestment. Note: Underinvestment is the second element of ribā. Here, the borrower tends to reject profitable (i.e. positive net present value, NPV) projects when their incremental wealth mainly accrues to the financier. This occurs when the net operating income (NOI_t) of the borrower is lower than their debt obligations (DO), as illustrated in Period 3. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.com)]

Financial decoupling-led risk-shifting. Our first ribā-free component requires the pricing of Murabaha to be revealed through the supply and demand mechanism of the tangible asset in the *real* sector of the economy. However, IBs are critiqued for pricing their facilities identically to their conventional counterparts by employing an interest-based benchmark such as LIBOR, which could lead to their convergence.

This convergence of the IIBR to LIBOR is rationalized on the basis of the market competition faced by IBs (Azmat et al., 2020; Khan, 2010). The mimetic isomorphism theory predicts that competition drives IBs to emulate existing products and pricing offered by CBs for the sake of efficiency (Bassens et al., 2013). The highly regulated nature of the financial sector is also among the major reasons for the same (Haniffa and Hudaib, 2010). Some religious scholars also defend it as a temporary solution in the current rudimentary Islamic finance development (Usmani, 1998).

From a moral perspective, the above justifications seem lame excuses. In principle, ethicality requires IBs to adhere to Islamic values and link their products to the real economy. However, IBs allege that the IIBR is

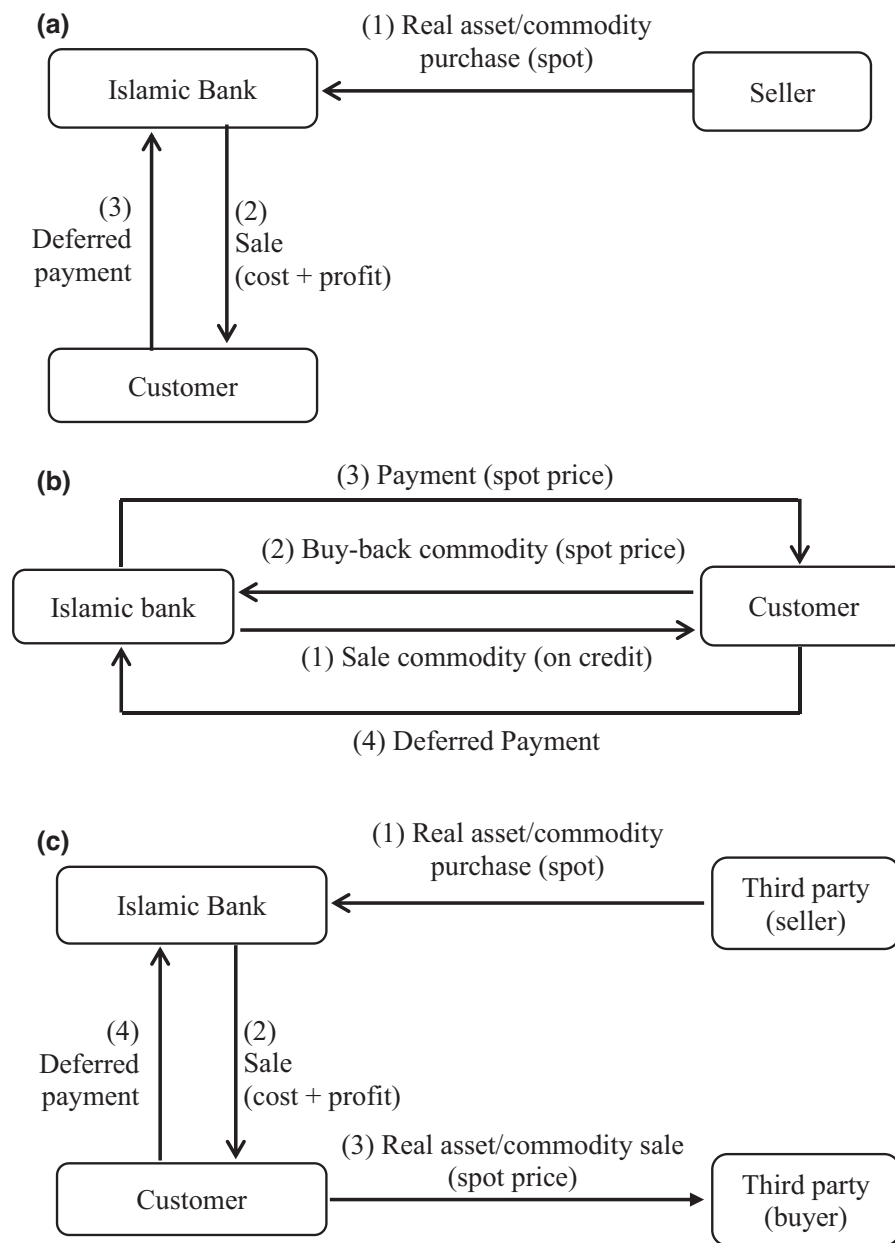


Figure 5. Simplified Murabaha, Inah and Tawarruq: (a) simplified banking Murabaha; (b) simplified sale and buy-back Inah; (c) simplified back-to-back Murabaha (organized Tawarruq). Note: (a) The real asset (i.e. commodity) is purchased and simultaneously sold to the borrower (i.e. Transactions 1 and 2) at a 'profit' with deferred payments (Transaction 3). (b) Deferred payment (4) > Spot price (3). The real asset (i.e. commodity) is offset in the simultaneous sale and buy-back of it (i.e. Transactions 1 and 2). The remaining Transactions 3 and 4 resemble a synthetic loan. (c) Here, too, the real asset is offset in the simultaneous purchase (i.e. Transactions 1 and 2). The remaining Transactions 3 and 4 resemble a synthetic loan.

independent of LIBOR as it is based on their so-called 'profit' rates instead of interest rates of CBs.

Nonetheless, employing a methodology similar to that of LIBOR, the IIBR is nothing more than an aggregation of the (local) interest benchmark plus a 'piety' premium. Therefore, the past movements of LIBOR, as the 'original benchmark,' can explain the variation in the IIBR. Based on the above discussion, we propose the following hypotheses.

- H1: The IIBR does not connect with the performance of the underlying assets (of the Murabaha transaction) in the real sector of the economy.
- H1a: The IIBR has a long-run relationship with LIBOR.
- H1b: The past movement of LIBOR can explain the variation in the IIBR.
- H1c: The IIBR has low correlations with the performance of tangible assets (comprising real estate

Table 2. Data and variables

Interest/index series	Maturities/frequency	Time period	Data source
LIBOR; IIBR; interest rate indices of each of 14 countries (see note below) where IB is being practiced	Overnight, 1-week, 1-month, 2-month, 3-month, 6-month and 1-year, all with a daily frequency	14 Nov 2011 to 1 Jul 2020	Datastream
FTSE Real Estate Index	Daily	Apr 2012 to Dec 2015	Datastream
Dow Jones (DJ) Real Estate Index	Daily	Apr 2012 to Dec 2015	Datastream
Consumer Price Index (CPI) of Bahrain, UAE, SAU and Malaysia	Monthly	Jan 2012 to Jun 2016	Datastream
Industrial Production Index (IPI) of Malaysia	Monthly	Jan 2012 to Jun 2016	Datastream

Note: The table outlines the different variables used, their frequencies, time period and data source. The 14 countries and their regions are (i) the Middle East: BHIBOR (Bahrain), SAIBOR (SAU), EIBOR (UAE), QIBOR (Qatar) and KIBOR (Kuwait); (ii) Muslim non-Middle East: KLIBOR (Malaysia), TRLIBOR (Turkey), JIBOR (Indonesia), KIBOR (Pakistan) and CAIBOR (Egypt); and (iii) non-Muslim countries: SLIBOR (Sri Lanka), JIBAR (South Africa), SIBOR (Singapore) and BIBOR (Thailand).

and consumer durables) in the real sector of the economy.

H1 tests the degree of integration between the real and financial sectors. It can be construed as an ethical examination of the 'sale-based' contract, as the Qur'anic verse (2:275) approving trade-based financing applies to the trade-credit facility in the real sector of the economy (see Jatmiko *et al.*, 2022). Here, a supplier of intermediate goods can price the same by linking them to the profit of the buyer, who is the seller of the finished goods. This would integrate the real and financial sectors as trade-credit is akin to a quasi-equity profit-and-loss sharing facility.

Price gouging-led underinvestment. We argue that price gouging, which aggravates the underinvestment issue, applies when IBs offer products indistinguishable from conventional ones at a higher cost. Moreover, the religiously conservative clients of IBs reject conventional financial services, thus endowing IBs with market power.

The higher price of Islamic financial products vis-à-vis their conventional counterparts has become traditional wisdom. In addition, the industry blames the distinct underlying risk and the certification process of their products that come at a steep cost (Hayat, Den Butter and Kock, 2013; Nawaz, 2019). However, these arguments contradict the evidence from studies showing that IBs offer similar financing products to conventional ones (El-Gamal, 2006; Khan, 2010; Kuran, 2018). Accordingly, we posit the following hypothesis.

H2: The pricing of the IIBR is higher than that of LIBOR.

Data

Table 2 reports the data and variables used in the study. The daily IIBR, LIBOR and each country's local in-

terest rate benchmarks data are collected from Datastream, from 14 November 2011 (the establishment date of the IIBR) to 1 July 2020. However, we exclude the observations before 16 April 2012 and after 30 November 2015, as the IIBR is mistakenly reported in the bid price before this period and suspended by Datastream afterwards (see Figure 6).¹¹ We also omit Friday and Sunday observations to address the mismatch bias stemming from the Middle East's distinct weekend period, where the IIBR contributors operate. To achieve a more robust inference, we examine overnight, 1-week, 1-month, 2-month, 3-month, 6-month and 1-year maturities.

We proxy the real sector of the economy (as real estate and consumer durables are the main sectors funded by IBs)¹² with two real estate indices (FTSE and DJ) as well as the CPI of four countries hosting IIBR contributing banks (Bahrain, United Arab Emirates [UAE], Saudi Arabia [SAU] and Malaysia). Datastream is also the main source of daily FTSE and DJ real estate indices and monthly CPI data (see Table 2).¹³ To test the robustness of H1c, we add another macroeconomic variable representing the real sec-

¹¹It is no coincidence that the reporting of the IIBR discontinued from 18 August 2016. This was at the dawn of the Financial Services Authority (FSA) decision to phase out LIBOR by December 2021 due to a series of unethical scandals involving the conventional benchmark rate (Aldohni, 2018). The adoption of the LIBOR methodology that is prone to manipulations signifies the lack of vision of the IIBR's proponents.

¹²Real estate (including mortgages) and consumer durables (including trading and manufacturing) constitute 63.08% of the 12 IIBR contributing banks' total assets in 2018, according to Datastream. The banks include Ahli United, Al Salam (Bahrain), Dubai Islamic Bank, Noor Bank, Al Hilal, Sharjah (UAE), Qatar Islamic Bank, Barwa, Al Rayan (Qatar), Alinma, National Commercial Bank (SAU) and RHB Bank (Malaysia).

¹³Indeed, GDP growth is arguably more appropriate for capturing the real sector of the economy. However, GDP data is only available at low frequency (quarterly to yearly for different countries), while the active period of the IIBR was rather short

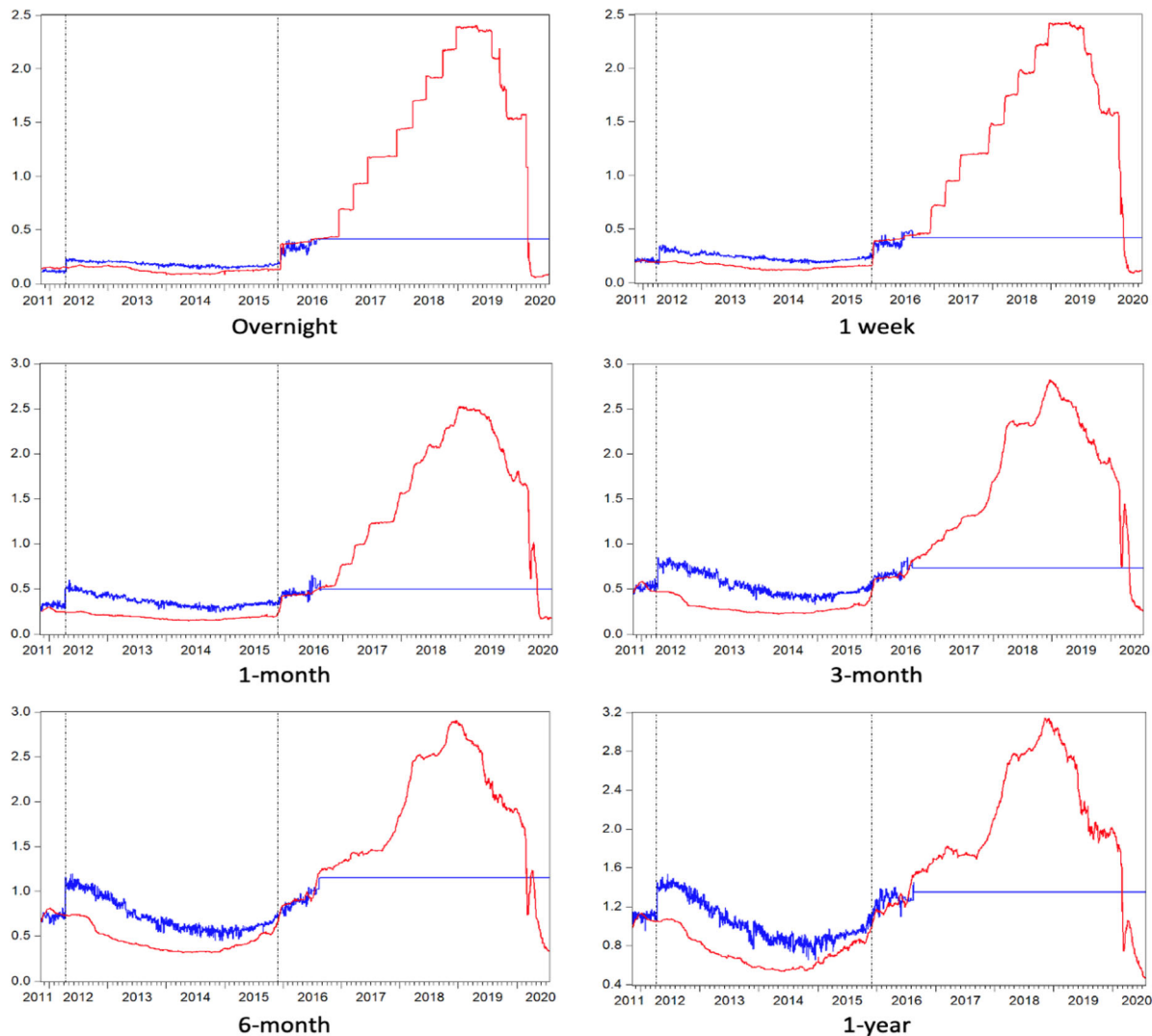


Figure 6. Time series plots. Note: The blue (thick) and red (thin) lines measure the IIBR and LIBOR as a percentage. The captions below the figures depict their maturity. [Colour figure can be viewed at wileyonlinelibrary.com]

tor of the economy, namely the IPI, which captures the dynamics of the production sector commonly financed by IBs. It complements the CPI that proxies the IBs' financing performance in the consumer sector. However, Malaysia is the only IIBR contributing country where the monthly IPI data is available in Datastream.

Empirical evidence of ribā in IBs

First, we empirically confirm the IIBR–LIBOR convergence by examining their long-run relationship using

(from the second quarter of 2012 to the third quarter of 2016, i.e. 18 quarters). This limitation leads us to use other proxies, such as the equity real estate indices of FTSE and DJ (available with daily frequency) in addition to the CPI (available with monthly frequency). These proxies also better reflect the payoff of tangible assets in the real sector, where most IB financing is targeted.

Johansen's (1991) cointegration test (H1a), as done in Azad *et al.* (2018). However, Azad *et al.* (2018) stop short of investigating the relationship's stability and the series causality. Second, we investigate the movement dependence between the IIBR and LIBOR's past variance (H1b) by (i) testing the Granger non-causality using Toda and Yamamoto's (1995) methodology and (ii) testing and generalizing our cointegration and causality findings to the 14 countries where Islamic banking is currently being practiced (see Table 2).¹⁴ Third, we expose the IIBR's detachment from the real sector of the economy by employing the GARCH–BEKK dynamic correlations (Baba *et al.*,

¹⁴Using these 14 countries enriches Nechi and Smaoui's (2019) analysis, which is limited only to the contributing countries of the IIBR in the Middle East (Bahrain, SAU, UAE, Qatar and Kuwait).

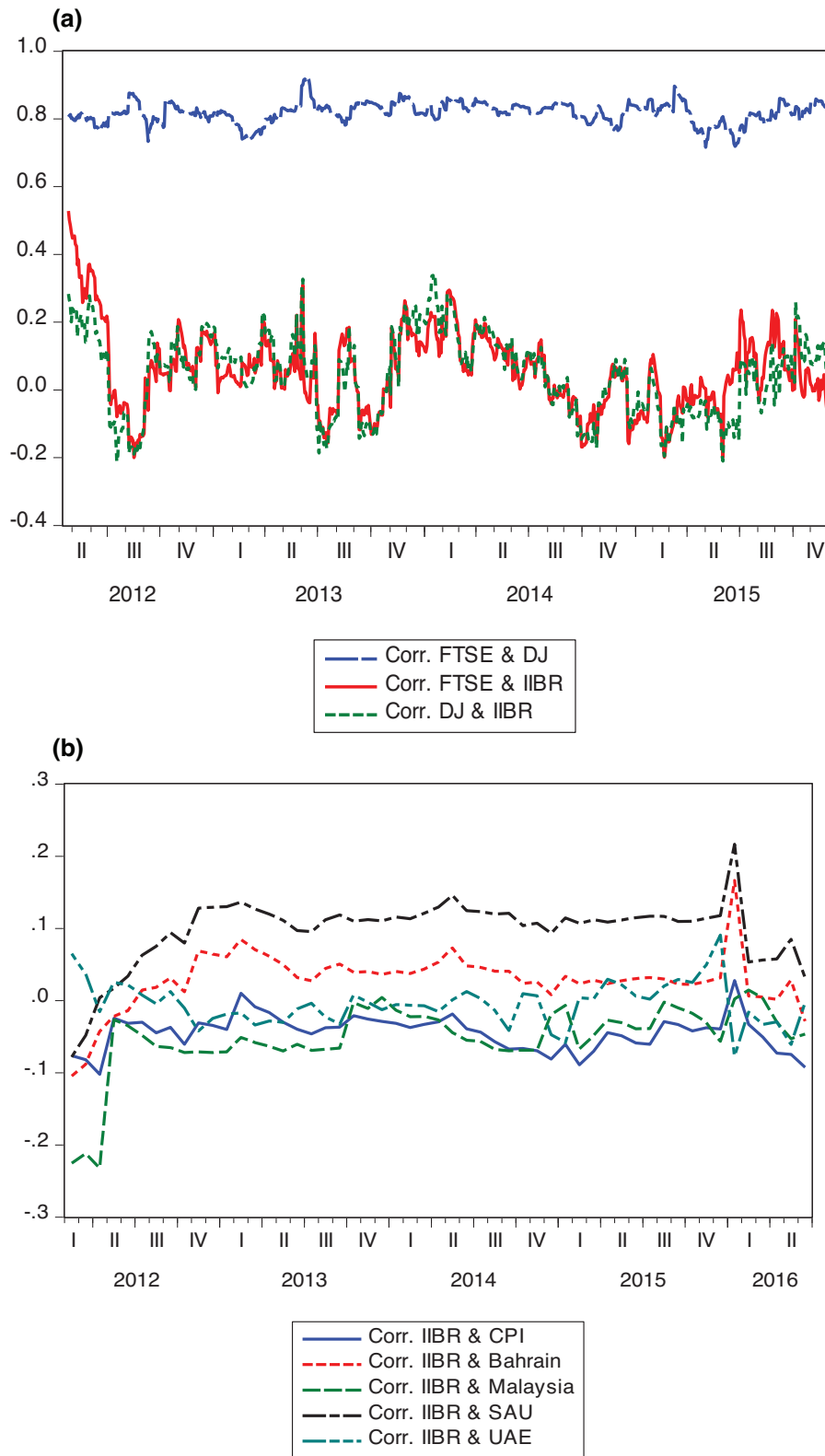


Figure 7. GARCH-BEKK dynamic correlations: (a) GARCH-BEKK dynamic correlations between the IIBR and real estate indices; (b) GARCH-BEKK dynamic correlations between the IIBR and CPIs. Note: (a) The figure depicts daily dynamic correlations between the overnight IIBR and real estate indices of the FTSE and DJ. The Friday observations are excluded for time consistency. (b) The figure depicts monthly dynamic correlations of the overnight IIBR and CPIs of four countries (Bahrain, Malaysia, SAU and UAE). The index average of these countries is denoted as the CPI. [Colour figure can be viewed at wileyonlinelibrary.com]

Table 3. Toda–Yamamoto causality results

Maturity	Chi-squared excluded variable		Direction LIBOR ⇔ IIBR
	LIBOR	IIBR	
Overnight	9.29***	1.56	⇒
1-week	1.67	0.29	×
1-month	2.32	0.97	×
2-month	3.15*	0.03	⇒
3-month	5.17*	2.64	⇒
6-month	1.80	1.58	×
1-year	3.03	0.47	×

Note: This table shows the results of the modified Wald test for the Toda–Yamamoto causality test. The right arrow [⇒] represents that LIBOR causes the IIBR and vice versa. × Indicates no directional causality between the paired series. The notations ***, ** and * represent significance at 1%, 5% and 10%, respectively.

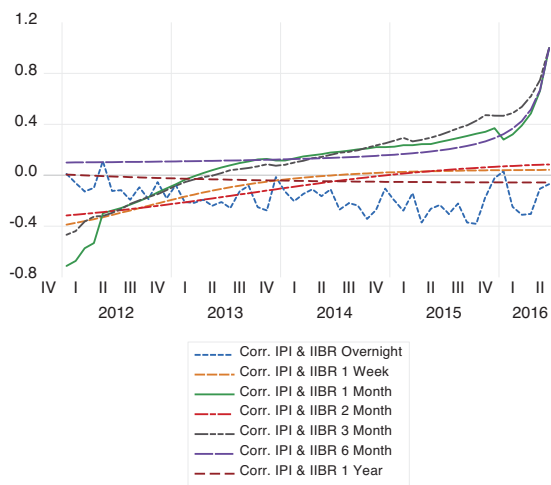


Figure 8. GARCH–BEKK dynamic correlations between the IIBR and IPI of Malaysia. Note: The figure depicts monthly dynamic correlations between the maturity varying IIBRs and the IPI of Malaysia. [Colour figure can be viewed at wileyonlinelibrary.com]

1990) (H1c). Finally, we use a set of paired difference tests to prove that the IIBR is consistently higher than LIBOR across different maturities (H2).

The long-run equilibrium between the IIBR and LIBOR. Our results, consistent with Azad *et al.* (2018) and reported in Appendix A, support H1a that the IIBR is not independent of LIBOR as the two series move together over time.¹⁵ It thus invalidates IBs main motive to disengage their pricing rates from those of CBs (an ethical issue).

Causality between the IIBR and LIBOR. Our Toda–Yamamoto causality test suggests three one-directional causality relationships between LIBOR and the IIBR, stemming from overnight, 2-month and 3-month maturities (see Table 3). For these maturities, the modified

¹⁵The findings are also robust to the inclusion of Friday observations.

Wald test substantiates that LIBOR Granger causes the IIBR and not vice versa, supporting H1b. Our findings from the country-based interest rate benchmarks also suggest that some interest-based indices can explain future movements of the IIBR. Table 4 demonstrates one-directional Granger causalities from at least 9 out of 14 local rates. In our sample of the non-Middle Eastern Muslim countries (Malaysia and Indonesia), the conventional benchmarks Granger cause the IIBR, particularly in the short-term maturities. Finally, Sri Lanka and Thailand are among the non-Muslim countries where their interest-rate benchmarks Granger cause the IIBR.

Connection with the real economy. Here, we test whether the IIBR genuinely represents the equilibrium rates derived from the supply and demand of tangible assets in the real sector of the economy. We illustrate the dynamic correlations across the IIBR and the two real estate indices (FTSE and DJ) as well as country-level CPIs (and the average) of four countries by employing the GARCH–BEKK methodology after ensuring their stationarity.¹⁶ We determine the optimal lag length for the ARMA (mean equation) following the standard autocorrelation function (ACF) and partial autocorrelation function (PACF) methods.

Figure 7(a) shows that the IIBR has relatively low time-varying correlations with real estate FTSE and DJ indices. The correlations range between −0.2 and 0.53 for the IIBR–FTSE and between −0.21 and 0.34 in the IIBR–DJ case. The former has an average of 0.06, while the latter’s is 0.05. These numbers are consistent across different maturities of the IIBR and are statistically insignificant, as shown in Table 5.

Figure 7(b) also depicts the divergence of the overnight IIBR from the four contributing countries’ CPIs. The average (of four countries’) CPI also has virtually zero correlation with the IIBR, with an average value of −0.05, as reported in Table 5. For the overnight IIBR, the three Middle Eastern countries’ CPIs have similar correlations with the IIBR. Contrarily, the relationship between Malaysia’s CPI and the IIBR is generally negative and somewhat different from that of the other countries. Table 5 confirms that our results and analysis are consistent across various maturities. Overall, the correlations are statistically insignificant, supporting H1c that the IIBR is uncorrelated with the real economy.

We test the robustness of H1c using the IPI of Malaysia. Table 6 and Figure 8 indicate a small dynamic correlation between this IPI and different maturity IIBRs, where the mean correlations tend to be negative for shorter maturity (overnight and 1-week) ones. However, the z-statistics illustrate that the correlations across different maturities are insignificant.

¹⁶These four countries are Bahrain, Malaysia, SAU and UAE.

Table 4. Toda–Yamamoto test of the IIBR and local interest rate benchmarks

Country	Overnight		1-week		1-month		3-month		6-month		1-year	
	Local	IIBR	Local	IIBR	Local	IIBR	Local	IIBR	Local	IIBR	Local	IIBR
Bahrain	36.94***	11.19	31.61***	7.41	0.52	3.67	1.56	1.94	0.16	0.67	0.66	0.77
Qatar	10.37	6.25	4.00	7.31	2.34	2.36	0.33	3.57	0.16	0.67	0.67	3.98
UAE	n.a	n.a	6.12	2.58	152.3***	5.47	110***	6.05	119***	4.41	64.1***	5.42
SAU	n.a	n.a	n.a	n.a	11.38**	7.62	5.94	2.93	10.27	7.71	7.89	4.48
Kuwait	n.a	n.a	n.a	n.a	0.08	7.63	7.28	4.37	3.09	4.68	18.55***	8.99
Malaysia	11.37**	6.45	7.08*	3.24	5.36	3.08	0.97	3.05	0.74	4.83	1.12	5.97
Turkey	0.90	2.98	1.89	3.47	1.60	1.13	3.43	12.56**	2.35	5.81	1.75	1.47
Indonesia	15.32***	3.98	0.75	0.66	0.86	0.71	1.29	1.95	1.13	1.27	1.35	1.81
Pakistan	n.a	n.a	5.23	3.13	0.66	0.30	0.73	0.74	2.53	0.75	3.27	3.40
Egypt	n.a	n.a	12.52*	12.84*	0.29	0.26	6.15	6.09	2.73	6.08	2.38	8.79
Sri Lanka	20.00***	4.97	68.46***	19.04***	77.43***	28.71***	5.71	10.99	22.76***	23.76***	27.56***	36.10***
South Africa	n.a	n.a	n.a	n.a	3.96	1.50	5.64	2.00	6.30	6.69	6.21	6.41
Singapore	n.a	n.a	n.a	n.a	1.11	1.60	0.83	4.34	1.09	4.44	1.73	2.22
Thailand	10.11**	3.32	16.15***	3.00	15.90***	1.18	14.25	3.77	4.58	2.48	9.74**	1.55

Note: The table shows the chi-squared values of the Toda–Yamamoto test between the IIBR and 14 local interest-rate benchmarks. The terms below maturities represent the excluded variables. The abbreviation n.a means the country has no data in a particular maturity. The notations ***, **, and * represent significance at 1%, 5% and 10%, respectively.

In sum, the findings so far support H1, that is, not only does the IIBR converge with the interest-based benchmark, it also deviates from the real sector of the economy, hence the ‘unjust price’.

Price gouging. This subsection examines whether the IIBR involves price gouging. Our results suggest that the IIBR statistically converges to the interest-based benchmark (LIBOR) and diverges from the real sector of the economy. In the ethical context, the IIBR should be similar to LIBOR. However, Figure 6 indicates a premium (i.e. positive incremental value) of the IIBR over LIBOR. This illustrates the inefficiency in the IBs’ pricing mechanism of making the aggregate ‘borrowing’ rate more expensive.

Here, we employ the parametric z and t-statistic and the non-parametric Wilcoxon sign-rank test. Table 7 reports significantly positive mean differences between the IIBR and LIBOR across all seven maturities, gradually increasing from 6 bps overnight to 30 bps in the case of 1-year maturity. Therefore, the IIBR is priced significantly higher than its conventional counterpart (i.e. LIBOR), which is consistent with H2.

To sum up, this section illustrates that IBs’ pricing still embeds the two elements of *ribā*, namely (i) risk-shifting, stemming from the detachment of the underlying real transactions and (ii) underinvestment, ensuing from the unjust price in the form of price gouging. We thus conclude that *ribā* is still pervasive in the Islamic banking system, which is against its religious ethos and casts doubt on its so-called ethical business model. We also infer that it is foolhardy for IBs to operate in the financial sector of the economy as it is futile to create their distinct index of profitability. It is better for them to engage in the real sector employing risk-sharing facilities such as trade credit using a specialized (debt-free) universal banking architecture as hypothesized in Jatmiko et al. (2022).

Gharar in IBs

Construing gharar from the moral objectives of Islam

The second primary prohibition of Islamic finance, *gharar*, stems from the trilateral Arabic root *ghrra*, which denotes deceiving or confounding the mind (Thomas, 1995). *Gharar* pertains to legal ambiguities in fulfilling contracts. From a *Maqāsid* perspective, it can be due to asymmetric information or excessive risk (El-Gamal, 2006). Here, we establish the close connection between *gharar* and *ribā*, where the ethical objective of the former’s prohibition is to prevent the latter’s adverse impact (see again Figure 2). This is consistent with Ibn Taimīyah, who argues that *gharar* is not allowed as ‘it leads to dispute, hatred, and devouring others’ wealth wrongfully’ (El-Gamal, 2006, p. 59). The GFC is an ideal example of how *gharar* in high-leverage finance

Table 5. Average GARCH-BEKK dynamic correlations

IIBR	FTSE	DJ	CPI Bah	CPI UAE	CPI SAU	CPI MAL	Av. CPI
Overnight	0.06 (0.88)	0.05 (0.74)	0.03 (0.99)	-0.01 (1.00)	0.10 (0.98)	-0.05 (0.97)	-0.05 (0.98)
1-week	-0.01 (0.77)	0.02 (0.73)	-0.01 (0.98)	0.04 (0.96)	0.04 (0.98)	-0.02 (1.00)	-0.03 (0.95)
1-month	0.02 (0.56)	0.00 (0.79)	-0.06 (1.00)	-0.02 (1.00)	-0.05 (1.00)	0.00 (1.00)	-0.01 (1.00)
2-month	-0.01 (0.87)	-0.01 (0.99)	-0.02 (1.00)	-0.01 (1.00)	-0.02 (1.00)	-0.36 (1.00)	-0.20 (1.00)
3-month	-0.00 (0.86)	0.00 (0.89)	-0.01 (1.00)	0.00 (1.00)	-0.01 (1.00)	-0.25 (1.00)	-0.10 (1.00)
6-month	-0.01 (0.72)	-0.00 (0.77)	-0.03 (0.99)	-0.07 (1.00)	0.22 (0.92)	-0.28 (1.00)	-0.25 (0.99)
1-year	0.03 (0.35)	0.01 (0.67)	-0.03 (0.99)	-0.02 (0.99)	0.03 (0.96)	-0.44 (1.00)	-0.32 (0.99)

Note: The table presents the (i) average daily dynamic correlations between the IIBR across various maturities and real estate indices (of FTSE and DJ) and (ii) monthly dynamic correlations between the IIBRs and CPIs of Bahrain, UAE, SAU, Malaysia and the average of the four countries' CPIs. The dynamic coefficient of correlations is estimated by employing the GARCH-BEKK model. The values in parentheses depict the probability of z-statistics.

Table 6. Descriptive statistics of dynamic correlation between the IIBR and IPI of Malaysia

Dynamic correlation	Obs.	Mean	Min.	Max.	z-Stats
IPI & IIBR Overnight	54	-0.177	-0.383	0.110	-0.213
IPI & IIBR 1-week	54	-0.079	-0.388	0.042	0.123
IPI & IIBR 1-month	54	0.095	-0.712	0.999	0.466
IPI & IIBR 2-month	54	-0.092	-0.316	0.084	0.400
IPI & IIBR 3-month	54	0.128	-0.469	0.999	1.088
IPI & IIBR 6-month	54	0.187	0.099	0.998	-0.264
IPI & IIBR 1-year	54	-0.039	-0.057	0.005	-0.188

Note: The table presents the descriptive summary of the monthly dynamic correlation between IPI of Malaysia and the IIBR across different maturities. Malaysia is the only IIBR contributing country where the monthly IPI data is available in Datastream.

Table 7. Paired difference tests

Maturity	Mean (%)		Diff. (%)	z-Test	t-Test	Wilcoxon
	IIBR	LIBOR				
Overnight	0.18	0.12	0.06	44.79***	84.21***	0.00***
1-Week	0.24	0.15	0.09	55.23***	121.68***	0.00***
1-Month	0.36	0.19	0.17	67.27***	108.75***	0.00***
2-Month	0.45	0.24	0.21	54.44***	91.86***	0.00***
3-Month	0.54	0.29	0.25	47.55***	79.36***	0.00***
6-Month	0.72	0.45	0.27	33.96***	79.36***	0.00***
1-Year	1.03	0.73	0.30	31.58***	73.68***	0.00***

Note: The table depicts various paired difference tests between the various maturities of the IIBR and LIBOR. We employ both parametric (z- and t-statistic) and non-parametric (Wilcoxon sign-rank) tests. The null hypothesis for all of them is that the difference between the IIBR and LIBOR is higher than zero (one-tailed positive). The notations ***, ** and * represent significance at 1%, 5% and 10%, respectively.

created 'massive destruction of wealth... allowing some to get very rich at the expense of others' (Nielsen, 2010, p. 300).

The above definition is supported by mainstream and banking literature, which attributes the *gharar* issue to market frictions stemming from ex-ante and ex-post information asymmetry (i.e. adverse selection and moral hazard, respectively; Stiglitz and Weiss, 1981). CBs (IBs)

make collateralized, that is, tangible asset-backed loans (Murabaha), as elaborated below. The real asset-backed nature of these facilities helps banks mitigate adverse selection as the 'seller' of assets (i.e. the IBs) (or facility provider in the case of CBs) conducts a thorough due diligence process before releasing funds in the escrow process when the title of the tangible asset changes hands (Wojakowski *et al.*, 2019). Banks also address the

ex-post change in behaviour of borrowers (moral hazard) by mandating the following in the indenture of their loan ('buy-sell') contract: (i) minimum maintenance of the tangible collateral; (ii) payment of taxes; and (iii) adequate insurance coverage of the collateral (Smith and Warner, 1979). Bankers' ability to uncover borrower characteristics is documented in the empirical literature (James, 1987).

Second, excessive risk-taking behaviour is pertinent in banks' structure as they employ tenure arbitrage (i.e. underwrite long-term facilities and borrowing against short-term deposits) to make profits. This, in essence, involves the use of an upward-sloping yield curve (Bagus and Howden, 2010). Diamond and Dybvig (1983) argue that banks' nature is prone to crisis as it embodies excessive risk-taking by transforming long-term illiquid assets into short-term liquid liabilities. While this mechanism allows risk-sharing among depositors with different time preferences of consumption, it aggravates bank runs caused by liquidity mismatch.¹⁷ A coordination failure incentivizes significant 'impatient' depositors to withdraw their money simultaneously, regardless of economic conditions. Those who would otherwise be happy to keep their money in the bank for future consumption get carried away in the panic to make withdrawals. This becomes even worse in poor economic conditions (Allen and Gale, 1998).

This paper argues that the long-term nature of banking facilities exacerbates the agency cost of debt due to the increase in the collateral risk under a geometric Brownian motion (or a lognormal random walk; Fama, 1970; Gau, 1987). Our view contrasts with the literature, which assumes asymmetric information to subsume agency cost of debt.

Theoretical evidence of gharar in IBs

A fragile financial system transferring all risk to the 'buyer' of the asset (i.e. the borrower) prices its facilities by imposing a premium based on default cost. Thus, financial fragility (a technical issue) aggravated by not conceptualizing the *Maqāsid* in a truly Islamic architecture (a *Shari'ah* issue) impacts the welfare of society (an ethics issue). Here, we apply the above definition of *gharar* to examine the ethicality of IBs by putting forth a question: Does Islamic banking resolve the problems of excessive risk-taking behaviour that aggravate the agency cost of debt?

The asset side of IBs. The schematic balance sheet of IBs deviates from that of CBs, as contrasted in Figures 9

¹⁷IBs distinguish themselves from CBs by linking their assets with their liabilities by employing the medieval *Mudharabah* (profit-sharing) contract. This enables them to forgo paying their depositors in a poor state of the economy when they are not profitable, as elaborated in the text.

and 10, respectively. On the asset side, most financing is conducted via the collateral-based Murabaha (conventional) contract, which helps in averting asymmetric information as elaborated earlier in this section.¹⁸ This implies a symmetric information (or rational expectations) equilibrium involving the trade-off of either a default-free or a default-prone financial claim, as depicted at the top of Figure 9.

The default-free Murabaha claim involves state-contingent free payoffs of the facility, while the default-prone claim denotes the contract's state-contingent nature. It also illustrates the inability of the 'buyer' of the collateral (i.e. the borrower) to meet their debt obligation in states 0Z. This is because the payoffs AB are insufficient compared to P_d . This discourages the borrower from maintaining the collateral, leading to its deterioration to A'B'. The quadrilateral ABB'A' represents the costs of risk-shifting and an embedded put option to default that is increasing in the money.

Four related issues are pertinent in multi-period symmetric information Murabaha equilibria, as elaborated in the proposition below.

Proposition 1. *The multi-period Murabaha rational expectations equilibrium (REE) displays the following features when the loan's underlying collateral follows a geometric Brownian motion (GBM). First, the risk of the underlying collateral increases over time, thereby inducing the borrower's equity to go underwater (see Figure 3). Second, the allocative efficiency of a default-free equilibrium vis-à-vis a default-prone one decreases with increasing time. Third, this prompts borrowers to opt for a default-prone facility. Fourth, this induces instability on the asset side of banks.*

Proof.

1. The increase in the risk of banks' underlying collateral over time is a property of a GBM and is described in Fama (1970) and Gau (1987).
2. The increase in the risk of the underlying collateral over time makes the loan-to-value (LTV) ratio (and thus the allocative efficiency) of a default-free loan lower than a default-prone one (Wojakowski *et al.*, 2019; see Figure 11).
3. The increase in LTV (along with the cost of the facility) spurs borrowers to prefer a default-prone facility over a default-free one as they do not have to allocate more downpayment to 'purchase' the asset (Wojakowski *et al.*, 2019).

¹⁸This feature is not present in the case of *Inah* and *Tawarruq*, making these two contracts mimic plain vanilla loans (see Figures 5B and C).

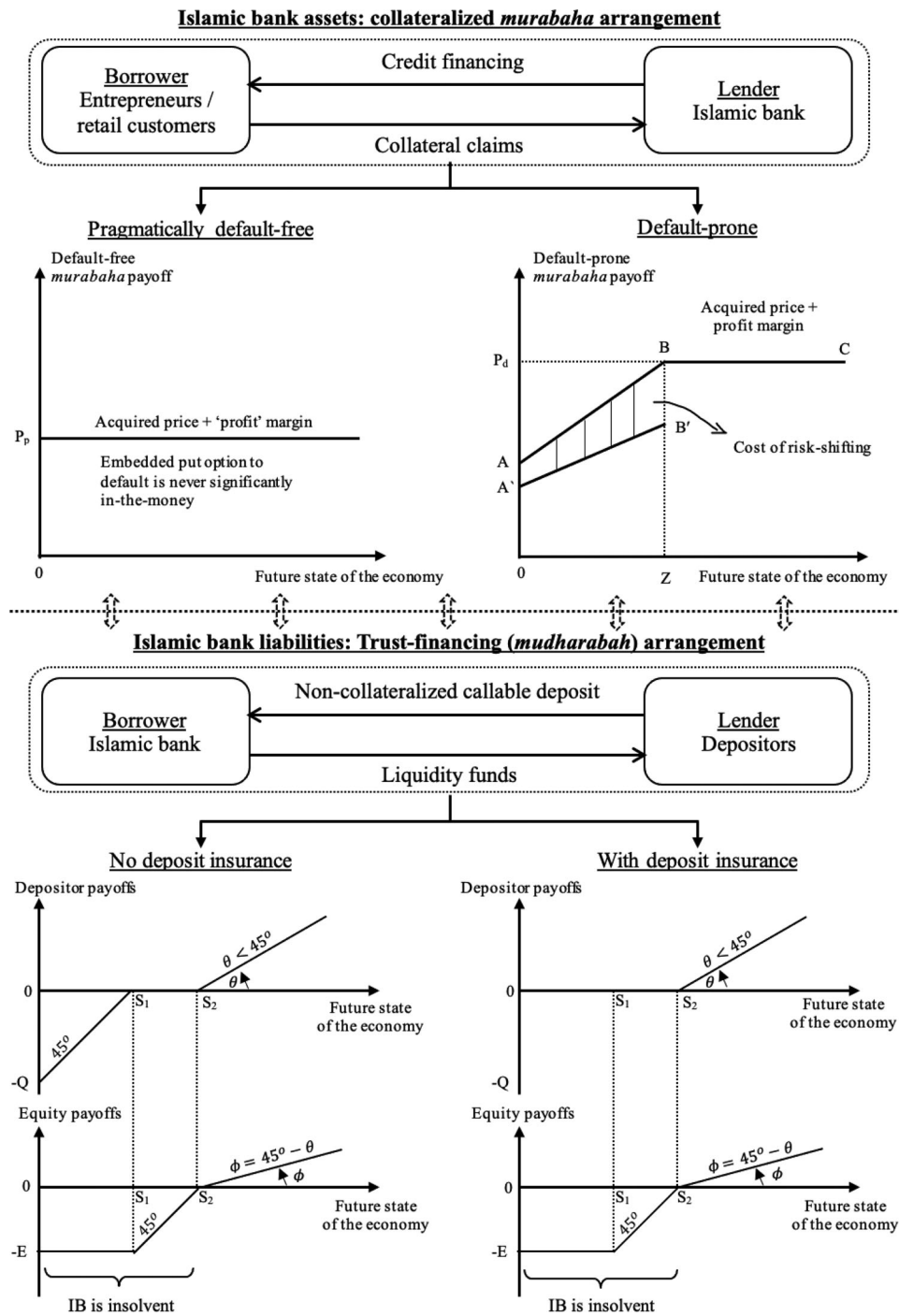


Figure 9. Schematic flow of asset transformation in Islamic bank balance sheet

4. The tilt of the banks towards default-prone loans induces instability on the asset side of the same.

The above is linked to the *Inah* and *Tawarruq* facilities equilibrium as below.

Lemma 1. *The multi-period Inah/Tawarruq REE is no better than the above Murabaha one.*

Proof. Theoretically, the underlying equity in an *Inah/Tawarruq* contract without any recourse to the borrower's personal assets (or guarantees) is immediately 'underwater' at the onset of a loan. This is akin to Figure 3 with $t_1 = 0$ as $Q_0 > V_0 = 0$. That is, $Equity_0 = V_0 - Q_0 < 0$. In other words, an *Inah/Tawarruq* contract aggravates risk-shifting. However, it is no better than the above Murabaha one with personal guarantees.

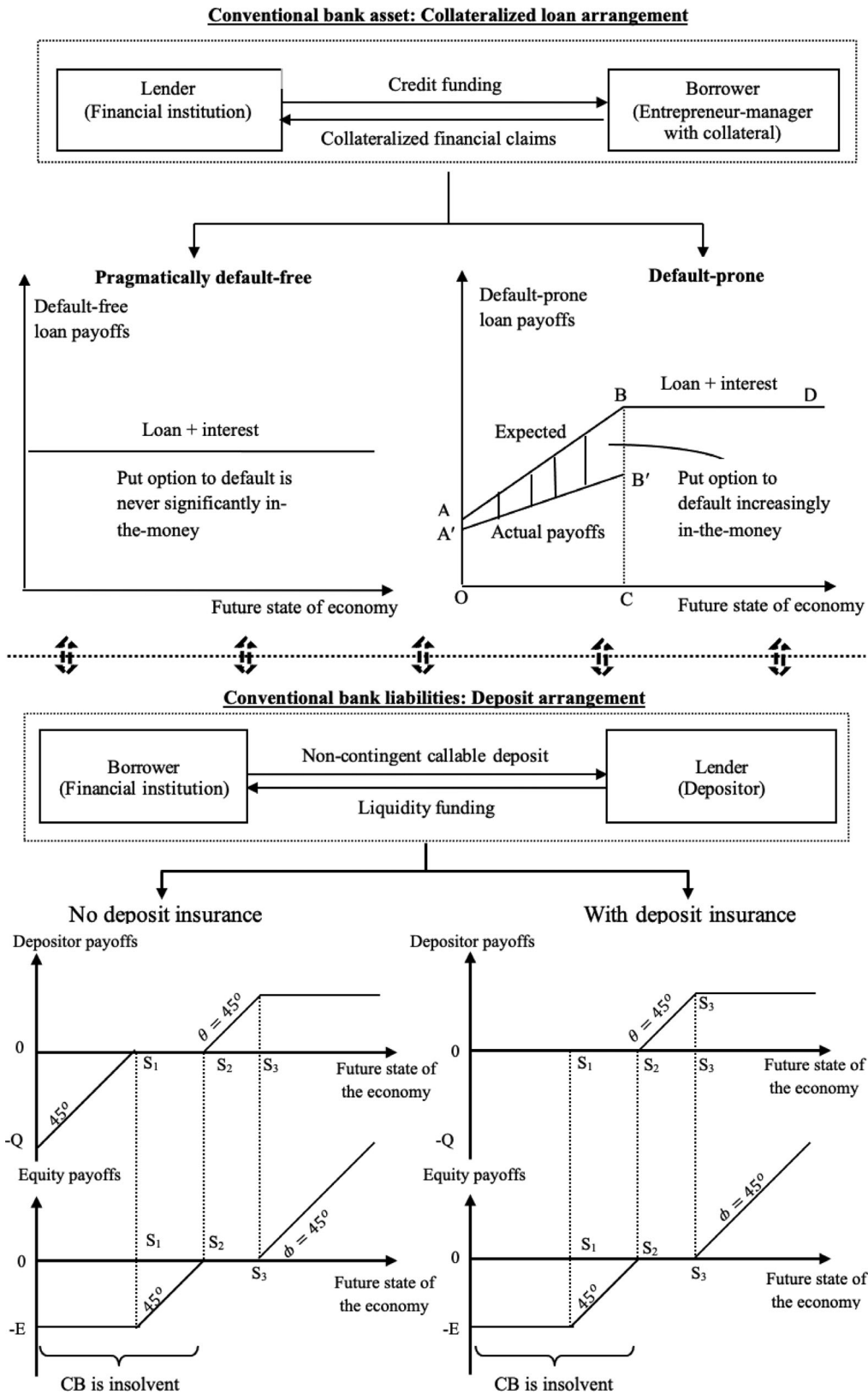


Figure 10. Schematic flow of asset transformation in a conventional bank balance sheet

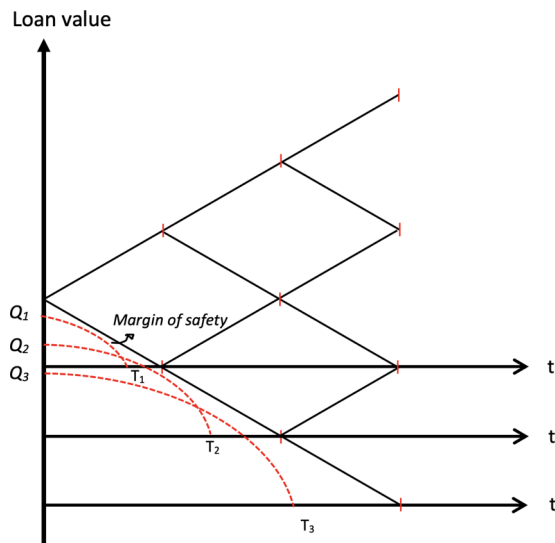


Figure 11. The decrease in allocative efficiency of the default-free Murabaha facility. Note: As the tenure (t) increases, the allocative efficiency of the default-free Murabaha facility decreases. This implies that as t increases, the Murabaha loan becomes more fragile (i.e. prone to rupturing default). [Colour figure can be viewed at wileyonlinelibrary.com]

An increase in the tenure of IBs' debt facilities exacerbates agency costs of debt, thereby jeopardizing the financial architecture's systemic risk. Proposition 2 below elaborates on this from the perspective of Murabaha finance. This result is extended to the case of *Inah/Tawarruq* in Lemma 2.

Proposition 2. *The escalation in the probability of risk-shifting orland underinvestment with the increase in the term to maturity of the Murabaha facility aggravates the downside risk (and thus the systemic risk) of the 'Islamic' banking system, hence increasing the fragility of the system. This is illustrated by the following mathematical conditions:*

$$\lim_{t \rightarrow \infty} \text{Prob}(V_t < Q_t) = \lim_{t \rightarrow \infty} y_t \rightarrow 1$$

orland

$$\lim_{t \rightarrow \infty} \text{Prob}(NOI_t < DO_t) = \lim_{t \rightarrow \infty} \zeta_t \rightarrow 1$$

where V_t , Q_t , y_t and ζ_t , respectively, represent the value of the underlying collateral, the amortized value of the Murabaha facility, the probabilities of risk-shifting and underinvestment at time t . NOI_t and DO_t , respectively, imply the net operating income and debt obligation at time t .

Proof. Figure 12(a) contrasts the 'random walk' of the underlying collateral with the value of the Murabaha facility with increasing tenure, that is, when $T_n > T_{n-1} > \dots > T_2 > T_1$. The asset value (V_t) is

bounded on the lower and upper side by an envelope, incorporating its drift and the random movements around it with risk increasing with time (i.e. $\sigma\sqrt{t}$ to be more precise) (Fama, 1970; Gau, 1987). The Murabaha facility (Q_t) intersects the asset value twice (i.e. when the asset declines and rebounds from its lows). The region between the two points of intersection denotes the equity trading 'underwater', leading to default. As the facility's tenure is increased, this area of 'equity underwater' increases. This increases the probability of default, with increasing terms culminating in a maximum of 1. Figure 12(b) illustrates the increasing cost of debt (DO_t) with increasing tenure (T), leading to increased hardship and, thus, underinvestment issues for the borrower. This result stems from an upward-sloping yield curve (Bagus and Howden, 2010). The probability here, too, culminates to a maximum of 1.

Lemma 2. *The increase in the tenure of an Inah/Tawarruq facility heightens the 'Islamic' banking system's downside (and hence the systemic) risk, thereby increasing its fragility.*

Proof. The financial system instability in *Inah/Tawarruq* is deduced from Lemma 1, which states that the corresponding REE of these two facilities is not better than that of a Murabaha REE.

The liability side of IBs. The Profit-sharing Investment Account (PSIA) is the norm on the IBs' liability side. The PSIA comprises an equity-based *Mudharabah*. Here, the depositors' payoffs are contingent on the performance of the IB's portfolio. This feature should make IBs more stable and less fragile than CBs, as it links assets with liabilities (Abedifar, Molyneux and Tarazi, 2013). However, the PSIA requires depositors to bear the loss in poor states of the economy (i.e. in the region OS_1 when the IB has no deposit insurance; see the left-hand side of the lower part of Figure 9). The situation is the opposite when the IB has deposit insurance (see the right-hand side of the lower part of Figure 9). That is, the depositors are absolved of their losses by the government. The profit-sharing kicks in after state S_2 , when both the depositors and the IB break even. The depositors are granted a fraction ($\tan \theta$) of the profits, while the IB retains $(1 - \tan \theta)$ of the profits.

Nonetheless, the negative equity of the IB in state S_2 in both cases (with or without deposit insurance) scares the depositors into believing that the bank may cease to function in the near future. In a fractional-reserve banking system, where banks generally keep a small portion of their assets in cash, depositors rush to liquidate their accounts as they believe the IB may become insolvent. This is termed a 'bank run' in the literature. As the run evolves, it generates its own momentum. That is, as more depositors withdraw cash, the prospect of the IB's

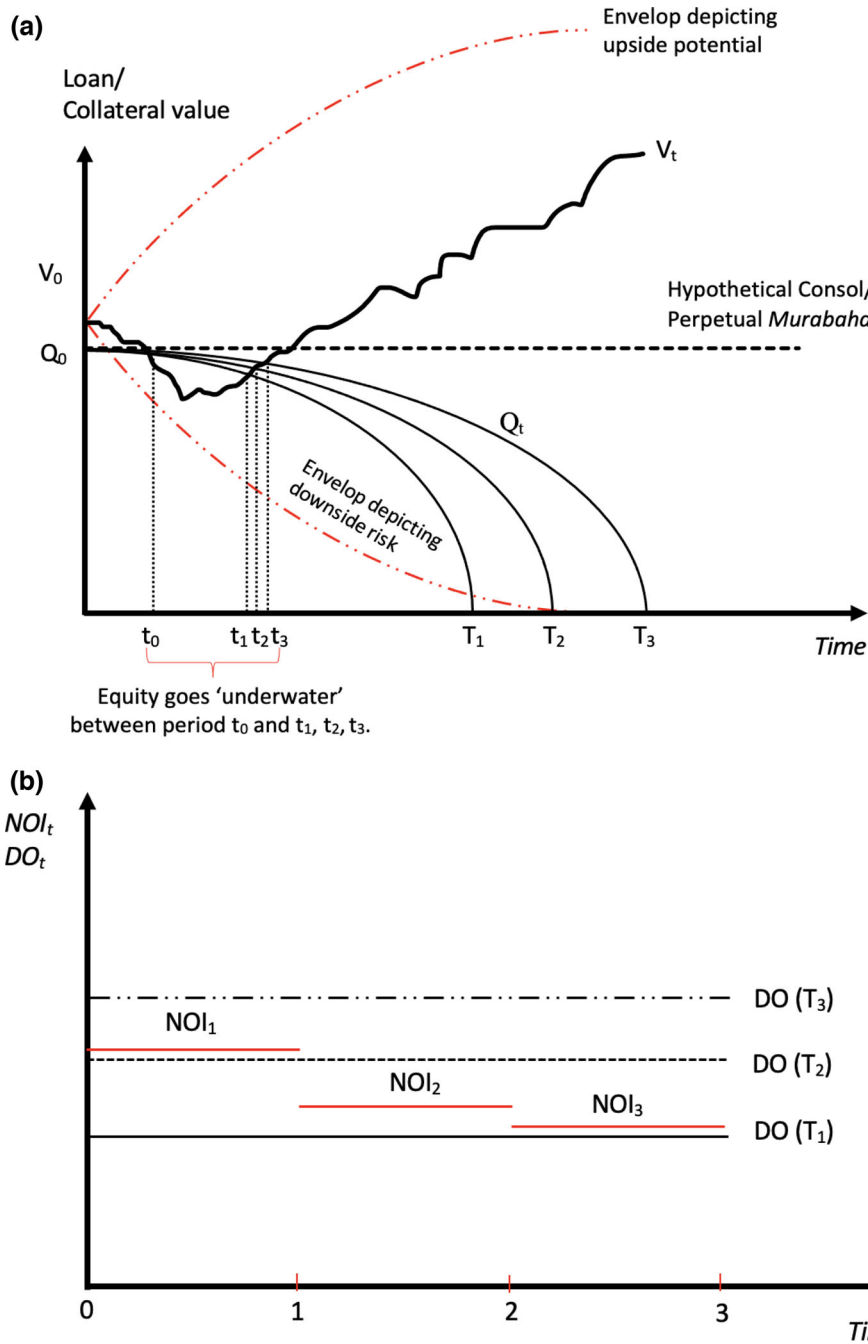


Figure 12. (a) Gharar escalating the problem of ribā in terms of risk-shifting: It depicts how an increase in the term to maturity enlarges the area where the equity is 'underwater', escalating the probability of risk-shifting. (b) Gharar escalating the problem of ribā in terms of underinvestment: It illustrates how an increase in the contract period increases the debt obligations, intensifying the underinvestment issue. [Colour figure can be viewed at wileyonlinelibrary.com]

default increases, provoking further withdrawals. This destabilizes the IB to a critical situation where it runs out of cash and faces sudden bankruptcy. This complements the results of Diamond and Dybvig (1983) and is elaborated in Proposition 2.

To conclude, *gharar* (excessive risk stemming from the agency cost of debt) ensuing from the asset and liability sides of the Islamic banking system could infect

the whole system. Our theoretical analysis provides an economic intuition of the fragility of the banking system, illustrated empirically in Delis, Hasan and Tsionas (2015), Nguyen, Nguyen and Sila (2019) and Ayadi et al. (2021). Contrasting Figures 9 and 10, we infer that the risk exposure of IBs is moderated a bit but is aggravated in the case of CBs. That is, IBs manage systemic risk relatively better than CBs. Despite this, we conclude

that IBs – while promoting themselves as ethical entities – do not adhere to the objectives (*Maqāsid*) of Islamic law while developing their financing products.

The superficiality of the *Sharī'ah* supervisory boards

The two preceding sections have demonstrated that the *Sharī'ah* rulings (*Ijtihād*) of 'sales-based' contracts have not incorporated the *Maqāsid* of *ribā* and *gharar*. The reason is the utter reliance of the *Sharī'ah* scholars on the nomenclature (developed roughly 1300–1400 years ago) of assets with non-*ribāwi* characteristics (*Mal-Ghair-Ribāwi*) as elaborated by al-Zuhayli (2006). It is school-specific and thus incoherent. It has not been updated through the centuries, except for Ibn 'Ashur (2006), who discusses the philosophy of financial transactions. The contemporary 'Islamic' banking architecture (on the asset side) does not improve the *ribāwi* financial architecture and drastically impacts social welfare. It also violates the traditions of Prophet Muhammad, endorsing the use of risk-dispersing facilities, mitigating systemic risk and thereby improving risk management (Azrak and Hazaa, 2021). It is, therefore, essential to evaluate the role of SSBs as a distinguishing feature of IBs in reinforcing the ethical issues of *ribā* and *gharar*.

SSBs are responsible for enhancing the *Sharī'ah* governance through advisory and supervisory roles. It is mandated that at least three scholars trained in Islamic law must sit on a bank's board for it to be legally labelled 'Islamic' (Al Mannai and Ahmed, 2019). This additional layer of governance is claimed to positively impact IBs' performance (Mollah and Zaman, 2015) and reduce managers' risk-taking behaviour (Mollah, Skully and Liljebloom, 2021). However, these studies have failed to account for IBs' different ethical foundations. Quite the contrary, our research shows that SSBs have yet to bring about superior performance and stability as far as IBs' moral identity is concerned. Specifically, ethical considerations are missing in the product development process. This raises a pressing question regarding their institutional efficacy.

In their defence, SSB members blame their limited power and lack of communication with other stakeholders (Hasan, 2014). Their role in reinforcing *Sharī'ah* compliance conflicts with managers, who strive to maximize shareholders' profits (Ullah, Harwood and Jamali, 2018). The fact that SSB members are hired and paid by the bank weakens their bargaining power and compromises their independence (Al Mannai and Ahmed, 2019).

Nonetheless, the root cause of the issue is the lack of trust towards SSB members' ability to integrate economic, Islamic law and ethical aspects in the product de-

velopment process (Hasan, 2014). This is why SSB members are treated as mere outsiders by IBs. Their expertise in Islamic law is necessary but not sufficient. Developing ethical Islamic banking products requires a deeper understanding of the technicality of financial instruments, institutions and markets that most SSB members lack (Hasan, 2014). Many even have a limited perspective in defining ethics as a mere investment in permissible sectors (Ullah, Harwood and Jamali, 2018). They are reluctant to allow people trained in other disciplines on the board to fill this gap (Hasan, 2014). Moreover, many of them sit across different SSBs to the extent that the top 20 monopolize the certification for roughly half of the market (Hayat, Den Butter and Kock, 2013). Thus, unsurprisingly, the select group of scholars construed as the 'gatekeepers of the Islamic financial circuits' has let down the innovation process of IBs (Gözübüyük, Kock and Ünal, 2020).

Conclusion

This study examines the morality encompassing IBs' business model by integrating the rich literature in ethics, Islamic law and banking. We employ the *Maqāsid* lens with the virtue ethics of Solomon (2003), Wade (2010), Ali (2014) and Bucar (2018). This is conducted in harmony with banking business model studies (Diamond and Dybvig, 1983; Stiglitz and Weiss, 1981), allowing us to define (i) *ribā* as wrongful expropriation of others' assets emanating from financial decoupling and unjust price gouging and (ii) *gharar* as asymmetric information or excessive risk-taking.

With respect to *ribā*, our findings document financial decoupling in the IIBR-linked debt contracts displaying the long-run cointegration with LIBOR. Furthermore, our Toda–Yamamoto approach illustrates LIBOR's past movements, thereby predicting the contemporaneous pattern of the IIBR. The GARCH–BEKK method also shows very low dynamic time-varying correlations between the various maturities of the IIBR and proxies of the real economy, namely the real estate and consumer goods indices.

Our findings also depict price gouging in the debt-based *Murabaha*, *Inah* and *Tawarruq* facilities to conclude that the IIBR is persistently priced higher than LIBOR. From this result, we deduce that the IIBR's 'piety' premium leads to underinvestment and potentially economic stagnation. This result affirms reports in the popular press that IBs have extensive liabilities to compensate (The Economist, 2018).

With respect to *gharar*, we advance a theoretical model to examine whether IBs' unique balance sheet structure can alleviate the problems of asymmetric information and excessive risk-taking. On the asset side, the collateral-based *Murabaha* contract mitigates the

ex-ante and ex-post asymmetric information due to (i) meticulous due diligence and (ii) underwriting iron-clad contracts, deterring borrowers from changing their behaviour (Smith and Warner, 1979; Wojakowski et al., 2019). However, the ‘random-walk’ feature of the collateral destabilizes the asset side of the IB as it allows for the asset values to drift lower than the residual value of the Murabaha facility. This makes the equity go ‘underwater’ and provokes the borrower’s default. Furthermore, the equity feature of PSIA, on the liability side of the IBs, bestows instability as depositors bear the risk of IBs’ collapse. This aggravates bank runs and the systemic risk in the financial system. This theoretical result complements the empirical perspective of Delis, Hasan and Tsionas (2015), Nguyen, Nguyen and Sila (2019) and Ayadi et al. (2021).

Our findings thus question the role of SSBs in safeguarding the morality of IBs. On the contrary, the SSB endorsement allows the industry to inundate the market with products tainted with *ribā* and *gharar*, thereby aggravating financial fragility. The idiosyncratic financial difficulties faced by IIB of Denmark, IBL of South Africa, IFH of Turkey and Muamalat Bank of Indonesia substantiate our results.

Our study has important managerial decision-making and policy implications too. On managerial decision-making, first, our study illustrates the lack of economies of scale in the pricing of IBs’ facilities in contrast to CBs, which aggravate financial exclusion. Second, strategically and for better risk management, it makes more sense to employ risk-sharing facilities to disperse systemic risk instead of using Murabaha financing. This issue is strictly endorsed in the traditions of Prophet Muhammed (Azrak and Hazaa, 2021). As for policymakers, they should nudge the IB industry to change its product structure to more risk-sharing and financially inclusive facilities. These should be accompanied by more integration with capital markets in a specialized (debt-free) universal banking architecture as hypothesized by Jatmiko et al. (2022).

The way forward can only be achieved by conceptualizing product design beyond *Shari’ah* compliance. Here, virtuous principles should be incorporated during the two stages of product development. After ensuring that the proposed product is legally acceptable from a religious perspective, it should also be examined in light of its impact on society and the various dimensions of sustainability. This requires the advancement of top-notch intellectual infrastructure and proper governance imbibing ethical behaviour (Chapra, 2008b). In doing so, the SSB should take the initiative to update Islamic rulings (*Fatāwā*) related to financial transactions (a) in concordance with the objectives of the Islamic law and (b) in conjunction with finance academics and practitioners (Ibn Qayyim, 1973).

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