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LDN: 14-0721

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IsDB-IsDBI

Islamic Economic Studies

Vol. 29 No. 2 2022

ISLAMIC ECONOMIC STUDIES

e-ISSN 2411-3395 p-ISSN 1319-1616
Vol. **29** No. **2** Ḏū al-Qa'dah 1443H (**June 2022**)

Number 2

ISLAMIC DEVELOPMENT BANK INSTITUTE
A Member of Islamic Development Bank Group

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Islamic Economic Studies (*IES*) is a quality journal founded by the Islamic Research and Training Institute. The journal publishes leading research across all fields of Islamic economics and finance. Established in 1414 Hijri (1993), the journal is one of the oldest and most respected scholarly journals in the Islamic economics and finance fields. *IES* is targeted at professional and academic economists and students.

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e-ISSN 2411-3395
p-ISSN 1319-1616

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Islamic Economic Studies
Indexed and abstracted by:
EconLit, Journal of Economic Literature published by the American Economic Association
RePEc
Google Scholar

Emerald Publishing Limited
Howard House, Wagon Lane,
Bingley BD16 1WA, United Kingdom
Tel +44 (0) 1274 777700;
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Emerald is a trading name of Emerald Publishing Limited

Printed by CPI Group (UK) Ltd, Croydon, CR0 4YY

Islamic Economics Studies (IES) is published by Emerald Publishing Services on behalf of The Islamic Development Bank Institute, a Member of the Islamic Development Bank Group.

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Jeddah 22332-2444, Kingdom of Saudi Arabia
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E-version is open-source and free of cost. Subscription to printed copies of IES by First class mail is US $35.00 for one year (two issues). The price of a single issue is US $20.00. Subscriptions for print-version should be mailed to IsDBI at the above IsDBI address.

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Islamic Economic Studies
Vol. 29 No. 2, 2022
p. 85
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616

Islamic work ethics as a key engine of endogenous economic growth

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Received 12 February 2021
Revised 6 June 2021
Accepted 7 September 2021

Abstract

Purpose – God promised pious individuals who obey to His commandments, to increase their economic well-being. Although it is difficult to demonstrate with figures in hand this causality relationship, Muslims must believe in its existence and robustness at both the individual and collective levels, as it is argued in Qur'an and the Prophetic Narration. We aim in this paper to model this positive relationship between Islamic work ethics and economic growth and prove theoretically its existence.

Design/methodology/approach – We develop an endogenous growth model very close technically to Lucas–Uzawa model (1988) in which the human capital defined as the individual's skill level acquired through formal education and learning by doing is replaced by ethical capital (piety).

Findings – The model proves theoretically that Islamic ethics are a key engine of endogenous economic growth and that the underdevelopment of Muslim populations is due to their low ethical capital (lack of piety).

Practical implications – The study recommends some policies such as providing formal religious education at all educational levels (elementary, secondary and higher levels) and promoting ethical values such as piety, sincerity, transparency, etc., through media and cultural institutions. Also, managers could provide courses and training to their workers to teach them Islamic work ethics.

Originality/value – This paper is the first to mathematically model Islamic work ethics as endogenous phenomena in socioeconomic systems and study theoretically their contributions to economic growth.

Keywords Islamic work ethics, Piety, Ethical capital, Human capital, Endogenous growth

Paper type Research paper

Introduction

Muslim economies are considered behind the non-Muslim ones. However, the debate on the relationship between economic growth and Islam is still unclear. According to some writers and academicians, Islam is an impediment to economic growth in Arab societies (Bendix, 1960). Similarly, Said (1978) and Nafissi (1998) attribute the underdevelopment of Muslim economies to Islam and consider it as a religion that preaches fatalism and hinders economic development. Tessler (2002) concludes that Islam is anti-democratic and hinders economic growth since it vests sovereignty in God as the sole source of political authority. According to Fachini (2007), Islam is incompatible with political modernity and democracy. Conversely, Islamic scholars are unanimous in concluding that the objective of Islamic Law (Maqāṣid al-Sharīʿah) is to raise income and wealth through development in order to promote well-being of all mankind. Many studies are sympathetic toward Islam. Indeed, Gardet (1970) and Sauvaget (1984) cite the golden centuries of the Abbasid who occupied half a millennium (750–1,258) and the century's conqueror of the Umayyad (661–758) to argue that Islam can build a developed economy. In addition, Adams (1976) argued that Islamic teaching and traditions are not opposed to the modern economic methods. According to Sadeq (2006) Islamic economic development is a balanced and sustained multi-dimensional process of

Islamic Economic Studies
Vol. 29 No. 2, 2022
pp. 86-99
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616
DOI 10.1108/IES-02-2021-0009

JEL Classification — I2, J2, J3 H2, H5. **KAUJIE Classification** — B5, F12, R61

improvement in the material and non-material well-being of man, involving the enrichment of welfare through advancement, reorganization and reorientation of the economic and social systems. According to Kamali (2008) the Islamic Sharīʿah enhances economic growth by encouraging work, production and trade in order to enable people to earn a living. Ahmad *et al.* (2013) also present Islam as a universal religion that brings economic development and prosperity to all over the world. Similarly, the study of Lamido (2016) argues that Islamic Sharīʿah permits everything legitimate needed for economic development. Recently, Iman and Mohammad (2017) confirm that *Waqf* generates economic outputs and realizes sustainable socioeconomic well-being.

On the empirical level, the study of Kuran (1997) conducted in a cross-section of 132 countries shows that Islam negatively and significantly affects economic growth through its effects on investment, education and gender inequality. Using the World Values Survey from 1995 to 2001, Guiso *et al.* (2003) support the argument that Islam is negatively associated with attitudes that are conducive to economic growth making Muslim countries the most "anti-market". Based on the same survey, Norris and Inglehart (2003) find that Muslims value democracy but differed from western societies on sexual liberation and gender equality, which may explain Muslim underdevelopment countries. According to Kuran (2004), rigid Islamic laws such as Islamic inheritance laws and polygamy are not amiable to economic growth and may explain why the Middle East is lagging behind the western world. The study of Barro and Mc Cleary (2003) on Turkey, Bangladesh, Malaysia and Pakistan concludes that religious beliefs enhance economic performance; however, religious behaviors (attendance of religious services which is higher for Muslim) hinders economic growth. More recently, based on a sample of 20 Muslim countries from 1990 to 2014, Khalfaoui (2015) shows that Islam does not promote economic growth. Similarly, Campante and Yanagizawa (2015) establish evidence for a negative effect of Ramadan fasting on economic growth in Islamic countries. Using Southeast Asian censuses, Delacroix and Delavallade (2018) show that Catholicism is pro-child (increasing total spending on children) which depresses economic growth in its early stages by decreasing savings and labor supply, whereas Islam which is pro-birth impedes human capital accumulation and economic growth in its later stages. Conversely, many other authors establish that Islam is positively associated with economic growth. Barlow (1982) and Collins and Bosworth (1996) found that Islamic economies grow faster than other developing economies. The cross and within-country analyses of Noland (2003) conducted on the Muslim population in India, Ghana and Malaysia does not find support for the argument that Islam is unfavorable to economic growth. Noland (2007), through his study on 70 countries, compared the effect of Islam, Christianity, Judaism, Buddhism and Hinduism on economic growth. He showed that given the level of economic development, Islam promotes economic growth. Using cross-country regression, Çamlıbel (2014) showed that Islam by itself has no impact on economic growth while technological innovation, human development and economic freedom are significant. More recently, the empirical study of Majeed (2019) shows that social capital (measured by solidarity and interpersonal safety and trust index) is a key factor of economic performance in the Muslim countries.

Many other studies focus on the impact of Islamic finance presence on economic growth. While this relationship is still unclear, rare studies in this field argued that the Islamic financial system, with zero interest rate, cannot support economic growth because it leads to lower savings and financial intermediation disadvantage (Pryor, 1985). However, most studies suggest that Islamic finance has a positive and significant contribution to economic growth because of the high profitability, stability, efficiency ensured by profit and loss sharing (PLS)-based finance. Indeed, Siddiqi (1999) showed that by sharing the risk between lenders and borrowers, moral hazard will have no place in the Islamic banks, and funds will be channeled toward more innovative, prudent and profitable projects. Almossawi (2001) argued that the Islamic banking system will not cause a probable crisis in the economy. For

that reason, in several countries, Islamic banking becomes an essential alternative to the conventional banking system based on interest (Ahmad and Haron, 2002). Also, the financial crisis that started in the United States in 2008 has confirmed that Islamic banking is better than conventional banking (Loo, 2010). Abduh *et al.* (2011) showed that Sharī'ah-based banks' deposits perform better in case of a financial crisis. Using cointegration and Granger-causality approaches, Abduh and Omar (2012) showed a positive correlation between economic growth and Islamic banking in Bangladesh from 2004 to 2011. The study of Cebeci (2012) showed that the Islamic financial instruments *muḍārabah* and *mushārakah* expand welfare, alleviate poverty and contribute to society in terms of social responsibility. Using a panel of Islamic banks from GCC and East Asian countries, during the period 2000–2009, Yusof and Bahlous (2013) found a significant contribution of Islamic banking to economic growth in both the long-run and short-run. Similarly, Farahani and Dastan (2013) showed a positive bidirectional Granger-causality between economic growth and Islamic banking in UAE, Qatar, Malaysia, Saudi Arabia, Indonesia, Yemen, Egypt, Kuwait and Bahrain. Grassa and Gazdar (2014) concluded that Islamic banks performed better than conventional banks in GCC countries and that the private Islamic credits and the Islamic banks' deposits are found to be relevant determinants of economic growth. Lebdaoui and Wild (2016) assessed the correlation between economic growth and the share of Islamic banking in Southeast Asian countries' financial market in terms of assets and deposits. The study shows that the Islamic banking sector contributes significantly to economic growth. Rashid *et al.* (2017) suggest that Islamic banks contributed more effectively than conventional banks to the stability of Pakistan's financial sector during the period 2006–2012. More recently, Choudhury *et al.* (2018) argued that in the presence of riba, bank-savings lead to continuous withdrawal from potential aggregate output and a deprivation in resource mobilization, goodly spending and employment generation, causing a contraction of the real economy and a failure to actualize social well-being (maslaha). Selim (2019) confirmed this result by showing that Qard-al-Hasan (interest-free loan) based monetary policy increases output and exports, reduces imports, maintains price stability making monetary policy more effective. In addition, Hassan *et al.* (2018) Found that *Takaful* Operators are making a significant contribution toward economic development, human capital development and poverty alleviation in Malaysia, thus making a significant contribution toward the social *maslaha*. It is shown that *Takaful* Operators significantly impact the economic indicators operationalized to capture three broad areas of *Maqasid al-Sharī'ah: darurriyyat, hajiyyat and tahsiniyyat*. Choudhury *et al.* (2019) argued that Islamic finance, through selecting equity-based financing instruments, should alleviate poverty and attain the well-being criterion and development sustainability goals.

While most scientific research focuses on Islamic economics and finance, the Islamic perspective in management studies is an interesting emerging field. Indeed, many researchers argued that Islamic beliefs, perceptions and values influence Muslim employees' management practices (see Ali and Al-Owaihan, 2008). According to Ahmad (1996), these Islamic values create a conducive work environment for quality management effectiveness. More recently, Sidani and Thornberry (2009) stated that Islamic ethics are central in quality management. Hashim (2010) focuses on Malaysia's business organizations. It finds a significant correlation between Islamic HRM and organizational commitment. Using a sample of 114 managers working in the Pakistani telecom industry, Abbasi *et al.* (2011) found that Islamic values have a positive multi-dimensional impact on managerial business performance of an organization and must be inculcated in organizational culture. Kumar and Rose (2010) have suggested that Islamic work ethics positively affect the innovation capability of employees. Kumar and Rose (2012) showed that Islamic work ethics significantly influences the relationship between innovation capability and knowledge-sharing capability of Malaysian employees. Similarly, Salleh (2012) argued that the Islamic principles of administration positively impact Malaysian business organizations. More

recently, Ghulam *et al.* (2016) suggest that Islamic work ethics positively affect the organizational citizenship behaviors among university employees in Pakistan since Islamic principles urge followers of Islam to provide voluntary support to their coworkers and organization when needed. They also find positive impacts on knowledge-sharing behaviors since Islam encourages followers to acquire and share their knowledge with colleagues and work for the community's welfare. Finally, Mansour and Nimr (2020) found a significant positive effect of Islamic business ethics on employees' competitive advantage in Palestinian Islamic banks. None of the researches cited above ventured to mathematically model Islamic work ethics as endogenous phenomena in socioeconomic systems, neither study their contributions to economic growth. The only theoretical framework of Ben Mimoun *et al.* (2016) has proved that the more committed individuals are to God commandments, the lower are their incentives for corruption, and the higher is the long-run economic growth. The theoretical model shows a minimum level of piety (Taqwa) below which the economy moves away toward an illegal rent-seeking situation and become unproductive.

Our paper aims to fill this gap, and it is the first to develop an endogenous growth model very close technically to the Lucas–Uzawa model developed by Lucas (1988) in which the *human capital* defined as the individual's skill level acquired through formal education and learning by doing is replaced by *ethical capital*. In our model, human capital is a part of Ethical capital which is a larger concept embedding both skills and piety. This ethical capital embodied in the individual is an internal power of self-restraint achieved by undertaking continuous religious self-education making the individual obedient to God's Commandments. We focus on Islamic work ethics, which consider work as an act of worship in itself, exhort Muslims on the importance of learning, educating and training themselves to acquire skills, working hard and perfectly, and forbids corruption, deception, and cheating in work. We show that the belief in these Islamic work ethics leads employees not only to acquire skills (increase the human capital level as in Lucas (1988)) but also to work with absolute sincerity for the blessings of God. This will increase their labor productivity and accumulates their *ethical capital*, relaxing the constraint of diminishing returns of physical capital and leading thereby to long-term economic growth. Hence, the study proves that the e*thical capital* based on Islamic work ethics is a key engine of growth embedding both skills (human capital) and piety. The paper is organized as follows. The first section defines and discusses the concepts of *ethical capital* and Islamic work ethics. The second section develops the theoretical model and shows how Islamic work ethics do generate endogenous economic growth. The third section discusses the results and concludes.

Islamic work ethics

Islam is a religion of worship that considers a person who struggles to provide for his family as someone striving in the "way of Allah" with all the rewards attached to this effort. The prophet said, "*never does a Muslim plant tree or cultivate land and birds or a man or a beast eat out of them, but that is a charity on his behalf."* Thus, work is considered as an act of worship in itself. The Muslim scholar Imam Al-Ghazali mentioned that Jesus (peace and blessings be upon him) once saw a man who had completely devoted himself to worship. When he asked him how he got his daily bread, the man replied that his brother, who worked, provided him with food. Jesus then told him, "That brother of yours is more religious than you are."

In Islamic teachings, working is necessary for social welfare. As Prophet Muhammad said, "*no food is better to man than that which he earns through his manual work*" (see Sahih al-Bukhari, 2072).

In addition, Islam forbids laziness, voluntary unemployment, relying on others for handouts, time-wasting and unproductive activities (see Yousef, 2001). The Prophet Muhammad, who is a paragon of virtues, used to pray, seeking God's refuge from idleness

and laziness. He also said, "*No doubt, you had better gather a bundle of wood and carry it on your back (and earn your living thereby) rather than ask somebody who may give you or not*".

In exhorting Muslims on the importance of working hard, The Prophet's Companion `Umar ibn Al-Khattab said, "*Never should anyone of you think that du`aa' (supplication) for sustenance without work will avail him, for heaven never rains gold nor silver"*.

Islam makes it an obligation for Muslim, not only to work hard but also to complete his work in order, discipline, accuracy and to do it to the best of his ability (Bayu Taufiq *et al.*, 2013). The Prophet said: *"Allah loves those* workers *who perform their work to the best of their abilities"*. (Al-Bayhaqi, Sya'bu al-Iman, no. hadith 4,931.)

To do the job perfectly Muslims should strive for education and learning to acquire knowledge and skills. Knowledge ('ilm) occupies a significant position within Islam, as evidenced by the Koran and Sunnah. The Prophet Muhammad declared:

> *One who treads a path in search of knowledge has his path to Paradise made easy by God.* (Riyadh us-Saleheen). In addition, Muslims should seek not only to gain knowledge but to share it with others. The Prophet Muhammad said: *"Inquire knowledge and impart it to the people."* (Al-Tirmidhi, 107)

The Islamic religion also clearly forbids deception and cheating in work. In the Qur'an, Allaah has condemned cheating. He said: "*Woe to Al-Mutaffifoon (those who give less in measure and weight). Those who, when they have to receive by measure from men, demand full measure and when they have to give by measure or weight to (other) men, give less than due*" [al-Mutaffifeen 1]. This is a sufficient warning against cheating in weights and measures and a sufficient deterrent against indulging in this heinous sin. Similarly, The Prophet passed by a pile of food and put his hand into it, and his fingers touched something wet. He said, "*What is this, O seller of the food?"* The man said, "*It got rained on, O Messenger of Allaah*." He said, "*Why did you not put it (the wet part) on top of the pile so that the people could see it? He who deceives does not belong to me.*" According to other reports, "*He who deceives us is not one of us*".

These are severe warnings to those who deceive others about the quality of a good or its weight, quantity, measure or components. So how about those who steal, embezzle and corrupt? Islam prohibits corruption and bribery through which the giver obtains much more than what the economic system can provide in the form of goods or services. The Prophet said:

> " لعن الله الراشي و المرتشي"
>
> *May God curse the briber, and the bribed*." reported by At-Tirmidhi graded Sahih (authentic).

Also, Islam forbids "Ghulul," which is all what employees or officials take illegally, no matter how valuable are misappropriated things. The Prophet said:

> "لَا تَغُلُّوا؛ فَإِنَّ اَلْغُلُولَ نَارٌ وَعَارٌ عَلَى أَصْحَابِهِ فِي اَلدُّنْيَا وَالْآخِرَةِ"
>
> *Ghulul will be like fire and a cause of disgrace to those who are guilty of it in this world and the Hereafter."* Related by An-Nasa'i, and Ibn Hibban graded it as Sahih (authentic).

The Prophet also said:

> " مَنِ اسْتَعْمَلْنَاهُ عَلَى عَمَلٍ فَرَزَقْنَاهُ رِزْقًا فَمَا أَخَذَ بَعْدَ ذَلِكَ فَهُوَ غُلُولٌ "
>
> When we appoint someone to an administrative post and provide him with an allowance, anything he takes beyond that is unfaithful dealing (Ghulul). In Sahih (Al-Albani)

As a conclusion for this section, a Muslim employee should do the job sincerely, perfectly and without any deception, cheating or corruption and his employer should pay him fairly and immediately (before his sweat dries). Both the employer and the employee should not wrong

each other and show justice and kindness in their relationship. Otherwise, injustice to working class would lead to discontentment, frustration, agitation and strikes (Azid *et al.* 2013). Both of them should make sure that they cater and pay due attention to the highest authority (Azid 2005). This taqwa (piety) attitude should translate all these Islamic ethics into practical realities. Muslims should be pious, i.e. follow all the above orders and leave all prohibitions, and have a sense of self-control and responsibility while having the entire conviction that they are under the continuous supervision of God without the need for any human supervisor. Indeed, God says:

[يعْلَمُ خَائِنَةَ الْأَعْيُنِ وَمَا تُخْفِي الصُّدُور] (غافر : 19)

[(Allah) knows of (the tricks) that deceive with the eyes, and all that the hearts (of men) conceal]. Al-Ghaafir/The Forgiver: 19

[لِتَعْلَمُوا أَنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ وَأَنَّ اللَّهَ قَدْ أَحَاطَ بِكُلِّ شَيْءٍ عِلْمًا...] الطلاق (12)

[that you may know that Allah has power over all things, and that Allah comprehends, all things in (His) Knowledge]. At-Talaq/Divorce: 12

All people, and not only Muslims, shall be pious. God says:

[وَلَقَدْ وَصَّيْنَا الَّذِينَ أُوتُوا الْكِتَابَ مِن قَبْلِكُمْ وَإِيَّاكُمْ أَنِ اتَّقُوا اللَّهَ] ، النساء : 131

[Verily we have directed the People of the Book before you, and you (o Muslims) to fear Allah]. An-Nisaa/The Women (131)

Finally, belief in God, when it translates into a renunciation of evil and sins, is rewarded (materially and psychologically) in the present life and in the Hereafter. God promised pious individuals who obey His commandments to increase their economic well-being. At the individual level, the Almighty said:

[...وَمَنْ يَتَّقِ اللَّهَ يَجْعَلْ لَهُ مَخْرَجًا (2) وَيَرْزُقْهُ مِنْ حَيْثُ لَا يَحْتَسِبُ...] ، (الطلاق : 2-3)

[... and for those who fear Allah, He (ever) prepares a way out, and He provides for him from (sources) he never could imagine]. At-Talaq/Divorce:2–3

At the community (or aggregate) level, the Almighty said:

[وَلَوْ أَنَّ أَهْلَ الْقُرَى آمَنُوا وَاتَّقَوْا لَفَتَحْنَا عَلَيْهِمْ بَرَكَاتٍ مِنَ السَّمَاءِ وَالْأَرْضِ ...] ، (الأعراف : 96)

[If the people of the towns had but believed and feared Allah, We should indeed have opened out to them (All kinds of) blessings from heaven and Earth] Al-A'raaf/The Heights (96)

Although it is difficult to demonstrate with figures in hand this causality relationship, Muslims must believe in its existence and robustness at both the individual and collective levels, as it is argued in Qur'an and the Prophetic Narration. According to Ahmad Raja *et al.* (2018) and Akhtar *et al.* (2018), both Muslim employer and the employee are obliged to implement the Islamic work ethics as an act of worshiping God, i.e. work with sincerity for the blessings of Allah and the betterment of the organization. This leads the business to prosper and the national wealth to increase. We aim in the following section to model this positive relationship between Islamic work ethics and economic growth and prove its existence theoretically.

The model

We consider an economy with a production sector and a representative firm that produces according to the following Cobb–Douglas function:

$$Y = AK^{\alpha}E^{1-\alpha} \quad (1)$$

Y is the output of goods, A is a positive constant technological parameter, K is the input of physical capital and E is the input of *ethical capital*, all at time t. $0 < \alpha < 1$ means that each firm produces at constant returns to scale in K and E. *The ethical capital*, defined as the individual's degree of belief in Islamic work ethics and the self-discipline to obey God's commandments, is acquired through the individual's Islamic self-education. To simplify, we assume that all individuals are identical and have the same ethical capital. The ethical capital, E, is the number of workers, L, (quantity), multiplied by the piety level (quality) of the typical worker, e ($E = L.e$). We assume that the total labor force, L, is fixed, and E grows with the piety level, e. Thus, there are two kinds of capital, or state variables, in our model: physical capital K that is accumulated and utilized in production under the neoclassical technology, and ethical capital E that increases the productivity of labor and physical capital. Contrarily to the physical capital, the ethical capital is embodied in an individual and is not a tangible thing that can immediately be transferred to others.

In the Lucas–Uzawa model, the human capital, H, defined by the individual's skills, is acquired through formal training and education activities, which occur in the non-leisure time simultaneously with the production activity. Then the use of human capital in one sector precludes its use in the other sector. That's why in their model, the individual devotes the fraction, u, of his non-leisure time to production, and the remaining fraction, $1 - u$, is devoted to human capital accumulation. However, in our model, the individual devotes the whole non-leisure time to production because the Islamic self-education activity should occur in the free time. The Prophet said*: "There are two blessings, and most people evaluate these blessings incorrectly: Health and free time." [Bukhari, Al-Riqaq (Heart Melting Traditions); 1].* Indeed, the best time to increase piety, i.e. to pray, to recite and study the Holy Quran – The word of Allah and the book of guidance revealed to the Prophet Muhammad-is at night until the dawn. God said:

« كَانُوا قَلِيلًا مِّنَ اللَّيْلِ مَا يَهْجَعُونَ وَبِالْأَسْحَارِ هُمْ يَسْتَغْفِرُونَ » الذاريات (18,17)

They used to sleep little at night (invoking their Lord and praying, with fear and hope) And in the hours before dawn, they were (found) asking forgiveness from Allah. Azzariyaat 17,18

The Almighty also said:

« أَقِمِ الصَّلَاةَ لِدُلُوكِ الشَّمْسِ إِلَىٰ غَسَقِ اللَّيْلِ وَقُرْآنَ الْفَجْرِ ۖ إِنَّ قُرْآنَ الْفَجْرِ كَانَ مَشْهُودًا » الاسراء (78)

Establish prayer at the dusk until the darkness of the night and the Quran of the dawn. Indeed, the recitation of Quran in the dawn is witnessed by angels. – Surah Al-Israa (78).

In addition, one of the most strongly emphasized duties in Islam, "Jumah" or Friday prayer, is the best way for a Muslim to educate himself and accumulate his ethical capital. Indeed, Friday congregational prayer includes a sermon given by a Muslim clergy member. During this prayer, worshippers listen to a lecture that explains Islam principles and reminds them of God's commandments. The Qur'an invokes the importance of "Jumah":

" يَا أَيُّهَا الَّذِينَ آمَنُوا إِذَا نُودِيَ لِلصَّلَاةِ مِنْ يَوْمِ الْجُمُعَةِ فَاسْعَوْا إِلَى ذِكْرِ اللَّهِ وَذَرُوا الْبَيْعَ ذَٰلِكُمْ خَيْرٌ لَكُمْ إِنْ كُنْتُمْ تَعْلَمُونَ" الجمعة (9)

O you who believe! When you are called to congregational (Friday) prayer, hasten to the remembrance of God and leave off trade and business. That is best for you, if you but knew. Al-Jumah (9)

According to the Prophet Muhammad, Muslims who miss three Friday prayers in a row, without a valid reason, stray from the straight path and risks becoming disbelievers. That's

why the majority of Islamic countries include Friday as part of the weekend. In non-Muslim countries, jurists have allowed Muslims to miss Friday prayer due to office hours since work is necessary for earning their living.

Muslims should also strive for education and learning to acquire skills. The Prophet said: *"The seeking of knowledge is obligatory for every Muslim."* (Al-Tirmidhi, 74). They should spend their leisure time in a meaningful way such as taking part-time courses at night or on weekends or opting for distance or online learning, etc. . . ..

Finally, not only ethical capital development is taking place in free time but the nature of ethical capital is such that it is transferable for use in any sector. It is not sector-specific skill. Moreover, the ethical capital grows with practice of ethics, and the opportunities to practice ethics exist during work time as well as in free time.

Thus, we assume, as in the Lucas–Uzawa model, that the Islamic self-education activity is intensive only in ethical capital, E which grows according to:

$$\dot{E} = BE - \delta_E E \tag{2}$$

where B is a positive technological parameter and δE is the rate of depreciation of ethical capital. Dividing (2) by E gives the expression for the growth rate of E:

$$\dot{E}\Big/E = B - \delta_E \tag{3}$$

The physical capital grows according to:

$$\dot{K} = Y - C - \delta_k K \tag{4}$$

C is consumption and δK is the depreciation rate of physical capital. Contrarily to the Lucas–Uzawa model, we assume, in our model, that the depreciation rates for physical and ethical capital are different, $\delta_k \neq \delta_E$ since this generalization will not complicate the algebra.

To facilitate the dynamic analysis we use the ratios $\omega \equiv K/E$ and $\chi \equiv C/K$.

These definitions combined with Eqns (1) and (4), give the expression for the growth rate of K:

$$\dot{K}\Big/K = A\omega^{\alpha-1} - \chi - \delta_k \tag{5}$$

and the growth rate of ω:

$$\begin{aligned}\dot{\omega}\Big/\omega &= \dot{K}\Big/K - \dot{E}\Big/E \\ &= A\omega^{\alpha-1} - \chi - \delta_k - B + \delta_E\end{aligned} \tag{6}$$

The first-order conditions give the consumption growth rate:

$$\dot{C}\Big/C = (r - \rho)/\theta \tag{7}$$

For a given E, each firm maximizes its profit by equating the marginal product of capital to the rental price, $r + \delta K$. Eqn (1) gives:

$$\partial Y/\partial K = \alpha A K^{\alpha-1} E^{1-\alpha} = r + \delta_K \tag{8}$$

Using the ratio $\omega \equiv K/E$ gives:

$$r = \alpha A \omega^{\alpha-1} - \delta_k \tag{9}$$

Therefore, the growth rate of consumption in Eqn (7) becomes:

$$\dot{C}\Big/C = \left(\alpha A\omega^{\alpha-1} - \delta_k - \rho\right)/\theta \tag{10}$$

Eqns (5) and (10) give the growth rate of χ as:

$$\begin{aligned}\dot{\chi}\Big/\chi &= \dot{C}\Big/C - \dot{K}\Big/K \\ &= \chi + \left[A\ \omega^{\alpha-1}(\alpha-\theta) - \delta_k(1-\theta) - \rho\right]/\theta\end{aligned} \tag{11}$$

Steady-state analysis

In the steady-state, the variables ω and χ are constant, which corresponds to $\omega = \dot{\chi} = 0$. Then setting Eqns (6) and (10) to zero (see Appendix) gives the rate of return r^*, ω^* and χ^*, in the steady-state:

$$r^* = (B - \delta_E)\theta + \rho \tag{12}$$

The common long-run growth rate of C, K, E and Y becomes in this steady-state $g^* = (r^* - \rho)/\theta$. Replacing r^* by Eqn (12) gives:

$$g^* = B - \delta_E \tag{13}$$

We know that the long-run growth rate in the Lucas–Uzawa model is given by $g^*_{Lu} = (B - \delta_H - \rho)/\theta$. Thus Eqn (13) shows that similarly to g^*_{Lu}, the parameter α has no effect on our long-run growth rate, g^*. This feature is due to the rather special assumption that no physical capital (output from manufacturing) is applied in the religious self-education activity, which, therefore, alone constitutes the "growth engine" in both models.

In addition, in the Lucas–Uzawa model the growth rate g^*_{Lu}, is an increasing function of the net productivity $B - \delta_H$, in the "educational sector" and a decreasing function of the pure rate of impatience, ρ. This means that a decrease in this parameter leads to a drop in current consumption and thus stimulates physical and human capital investments leading to a permanently higher growth rate. However, in our model the long-run growth rate g^*, equals the net productivity $B - \delta_E$, in the religious self-education activity, which means that only the ethical capital does matters for the long-run economic growth.

Finally, as in the Lucas–Uzawa model, the transversality condition $r^* \geq g^*$, ensures that ω^* and χ^* showed in the Appendix are both positive. Eqns (12) and (13) imply that:

$$r^* \geq g^* \Rightarrow \frac{\rho}{(1-\theta)} \geq (B - \delta_E) \tag{14}$$

To compare the growth rates in the Lucas–Uzawa model, g^*_{Lu} with the our g^*, we first assume the same depreciation rates in both models, $\delta_H = \delta_E = \delta$ and then we calculate the difference, $g^* - g^*_{Lu}$. This yields:

$$\begin{aligned}g^* - g^*_{Lu} &= (B - \delta) - (B - \delta - \rho)/\theta \\ &= \frac{\rho - (B - \delta)(1-\theta)}{\theta} \geq 0\end{aligned} \tag{15}$$

Thus, condition (14) implies that $g^* - g^*_{Lu} \geq 0$, which means that the growth rate in our model is higher than that of the Lucas–Uzawa model. The intuition behind this result is the

following: In the Lucas–Uzawa model, the individual spends some time in production and some time in formal education, so the opportunity cost of producing human capital is the manufacturing output forgone, which society hereby loses. This opportunity cost is absent in our model since the religious self-education occurs in the individual's free time while the non-leisure time is fully devoted to production, thereby leading to a higher growth rate. We thus prove theoretically that ethical capital is a key engine of endogenous economic growth. The accumulation of this ethical capital (an increase of individual piety and skill) generates a higher long-term economic growth rate as given by condition (14). This result proves the promise of God, in Qur'an and the Prophetic Narration, for pious individuals and societies and argues that the underdevelopment of Muslim populations is not due to their belonging to Islam in itself, but because of their lack of piety (low ethical capital) required in that religion. Indeed, Hussain (2007) stated that Muslims do not develop an in-depth understanding of Islam. They recite and memorize the Holy Quran without comprehending its meanings, which creates a gap between the theory and practice of Islamic management in Arab countries, as argued by Branine and Pollard (2010). Similarly, Mitroff (2003) has shown that, in general, employees are physically present, while their souls are absent from the organization (Mitroff, 2003). As a result, Rego *et al.* (2008) conclude that employees fail to develop themselves as holistic human beings, and the organization does not trigger their employees' full potential and creativity, as stated by Hoque *et al.* (2013).

Conclusion

Many studies focused on Islam's effect on economic growth without reaching a consensus on whether this effect is positive or negative. Indeed, some authors show that Islam promotes economic growth. Conversely, some others state that it harms economic growth. In this paper, we show that religion does matter for economic growth**.** More precisely, what really matters is not the simple belonging to a given religion, but the degree of belief in that religion and the self-discipline to obey its commandments, which we called *Ethical Capital* embodied in the individual. We consider in this paper, The Islamic religion which exhorts Muslim employees to do the job for what they are paid for sincerely, perfectly and without any deception, cheating or corruption and to have a sense of self-control and responsibility while having the entire conviction that they are under the continuous supervision of God without the need for any human supervisor. We developed an endogenous growth model very close technically to the Lucas–Uzawa model, where the growth generating activity (the "growth engine") is *Ethical capital* accumulation through Islamic self-education activity. In the Lucas–Uzawa model, the individual spends some time in production and some time in formal education to accumulate human capital. However, in our model, Islamic self-education activity occurs in the individual's free time while the non-leisure time is fully devoted to production, leading thereby to a higher long-run growth rate. This result proves that Islam promotes economic growth and that Muslim populations' underdevelopment is due to their low ethical capital (lack of piety). Consequently, our study recommends some policies such as providing formal religious education at all educational levels (elementary, secondary and higher levels) and promoting ethical values such as piety, sincerity, transparency, etc., through media and cultural institutions. Also, managers could provide courses and training to their workers to teach them Islamic work ethics.

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Further reading

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Appendix

$$\dot{\omega}\Big/\omega = 0 \Rightarrow A\omega^{\alpha-1} - \chi - \delta_k - B + \delta_E = 0 \tag{16}$$

and

$$\dot{\chi}\Big/\chi = 0 \Rightarrow \chi + \left[A\ \omega^{\alpha-1}(\alpha-\theta) - \delta_k(1-\theta) - \rho\right]/\theta \quad = 0 \tag{17}$$

(16) implies:

$$A\omega^{*\alpha-1} = \chi^{*} + \delta_k + B - \delta_E \tag{18}$$

and (17) means:

$$A\omega^{*\alpha-1} = \chi^{*} + \delta_K + \left(\alpha A\omega^{*\alpha-1} - \delta_K - \rho\right)/\theta \tag{19}$$

(18) and (19) imply that

$$\left(\alpha A\omega^{*\alpha-1} - \delta_K - \rho\right)/\theta = B - \delta_E$$

Remind that according to (9) we have $\alpha A\omega^{*\alpha-1} - \delta_K = r^{*}$. This means that

$$r^{*} = (B-\delta_E)\theta + \rho$$

$$\chi^{*} = \frac{((B-\delta_E)(\theta-\alpha) + \delta_K(1-\alpha) + \rho)}{\alpha}$$

$$\omega^{*} = \left(\frac{(B-\delta_E)\theta + \delta_K + \rho}{\alpha A}\right)^{\frac{1}{\alpha-1}}$$

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Received 21 March 2021
Revised 26 November 2021
Accepted 2 December 2021

Does it pay to be a faithful investor? A risk-based approach performance analysis of Islamic funds vs UCITS schemes

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Abstract

Purpose – This paper empirically investigates the performance of Islamic funds, which have been praised for weathering the 2008 financial storm relatively well and compares it to a European product designed to protect the most vulnerable of investors, UCITS funds.
Design/methodology/approach – This paper builds on 128 time-series regressions using various factor models to analyse the risk-return relationship of 242 Islamic and UCITS funds relative to a market benchmark, over a 10-year period starting January 2006, to capture severe bear and bull market conditions.
Findings – Islamic funds do not face a competitive disadvantage arising from their strict compliance with Sharīʿah principles, and their performance and investment style is relatively similar to UCITS schemes.
Practical implications – Islamic funds represent a low risk investment due to their very mild betas. Therefore, when forming part of a diversified portfolio, they can act as a hedging tool against adverse market movements.
Social implications – Muslim investors are not punished relative to conventional retail investors when following their own beliefs. Other investors can consider Islamic funds in their portfolio allocation, especially those who seek socially and ethically responsible investments.
Originality/value – This paper fills a lacuna in the existing literature, because the sample is made up of Islamic funds established worldwide and includes not only equity, but also fixed income and mixed allocation funds.

Keywords Islamic funds, UCITS, Matched-pair analysis, Performance evaluation, Fama-and-French four-factor model, Fung Hsieh seven-factor model, Market-timing abilities

Paper type Research paper

1. Introduction

What goes up must come down.

The quote which Sir Isaac Newton used to define the law of gravity could be easily applied to the modern financial markets.

The severity of the 2008 financial crisis brought the world to its knees, and for such reason, it has been labelled as the worst financial crisis since the Great Depression. Albeit its

JEL Classification — C12, C32, G11. **KAUJIE Classification** — I73, L31, V12

Islamic Economic Studies
Vol. 29 No. 2, 2022
pp. 100-118
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616
DOI 10.1108/IES-03-2021-0012

devastating effects, the global crisis of 2008 brought the Islamic Financial Industry ("IFI") into the limelight, for its stability and resilience during periods of economic stress. Traditionally, the IFI was developed to serve the financial needs of the faithful Muslim population. The basic principles of Islamic Finance ("IF") revolve around the promotion of greater social justice. Nowadays, promoters of IF believe that the doctrines upon which the IFI is built may present a possible solution to avoid future recurrence of the crisis.

The IFI was not immune to the repercussions of the financial crisis and its subsequent recessions, yet several studies show that Sharī'ah-based financial products weathered the storm better than their conventional counterparts (see, e.g. Abdullah *et al.*, 2007; Chapra, 2008; Alam, 2011). This is primarily because, IF prohibits certain investments such as derivative instruments and hence Sharī'ah compliant financial products are relatively disassociated from the sub-prime market.

This paper investigates a smaller segment of the IFI, namely Islamic collective investment schemes ("CIS"). The Islamic faithful investors' choice of CISs is limited to those funds that strictly abide by Sharī'ah law. Islamic funds are only allowed to gain exposure to assets that are compliant with Sharī'ah Law and prohibited from entering into transactions which are considered unethical.

The conservative approach of Islamic funds has worked in favour of the industry during certain market conditions. These funds have managed to limit the repercussions of the collapse in the asset prices during the financial crisis of 2008, which had its epicentre in high leverage and speculative instruments. By way of a real example, the *Eurekahedge Islamic Fund Index* fell by 28.72% in 2008, whereas the *MSCI AC World Index All Core (Local)* plunged 41.1% [1].

While there are various contributions to literature regarding IF, the majority revolve around the Islamic banking system. Moreover, the limited existing studies that have examine the performance of Islamic funds focus primarily on equity, or otherwise restrict the data sample to include funds established in the Asia Pacific region, particularly Malaysia. This study will continue to add to the existing literature on Islamic funds and aims to fill a small lacuna in the existing finance literature, by studying Islamic funds established worldwide through a sample which is not limited solely to equity funds, but also includes fixed income and mixed allocation funds, and compare their performance to that of the heavily regulated UCITS schemes.

UCITS schemes are a product of a European Union ("EU") Directive on Undertakings for Collective Investment in Transferable Securities ("UCITS"). The first UCITS Directive was adopted in 1985, with the aim to reduce regulatory arbitrage for mutual funds across Europe and ensure that European citizens receive the same level of protection across all EU member states. UCITS schemes' investment policies and restrictions have to be in line with a list of eligible assets as set out in the UCITS Directive. UCITS funds are only allowed to invest in transferable securities and other financial assets that are liquid. The exception to this rule is the so called "Trash Ratio". A UCITS scheme may invest up to 10% of its assets in illiquid transferable securities and money market instruments. The use of derivative instruments for investment or hedging purposes is also allowed on the basis that the underlying is an eligible UCITS asset or an approved index. Disclosure requirements are in place to ascertain that investors are made aware of the underlying assets and the risk associated with such investments. The UCITS Directive requires certain level of diversification such that the performance of the scheme is not based solely on a limited number of assets. The most common diversification rule is the so-called 5/10/40, meaning that investments in securities issued by a single issuer may account for a maximum of 10% of the funds' assets. Any exposures of more than 5% in single issuers may not, in aggregate, account for more than 40% of the whole portfolio.

One of the top hedge fund databases, Eurekahedge (July 2015) (April 2020), outlines that the flight to quality following the 2008 financial crisis has seen an increase in the interest and

demand for investments which offer greater protection against downside risk, and hedge fund investors shifted their savings to more regulated, transparent and liquid CISs, such as UCITS Schemes. Eurekahedge outlines that by the end of 2007, the UCITS funds industry was relatively small, with an AUM of US$105 billion spread amongst 300 funds. It was only after the 2008 financial crises that UCITS funds gained traction, increasing to circa 700 funds and US$250 billion of Assets under Management by the end of 2010. According to the European Commission, UCITS funds account for approximately 75% of all collective investment done by small investors in Europe.

This research is important from a practical point of view, as it provides a good basis for understanding the behaviour of these funds during both bullish and bearish market conditions. Investors and fund management companies may apply this study to better manage their asset allocations with the aim to maximise risk-adjusted returns during different market cycles. It could also inspire regulatory bodies to work towards legislation and regulation that encourages the development of Islamic funds.

The remainder of this paper is set out as follows. Section 2 is a brief literature review, Section 3 provides details of the data, models and methodology. Section 4 presents the empirical findings, and the conclusion is presented in Section 5.

2. Literature review

Many of the research studies that deal with the evaluation of funds' performance are based on the assessment of risk and return in relation to relative benchmarks. Sharpe (1964) and Lintner (1965) have been pioneers in this area, with the development of the Capital Asset Pricing Model. Michael Jensen (1968) was one of the first researchers to evaluate funds' performance using the implications of the CAPM. He measured the performance of 115 mutual funds between 1955 and 1964, using a single-factor measure, which later became known as Jensen's Alpha. He concluded that these funds were not able to outperform the buy and hold policy after considering their expenses, in support of the EMH. The presence of fees and transaction costs is detrimental to the performance of CISs (Sharpe, 1966; Grinblatt and Titman, 1993; Carhart, 1997).

Fama and French (1993) wrote one of the most influential papers, criticising the CAPM for being too simplistic in explaining the returns of stocks. They proposed a three-factor model, outlining that the returns of stocks are a function of their exposure towards the market, size and value factors. Carhart (1997) also acknowledged the criticism towards the CAPM and developed his own four-factor model, by adding a momentum factor to Fama and French's (1993) three-factor model. He found that equity funds underperformed the NYSE by approximately the same amount of their investment expense. Otten and Bams (2002) applied the Carhart's model to the European equity mutual fund industry during an eight year period ending December 1998, and also found that when costs are added back to the performance of the funds, all funds from different EU countries outperformed the market, with the exception of German funds.

In 2004, Fung and Hsieh argued against the application of conventional models. Instead, they developed a multi-factor model, using seven asset-based style factors. Kosowski *et al.* (2007) made use of the Fung and Hsieh (2004) seven-factor model and showed that, during the period 1990 till 2002, their sample of hedge funds was not able to generate statistically significant positive alpha. More recently, Fama and French (2015) developed a five-factor model, by adding on profitability and investment factors to their three-factor model.

Abedifar *et al.* (2015) outlined that the majority of the empirical literature on Islamic funds evaluates the risk and return characteristics of such schemes and test whether these are statistically different from those of other CISs, Islamic market indices and conventional debt securities. Generally, in pursuit of results and to be able to evaluate the risk-adjusted returns

of these CISs, such studies make use of performance metrics, and single and multi-factor regression models.

One of the earliest contributors to the Islamic funds' literature were Annuar *et al.* (1997). Through an empirical examination of the market timing and selectivity skills of 31 Malaysian mutual CISs, they showed that fund managers were not able to time the market correctly during the period 1990 till 1995. However, 81% of their sample outperformed the Kuala Lumpur Composite Index, which was used as a proxy for the market. This finding of positive securities selection ability is in line with the findings of Mansor (2012). She found evidence that Islamic fund managers have superior stock selection skills when compared to conventional fund managers, yet both have poor market timing abilities.

These findings are however divergent to the conclusions drawn by most other studies on Islamic funds. Elfakhani *et al.* (2005), Abdullah *et al.* (2007) and Hayat and Kräussl (2011) suggest that Islamic fund managers have poor market timing abilities and securities selectivity skills. Whereas Mohammad *et al.* (2015) in their study about Islamic Equity Indices found that, whereas the majority of Islamic equity indices have negative market timing abilities due to their conservative nature of investments, the Sharī'ah screening helps Islamic equity indices to select companies which are not financially distressed, with a positive momentum and growth oriented.

Another prominent study is the one conducted by Elfakhani *et al.* (2005), who studied the performance of 46 Islamic mutual funds from January 1999 till August 2002. They found that, normally, there is no difference in the behaviour of Islamic mutual funds when compared to conventional schemes. They suggest that any under- or over-performance is generally the result of the choice of the market benchmark and the performance measure used. In addition, they also showed that there is a positive relationship between funds' performance and the experience of the fund managers since the former tends to increase as fund managers gain more sense of the general markets.

Hayat (2006) compared the performance of 59 Islamic equity funds established worldwide against both Islamic and conventional benchmarks during a five-year period ending August 2006, making use of different performance measures, including an analysis of average return and other risk-adjusted measures. Hayat revealed that during normal market conditions, there is no statistical difference in the returns of Islamic funds as compared to the chosen benchmarks. Islamic equity funds performed significantly better than both benchmarks during the bear market of 2002. Hayat concluded by indicating that Islamic funds have low betas and thus are beneficial to use as part of a larger and well-diversified portfolio. Similarly, Ashraf *et al.* (2014) studied the performance of Islamic equity indices in comparison to conventional equity indices for the period 2000 till 2012 and suggest that generally Islamic equity indices perform better than conventional indices due to their lower systematic risk.

The finding of Hayat (2006) seems to tie in with more recent findings of Boo *et al.* (2017) who examined Islamic equity funds in comparison to conventional equity mutual funds over the period 1996 to 2013, capturing three financial crises. They conclude that there is no clear cut over-performance by Islamic mutual funds against their conventional peers, albeit Islamic funds showed a better risk management capability. Moreover, Boo *et al.* noted that there was an exception during the latest financial crisis, whereby Islamic funds generally outperformed their conventional peers. Similar results were also reported by Reddy *et al.* (2017), who compared risk adjusted performance of Islamic funds, socially responsible and conventional funds established in the UK. They confirmed that, generally, Islamic funds perform similarly to conventional funds. Their findings also showed that the UK-based Islamic funds' magnitude of loss during the financial crisis was lower than that of conventional funds.

Recent studies also compare Islamic Funds with other socially responsible investment funds. Climent *et al.* (2020) compared US Islamic, Socially Responsible, and conventional open-ended mutual funds for the period 1987 till 2018. They explained that the limitations on

investments and stock selection could have probably led Islamic funds to perform worse than conventional funds during the sub-period 1987 till 2000. However, during the sub-period 2000 till 2018, Islamic funds had similar performance to conventional funds, thus showing that market uncertainties made Islamic funds a viable alternative. Abdurahman and Aassouli (2020) evaluate the risk and return characteristics of Islamic funds in comparison to socially responsible investment via the use of absolute and risk adjusted performance measures on a sample collected from four different geographic regions. They did not find any statistically significant differences between Islamic funds and socially responsible investments. They indicate that embedding environmental, social and governance characteristics into Islamic funds investment decisions will not adversely affect their returns. Moreover, they suggest that the industry should consider developing Sharī'ah compliant Socially Responsible Investments, to target wider investor base in support of sustainable development goals.

Notwithstanding the different limitations and approaches to measure performance, there seems to be a consensus amongst Islamic funds literature. These funds tend to have a lower correlation with market movements, as evidenced by lower betas (see e.g. Hayat, 2006; Abderrezak, 2008). This could help to explain why Islamic funds perform better than conventional CISs during periods of financial distress, whereas conventional funds outperform Islamic funds during bearish economic conditions (e.g. Elfakhani *et al.*, 2005; Hayat, 2006; Abdullah *et al.*, 2007; Merdad *et al.*, 2010; Mansor, 2012; Boo *et al.*, 2017). Therefore, such common consensus seems to suggest that Islamic funds may be used to hedge against market downturn. Merdad *et al.* (2010) attribute such benefit to the restrictions that Sharī'ah law imposes on portfolio selection.

3. Data and methodology

This paper aims to address the following research questions:

(1) Do Islamic funds and UCITS schemes underperform the market?

(2) Do these type of collective investment schemes offer similar benefits to investors in terms of risk and return?

(3) Do these funds act differently in bullish and bearish market conditions?

(4) Do Islamic and UCITS funds' managers offer similar benefits to investors in terms of market timing expertise?

This study builds upon 128 regressions, split equally between the Islamic and the UCITS schemes across the four different periods. The data covers 120 monthly observations from January 2006 until December 2015.

3.1 Data

The universe of Islamic funds as presented on Bloomberg was filtered as follows: (1) funds with a complete 10 years of history plus an extra year to control for back-fill bias, from 2004 till 2015, (2) funds which invest in liquid financial instruments such as equities, fixed income instruments and CISs, particularly because UCITS schemes are only allowed to invest in liquid transferable instruments; and (3) funds which had missing Net Asset Value ("NAV") data for continuous periods (more than 2 months in a row) were eliminated from the sample. The Islamic funds sample was divided into three broad categories, namely, equity, fixed income and mixed allocation funds.

To perform a meaningful matched-pair analysis, the UCITS schemes were chosen on the basis of, and in line with, the particular characteristics of the Islamic funds. The Mixed Allocation funds was done meticulously, to ensure that, as much as possible, the underlying

assets of the selected UCITS schemes correspond, in similar percentage terms, to the underlying assets of the Islamic funds. Particular attention was paid to select UCITS schemes with similar geographical allocation to that of Islamic funds. Most Islamic funds invest in the Asian markets, focusing mainly on Malaysia. Whilst there are several UCITS equity funds that invest solely in Asia, the search for Fixed Income and Mixed Allocation UCITS schemes which invest in the same region proved difficult. To this effect, the focus was then widened to consider UCITS schemes that invest at least a portion of the portfolio in Asian countries (mostly Japan), emerging markets or have an ethical investment policy, and subsequently those that invest in international markets.

The final sample consists of 121 Islamic funds and 121 corresponding UCITS schemes, split up in 66 Equity, 39 Mixed Allocation and 16 Fixed Income. The MSCI All Country World Index ("MSCI ACWI") is used as a proxy for the market in respect of both Islamic and UCITS schemes. The choice of the index is based on the fact that the CISs under review are not restricted in terms of geographical allocation and a considerable number invest in the Asian markets, some of which also include emerging markets.

3.2 Methodology

The NAV of each fund was converted into one single currency, namely the United States Dollar ("USD"). The NAVs were then converted into returns. The US three-month Treasury Bill was used as a proxy for the risk-free rate.

The presentation of results is split into four categories based on the funds' underlying assets, and distinguishing between Islamic and UCITS schemes, namely (1) All Funds, (2) Equity, (3) Mixed Allocation and (4) Fixed Income – whereby the average of the results of the performance measures of the funds falling within the respective category is reported. This representation in results is maintained throughout the four periods under study, namely (1) the entire ten-year period (January 2006 till December 2015), (2) Sub-Period 1 (January 2006 till September 2007), (3) Sub-Period 2 (October 2007 till February 2009) and (4) Sub-Period 3 (March 2009 till December 2015). The sub-periods capture the variations in the performance of the funds during different market conditions and represent the months preceding the latest financial crisis (Sub-Period 1), the bear market (Sub-Period 2), and the years following the crisis (Sub-Period 3).

This paper adopts an equally weighted portfolio approach. The individual fund's monthly returns were grouped into four portfolios, according to the same underlying assets as described above, and calculated over the entire 10-year period and each of the sub-periods. The equally weighted portfolio approach shows an aggregate picture of funds' performance and thus provides insight into the performance from the perspective of a well-diversified investor.

The portfolio approach was subject to various time-series regressions. The time-series analysis focuses on the risk and return performance starting from the single-factor CAPM expressed as:

$$E\left(\bar{\bar{R}}_{jt}\right) = R_{Ft} + \beta_j\left[E\left(\bar{\bar{R}}_{mt}\right) - R_{Ft}\right] \tag{1}$$

whereby $E(\bar{\bar{R}}_{jt})$ is the expected return on portfolio (j) at time (t), $E(\bar{\bar{R}}_{mt})$ is the expected return on the market portfolio at time (t), R_F is the risk-free interest rate and β_j is a measure of systematic risk, and then extends to more complex multi-factor models, namely: the Fama and French (1993) three-factor model expressed as:

$$R_i - R_f = \alpha_i + b_i(R_M - R_f) + s_i SML + h_i HML + \varepsilon_i. \tag{2}$$

This model outlines that the portfolio's return in excess of the risk-free rate $(R_i - R_f)$ is dependent upon the sensitivity of the return to three factors, namely (1) the excess return on

the market as defined by $R_M - R_f$, (2) the size factor (SML), which is the difference between small stocks' and large stocks' returns and (3) the value factor (HML), which is the difference between high and low book-to-market stocks' returns. The b_i, s_i and h_i are the factor sensitivities or loading as measured by the time series regression. The Fung and Hsieh (2004) seven-factor model was also used, which is expressed as:

$$R_{it} - R_{ft} = \alpha_i + \beta_{is\&p} S\&P_t + \beta_{isc-LC} SC - LC_t + \beta_{i10Y} 10Y_t + \beta_{icredspr} CredSpr_t + \beta_{iptfsbd} PTFSBD_t + \beta_{iptfscom} PTFSCOM_t + \beta_{iptfsfx} PTFSFX_t \varepsilon_i \quad (3)$$

whereby $R_{it} - R_{ft}$ is the same as outlined previously, $S\&P$ is the S&P500 index monthly total return, $SC - LC$ represents the size spread factor as measured by the Russell 2000 index monthly return less the S&P500 index monthly total return, $10Y$ is the bond-oriented factor as measured by the change in the 10 years treasury constant maturity yield and *CredSpr* is the credit spread factor, equivalent to the difference between the monthly change in the Moody's BAA yield and the 10 years treasury constant maturity yield. Finally, the PTFSBD, PTFSFX and PTFSCOM are the return of a portfolio of look-back straddles on bond, currency and commodity futures respectively.

In addition, the market timing skills of fund managers was analysed by using the quadratic version of the CAPM as developed by Treynor and Mazuy (1966), expressed as:

$$R_{pt} - R_{ft} = \alpha_{pt} + \beta_{pt}(R_{Mt} - R_{ft}) + \gamma_t (R_{Mt} - R_{ft})^2 + \mu_t \quad (4)$$

whereby $R_{pt} - R_{ft}$ is the return on each of the funds' portfolio less the risk-free rate and $R_{Mt} - R_{ft}$ is the excess return of the market over the risk-free rate, at time (t). Moreover, α_{pt} denotes the selectivity skill of the fund manager, β_{pt} represents the systematic risk, γ_t is the coefficient that indicates the market timing skill. Therefore, a positive and significant α and γ indicate that fund managers have superior selectivity and market timing skills respectively.

4. Findings

When analysing mutual fund performance, Jensen concluded, "*There is very little evidence that any individual fund was able to do significantly better than that which we expect from mere random chance*" (Jensen, 1968). This conclusion is also true for both Islamic and UCITS schemes across the different periods under analysis, as evidenced by the statistically insignificant intercepts of the CAPM across the different time periods. Therefore, this result supports the notion of an efficient market. The one exception to this rule is evidenced in the UCITS mixed allocation funds portfolio during the post-crisis period, which had a significant negative alpha value. The strongly significant Beta co-efficient for most of the cases also confirm the correlation with the market as previously explained.

The results of the time series regression of the Jensen's Alpha;

$$\bar{\bar{R}}_{jt} - R_{Ft} = \alpha_j + \beta_j \left(\bar{\bar{R}}_{Mt} - R_t \right) + \mu_{jt} \quad (5)$$

where $\bar{\bar{R}}_{jt} - R_{Ft}$ is portfolio (j)'s excess return over the risk free rate at time (t), $\bar{\bar{R}}_{Mt} - R_{Ft}$ is the market risk premium, α_j and β_j are the coefficient estimates denoting the return performance and the systemic risk respectively and μ_{jt} is the error term, with the usual assumption $\varepsilon_{it} \sim N(0, \delta_t^2)$, are shown in Table 1.

Results of the empirical literature on Islamic funds' performance are quite divergent on this front, and the main differences in results may be mainly attributed to several factors, including the differing periods under investigation and the benchmarks used. The results of

		Jensen's (1968) single factor model					
		Islamic funds			UCITS funds		
		α_p	β_p	Adj R^2	α_p	β_p	Adj R^2
All funds	10Y	0.001 (0.512)	0.646*** (17.835)	0.727	0.000 (0.313)	0.862*** (37.679)	0.923
	SP1	0.004 (0.980)	0.846*** (4.869)	0.532	0.003 (0.947)	0.922*** (8.362)	0.775
	SP2	0.003 (0.472)	0.631*** (6.626)	0.728	0.008 (1.501)	0.929*** (12.713)	0.909
	SP3	−0.001 (−0.611)	0.658*** (14.396)	0.718	−0.002 (−1.467)	0.872*** (33.955)	0.934
Equity	10Y	0.001 (0.830)	0.742*** (21.876)	0.801	0.001 (0.750)	1.065*** (39.538)	0.929
	SP1	0.004 (0.908)	0.922*** (5.508)	0.595	0.003 (1.038)	1.212*** (8.904)	0.796
	SP2	0.003 (0.459)	0.758*** (8.122)	0.802	0.007 (1.216)	1.129*** (14.936)	0.933
	SP3	0.000 (0.077)	0.731*** (17.295)	0.786	−0.001 (−0.376)	1.048*** (32.533)	0.929
Mixed allocation	10Y	0.001 (0.281)	0.630*** (13.043)	0.587	−0.001 (−0.554)	0.722*** (25.084)	0.841
	SP1	0.007 (1.119)	0.881*** (3.510)	0.361	0.002 (0.653)	0.697*** (6.759)	0.691
	SP2	0.003 (0.459)	0.758*** (8.122)	0.802	0.009 (1.199)	0.749*** (7.982)	0.797
	SP3	−0.003 (−1.114)	0.665*** (11.083)	0.601	−0.003** (−2.275)	0.760*** (22.664)	0.864
Fixed income	10Y	0.000 (−0.263)	0.290*** (8.666)	0.384	0.000 (0.247)	0.365*** (9.305)	0.418
	SP1	−0.001 (−0.230)	0.446*** (4.199)	0.454	0.001 (0.316)	0.276* (2.044)	0.137
	SP2	0.004 (0.664)	0.237** (2.895)	0.316	0.012 (1.124)	0.392** (2.788)	0.297
	SP3	−0.003 (−1.362)	0.344*** (7.597)	0.412	−0.002 (−1.128)	0.420*** (9.673)	0.533

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

Table 1.
CAPM results

these study are in line with the works of Abdullah *et al.* (2007), Hoepner *et al.* (2010), Hayat and Kräussl (2011), Elfakhani *et al.* (2005) and Abderrezak (2008), who all reported insignificant alphas, whereas it goes against the results of Hayat and Kräussl (2011) who report that Islamic funds underperformed the market during the recent financial crisis, whereas Mansor (2012) found that Islamic funds significantly outperform the market over the period 1990 till 2009.

4.1 Analysis of beta

An interesting result is that the Beta of Islamic funds has always been much lower than that of UCITS schemes for all categories of funds and across all the different periods under analysis. Therefore, any attempt to compare the average returns of Islamic funds to the returns of the market without making an adjustment for risk would be biased against the Islamic funds. As can be observed in most of the Islamic funds' literature (such as Abdullah *et al.* (2007); Hayat and Kräussl, 2011; Mansor, 2012), Islamic funds have been less responsive to market risk, with beta less than one, across different market conditions. On the other hand, some categories of UCITS schemes, in particular, equity funds, have been riskier than the benchmark (with beta as high as 1.212 during the period preceding the crisis).

Therefore, Islamic funds are indeed less volatile than the market and may be classified as low-risk investments. As also suggested by Abderrezak (2008), due to their mild correlation with the market, Islamic funds may be used as a good hedging investment against market downturns. Inversely, in good market conditions, Islamic funds are likely to underperform the market.

Abdullah *et al.* (2007) attribute the low level of beta to the restrictions imposed by Sharī'ah principles. Islamic financial institutions were not directly affected by the financial crisis during its early stages particularly because they did not have any exposure to debt-based toxic assets (Askari *et al.*, 2010). The fact that Sharī'ah principles do not allow investors to gain exposure to conventional banking system (since these gain income from *ribā*) investors in Islamic funds were not immediately affected by the failure of the conventional banking system in 2007. However, due to the interconnectedness of the markets and as the financial crisis led to a global slowdown and economic recession, Islamic financial institutions were eventually influenced by the negative pressure of the crisis.

Judging by the results of the Adjusted R^2, the CAPM provides a fairly good fit for Islamic funds, with an average Adjusted R^2 (across periods and categories) of 58.7%. The single-factor model is yet more accurate in explaining the UCITS schemes' excess returns as evidenced by an average Adjusted R^2 of 73.2%. This is quite an expected outcome, because a conventional benchmark, such as the one used in this research, may not be the most adequate benchmark which reflects the true investable universe applicable under Sharī'ah Law.

In order to further validate the above findings, the analysis was extended towards the three-factor model following Fama and French (1993). One commonality in the results of the three factor model as shown in Table 2, with all the tests conducted so far, is that all categories of funds, bar the UCITS Equity Funds have lower volatility than the market. Moreover, Islamic funds have lower exposure to the market than UCITS schemes, indicating that Islamic Funds provide a better hedge, especially during market turmoil. In terms of style, it is apparent that both Islamic and UCITS schemes have significant negative loading on the size factor. This suggests that the return of both categories of funds is driven relatively more by the exposure to large capitalisation firms.

Whilst this is expected for UCITS funds, since these are not permitted to gain exposure to unlisted securities which by the very nature, tend to be small cap firms, the tilt of Islamic funds to large cap companies do contradict the findings of Abderrezak (2008) and Hoepner *et al.* (2010), who suggest that large-cap companies have a higher risk of receiving revenues

		Fama and French (1993) 3-factor model										
		Islamic funds					UCITS funds					
		α_p	Rm-Rf	SMB	HML	Adj R^2	α_p	Rm-Rf	SMB	HML	Adj R^2
All funds	10Y	−0.002 (−0.762)	0.686*** (12.617)	−0.218** (−2.147)	−0.104 (−1.185)	0.588	−0.003 (−1.513)	0.898*** (17.698)	−0.170* (−1.801)	−0.145* (−1.763)	0.744
	SP1	0.008 (1.336)	0.692*** (2.629)	−0.110 (−0.418)	−0.061 (−0.199)	0.179	0.007 (1.510)	0.650** (2.873)	0.062 (0.275)	−0.105 (−0.394)	0.275
	SP2	0.004 (0.344)	0.773*** (4.770)	−0.502 (−1.138)	−0.273 (−1.465)	0.577	0.005 (0.427)	1.023*** (6.054)	−0.181 (−0.394)	−0.310 (−1.596)	0.728
	SP3	−0.005* (−1.816)	0.692*** (10.098)	−0.217* (−1.940)	0.020 (0.176)	0.589	−0.006*** (−2.669)	0.910*** (14.756)	−0.230** (−2.286)	−0.039 (−0.379)	0.754
Equity	10Y	−0.002 (−0.814)	0.802*** (15.137)	−0.218** (−2.206)	−0.148* (−1.723)	0.674	−0.003 (−1.448)	1.121*** (18.825)	−0.145 (−1.305)	−0.235** (−2.435)	0.768
	SP1	0.008 (1.413)	0.741*** (2.880)	0.001 (0.002)	−0.199 (−0.657)	0.267	0.009 (1.544)	0.888*** (3.110)	0.062 (0.219)	−0.146 (−0.436)	0.315
	SP2	0.003 (0.266)	0.927*** (5.699)	−0.502 (−1.133)	−0.358* (−1.914)	0.676	0.003 (0.245)	1.314*** (7.600)	−0.264 (−0.560)	−0.518** (−2.602)	0.811
	SP3	−0.004 (−1.571)	0.779*** (11.960)	−0.232** (−2.180)	0.023 (0.209)	0.670	−0.006*** (−2.141)	1.083*** (14.665)	−0.166 (−1.374)	−0.052 (−0.426)	0.757
Mixed	10Y	−0.002 (−0.623)	0.654*** (9.579)	−0.245** (−1.927)	−0.091 (−0.822)	0.447	−0.003* (−1.706)	0.746*** (14.709)	−0.204** (−2.161)	−0.065 (−0.786)	0.668
allocation	SP1	0.010 (1.347)	0.709* (2.027)	−0.284 (−0.815)	0.046 (0.113)	0.053	0.005 (1.383)	0.471** (2.538)	0.108 (0.586)	−0.044 (−0.202)	0.236
	SP2	0.004 (0.337)	0.724*** (3.814)	−0.607 (−1.174)	−0.287 (−1.316)	0.436	0.006 (0.471)	0.804*** (4.322)	−0.110 (−0.217)	−0.128 (−0.598)	0.570
	SP3	−0.006* (−1.912)	0.681*** (7.909)	−0.208 (−1.480)	0.036 (0.248)	0.467	−0.008*** (−3.239)	0.811*** (13.271)	−0.314*** (−3.146)	−0.027 (−0.268)	0.706
Fixed	10Y	−0.001 (−0.717)	0.286*** (6.464)	−0.148* (−1.805)	0.042 (0.584)	0.281	−0.001 (−0.265)	0.350*** (6.578)	−0.193* (−1.947)	0.030 (0.349)	0.282
income	SP1	0.000 (0.071)	0.446*** (3.308)	−0.138 (−1.030)	0.242 (1.531)	0.330	0.003 (0.793)	0.107 (0.602)	−0.052 (−0.292)	−0.082 (−0.391)	−0.140
	SP2	0.005 (0.705)	0.253* (2.052)	−0.246 (−0.731)	0.113 (0.798)	0.163	0.010 (0.719)	0.356 (1.621)	−0.016 (−0.027)	0.101 (0.398)	0.078
	SP3	−0.005* (−1.922)	0.361*** (5.886)	−0.178* (−1.779)	−0.028 (−0.277)	0.299	−0.004* (−1.806)	0.441*** (7.207)	−0.293*** (−2.933)	−0.012 (−0.119)	0.400

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

Table 2.
Fama and French 3-factor model results

from activities which are forbidden according to Sharī'ah Law. Yet, one could argue that large-cap companies tend to publish more detailed information about their operations on a more frequent basis, and accordingly, the availability of up to date information inevitably makes it easier for Islamic fund managers to clearly assess and distinguish between companies that generate *haram* and *halal* income. Abderrezak (2008) and Hoepner *et al.* (2010) suggest that Islamic equity funds favour growth stock due to their lower leverage when compared to value stock, and the same significant result was found for the whole ten year period under review for the Islamic Equity funds.

During crisis period, both the Islamic and also the UCITS Equity Funds gained significant exposure to growth companies, which companies are considered to be less risky than those with high book to market ratios. When looking at each individual category of funds, it is noticeable that Islamic funds performed less worse than their UCITS counterparts in respect of the All Funds, Equity and Mixed Allocation categories, whereas the UCITS Fixed Income portfolio fared better than its Islamic counterparts.

It is important to note that, in terms of the results of the Adjusted R^2 for all of the periods under analysis, the Fama and French (1993) three-factor model has lower explanatory powers than the CAPM, especially during the period prior to the crisis. This could partially be explained by two reasons. The Fama and French's three risk factors are built upon the US market, and thus the lower Adjusted R^2 might be suggestive of the fact that both Islamic and UCITS schemes are more exposed to international markets, as captured by the MSCI ACWI. Moreover, one could also argue that most of the changes in the returns of the funds could be explained by other factors which are not captured by the model.

For more robust test, this study analysis the performance of the funds relative to the Fung and Hsieh (2004) seven factor model, which model has proved to be more efficient at explaining the returns of different categories of funds when compared to the three-factor model. As evidenced by the results in Table 3, generally speaking, the null hypothesis that Islamic and UCITS schemes do not outperform the market, may not be rejected. Moreover, in times when the general market conditions start to regain following periods of market turmoil, the restrictions imposed by both Sharī'ah Law and the UCITS Directive are even more detrimental to investors. During the whole 10 year period, all the portfolios experienced statistically significant and positive exposure to the S&P500, yet the UCITS Equity portfolio was more volatile than the general equity market. Moreover, the Islamic Fixed Income portfolio was the only category of funds that did not have a statistically significant exposure to Credit Spread, whereas all the other portfolios followed a strategy of buying risky bonds vis-à-vis higher grade bonds (as evidenced by the negative coefficients). Prior to the crisis, albeit all the portfolios generated positive alpha, the results were statistically insignificant. In terms of style, the UCITS Fixed Income portfolio was the only category which did not have a statistically significant exposure to the S&P500, which Fung and Hsieh (2004) classify as an equity risk factor. This confirms the findings of the three-factor model, in that the UCITS Fixed Income funds did not gain exposure to the equity market during the period before the crisis. Moreover, the seven-factor model captured the positive exposure of the UCITS Fixed Income funds towards the foreign exchange trend factor (500bps (t-stat: 2.78)) and the negative exposure of the Islamic Mixed Allocation funds towards the credit spread factor, which were previously not captured by the Fama and French model. This explains the reason why the Adjusted R^2 of the Fung and Hsieh model (34.6 and 33.1% respectively) improved significantly when compared to the Fama and French model (−14 and 5.3% respectively) for these categories of funds.

In the midst of the crisis, the 7-factor model did not find any statistically significant alphas, yet, when it comes to style, it confirmed that the Islamic and UCITS Fixed Income portfolios were the only categories not exposed to the equity market. This could help explain why, during this period, the Fixed Income funds were the least to suffer in terms of their mean

Table 3.
Fung Hsieh 7-factor model results

10 year period (January 2006–September 2015)	Fung Hsieh (2004) 7-factor model							
	Islamic funds				UCITS funds			
	All funds	Equity	Mixed allocation	Fixed income	All categories	Equity	Mixed allocation	Fixed income
α_p	−0.001 (−0.551)	0.000 (−0.425)	−0.001 (−0.510)	−0.002 (−1.100)	−0.002 (−1.019)	−0.002 (−0.726)	−0.003 (−1.464)	−0.001 (−0.588)
PTFSBD	−0.021 (−1.281)	−0.022 (−1.342)	−0.025 (−1.191)	−0.011 (−0.796)	−0.010 (−0.644)	−0.010 (−0.541)	−0.012 (−0.755)	−0.006 (−0.386)
PTFSCOM	−0.007 (−0.490)	−0.002 (−0.144)	−0.016 (−0.864)	−0.007 (−0.588)	0.005 (0.373)	−0.003 (−0.180)	0.016 (1.097)	0.015 (1.070)
PTFSFX	−0.004 (−0.325)	−0.005 (−0.379)	−0.001 (−0.079)	−0.009 (−0.859)	0.006 (0.442)	0.009 (0.568)	0.004 (0.358)	−0.004 (−0.334)
SP500	0.590*** (10.188)	0.686*** (12.188)	0.557*** (7.632)	0.271*** (5.771)	0.833*** (15.039)	1.024*** (15.467)	0.706*** (12.864)	0.351*** (6.409)
SC-LC	−0.108 (−1.191)	−0.103 (−1.169)	−0.139 (−1.218)	−0.052 (−0.707)	−0.037 (−0.428)	−0.009 (−0.086)	−0.065 (−0.757)	−0.085 (−0.991)
Bond factor	−27.372** (−2.000)	−23.263* (−1.747)	−32.220* (−1.868)	−32.506*** (−2.925)	−29.787** (−2.277)	−24.094 (−1.540)	−29.465** (−2.272)	−54.056*** (−4.179)
Credit spread	−34.197** (−2.609)	−40.256*** (−1.747)	−35.840** (−2.170)	−5.245 (−0.493)	−34.397*** (−2.746)	−39.701*** (−2.649)	−29.798** (2.399)	−23.730* (−1.916)
Adj R^2	0.608	0.690	0.469	0.317	0.745	0.760	0.674	0.362
Sub-period 1 (January 2006–September 2007)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	0.007 (1.031)	0.007 (1.014)	0.009 (1.170)	0.000 (−0.047)	0.009 (1.472)	0.012 (1.568)	0.005 (1.152)	0.003 (0.733)
PTFSBD	0.001 (0.022)	0.007 (0.113)	−0.007 (−0.105)	−0.001 (−0.037)	0.042 (0.857)	0.073 (1.131)	0.009 (0.255)	−0.009 (−0.284)
PTFSCOM	0.009 (0.251)	0.017 (0.436)	0.002 (0.050)	−0.006 (−0.264)	0.032 (0.989)	0.031 (0.738)	0.031 (1.302)	0.034 (1.730)
PTFSFX	0.039 (1.175)	0.028 (0.790)	0.067 (1.717)	0.015 (0.760)	0.038 (1.334)	0.032 (0.828)	0.045 (2.110)	0.050** (2.782)
SP500	0.720** (2.776)	0.740** (2.680)	0.795** (2.589)	0.457** (2.854)	0.620** (2.731)	0.857** (2.846)	0.449** (2.659)	0.055 (0.389)
SC-LC	−0.083 (−0.351)	0.014 (0.055)	−0.249 (−0.895)	−0.073 (−0.504)	0.138 (0.671)	0.162 (0.593)	0.158 (1.028)	−0.007 (−0.057)
Bond factor	−24.107 (−0.420)	−32.407 (−0.531)	−19.528 (−0.288)	−1.030 (−0.029)	−33.947 (−0.677)	−46.697 (−0.702)	−13.460 (−0.360)	−31.292 (−1.006)
Credit spread	−157.542 (−1.655)	−151.153 (−1.492)	−213.201* (−1.893)	−48.231 (−0.821)	−76.100 (−0.915)	−106.846 (−0.968)	−49.427 (−0.797)	−14.283 (−0.277)
Adj R^2	0.268	0.227	0.331	0.132	0.334	0.303	0.419	0.346

(*continued*)

Table 3.

Sub-period 2 (October 2007–February 2009)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	0.001 (0.109)	0.003 (0.318)	−0.001 (−0.053)	−0.005 (−0.909)	0.005 (0.407)	0.008 (0.549)	0.001 (0.144)	−0.001 (−0.109)
PTFSBD	−0.037 (−0.543)	−0.024 (−0.324)	−0.051 (−0.674)	−0.053 (−1.473)	0.055 (0.709)	0.035 (0.358)	0.087 (1.234)	0.058 (0.780)
PTFSCOM	0.126 (1.808)	0.127 (1.657)	0.139 (1.774)	0.088** (2.393)	0.142 (1.784)	0.183 (1.812)	0.107 (1.463)	0.063 (0.821)
PTFSFX	−0.116** (−2.568)	−0.113** (−2.281)	−0.134** (−2.635)	−0.082*** (−3.413)	−0.123** (−2.372)	−0.143* (−2.188)	−0.107** (−2.263)	−0.077 (−1.551)
SP500	0.534** (3.199)	0.682*** (3.701)	0.445** (2.365)	0.144 (0.169)	0.813*** (4.235)	1.102*** (4.540)	0.598*** (3.405)	0.149 (0.808)
SC-LC	−0.474 (−1.405)	−0.536 (−1.440)	−0.551 (−1.449)	−0.034 (−0.188)	−0.260 (−0.669)	−0.433 (−0.882)	−0.074 (−0.208)	0.000 (−0.002)
Bond factor	−67.132 (−1.816)	−55.282 (−1.356)	−86.400* (−2.074)	−69.047*** (−3.520)	−45.145 (−1.061)	−26.170 (−0.487)	−54.376 (−1.399)	−100.918** (−2.472)
Credit spread	−24.505 (−0.846)	−35.641 (−1.115)	−23.143 (−0.709)	18.109 (1.178)	−27.409 (−0.822)	−30.632 (−0.727)	−23.808 (−0.782)	−22.894 (−0.716)
Adj R^2	0.681	0.706	0.608	0.695	0.751	0.736	0.729	0.540
Sub-period 3 (March 2009 – December 2015)	All funds	Equity	Mixed allocation	Fixed income	All funds	Equity	Mixed allocation	Fixed income
α_p	−0.005** (−2.062)	−0.004 (−1.596)	−0.007** (−2.306)	−0.006** (−2.527)	−0.006** (−2.390)	−0.005* (−1.823)	−0.007*** (−2.884)	−0.005** (−2.100)
PTFSBD	−0.016 (−0.868)	−0.022 (−1.224)	−0.013 (−0.564)	0.000 (−0.010)	−0.027 (−1.572)	−0.028 (−1.379)	−0.031* (−1.782)	−0.014 (−0.788)
PTFSCOM	−0.021 (−1.270)	−0.016 (−1.010)	−0.030 (−1.436)	−0.020 (−1.380)	−0.010 (−0.653)	−0.026 (−1.432)	0.008 (0.520)	0.012 (0.786)
PTFSFX	−0.004 (−0.255)	0.002 (0.143)	−0.010 (−0.490)	−0.015 (−1.124)	0.021 (1.469)	0.030* (1.776)	0.017 (1.179)	−0.006 (−0.450)
SP500	0.657*** (9.057)	0.733*** (10.559)	0.652*** (7.171)	0.352*** (5.489)	0.877*** (13.278)	1.049*** (13.399)	0.768*** (11.575)	0.437*** (6.581)
SC-LC	−0.085 (−0.819)	−0.096 (−0.963)	−0.068 (−0.522)	−0.083 (−0.900)	−0.080 (−0.851)	−0.002 (−0.019)	−0.172* (−1.817)	−0.179* (−1.890)
Bond factor	−38.195** (−2.035)	−28.280 (−1.573)	−51.471** (−2.187)	−46.735*** (−2.813)	−29.043* (−1.697)	−36.745* (−1.813)	−13.987 (−0.814)	−33.966* (−1.976)
Credit spread	−42.593** (−2.433)	−41.525** (−2.477)	−49.071** (−2.236)	−31.206** (−2.014)	−38.643** (−2.422)	−43.624** (−2.308)	−33.796** (−2.110)	−29.907* (−1.865)
Adj R^2	0.625	0.695	0.516	0.375	0.770	0.778	0.718	0.424

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

returns. Consistent with the bear market effects, and also as specified in Fung and Hsieh (2004), the reduction in the exposure to the equity market by the Fixed Income and the Islamic Mixed Allocation portfolios was compensated by the statistically significant and negative exposure to the bond factor as proxied by the yield on the 10 years U.S. Treasury Bonds. Due to the inverse relationship of the price-to-yield of bonds, a more negative exposure is indicative of further investments in the bond market. During the crisis, all of the different fund portfolios (with the exception of the UCITS Fixed Income portfolio) experienced negative and statistically significant exposure to the currency trend-following factor. This could potentially indicate that these funds use foreign exchange for hedging purposes rather than for investment purposes. In addition, Islamic Fixed Income portfolio experienced a positive (0.088) and statistically significant exposure (at 95% confidence level) to the commodities trend following factor. Fung and Hsieh (2004) attribute the increase in the trend-following factor on commodities as a diversifying bet during stressful equity market conditions. Indeed Islamic funds are allowed to gain exposure to the commodities market, which is an investment style that UCITS schemes are precluded to delve into. As also evidenced by the three-factor model, the period following the latest financial crisis was characterised by the poor performance of the funds relative to the market. The only fund category which did not generate a statistically significant intercept after the crisis was the Islamic Equity portfolio, whereas the other categories produced statistically significant negative alphas, which ranged between 50bps and 70bps per month. Although one may say that the Islamic funds, in general, fared better than their UCITS counterparts, the difference is only marginal (10bps).

Once the bear market conditions came to an end, one can notice that the portfolios (with the exception of the UCITS Equity portfolio) no longer loaded on the foreign exchange trend following factor and instead gained a negative and statistically significant exposure to the credit spread factor. The negative exposure to the credit spread in theory implies that the funds moved away from the safe haven of government bonds and gained exposure to high yield bonds or corporate bonds. This increase in credit risk had a negative impact on the returns. However, most of the funds portfolios, namely the Islamic All Funds, Mixed Allocation, Fixed Income and the UCITS All Funds, Equity and Fixed Income, display a negative and statistically significant loading on the bond factor, meaning that they were long in the government bond market. Therefore, in view of the contradictory outcome, the negative exposure to the credit factor during this period signifies that the funds have probably sold credit swaps. It is also worth noting that, following the crisis, the Fixed Income funds decreased their exposure to the bond market and increased their exposure to the equity market (both in terms of statistical significance and magnitude).

In almost all categories of funds and across almost all periods, the seven-factor model was better at explaining the funds' excess returns when compared to the three-factor model, as evidenced by a higher Adjusted R^2. The magnitude of the Adjusted R^2 across all the ten year period and in the second and third sub-periods is indicative that these funds (especially the All Funds and the Equity portfolios whose Adjusted R^2 was above the 60% mark) take on a significant amount of factor risk. Although the single-factor model seems to have the highest explanatory powers between all models, the seven-factor model proved significantly better at explaining the excess return of Fixed Income portfolios during the crisis period.

This study also looked at the fund manager's market timing ability (as measured by coefficient γ_1), through the Treynor and Mazuy model. Results are presented in Table 4. It is evident that the null hypothesis that fund managers are not able to outguess the market cannot be rejected. Such result was expected and is in line with the EMH. This outcome is similar to the results of Hayat (2006), Hayat and Kräussl (2011) and Mansor (2012). The only category of funds that showed good market timing ability was the UCITS Fixed Income portfolio during the first sub-period (γ: 8.592 statistically significant at the 5% level). To note

Table 4.
Treynor and Mazuy model results

		Treynor and Mazuy (1966) model							
		Islamic funds				UCITS funds			
		α_p	β_1	γ_1	Adj R^2	α_p	β_1	γ_1	Adj R^2
All funds	10Y	0.001 (0.578)	0.643*** (16.662)	−0.109 (−0.271)	0.723	0.005 (0.403)	0.860*** (35.301)	−0.068 (−0.269)	0.922
	SP1	0.003 (0.571)	0.817*** (4.311)	2.476 (0.430)	0.511	0.001 (0.406)	0.893*** (7.481)	2.518 (0.695)	0.769
	SP2	0.004 (0.482)	0.578*** (3.208)	−0.418 (−0.347)	0.711	0.008 (1.474)	0.873*** (6.442)	−0.288 (−0.318)	0.904
	SP3	0.000 (−0.136)	0.668*** (13.999)	−0.502 (−0.714)	0.716	−0.002 (−1.246)	0.872*** (32.447)	0.008 (0.021)	0.933
Equity	10Y	0.002 (1.200)	0.730*** (20.300)	−0.367 (−0.977)	0.800	0.001 (0.752)	1.063*** (37.065)	−0.061 (−0.203)	0.929
	SP1	0.003 (0.530)	0.897*** (4.905)	2.194 (0.395)	0.576	0.004 (0.906)	1.217*** (8.156)	−0.475 (−0.105)	0.785
	SP2	0.004 (0.494)	0.663*** (3.791)	−0.757 (−0.648)	0.794	0.007 (1.146)	1.195*** (8.401)	0.523 (0.550)	0.930
	SP3	0.001 (0.471)	0.740*** (16.799)	−0.496 (−0.763)	0.785	−0.001 (−0.481)	1.045*** (31.028)	0.154 (0.309)	0.928
Mixed allocation	10Y	0.000 (0.144)	0.633*** (12.318)	0.111 (0.208)	0.584	0.000 (−0.285)	0.718*** (23.435)	−0.130 (−0.407)	0.840
	SP1	0.005 (0.719)	0.846*** (3.084)	3.041 (0.365)	0.331	−0.001 (−0.291)	0.639*** (6.022)	5.091 (1.582)	0.713
	SP2	0.004 (0.372)	0.545** (2.388)	−0.262 (−0.172)	0.551	0.009 (1.260)	0.610*** (3.530)	−1.106 (−0.957)	0.796
	SP3	−0.002 (−0.666)	0.674*** (10.751)	−0.475 (−0.514)	0.597	−0.003 (−1.590)	0.766*** (21.884)	−0.320 (−0.619)	0.862
Fixed income	10Y	−0.001 (−0.780)	0.304*** (8.559)	0.420 (1.133)	0.385	0.000 (0.158)	0.366*** (8.776)	0.051 (0.117)	0.413
	SP1	−0.002 (−0.542)	0.420*** (3.645)	2.265 (0.648)	0.437	−0.004 (−0.872)	0.177 (1.338)	8.592** (2.137)	0.273
	SP2	0.004 (0.607)	0.312* (2.030)	0.601 (0.584)	0.284	0.013 (1.183)	0.187 (0.719)	−1.641 (−0.946)	0.292
	SP3	−0.002 (−0.694)	0.355*** (7.530)	−0.598 (−0.859)	0.410	−0.003 (−1.116)	0.417*** (9.166)	0.209 (0.311)	0.528

Note(s): *, **,*** indicate that the result is statistically significant at the 10%, 5% and 1% level respectively

that the TM intercept of this category of funds during the same period is −0.004, whilst the JA was at 0.001. This result is similar to what has been identified by Hayat (2006). He explains that JA overestimates the value of alpha when positive market timing ability is found. Therefore, when extracting the positive market timing from alpha, it becomes clear that the fund managers are not good at stock picking.

The results of the Adjusted R^2 are very similar to those of the CAPM, as indeed, the TM Is an extension of the Jensen's model as it adds a quadratic term. The model had an exceptionally good fit for the UCITS All Funds, Equity and Mixed Allocation portfolios across all periods (Adjusted R^2 ranging from to 71.3–93.3%). The model proved good at explaining the excess returns on the Islamic All Funds and Equity portfolios during all periods (Adjusted R^2 ranging from 71.1 to 80%), with the exception of Sub-Period 1. However, and as expected considering the previous models' results, the TM is poor at explaining the excess returns of the Fixed Income portfolios across all the periods (Adjusted R^2 for both the Islamic and UCITS schemes portfolios ranging between 27.3 and 52.8%).

5. Conclusion

> The global financial crisis revealed the weakness of the global financial architecture on one side and provided an opportunity for Islamic finance to show the inherent strengths and qualities on the other. (Haneef and Smolo, 2014)

Academics suggest that albeit the Islamic Financial Industry did not emerge unscratched, the latest financial crisis had limited negative effects on this industry. The question arises as to how well Islamic funds, which are considered to be a small and relatively new segment of IF, perform during differing market conditions.

To be able to address this question, this research evaluates the risk and return performance of Islamic funds between January 2006 and December 2015, which period was marked by one of the most severe financial crisis in history. In order to gauge their resilience to diverse market conditions, their performance was compared to two different benchmarks, firstly to the general market as proxied by the MSCI ACWI and secondly to a category of conventional CISs which is synonymous for its conservative investment approach, namely UCITS schemes.

Evaluating the performance of Islamic funds and comparing it to the performance of UCITS schemes through a matched-pair analysis, it may be concluded that Islamic funds do not face a competitive disadvantage arising from their strict compliance with Sharīʿah principles and their performance is relatively similar to UCITS schemes. Results suggest that, generally, there is no statistically significant risk-adjusted abnormal return or penalty associated with investing in Sharīʿah compliant funds relative to UCITS scheme. Such similarity could arise due to the fact that both types of CISs are subject to certain investment restrictions, as imposed either by Sharīʿah law or by the UCITS Directive, which therefore hinder fund managers from allocating the portfolios more liberally. Moreover, according to the results of the three and seven-factor models, both categories of funds seem to follow similar investment strategies.

Therefore, investors who follow the Sharīʿah principles are not punished relative to conventional retail investors when following their own beliefs and other investors can consider Islamic funds in their portfolio allocation, especially those who seek socially and ethically responsible investments.

A very interesting finding relates to the risks associated with fund return performance. Both categories of funds have a beta of less than one (with the exception of the UCITS equity funds), yet Islamic funds are less exposed to market risk than UCITS schemes. This implies

that the market risk and volatility of Islamic funds is lower than that of conventional funds and even the market benchmark. This makes Islamic funds attractive to fund managers and risk-averse investors alike, since these funds can be used as a hedging tool against adverse market movements.

The results reveal that both Islamic and UCITS schemes' fund managers have no market timing abilities. Therefore, the implementation of market timing strategies by fund managers do not provide any benefits and value-added to investors in their portfolio management. Hence, fund managers are encouraged to make use of other key strategies, such as risk management and cost averaging, to sustain better performance and be able to overcome financial meltdown. Taking into account the market timing inabilities of fund managers, investors should gain the necessary knowledge about market events, particularly about bearish and bullish conditions. This also enhances the responsibility of regulators and policymakers to invest more resources in financial education.

Islamic Finance should be recognised as a system which works in parallel with the conventional one. Not putting all your eggs in one basket goes beyond allocating the portfolio amongst funds with different asset classes. These findings suggest that including Islamic funds to complement a portfolio made up of conventional funds would be beneficial to decrease the exposure to the market. Whilst it is true that what goes up must eventually come down, diversification across different fund categories can lessen the impact of the fall.

Note

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Islamic securities (ṣukūk) and economic growth: New empirical investigation from Southeast Asia using non-parametric analysis of MCMC panel quantile regression

Received 25 June 2021
Revised 4 October 2021
Accepted 14 November 2021

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Abstract

Purpose – This paper aims to investigate empirically whether Islamic securities enhance economic growth in the Southeast Asian region based on the endogenous growth theory using the non-parametric analysis.

Design/methodology/approach – This paper applies panel quantile regression with Markov chain Monte Carlo optimization as an optimal non-parametric approach to investigate the effect of Islamic securities on economic growth starting from 2013Q4 to 2019Q4 in Southeast Asia. Total issued Islamic securities holdings are employed as a measure for Islamic securities, while the gross domestic product is employed as a proxy for economic growth. The sample includes all working Islamic financial foundations in the top progressive Islamic securities markets' countries of Southeast Asia (Malaysia, Indonesia and Brunei Darussalam).

Findings – The findings confirm that the increase of issuing Islamic securities in Islamic capital markets of Southeast Asia is increasing the levels of economic growth, reflecting the weighty role of the Islamic capital market development as an active contributor to economic growth.

Practical implications – This research would fill the literature gap by exploring Islamic securities–economic growth nexus in Southeast Asia using a robust non-parametric approach based on the endogenous growth theory for better estimation results. The findings of this review serve as a roadmap for financial analysts, policymakers and decision makers to stimulate the Islamic securities markets as another source of finance which can promote the economic growth.

Originality/value – This research is the first that investigates empirically the Islamic securities–economic growth nexus in Southeast Asia using a new empirical investigation built on the non-parametric analysis and outlined within the theoretical context of the endogenous growth model to gain robust evidence about this nexus.

Keywords Islamic securities (ṣukūk), Economic growth, Islamic capital markets, Endogenous growth theory, Panel quantile regression, Markov chain Monte Carlo (MCMC) optimization

Paper type Research paper

JEL Classification — C31, G15, F43, O47. **KAUJIE Classification —** H52, I73, K16

The authors would like to thank the General Directorate of Scientific Research and Technological Development "*La Direction Générale de la Recherche Scientifique et du Développement Technologique (DGRSDT)*" under the Algerian Ministry of Higher Education and Scientific Research "*le Ministère de l'Enseignement Supérieur et la Recherche Scientifique (Algerie)*" for supporting this research. The authors would also like to thank the *Laboratory for Money and Financial Institutions in the Arab Maghreb "MIFMA Laboratory" (Algeria)* for the continuous support of research.

Islamic Economic Studies
Vol. 29 No. 2, 2022
pp. 119-138
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616
DOI 10.1108/IES-06-2021-0020

1. Introduction

Islamic finance has recently turned out to be a significant player in economic development around the world and is expected to grow to US$ 3.8 trillion by 2023 due to the expansion of its reserves (Reuters, 2020). Islamic securities are currently the key Islamic finance mechanism that enhances economic development, according to Lahsasna *et al.* (2018) and Al-Ali (2019). Islamic debt securities or ṣukūk are certificates of Islamic bonds that conform with Islamic laws under which ṣukūk's benefit is interest-free but is generated from the underlying asset value (Lahsasna *et al.*, 2018; Al-Ali, 2019). The benefit derived from Islamic securities is therefore not interest-based but it is a consequence of the basic asset's efficiency.

Lately, particularly in most Muslim economies, the Islamic securities market has seen massive growth. Therefore, in Southeast Asia, where the Islamic finance sector is advanced in all of Malaysia, Indonesia and Brunei Darussalam as stated by Ledhem and Mekidiche (2021), the global pioneer Islamic securities markets are in Southeast Asia (Reuters, 2020). According to Haini (2019), owing to developments in the capital markets, Southeast Asia has recently undergone tremendous economic growth. Because the Islamic securities markets are part of the financial markets, there is a controversy over whether the funding of Islamic securities facilitates the economic growth of Southeast Asia. For this purpose, this study aims to explore whether Islamic securities enhance the economic growth of Southeast Asia as an extension of the literature on the relationship between Islamic securities and economic growth.

In line with Haini (2019), the financial market development in Southeast Asia is promoting economic growth. Furthermore, the Islamic financial markets of Islamic securities are part of the financial markets, and for the reason that Islamic securities markets promote economic growth globally, this paper expresses the hypothesis as the following:

(1) Islamic securities positively affect economic growth in Southeast Asia.

Over the last few years, Southeast Asia witnessed an enormous development in Islamic securities markets, by setting up 50.5% of the global Islamic securities issue. Malaysia remained dominant on the global Islamic securities market and retained its ranking as the world's top issuer with 41% of the total global Islamic securities' share in the first semester of 2018, an increase of 33% a year earlier (IIFM Sukuk Report, 2019, 2020). It released USD 22.4 billion of Islamic securities during the first semester of 2018, a 9% rise from the first semester of 2017 (IIFM Sukuk Report, 2019, 2020; Islamic Financial Services Board, 2020). This Islamic securities growth illustrates why Malaysia is the pioneering Islamic finance country with the best Global Islamic Economy Indicator (GIEI) ranking of 111, representing the best success of Islamic finance in the world (Reuters, 2020).

Similarly, Indonesia saw phenomenal growth in the Islamic finance sector and Islamic securities markets, close to the direction of Malaysian Islamic finance. In 2018, the Indonesian Islamic securities market saw steady growth facing a competitive environment. Relevant international challenges have resulted in sluggish global economic development impacting Indonesia's Islamic capital markets. Even so, at the launch of Islamic securities in 2018, both the Indonesian Government and the Islamic securities companies remained in a good position with continued expansion in the first semester of 2018; Islamic securities about USD 2,472 billion has been issued from both the Indonesian Government and the Islamic securities firms, a rise of 37.13% from the first semester of 2017 (Islamic Financial Services Board, 2020). This Islamic securities growth reflects why Indonesia, with a GIEI score of 49, ranked fifth in Islamic banking and finance ranking worldwide (Reuters, 2020).

Following the growth of the Islamic securities markets in Malaysia and Indonesia, Brunei Darussalam is an excellent underground destination for the Islamic finance business and the Islamic securities markets. With an increasing number of issuances focused primarily on funding infrastructure projects, Brunei Darussalam continues to dominate the international market in Islamic securities since the Brunei Government, through its delegate, Autoriti Monetari Brunei

Darussalam (AMBD), published its 164th Islamic securities series valued at BND 50 million (IIFM Sukuk Report, 2019, 2020). Via this issuance, both the AMBD and the Islamic securities financial firms issued USD 1,730,380 million Islamic securities during the first semester of 2018, a rise of 19.32% from the first semester of 2017 based on the Islamic Financial Services Board (2020). This Islamic securities creation reflects why Brunei Darussalam positioned the 10th country with a GIEI score of 40 in Islamic finance best internationally achievement (Reuters, 2020).

Based on the study of Echchabi *et al.* (2018) and Yıldırım *et al.* (2020), pure research that explores the nexus between Islamic securities and economic growth is minimal, so there is a lack of understanding of this relationship. Consequently, this research is enriching the literature by offering a purer analysis of this relationship from a solid sampling of Southeast Asia which contains developed Islamic capital markets.

Currently, Southeast Asia has seen a substantial increase in capital supplies, savings and the accumulation of expertise, which has led to rapid economic growth in the sense of "the endogenous growth model" (Canlas, 2020). For this purpose, based on the theoretical perspective of the "endogenous growth model" which is an expansion of the "Supply leading hypothesis" in Southeast Asia that contains the top Islamic securities issuers (Malaysia, Indonesia and Brunei Darussalam), this paper is exploring empirically the relationship between Islamic securities and economic growth. Therefore, this paper answers the ensuing question: "Do Islamic securities enhance economic growth in Southeast Asia?"

2. Literature review

2.1 The theoretical framework of Islamic securities–economic growth nexus

2.1.1 Islamic securities–economic growth nexus based on the supply-leading hypothesis. By focusing on the "Supply-leading hypothesis" of Schumpeter theorem (Schumpeter, 1934), the interpretation of McKinnon (1973) and Shaw (1973) is consistent with the principle of financial exploitation, which determines that finance enhances economic development, in which capital securities markets and financial channels of investments can increase economic growth. This hypothesis was widely tested and validated in many empirical studies (Hafnida and Abdullah, 2016). However, as stated by Adeyeye *et al.* (2015), the weakness of this hypothesis is that it cannot be always supported in the case of developing economies. On the other hand, relating to the contribution of Islamic securities capital markets to economic growth, various empirical studies like Tabash and Dhankar (2014), Mitsaliyandito *et al.* (2017) and Al Fathan and Arundina (2019) support the supply-leading theory by demonstrating that Islamic securities (ṣukūk) markets enhance economic growth.

2.1.2 Islamic securities–economic growth nexus based on the demand-following hypothesis. The "demand-following hypothesis" was championed by Robinson (1952), who stated that financial progress follows economic growth which means that economic growth leads to financial progress. However, according to Odhiambo (2007), this hypothesis has not been widely supported in the literature where economic growth leads to financial progress. As well, to the best of the authors' knowledge, this hypothesis was not supported on the promotion of economic growth to the Islamic securities markets' development in the existing literature.

2.1.3 Islamic securities–economic growth nexus based on the mutual-dependence hypothesis. Patrick (1966) proposed the "mutual-dependence hypothesis"; this hypothesis states that the causality of financial development–economic growth is reciprocal (bi-directional relationship). According to Khalifa Al-Yousif (2002), although this hypothesis has been discussed in several empirical studies, it cannot be always supported across developing and developed economies due to the variances in financial development that are determined by economic policies and organizations. Additionally, concerning the Islamic securities–economic growth relationship, it was not widely validated based on a mutually causal relationship; only a few empirical studies like Muharam *et al.* (2019) and Sabiu and Abduh (2020) support this hypothesis.

2.1.4 Islamic securities–economic growth relationship based on the endogenous growth theory. As an extension of these classical concepts, the theory of endogenous growth by Paul Romer proposes that economic growth is influenced by exogenous variables such as financial markets beneath the model of economic growth of Romer (2011) due to investment progress and the rise of the human capital stock (Jhingan, 2011). Additionally, many notable empirical studies are corroborative that financial markets of securities are exogenous factors inside the model of endogenous growth. Bencivenga and Smith (1991) showed that financial intermediation enhanced loans that could fund long-term investments, owing to the increase in deposits and capital supplies, leading to economic growth depending on the endogenous growth model. Correspondingly, Saint-Paul (1992) showed that financial markets foster technical specialization in entrepreneurship that contributes to economic growth.

Besides, Blackburn and Hung (1998) decided that the development of the financial system and trade liberalization could stimulate the development of intermediation which stimulates economic growth. Similarly, Hassan *et al.* (2011) and Levine and Zervos (1998) have determined that finance development and capital markets of securities encouraged technological growth by growing innovation, which contributes to high productivity and is thus essential for economic growth depending on the endogenous growth model, these findings were confirmed also by the two notable studies of Rajan and Zingales (1996) and King and Levine (1993). Above and beyond, all of the noteworthy papers of Fanta and Makina (2017), Pradhan *et al.* (2015) and Thumrongvit *et al.* (2013) demonstrated that the securities financial markets have enhanced economic activity by stimulating expenditure and capital stocks. As a result, securities development boosts economic growth based on the endogenous growth theory.

Since Islamic securities are a category of securities in financial markets, many remarkable studies like Malikov (2017), Mitsaliyandito *et al.* (2017), Smaoui and Nechi (2017), Sari *et al.* (2018) and Ledhem (2020) have determined that Islamic securities development encourages economic growth through expanding investment and capital assets. Therefore, in the sense of the "endogenous growth theory", Islamic securities are an exogenous factor that positively impacts economic growth when investments and capital stocks are raised by Islamic securities financing. As well, Islamic finance is improving economic growth internationally as an exogenous driver according to the endogenous growth concept (Ledhem and Mekidiche, 2020, 2021). Consequently, because Islamic securities are part of Islamic finance that enhance endogenous economic growth, it is easier to infer that the factor of Islamic securities is an exogenous variable that promotes economic growth in the sense of endogenous growth theory.

2.2 Earlier empirical studies

Studies that found Islamic finance is enhancing economic growth are many like the study of Boukhatem and Moussa (2018) and Ledhem and Mekidiche (2020). However, only limited pure studies empirically investigate the relationship between Islamic securities and economic growth. Therefore, and to enrich studies on the Islamic securities and economic growth, this study explores the nexus between Islamic securities and economic growth based on the modelling of endogenous growth, and it examines empirically the effect of Islamic securities on economic growth as an exogenous factor inside the endogenous growth model based on a non-parametric approach. Thus, this study is the first that addresses the exploration of the Islamic securities–economic growth nexus in the outline of the endogenous growth theory. Consequently, it is believed that this paper will add a substantial contribution to the existing literature.

In a recent study, Ledhem (2020) investigated the link between the financing of Islamic securities (ṣukūk) and economic growth in all of Indonesia, Brunei Darussalam and Malaysia based on a quarterly sample from 2013Q4 till 2019Q3. Using panel system GMM, Ledhem (2020) examined the effect of Islamic securities on the gross domestic product (GDP) as the

factor of economic growth. The findings indicated that Islamic securities had a positive impact on economic growth.

Similarly, via a sample of nine developed countries in Islamic finance over periods from 2014Q1 to 2017Q4, Yıldırım *et al.* (2020) calculated the impact of Islamic securities market creation on economic growth. As an indicator of economic growth, they used panel co-integration regression with a dependent variable of the GDP. Total Islamic securities exports were used as a quantity for the Islamic securities market as independent variables, while Islamic securities density was used as a quantity for the growth of the Islamic securities market. Trade, inflation and financial stress were adopted as control variables. Their results indicated the presence of a long-term co-integration connection between the production of the Islamic securities sector and economic growth when the Islamic securities density and Islamic securities exports had a positive impact on economic growth.

Correspondingly, Al-Raeai *et al.* (2018) surveyed the effect of the macro-economic factors on the growth of the Islamic securities market in Gulf Cooperation Council (GCC) for the period 2001–2016 to introduce Islamic securities as an alternate source of financing. They concluded that economic growth could be enhanced by Islamic securities market development.

In the same context, Sari *et al.* (2018) evaluated the effect of Islamic securities in three outstanding Islamic capital markets on economic growth in Indonesia from January 2011 to December 2011. To evaluate the nature of a long-term relationship between the Islamic stock market of Islamic securities and economic growth, they used the co-integration regression. Their findings suggested that Islamic securities in the Islamic stock market are driving economic growth over the long term to be a substitute financial instrument in Indonesia.

In a similar study, Malikov (2017) discussed the effect of Islamic securities sovereigns on economic development in Saudi Arabia and Malaysia. Using statistical analysis, he tested the substantial effect of sovereign Islamic securities issuance on GDP which was a proxy for economic growth. Its findings found that the sovereign issuance of Islamic securities had a positive impact on economic development in Saudi Arabia and Malaysia.

Also, Mitsaliyandito *et al.* (2017) studied the effects of market developments of Islamic securities on Indonesian economic growth from 2009 to 2016. They employed VAR and Granger causality to evaluate the effect of Islamic securities market developments on economic growth. The remaining Islamic securities were used as an independent variable for the volume of the Islamic securities market, the GDP was used as the dependent variable. Their findings showed that Indonesia's economic growth was positively impacted by the Islamic securities domestic sovereign market.

Further, the effects of the financial market production of Islamic securities on economic growth were studied by Smaoui and Nechi (2017) using a sample of all Islamic securities–exporting countries from 1995 until 2015. They used the GMM method for empirical analysis. Islamic securities market growth was driven by two variables, namely the Islamic securities market capitalization ratio and the overall issued Islamic securities. They stated that the expansion of the Islamic securities market has fuelled economic growth.

Then again, Khoutem (2014) investigated the association between Islamic banking and the Islamic securities markets on Tunisian economic growth after the Tunisian revolution of 2011. Their results have shown that Islamic intermediation has boosted the Islamic securities markets, which have been capable of improving economic development in Tunisia.

Supplementary to this, Echchabi *et al.* (2016) estimated the effect of Islamic securities issuance on economic growth in the main Islamic securities issuance countries from 2005 to 2012. Toda and Yamamoto's approach has been adopted to estimate the effect of Islamic securities as the primary independent variable, trading operations and gross capital creation as control variables on the GDP as the dependent variable for economic growth. They indicated that Islamic securities issuance has little impact on economic growth.

In different special cases, Echchabi *et al.* (2018) examined the effect of Islamic securities on economic growth among GCC countries from 2005 to 2012. They used GDP as the dependent variable for economic growth, Islamic securities issuance as the primary independent variable while trading operations, and gross capital investment as the control variables. They used the approach of Toda and Yamamoto. They indicated that the financing of Islamic securities did not affect economic development. Similar to this finding, Grassa and Gazdar (2014) and Ibrahim (2015) had determined that Islamic securities markets are not promoting economic growth.

Most of the previous studies have agreed that Islamic securities enhance economic growth in which the "supply-leading hypothesis" of Schumpeter (1934) is confirmed. Thus, the validity of the Schumpeter understanding concerning the promotion of Islamic securities on economic growth is confirmed in the most literature, except for the studies of Echchabi *et al.* (2018), Grassa and Gazdar (2014) and Ibrahim (2015) that found that Islamic securities do not enhance economic growth in which this conclusion is reliable with Lucas's (1988) "neutrality hypothesis", which is built on the concept that the finance is a useless factor to economic growth and not an imperative factor to the growth cycle.

However, as reported by Ledhem (2020) and Echchabi *et al.* (2018), pure research that explores the association between Islamic securities and economic growth is limited; so there is a lack of understanding of this relationship. Thus, this paper is enriching the literature by offering a purer examination of this relationship from a solid sampling of Southeast Asia which comprises extraordinary Islamic securities markets. Consequently, this research is enriching the literature on the Islamic securities–economic growth nexus by investigating it based on the "endogenous growth theory".

Concerning the empirical methodology, all of the previous studies have employed parametric approaches to investigate the nexus between Islamic securities and economic growth, in which panel regression methods like panel regression with fixed and random effects and panel GMM were used. Nevertheless, all the empirical investigations were parametric approaches and not non-parametric. As stated by Asmare and Begashaw (2018), Jureckova *et al.* (2012), Hettmansperger and McKean (2011) and Ullah (1989), non-parametric approaches produce better results for empirical investigations. For this reason, this paper is filling a literature gap of missing to employ the non-parametric approaches which can be more competent and accurate in the estimation results than the parametric approaches which assume that empirical model's errors follow certain parametric distributions (Ullah, 1989; Hettmansperger and McKean, 2011; Jureckova *et al.*, 2012; Asmare and Begashaw, 2018). According to Dong *et al.* (2015), one of the efficient non-parametric methods for robust estimation is Markov chain Monte Carlo (MCMC) quantile regression. Therefore, since this method was not adopted in the previous studies for investigating the relationship between Islamic securities and economic growth, this study is adopting this method for getting accurate empirical findings, also, based on the literature, this study is adopting the most suitable variables for exploring the Islamic securities–economic growth nexus.

Consequently, this is the first study that investigates the Islamic securities–economic growth nexus using a non-parametric approach within a robust theoretical background of the "endogenous growth theory". Hence, it is believed that this paper will make a noteworthy contribution to the literature.

3. Research methodology

3.1 Sample and assortment of data

This study employs balanced panel data from all working Islamic financial institutions in the three main Islamic securities issuance countries of South-East Asia (Malaysia, Brunei Darussalam and Indonesia) spanning from the fourth quarter of 2013 to the fourth quarter of

2019 (2013Q4–2019Q4). The Islamic securities data were extracted from the database of the Islamic Financial Services Board. The added macro-economic data were obtained from the Central Bank of Malaysia (Negara), the Indonesian Central Bank, the Ministry of Finance and Economy in Brunei Darussalam and the IMF database. Since all countries (Malaysia, Indonesia and Brunei Darussalam) have varied currencies, the entire quarter financial values are changed to the US dollar by proper average exchange rates from the International Monetary Fund (IMF) database.

3.2 Experimental variables

3.2.1 Islamic securities variable. Following Ledhem (2020), Yıldırım *et al.* (2020), Echchabi *et al.* (2018) and Smaoui and Nechi (2017), this paper employs total issued Islamic securities holdings as a determinant for the Islamic securities variable (ISEC) in all of Malaysia, Indonesia and Brunei Darussalam (Table 1).

3.2.2 Economic growth factor. All the previous studies in this paper focused on employing the GDP as a measurement for economic growth when it is investigated with Islamic securities and Islamic financing. Thus, this paper employs the GDP as a dependent variable for economic growth (Malikov, 2017; Al-Raeai *et al.*, 2018; Smaoui and Nechi, 2017; Echchabi *et al.*, 2018; Yıldırım *et al.*, 2020; Ledhem, 2020) (Table 1).

3.2.3 Control variables. To demonstrate the possible impact of other economic growth determinants, several control variables are used in the estimated model to prevent the issue of bias due to the missed macroeconomic variables; these variables are used based on the literature on the association between Islamic securities and economic growth and also on the relationship between Islamic finance and economic growth. Thus, this study adopts trade openness index which signifies the external sector (TRADE) (Smaoui and Nechi, 2017; Boukhatem and Moussa, 2018; Al-Raeai *et al.*, 2018; Yıldırım *et al.*, 2020; Ledhem, 2020; Ledhem and Mekidiche, 2020), consumer price index (CPI) which measures inflation (Smaoui and Nechi, 2017; Kassim, 2016; Ledhem and Mekidiche, 2020; Yıldırım *et al.*, 2020; Ledhem, 2020) and gross fixed capital formation (GFCF) as a measurement for investments (Kassim, 2016; Ledhem, 2020; Ledhem and Mekidiche, 2020) (Table 1).

3.3 Estimating model

According to the literature, most empirical studies that investigate the association between Islamic securities and economic growth have adopted panel regression models such as panel regression (fixed effects and random effects) and panel GMM. However, all the empirical investigations were parametric approaches and not non-parametric. Although the parametric approaches produce better results and have significant advantages in modelling data that suffer from critical measurement errors as stated by Asmare and Begashaw (2018), it is not enough for robust estimation results, due to the possible misleading results in the parametric approaches, which can be generated from the assumption that errors in the empirical models follow certain parametric distributions (Ullah, 1989; Hettmansperger and McKean, 2011; Jureckova *et al.*, 2012; Asmare and Begashaw, 2018). Thus, this paper is filling a gap of missing to employ robust non-parametric approaches that can offer better estimation results from investigating and exploring the relationship between Islamic securities and economic growth. Following the research of Powell (2014), this paper employed the panel quantile regression as a robust non-parametric approach to explore the impact of economic stimulus payments on labour supply. Moreover, by following the new approach of Powell (2017), this paper employed panel quantile regression with the optimization of MCMC as a new robust non-parametric approach. As well, employing the non-parametric method of panel quantile regression with MCMC optimization offers more exploration to the Islamic securities–economic growth nexus by measuring the effect of different quantiles of Islamic securities

Table 1.
Descriptive statistics summary of the employed panel data

Variables		Mean	Standard Deviation	Min	Max	Observations
GDP (USD million)	Overall	108,698.7	100,773.1	2,756.005	28,9104.6	$N = 75$
	Between		121,155.5	3,397.42	241,113.9	$n = 3$
	Within		15,401.17	70,808.8	156,689.4	$T = 25$
ISEC (USD million)	Overall	7,729.136	10,201.68	74.58109	31,424.05	$N = 75$
	Between		11,918.7	132.0937	21,465.93	$n = 3$
	Within		2,844.457	1,783.581	17,687.26	$T = 25$
TRADE	Overall	0.8927349	0.3836809	0.3456053	1.426386	$N = 75$
	Between		0.4537777	0.4168381	1.320567	$n = 3$
	Within		0.0898875	0.729421	1.378321	$T = 25$
GFCF (USD million)	Overall	33,214.45	33,346.45	762.7048	97,731.01	$N = 75$
	Between		40,132.44	1,184.395	78,232.39	$n = 3$
	Within		4,871.802	20,553.68	52,713.06	$T = 25$
CPI	Overall	118.0376	17.09025	98.25291	152.3715	$N = 75$
	Between		19.38802	99.54021	138.2078	$n = 3$
	Within		6.171967	100.0584	132.2012	$T = 25$

Note(s): N (Observations Number), n (Panel Number: Three countries) and T (Periods: 2013Q4–2019Q4)
Source(s): Executed by authors

on economic growth; this advantage in this non-parametric analysis cannot be provided by the parametric methods.

In the empirical analysis of economic growth, the elementary issue is the use of appropriate control variables within the model (Ledhem and Mekidiche, 2021). In the empirical modelling, Brock and Durlauf (2001) identified this issue of using the control variables as an "open-ended hypothesis" of the causal relationship between economic growth and another variable. This hypothesis stated that it was difficult to regulate the association between economic growth and another variable. That is exactly what the research of Durlauf and Quah (1999) have accomplished by presenting around 90 variables that can affect economic growth.

However, the principal purpose of this analysis is not to promote all hypotheses of economic growth through the financing of Islamic securities, but to investigate whether and how the financing of Islamic securities impacts economic growth in the light of endogenous growth theory. For this reason, the minimum model for estimating the financial effects of Islamic securities on economic growth has been quantified in this study. Thus, the possible macroeconomic factors (TRADE, GFCF and CPI) are used to erase the bias problem by following prior empirical studies associated with the subject. Consequently, following the path of the endogenous growth theory, the general model for investigating the Islamic securities–economic growth nexus is as follows (Figure 1):

$$\mathrm{GDP} = \mathrm{ISEC} + \mathrm{TRADE} + \mathrm{GFCF} + \mathrm{CPI} \tag{1}$$

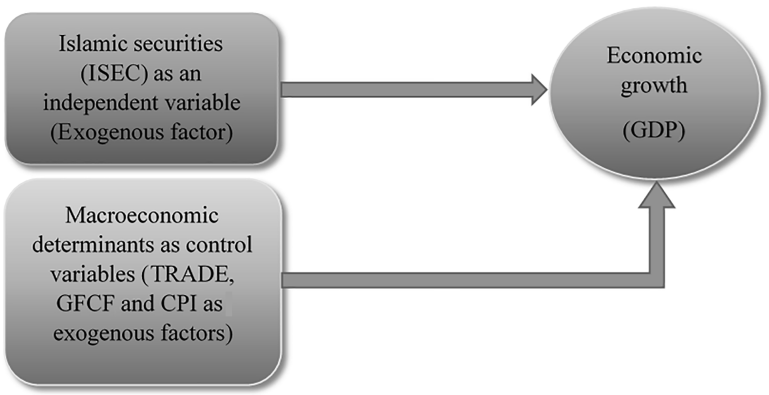
where GDP is a dependent variable, ISEC is the independent variable and TRADE, CPI and GFCF are the control variables.

3.4 Econometric methodology

Based on the research of Powell (2014), quantile regression for the panel data (QRPD) is a non-parametric approach for panel data estimation particularly for small periods T in the panel data; it is well defined as follows:

$$Y_{it} = D_{it}'\beta\left(U_{it}^{*}\right),\ U_{it}^{*} \sim U(0,\ 1) \tag{2}$$

where, for a given variable treatment set represented by D_{it}, $D_{it}'\beta(\tau)$ denotes stringently increasing conditional distribution quantile (τ) and Y_{it} is the economic growth measure (GDP)



Source(s): Arranged by authors

Figure 1.
The empirical investigation summary of Islamic securities–economic growth nexus in the context of endogenous growth theory

for country i at time t. U_{it}^{*} signifies the independent variable which is Islamic securities (ISEC) and the control variables (TRADE, GFCF and CPI), while β signifies coefficients.

As stated in the research of Powell (2014), the quantile treatments (QTEs) characterize the alteration causal effect of the treatment variables from d_1 to d_1 on Y_{it}, by holding τ fixed as the ensuing:

$$d_2'\beta(\tau) - d_1'\beta(\tau) \tag{3}$$

The estimator of QRPD which estimates the properties of QTEs for the outcome variable Y_{it} is determined by engaging a similar designation to Chernozhukov and Hansen (2008). Thus, this designation requires a structural quantile function (SQF) for Equation (2) as the subsequent:

$$S_Y(T|d) = d'\beta(\tau),\ \tau \in (0,\ 1) \tag{4}$$

The SQF states the quantile of the contained outcome variable $Y_d = d'\beta(U^*)$ for a fixed d and a randomly chosen $U^* \sim U(0,\ 1)$. In other meaning, it designates the τth conditional quantile of Y for a given d (Powell, 2014).

Then, the QRPD depends on the conditional restriction as shown by allowing $D_i = (D_{i1},\ \ldots,\ D_{iT})$:

$$P(Y_{it} \leq D_{it}'\beta(\tau)|D_{it}) = \tau \tag{5}$$

As reported by Powell (2014), this condition that states that the probability of the outcome variable is fewer than the quantile function is the same for all D_{it} and equal to τ. The QRPD lets this probability vary through the individual and even within-individual on the condition that this variation is orthogonal to the instruments. Since the same individual can occur multiple times in panel data, this additional information can be employed to recognize that the probability of an individual has a small value of the outcome variable in which their treatment variables may not be τ. Thus, instead, the QRPD depends on a conditional restriction and an unconditional restriction by allowing $D_i = (D_{i1},\ \ldots,\ D_{iT})$:

$$P(Y_{it} \leq D_{it}'\beta(\tau)|D_{it}) = P(Y_{is} \leq D_{is}'\beta(\tau)|D_{it}) \tag{6}$$

$$P(Y_{it} \leq D_{it}'\beta(\tau)) = \tau \tag{7}$$

In Equation (7), the QRPD estimator approves the probability to vary by individual and the estimator only uses within-individual assessments of this probability. Equation (7) approves that the probability of the outcome Y is fewer than the quantile function which is equal to the τth quantile, however, once more, the estimator approves for heterogeneity over individuals (Powell, 2014).

Finally, to estimate the conditional quantile function of the outcome Y, Koenker and Bassett (1978) and Koenker (2004) expressed the quantile regression with specified W under the deviation loss of asymmetric least absolute $\rho_\tau(u) = (\tau_{-1}(u < 0))u$, in which the τth conditional quantile given W is a problem solved as the following:

$$Q_Y(\tau|w) = \text{argmin}_{f \in \mathsf{F}}\, E[\rho_\tau(Y - f(W))] \tag{8}$$

where F is the computable functions class of W, while $\tau = ½$, $Q_Y(0.5|w)$ is a median regression function of Laplace which is a resolution to the problem $\rho_\tau(u) = 1/2|u|$ (Chernozhukov and Hansen, 2008).

Consequently, the estimated model using the quantile regression in this study is as follows:

$$\text{GDP}_t = \alpha_{\tau 1}\text{ISEC}_t + \alpha_{\tau 2}\text{TRADE}_t + \alpha_{\tau 3}\text{GFCF}_t + \alpha_{\tau 4}\text{CPI}_t,\ \tau \in (0,\ 1) \tag{9}$$

where $\alpha_{\tau 1}$, $\alpha_{\tau 2}$, $\alpha_{\tau 3}$ and $\alpha_{\tau 4}$ are coefficients, τ refers to the quantile, t is the year quarter, GDP is a dependent variable, ISEC is the independent variable and TRADE, CPI and GFCF are the control variables.

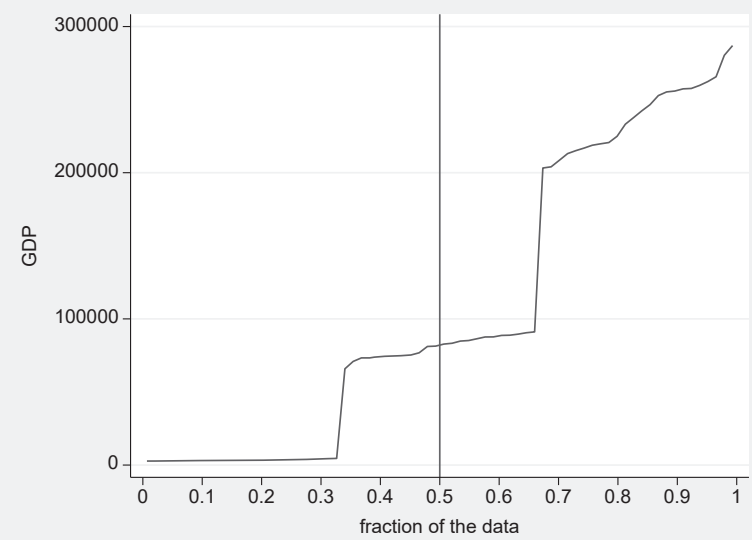
Following Powell (2017), to get robust estimated results since the study sample is small (75 observations), this paper has performed the QRPD using MCMC optimization of Chernozhukov and Hong (2003), with an MCMC simulation process of 1,000 iteration performed to estimate the QRPD.

4. Results and discussion

To execute the quantile regression, this study employed the QPLOT command of Cox (2005) to choose the optimal quantile regression value. Using the QPLOT command of Cox (2005), this study illustrated the GDP, which appears reasonably symmetric at 0.5 quantiles as shown in Figure 2. Note that 0.5 quantiles are almost 100,000 which reflect an intermediate economic growth within Southeast Asia. Thus, the optimal regression is at 0.5 quantiles.

Choosing the 0.5 quantile regression value as the optimal value, Table 2 showed the estimated results of running panel quantile regression with MCMC optimization.

Table 2 displayed the estimation results of panel quantile regression with the optimization of 1,000 iterations within the MCMC method. The estimated results indicated that on the significance level of 1%, the effect of Islamic securities issuance on economic growth is significantly positive (p-value of ISEC: 0.000 < 0.01), which confirms that Islamic securities enhance economic growth in Southeast Asia. If there is an increase of 1% in Islamic securities median value then the economic growth (GDP) will increase by 0.99% in the median value. Consequently, this result confirmed the validity of the hypothesis that economic growth is positively affected by Islamic securities in Southeast Asia based on the "endogenous growth theory". This finding is reliable with the "supply-leading hypothesis" of Schumpeter's thought (Schumpeter, 1934), in which financial development is a promoter of economic growth within Southeast Asia through Islamic securities.



Source(s): Symmetric GDP fraction data over 0.5 quantiles

Figure 2.
Graph of the symmetric GDP fraction data over quantiles

Concerning other control variables' effect on economic growth, the proxy variable of investments (GFCF) is positively affecting the GDP at the significance level of 1% (p-value of GFCF: 0.000 < 0.01); therefore, investments promote Southeast Asia's economic growth; this result is consistent with the findings of Zhang (2001), who demonstrated that investments promoted economic growth of East Asian region, and with the findings of Hussin and Saidin (2012), who indicated that investments promoted economic growth in the Asian countries. The proxy factor of inflation (CPI) is statistically insignificant to the economic growth at a 5% significance level (CPI p-value: 0.1948 > 0.05), that is consistent with the outcomes of Behera (2014) that determined that there is no association between inflation and economic growth in the majority of South Asian countries. The trade openness index is statistically insignificant and has no effect on economic growth at the 5% significance level (p-value of TRADE: 0.1852 > 0.05), which is reliable with the results of Ledhem and Mekidiche (2021) when they determined that trade openness has no impact on the economic growth of Southeast Asia.

For more detailed empirical investigation, the quantile process estimations are required; therefore, Table 3 provides estimations across 0.10, 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90 quantiles. Lower quantiles (from quantile = 0.10 to quantile = 0.30) represent low-issued Islamic securities (ISEC) holdings on a low economic growth (economic recession), the medium quantiles (from quantile = 0.30 to quantile = 0.70) reflect intermediate-issued Islamic securities (ISEC) holdings on intermediate economic growth, while the upper quantiles (quantile = 0.70 to quantile = 0.90) represent high-issued Islamic securities (ISEC) holdings on high economic growth.

Table 3 reports only the 10th quantile (0.10 quantile) which characterizes the lowest quantile of the total issued Islamic securities holdings; the Islamic securities (ISEC) do not affect economic growth. This outcome confirms that low-issued Islamic securities are not enough to make a significant contribution to the economic growth. This outcome is reliable with the finding of Echchabi *et al.* (2018) in which the low financing of issued Islamic securities does not promote economic growth. Whereas starting from the 20th quantile (0.20 quantile) to 90th quantile (0.9 quantile) (low, intermediate and high quantiles), the economic growth (GDP) was increased due to the Islamic securities (ISEC) from 1.08% to 1.10%; these increase in the Islamic securities (ISEC) is causing a significant increase in the economic growth (Figure 3). Consequently, the increasing of issuing Islamic securities (ṣukūk) in Southeast Asia is increasing the contribution on economic growth. This successful contribution is referred to the success of the stimulating programs for Southeast Asian Islamic capital markets in Malaysia, Indonesia and Brunei Darussalam. The first successful program of stimulating the Islamic securities markets was in Malaysia when it released USD 22.4 billion of Islamic securities during the first semester of 2018, a 9% rise from the first semester of 2017 (IIFM Sukuk Report, 2019, 2020; Islamic Financial Services Board, 2020). The second successful program of stimulating the Islamic securities markets was in

Table 2.
Panel quantile regression with MCMC optimization outputs

Method: MCMC panel quantile regression		Optimal quantile regression: 0.5		
Number of observations: 75		Total iterations: 1,000		
Variables	Coefficients	Standard Error	t	$p> \|t\|$
ISEC	0.996739	0.087314	11.41560	0.0000**
TRADE	−4329.600	3236.333	−1.337810	0.1852
GFCF	3.040288	0.043819	69.38244	0.0000**
CPI	39.68110	30.31754	1.308849	0.1948

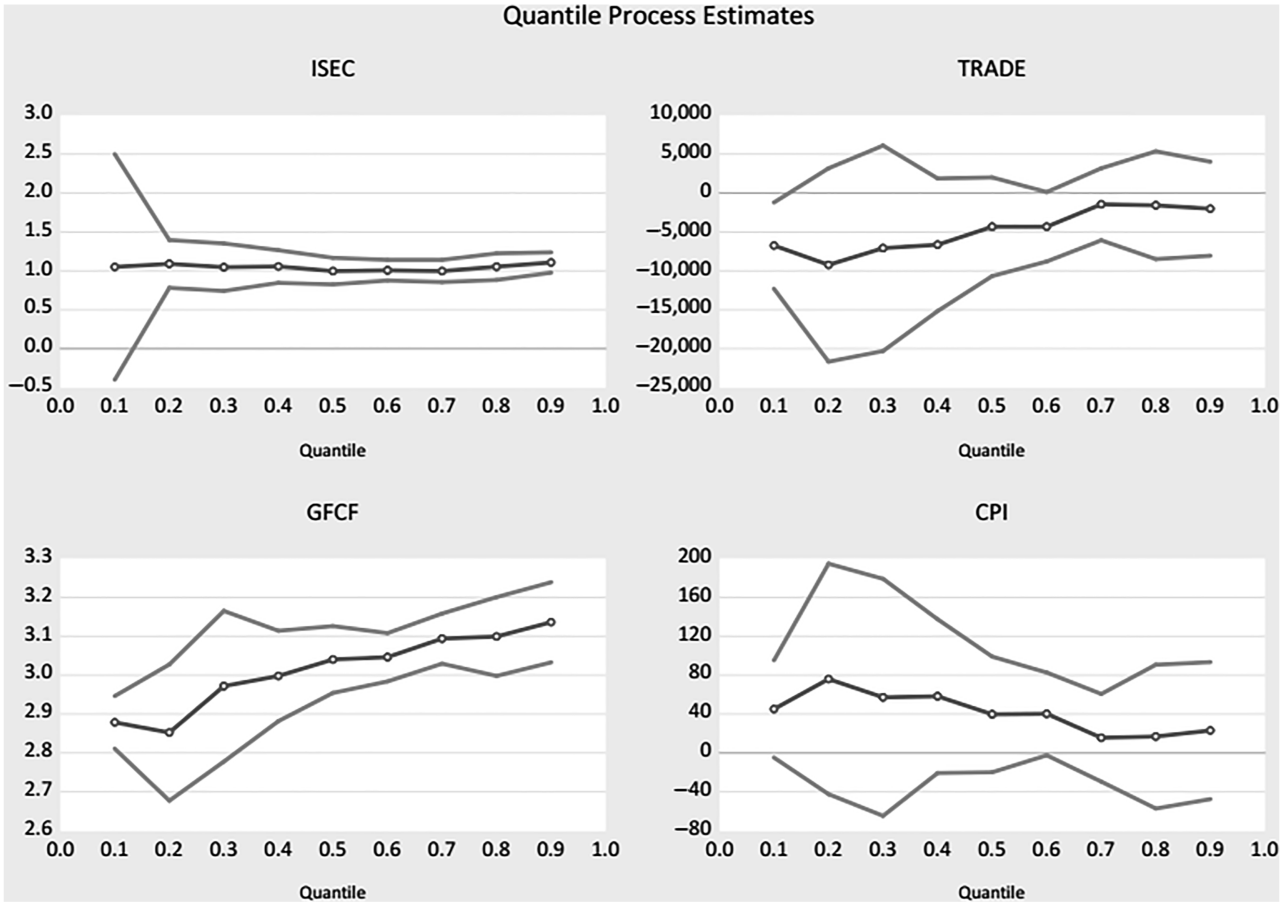
Note(s): ** Significant at 1% level
Source(s): MCMC panel quantile regression executed by authors

Variables	Quantiles	Coefficient	Standard error	t	$p>\|t\|$
ISEC	0.1	1.050474	0.739214	1.421069	0.1597
	0.2	1.089739	0.156504	6.963020	0.0000**
	0.3	1.048522	0.155673	6.735394	0.0000**
	0.4	1.056417	0.106498	9.919617	0.0000**
	0.5	0.996739	0.087357	11.40989	0.0000**
	0.6	1.007991	0.067833	14.85995	0.0000**
	0.7	0.997909	0.072976	13.67442	0.0000**
	0.8	1.053342	0.086717	12.14686	0.0000**
	0.9	1.108640	0.066765	16.60514	0.0000**
TRADE	0.1	−6758.722	2836.424	−2.382832	0.0199
	0.2	−9240.466	6341.780	−1.457078	0.1495
	0.3	−7086.023	6731.564	−1.052656	0.2961
	0.4	−6630.625	4345.519	−1.525853	0.1315
	0.5	−4329.600	3237.952	−1.337141	0.1854
	0.6	−4344.664	2276.207	−1.908730	0.0603
	0.7	−1464.142	2359.800	−0.620451	0.5369
	0.8	−1568.121	3528.949	−0.444359	0.6581
	0.9	−2028.571	3081.011	−0.658411	0.5124
GFCF	0.1	2.878454	0.034565	83.27766	0.0000**
	0.2	2.852222	0.089296	31.94117	0.0000**
	0.3	2.971538	0.098601	30.13705	0.0000**
	0.4	2.997998	0.059164	50.67235	0.0000**
	0.5	3.040288	0.043841	69.34774	0.0000**
	0.6	3.045937	0.031556	96.52368	0.0000**
	0.7	3.094063	0.032800	94.33018	0.0000**
	0.8	3.099148	0.051739	59.89957	0.0000**
	0.9	3.135765	0.052447	59.78898	0.0000**
CPI	0.1	45.23664	25.49956	1.774016	0.0803
	0.2	76.02214	60.41021	1.258432	0.2124
	0.3	57.18734	62.07722	0.921229	0.3601
	0.4	58.38752	40.36262	1.446574	0.1524
	0.5	39.68110	30.33271	1.308195	0.1950
	0.6	40.23376	21.69690	1.854355	0.0678
	0.7	15.60388	23.00405	0.678310	0.4998
	0.8	16.94113	37.69976	0.449370	0.6545
	0.9	22.99470	35.98042	0.639089	0.5248

Note(s): **Significant at 1% level
Source(s): Executed by authors

Table 3.
MCMC panel quantile process estimates

Indonesia where Islamic securities have been issued worth USD 2,472 billion from both the Indonesian government and the Islamic securities firms, a rise of 37.13% from the first semester of 2017 (Islamic Financial Services Board, 2020). The third successful program of stimulating the Islamic securities markets was in Brunei Darussalam when the AMBD published its 164th Islamic securities series valued at BND 50 million (IIFM Sukuk Report, 2019, 2020). Via this issuance, both the AMBD and the Islamic securities financial firms issued USD 1,730,380 million Islamic securities during the first semester of 2018, a rise of 19.32% from the first semester of 2017 based on the Islamic Financial Services Board (2020). Consequently, the Islamic capital market development in Southeast Asia is promoting economic growth. This finding is confirming the theoretical path of the "supply-leading hypothesis" of Schumpeter (1934) and the interpretation of McKinnon (1973) and Shaw (1973) which determines that finance development, capital securities markets development and financial channels of investments enhance economic growth.



Source(s): Executed by authors

Figure 3.
Graphs of the MCMC panel quantile process estimations

Concerning other control variables, the trade openness index (TRADE) has no significant effect on the economic growth of Southeast Asia across all the quantiles. Regarding the GFCF, Table 3 reported that starting from the 10th quantile (0.10 quantile) to the 90th quantile (0.90 quantile), the economic growth (GDP) increased due to the GFCF from 2.87% to 3.13% (Figure 3). Concerning the CPI, it has no significant effect on the economic growth of Southeast Asia across the quantiles.

Regarding the estimated model diagnostics, MCMC panel quantile regression requires testing the symmetric quantile test of Newey and Powell (1987) and the stability reset test of Ramsey (1969) (Table 4).

Based on the used Wald test in the test of Newey and Powell (1987), the chi-square value of the symmetric quantile test is not significant on the 5% level (p-value: 0.4302 > 0.05) (Table 4). There is evidence of symmetry over quantiles; therefore, the estimated MCMC panel quantile regression is not asymmetric.

Table 4 informs that the null hypothesis in the stability reset test of Ramsey (1969) cannot be rejected owing to the high insignificant p-value on the level of 5% (p-value: 0.3512 > 0.05). Thus, there is no evidence of the misspecification in the estimated model, for this reason, the estimated model is robustly stable against the misspecification from omitted variables, heteroskedasticity and autocorrelation issues.

By executing the diagnostic tests of symmetric quantile test of Newey and Powell (1987) and the stability test of Ramsey (1969), this paper proves that the estimated outcomes are truthful and robust to answer the research question of whether Islamic securities enhance economic growth in South-East Asia.

5. Conclusion

The main purpose of this paper is to determine empirically whether Islamic securities enhance the economic growth of Southeast Asia using the non-parametric analysis in the light of the theoretical background of endogenous growth. The findings show that Islamic securities had a positive impact on the economic growth of Southeast Asia. Dissimilar to the studies of Echchabi *et al.* (2018), Grassa and Gazdar (2014) and Ibrahim (2015), – that determined that Islamic securities do not stimulate economic growth in which those studies are reliable to "neutrality hypothesis" of Lucas's (1988), which claimed that finance is an impractical factor to economic growth – the empirical findings in this paper demonstrate that Islamic securities are promoting economic growth exogenously based on the "endogenous growth theory" (Romer, 2011), as well, since the increasing Islamic securities in Southeast Asia is leading to increased economic growth and the Islamic capital market development in

Test of symmetric quantile Null hypothesis: There is no asymmetry in panel data Wald test	Prob
16.33011	0.4302

Stability Ramsey reset test Null hypothesis: No misspecification in the model QLR L-statistic	Prob
0.869260	0.3512

Source(s): Executed by authors

Table 4. Panel quantile regression diagnostics

Southeast Asia is promoting economic growth which validates the concept of the "supply-leading hypothesis" of Schumpeter (1934) and the interpretation of McKinnon (1973) and Shaw (1973) which claims that capital securities markets' development promote the economic growth. Therefore, this study is reliable with Ledhem (2020), Yıldırım *et al.* (2020) and Al-Raeai *et al.* (2018) which showed that Islamic securities markets development is enhancing economic growth.

In this paper, the contribution of applying panel quantile regression with MCMC optimization to the body of knowledge in terms of ṣukūk market industry is to investigate whether the increase of issuing Islamic securities (ṣukūk) is increasing economic growth; this knowledge is achieved by exploring the effect of various quantiles of the total issued Islamic securities separately, and this advantage is not provided by other parametric methods that cannot measure the effect of increasing the issuance of Islamic securities over any economic variable such as economic growth. As a result, this study proves that Islamic securities are statistically significant and positive to the economic growth of Southeast Asia all over 0.20, 0.30, 0.40, 0.50, 0.60, 0.70, 0.80 and 0.90 quantiles, which approves that the increase of issuing Islamic securities in Islamic capital markets of Southeast Asia is increasing the levels of economic growth, reflecting the substantial role of the Islamic financial markets development as an imperative contributor to economic growth due to the successful stimulating programs for Southeast Asian Islamic capital markets in Malaysia, Indonesia and Brunei Darussalam. In addition, this paper fills a literature gap of missing to employ the non-parametric approaches in investigating the relationship between Islamic securities and economic growth. Thus, unlike previous studies, to gain robust estimated results, this paper is the first that applied a non-parametric analysis for a better understanding of how Islamic securities affect economic growth.

Above and beyond, this paper is extending previous literature by incorporating extra investigation for better understanding whether Islamic securities is enhancing economic growth within Southeast Asia, in which a new econometric investigation was employed using a powerful sample of the top Islamic securities (ṣukūk) issuance countries in Southeast Asia (Malaysia, Indonesia and Brunei Darussalam). Consequently, as an answer to the key question of this paper, Islamic securities enhance economic growth in Southeast Asia.

In conclusion, the Islamic finance industry is acting as a vital player in improving global economies, because developed and developing Muslim and non-Muslim countries have recently begun collaborating with Islamic securities, as one of the simplest ways to fund beyond the mainstream finance system (Yıldırım *et al.*, 2020). Furthermore, as reported by Azmat *et al.* (2021), Islamic securities can depend on customers' emphasis on religiosity; this makes Islamic securities as attractive instruments for investors as other conventional assets which indicates that Islamic securities can replace conventional assets in the capital markets from this side also. Consequently, although Islamic capital markets are still small compared to the conventional capital markets (IIFM Sukuk Report, 2019, 2020), this paper indicates that Islamic capital markets are expected to be prosperous in the future as an alternative financial system that enriches economic growth through increasing the capital stock and investments, consistently with the expectations of Cevik and Bugan (2018), Ledhem (2020) and Yıldırım *et al.* (2020).

5.1 Research and practice implications

Like the following, this study has some research and practice implications:

(1) This study aims to explore empirically whether Islamic securities enhance economic growth in Southeast Asia using the endogenous growth theory. Thus, the empirical investigation in this paper is expanding literature on the Islamic securities–economic

growth nexus with the accurate theoretical context in Southeast Asia. Consequently, this paper serves as a roadmap for financial analysts, policymakers and decision makers to boost the Islamic securities market internationally as an alternate source of finance for maximum involvement in economic growth.

(2) In light of practical implications, this study provides valuable proof to financial analysts, business leaders, policymakers and related authorities that Islamic securities enhance economic growth, drawing global attention to the significant role of Islamic securities as an essential instrument of Islamic finance in approving the economic growth of Southeast Asia. As a result, financial analysts, policymakers and decision makers across countries are motivated by the need to stimulate and integrate Islamic securities into financial markets as an important player alongside conventional securities to fund investments that enhance economic development, particularly in Muslim countries which consist of a remarkable Islamic population.

5.2 Limitations and future research

To investigate the impact of Islamic securities on economic growth, this paper restricts the empirical investigation to the Southeast Asian region. Future research could consider expanding the sample by including the Middle East and North Africa countries since this region contains one of the top global Islamic securities markets, which is Saudi Arabia, as the second-largest ṣukūk issuer (IIFM Sukuk Report, 2019, 2020).

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Sharī‘ah scrutiny of Islamic Banks' Financial Compensation Fund in Bangladesh: governance principles in the COVID-19 perspective

Received 7 August 2021
Revised 7 September 2021
Accepted 7 September 2021

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Abstract

Purpose – The purpose of this study is to critically analyze the Financial Compensation Funds being accumulated by Islamic Banks of Bangladesh in credit-based transactions. In this connection, due to the evolved liquidity crisis amidst the COVID-19, industry opinions are observed that suggest including the compensations or the donation funds directly into the bank's income account. But the Sharī‘ah does not permit it. Such alternative proposals of using compensation or donation fund during crises are scrutinized under Sharī‘ah principles to come to a logical conclusion.

Design/methodology/approach – The approach followed in the study is textual and discourse analysis through descriptions of ideal Sharī‘ah-compliant methods for handling late payment of credit and comparison with the industry practices.

Findings – It is observed that there are conceptual gaps in the industry as is reflected in the Islamic Banking Guideline of Bangladesh. The funds collected from the debtor due to late payment are named as compensation (Ta‘wīḍ) whereas the nature of the transaction is a donation (Tabarru'). The misconception can lead to various Sharī‘ah non-compliant activities later with the funds. The proposals brought out in the industry to use such compensation/donation funds during a crisis are a consequence of this. The proposals of using such funds for banks' purposes in any situation are not supported by Sharī‘ah principles and are against the Islamic banking philosophy.

Originality/value – The study is very relevant to the current crisis of COVID-19 in the domestic Islamic Banking Industry and also instrumental for the future guidance to stick to the Sharī‘ah principles in managing compensation or donation funds by the Islamic Banks.

Keywords Ta‘wīḍ, Gharamah, Al-Iltizam bi-al-Tabarru', Penalty clause, Islamic bank, Bangladesh

Paper type Research paper

1. Introduction

For Islamic Financial Institutions, it is a big challenge to handle the delayed repayments from the debtors. In the light of COVID-19, the situation is crucial. In the conventional system, receiving fines as the addition to the interest payment is an established method. But, the procedure is not justified for an Islamic Financial Institution. So, alternative action plans are necessary. One of the recognized procedures is "Undertaking to Donate" by the borrower in case of delay in the repayments which is made obligatory in the contract. In Bangladesh, there are "Foundations" as subsidiary organizations of the Islamic Banks. The amounts collected by the branches of a bank are directed to the headquarter. The head office directs the money

JEL Classification — G20, G21, G28. **KAUJIE Classification** — J32, L24, L26

Islamic Economic Studies
Vol. 29 No. 2, 2022
pp. 139-158
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616
DOI 10.1108/IES-08-2021-0025

then to the foundation. From the foundations, the funds are spent on different charities. Generally, Islamic Banks in Bangladesh have hospitals in the group of companies and the donation funds are used in these hospitals for charity purposes.

Ethically, the Islamic Bank or Financial Institution cannot include this amount in the income. But, during the COVID-19 scenario, due to the evolved liquidity crisis, several opinions in the industry are observed that advise to include the donation from the late repayments in the Bank's income which is completely unacceptable in the Islamic Sharīʿah. Again, though as per the feature of procedures-the extra amounts received by Bangladeshi Islamic Banks are "Donations", the guideline of the central bank defined it as "Compensation" (Bangladesh Bank, 2009). Bangladesh lacks a full-fledged Islamic Banking Act. The loopholes and discrepancies in the governance are creating risks in Sharīʿah compliance and the practice of Islamic finance techniques.

This study critically analyses the process in the light of Sharīʿah principles and sheds light on the governance principles of the Financial Compensation Fund in Islamic Banks and Financial Institutions. Initially, Sharīʿah terminologies are discussed in the literary framework to deduce the Sharīʿah guidelines along with the scholar opinions and religious text references. Then the industry opinions are scrutinized to arrive at a logical conclusion. The Sharīʿah principles are brought out which are to be followed in any case of recovering delayed payments.

2. Literary framework

*2.1 Taʿwīḍ (*التعويض)

If anyone's wealth is damaged or anyone is physically harmed, compensation is imposed on the doer. In Sharīʿah terminology, it is called *taʿwīḍ* (التعويض). The root word is *ʿiwaḍ'* (العوض) of which lexical meaning is "exchange." According to Islamic economic terminology-compensation is the obligatory exchange against the damage caused – التعويض هو دفع ما وجب من بدل مالي بسبب إلحاق الضرر بالغير (Hammad, 2008, p. 142). In Islamic Economics, there are four ways of becoming the owner of wealth. One of them is *al-khalafiyah* which means replacing the ownership with a new one. *Al-khalafiyah* occurs in two forms-

(1) Inheritance (Inheritor becomes the owner after the death of the former owner);

(2) Compensation (When somebody's wealth is damaged, the victim becomes the owner of a certain portion of the wealth owned by the doer formerly).

In both cases, the ownership is created later. So, it becomes clear that ownership created through compensation is established later; not declared earlier. That is why, *al-Khalafiyah* is known as late-arrival (Al-Zarqa, 2004, p. 7).

In English, *taʿwīḍ* (التعويض) is known as "Compensation" (Binti Zulkipli, 2019). According to Hornby and Turnbull (2010) from Oxford Advanced Learners' Dictionary, compensation is something, especially money, that somebody gives you because they have hurt you, or damaged something that you own. To be specific, it is financial compensation that ultimately means the same as *taʿwīḍ*. The value is determined later as the actual indemnity against the damage or infringement caused.

On the contrary, in Islamic Banking, the excess payable by the debtor (what is received as a donation) is pre-determined. There is no relation between it with the actual damage or infringement because sometimes the debtor is unable to repay in reality. Then he/she is not a transgressor. Therefore, donation or the excess paid by a debtor in Islamic Banking cannot be told Financial Compensation or *taʿwīḍātu māliyah* from an academic perspective.

But according to Bangladesh Bank (2009) from the Guidelines for Conducting Islamic Banking, "*Compensation means such financial penalty as is imposed by an Islamic Banking*

Company over and above the amount of installment when a client fails to repay Bank's investment on due dates as per the agreement executed by him." It is evident that in the guideline provided by the central bank-compensation indicates the financial compensation or the *ta'wīḍātu māliyah*. As per the contract, when the client fails to repay in due time, Islamic Bank imposes this excess amount on the payable amount. The use of the term "Compensation" in this context requires a logical explanation.

2.2 Gharamah or penalty

Gharamah (الغرامة) is another Arabic term that means– what is obligatory to pay; viz. debt and compensation. In the Qur'ān, it appears as "والغارمين" which means "and those who are indebted" (Qur'ān, 9:60). According to Islamic *Fiqh* Encyclopedia, "مال يجب أداؤه تعزيرا أو تعويضا" i.e. such financial liability that is mandatory to pay as compensation or penalty (Ministry of Awqaf and Islamic Affairs Kuwait, 2012).

Gharamah is of two kinds (Al-Suwailem, 2009). They are

(1) *Al-Gharamah al-Ta'zīriyyah* (الغرامة التعزيرية): Penalty or punitive fine which is imposed due to the violation of any law (Binti Zulkipli, 2019). It is generally imposed by the authority or the government and pre-determined against the breach of certain laws. For example, fines were imposed for the violation of the traffic act. In lexical meaning, a punishment for breaking a law, rule or contract (Hornby and Turnbull, 2010).

(2) *Al-Gharamah al-Ta'wīḍiyyah* (الغرامة التعويضية): Compensatory fine which evolves against any real or actual loss. This is the compensation discussed above that is not predetermined (AAOIFI, 2016, p. 243).

But the practice of Islamic Banking being discussed here cannot be *al-gharamah al-ta'wīḍiyyah*, since it is similar to *ta'wīḍ* i.e. compensatory fine to be determined after the damage. On the other hand, compensation received by the Islamic Bank from the debtor as the donation is predetermined. Moreover, Islamic Bank cannot use the donated money for its use. But, the penalty or punitive fines collected by any authority or government is added to the authority's pool of funds. So, the concept of *al-gharamah al-ta'zīriyyah* is also conventional as the case of Islamic Bank is very much different here.

2.3 Al-sharṭ al-Jazā'ī or penalty clause

Al-Sharṭ al-Jazā'ī (الشرط الجزائي) is the indenture that binds one party of a contract with some principles at the inception of the contract. Violation of these clauses will compel the party to pay a fixed compensation amount. This is *al-Sharṭ al-Jazā'ī* or Penalty clause (AAOIFI Sharī'ah Standards, 2021) [1]. This terminology was not in use during the time of former *fuqahā*. When trade and commerce spread over time, the term evolved through human laws. But the use of such clauses in the contracts is found in classical *fiqh* (Bukhari, 2004, *ḥadīth* no. 2611).

Al-Suwailem (2009) introduced a penalty clause as the condition attached in the main contract which compels any contracting party to compensate provided that they have failed to satisfy the condition without a valid reason. Al-Darir (1985) wrote in this context, both the contracting parties agree that the party responsible for performing the task would compensate for the loss incurred if the task is not performed or delayed. *Al-Sharṭ al-Jazā'ī* is classified in two categories:

(1) Penalty clause indicating the failure to pay any debt or financial liability in due time. It means, both contracting parties agree that if the debtor fails to pay the debt in due

1. Sharī'ah Standards No. 3, Section 2/1/2.

time, s/he will pay a fixed amount of financial compensation over the real debt amount. This is usury.

(2) Penalty clause attached in regular buy-sell or service-based contracts. For instance-a compensatory fine is payable due to the failure of completing the task in time (AAOIFI Sharīʿah Standards, 2021) [2].

The practice of collecting excess amounts in Islamic Bank due to the failure of debt repayment in due time is similar to the first category of *al-sharṭ al-jazā'ī* or Penalty clause. But in a practical sense, this practice cannot be called a penalty clause because this type of penalty clause in money lending contracts is not permissible. It becomes like the conventional banking practice of receiving anything above the debt value-usury dealing.

2.4 Al-Iltizam bi-al-Tabarruʿ (undertaking by the debtor to donate)

"Iltizam" means making something obligatory on ownself. *Tabarru'* means the donation, charity, etc. So, *al-iltizam bi-al-tabarru'* is making donation compulsory on ownself by anyone. For example-making donation compulsory through taking vow (*manut*). In the *murābaḥah* investment method, the client takes a one-sided responsibility of donating a fixed amount to the bank's charity fund, in case he/she fails to pay in due time (Usmani, 2011, p. 146). Thus, in *murābaḥah* mode-if the client fails and there is no valid reason behind the failure, it becomes compulsory for him/her to donate. The rate of donation can be aligned with the conventional bank's interest rate [3]. This whole process is *Al-Iltizam bi-al-Tabarruʿ* or Undertaking by the Debtor to Donate (AAOIFI Sharīʿah Standards, 2021) [4]. In this method, the client is compelled to pay in due time; otherwise, his/her payable would increase which is unacceptable for him/her. This is now evident that the amount collected from the loan defaulter in Islamic banking is *al-iltizam bi-al-tabarru'*; neither compensation nor penalty clause. Other terms except the "Undertaking to Donate" are not appropriate in this context according to Islamic philosophy. AAOIFI also rejected these terms.

2.5 Islam's position regarding the loan defaulters

It is not appropriate to think that Islam relaxes the legal bindings on the loan defaulters, since Islam does not allow the creditors to receive a financial penalty from the defaulters. On the contrary, willingly defaulting is a grave sin in Islam. This is explicitly forbidden to do so.

It appears in the *ḥadīth* being narrated by Abu Huraira Ra.: *Whenever a dead man in debt was brought to Allah's Messenger (ﷺ) he would ask, "Has he left anything to repay his debt?" If he was informed that he had left something to repay his debts, he would offer his funeral prayer, otherwise, he would tell the Muslims to offer their friend's funeral prayer. When Allah made the Prophet (ﷺ) wealthy through conquests, he said, "I am more rightful than other believers to be the guardian of the believers, so if a Muslim dies while in debt, I am responsible for the repayment of his debt, and whoever leaves wealth (after his death) it will belong to his heirs"* (Bukhari, 2004, *ḥadīth* no. 2298).

2. Sharīʿah Standards No. 5, Section 2/3.

3. But there are three distinct differences between this rate and the conventional bank's interest rate: (1) this is not a usury contract, (2) this is not interest earning of a bank and also not income in any form; rather a donation or charity, (3) it is one-sided undertaking to donate that has to be performed by the borrower; not a bilateral agreement.

4. Sharīʿah Standards No. 3, Section 2/1/8.

In another *ḥadīth* being narrated by Suhaib Al-Khair Ra.: *The Messenger of Allah (ﷺ) said, "Any man who takes out a loan, having resolved not to pay it back, will meet Allah (SWT) as a thief*" (Ibn Majah, 2008, *ḥadīth* no. 2410) [5].

Abu Huraira Ra. also narrated another *ḥadīth* in this context: *The Prophet (ﷺ) said, "Whoever takes the money of the people to repay it, Allah will repay it on his behalf, and whoever takes it to spoil it, then Allah will spoil him"* (Bukhari, 2004, *ḥadīth* no. 2387).

Therefore, there is no chance of reconciliation with the deliberate defaulters. The sin is grave and to recover money from them, it is allowed to take necessary actions. Even, they can be banned from future transactions, foreign travel, etc. But to do so, the application of a Sharīʿah-based financial system across all the sectors of the economy is necessary. Charging a fine that is to be paid to the creditor is not the way of Islam to deal with loan defaulters as it is associated with *ribā*.

3. Methodology

The research design followed in this study is descriptive under the qualitative method. At first, there are the observation of standard directives according to Sharīʿah teachings along with the scholarly opinions and then the observation of industry practice in real scenarios. To analyze the industry practices and the intents, textual and discourse analyses are conducted. The theme of understanding texts and discourses is gradually developed in the form of– what should be and what is being followed– action research approach. The texts and discourses are collected from various primary and secondary sources. The COVID-19 pandemic created a depression in almost all spheres of the economy. Regulators discouraged the Islamic Banks to push the debtors to repay hurriedly. Consequently, banks' respective incomes decreased in the process. The effect ultimately hit two different aspects:

(1) Profit-share of the depositors,

(2) Operating and administrative costs of the banks.

Overall, a liquidity crisis is observed across the industry. On the other hand, there is ample idle money accumulated in the Donation Funds (named as compensations) of the banks which have not been donated for long. Under this circumstance, in a seminar conducted by the Central Sharīʿah Board for Islamic Banks of Bangladesh (CSBIB), different proposals have been brought out to tackle the liquidity crisis (CSBIB, 2020). But there are Sharīʿah non-compliance risks associated with the proposals which question the existence of the banking principles of Islamic Banks. At this point, the motive behind this study was created. The notable proposals brought out in the discussion of the industry professionals:

(1) Proposal 1: In case of exceptional need, the money accumulated in the Compensation Fund can be added to the Income Account.

(2) Proposal 2: Directly adding the compensation to the bank's income and declaring it as a usury percentage during the income declaration through financial statements. It will be accounted as usury so that the depositors can donate the *ribā* portion from their share of profit.

(3) Proposal 3: The donated money by the debtor would be utilized by the bank in act of charities to its poor clients or customers.

5. According to Imam 'Abd al-Qawī Mundhirīʿ, there is no problem in the *sanad* of this ḥadīth (Mundhirīʿ, n.d., ḥadīth no. 2687).

(4) Proposal 4: The loss bank incurs due to the late payment of debt or delay in the repayments would be collected from the defaulting clients.

(5) Proposal 5: Compelling the debtor to donate by the central bank or any third party, where the bank itself will not take part.

The study ultimately evaluates the justifiability of the above proposals in exceptional situations like COVID-19.

4. Sharīʿah inference of the terminologies

4.1 Taʿwīḍ or compensation

Islam preserves everyone's life and wealth from others. None is permitted to harm or occupy another person's wealth and property. It is stated in Surah An-Nisa, "*Do not consume one another's wealth unjustly but only [in lawful] business by mutual consent*": لَا تَأْكُلُوا أَمْوَالَكُم بَيْنَكُم بِالْبَاطِلِ إِلَّا أَن تَكُونَ تِجَارَةً عَن تَرَاضٍ منكُمْ (Qur'ān, 4:29). It appears in the Sahih *Ḥadīth*, "*All things of a Muslim are inviolable for his brother in faith: his blood, his wealth and his honor*": كل المسلم على المسلم حرام دمه وعرضه وماله (Muslim, n.d., *ḥadīth* no. 2564). Therefore, receiving *taʿwīḍ* or compensation against the loss of life or wealth is valid in Sharīʿah. In another *ḥadīth* it is told – لا ضرر ولا ضرار – "*There should be neither harming nor reciprocating harm*" [6] (Ibn Hanbal, 2008, *ḥadīth* no. 2865) [7]. In this context, compensation will be compulsory on three fundamental conditions:

(1) The infringement is proved against the law whether it is obvious in statement or custom (AAOIFI, 2016, p. 220).

(2) Harm is caused. It can be financial or physical (AAOIFI Sharīʿah Standards, 2021) [8].

(3) Loss is incurred. It should not be based on any possibility (AAOIFI Sharīʿah Standards, 2021) [9].

One important consideration here is that the discussion's focus is business-related loss. In economics, the loss is of two kinds. One is actual and another is opportunity loss. Opportunity loss or cost is a foregone investment. Here the value of the loss is a possibility that could have happened. Mufti Taqi Usmani defined opportunity loss – الفرصة الضائعة – as the profit could have gained by the bank if an amount was invested (Usmani, 2009, p. 226). Islam does not recognize such opportunity loss. That is why, if someone's money is thieved, the exact amount is to be paid back along with other punishments. But, the opportunity loss would not be considered in repayment (Usmani, 2011, pp. 143–144). Similarly, when a *murābaḥah* client refuses to purchase a product later, the actual loss can be received by the bank. For instance– the product purchased by the bank for *murābaḥah* was sold at a lower value than cost. Here, the lost amount can be recovered as compensation from the first or original client who refused. But the opportunity cost

6. In the explanation of this ḥadīth, Shaykh Al-Zarqa told, punishing a criminal is not against this ḥadīth because the punishment for criminals is executed to eliminate harm. "Nor reciprocating harm" means one should not harm another's wealth because of his wealth being harmed by the other; rather he should take the justified compensation from the man who harmed. See more at the book- Al-Madkhal Al-Fiqhī Al-ʿĀmm, Section 81/18.

7. The ḥadīth is Ḥasan according to Shaykh Al-Zarqa RAH. and Shaykh Shuaib Al Arnaout RAH. See more at the books- Al-Madkhal Al-Fiqhī Al-ʿĀmm, Section 81/18 and Musnad Al-Imam Ahmad Ibn Hanbal, Vol. 5 (Ibn Hanbal, 2008, p. 55).

8. Sharīʿah Standards No. 5, Section 2/2/1.

9. Sharīʿah Standards No. 8, Section 6/8/2.

of selling the product to the first client in profit, cannot be asked as compensation (AAOIFI Sharīʿah Standards, 2021) [10]. Similarly, the opportunity cost of not buying the product rather investing the amount in any other project is also not to be considered.

4.2 Gharamah or penalty

The first type of Ghaaramah, *al-gharamah al-taʿzīriyyah*, or the punitive fine is imposed due to the violation of the law. It is imposed in various forms like physical punishment, financial penalty, etc. The financial penalty is called *taʿzir bi-al-māl*. Classical *fuqahā* differed in their opinion on the permissibility of *taʿzir bi-al-māl* and most of them did not allow it. Oppressive rulers can illegally occupy general peoples' wealth by this mean for own purposes. But Imam Ahmad RAH (780 AD–855 AD), Imam Abu Yousuf RAH (738 AD–898 AD) approved it. Many present *fuqahā* support it (Al-Zarqa, 2004, p. 50). But the execution of this punishment should be done by the court according to state law. The money will be delivered to the state's treasury. Without the interference of the court, none can impose such financial penalty on anyone and it will not be valid.

Therefore, when a person is found to delay in repayments for no reason, the court can impose such punishments on him. It is told in the *ḥadīth*, "If one who can afford it delays repayment, his honor and punishment become permissible": لي الواجد يحل عقوبته وعرضه (Ibn Hanbal, 2008, *ḥadīth* no. 17946) [11]. The punishment mentioned in the *ḥadīth* is not specific. So, it is not necessarily to be a financial penalty. It can also be physical. If the financial penalty is imposed, then it has to be executed by the court and directed to the state's treasury (Usmani, 2011, p. 143). The creditor cannot receive the financial penalty.

4.3 Al-sharṭ al-Jazā' ī or penalty clause

At present, in different financial transactions, a penalty clause is included in the contracts from the beginning. The main objective of this clause's inclusion is to complete the task associated with the transaction. Another usefulness is loss can be recovered without any legal proceedings. For example, if the cloth is not delivered on the due date a hundred pennies are deducted from the wage. Such penalty clauses are applied in two aspects:

(1) Transactions where product or services are received; viz. contractual service agreements, *istiṣnāʿ*, *salam*, *ijārah*, etc. Using the penalty clause in these transactions is valid. It is similar to the above example. But no such obstacle can be placed which is unavoidable so that the deduction in wage becomes obvious from the beginning (AAOIFI Sharīʿah Standards, 2021) [12].

(2) Transactions in loan or any payment like failure to pay the creditor in time are associated with the penalty of paying extra money as fine. This is not acceptable at all in Islam. This is the obvious usury (AAOIFI Sharīʿah Standards, 2021) [13]. In a resolution by the International Islamic Fiqh Academy, Jeddah, it is stated clearly that it is invalid whether paid in currency or any form of wealth [14]. In such contracts,

10. Sharīʿah Standards No. 8, Section 4/2.

11. The ḥadīth is Ḥasan (Ibn Hajar al-Asqalani, n.d., p.61).

12. Sharīʿah Standards No. 3, Section 2/3. See more at the Sharīʿah Standards of the book- Abḥāth Hay'at Kibār al-'Ulamā' (Hay'at Kibār Al-'ulamā' (Saudi Arabia), 1991, p. 105).

13. Sharīʿah Standards No. 3, Section 2/1/2.

14. Resolution No. 51, Section 6/1/193 (cited in Hammad, 1985, p. 110; AAOIFI, 2016, p. 247). This is also the decision of the International Islamic Fiqh Academy, Makkah (AAOIFI, 2016, p. 249). It has to be remembered that this is not the appropriate application of Al-Sharṭ al-Jazā' ī as per the AAOIFI Sharīʿah Standards No. 3, Appendix B (AAOIFI, 2016, p. 102).

even if the collected extra money i.e. fine is donated without consumption, the sin of contracting prevails [15].

4.4 Al-Iltizam bi-al-Tabarru' (undertaking by the debtor to donate)

This is taken from the *Mālikī fuqahā*'s *fiqh* principles, currently followed in Islamic Banking. It came through several stages to the current form. Initially, this undertaking was not in the practice of Islamic Banking. The best way to handle a person who defaults willingly is to punish him centrally. This central punishment is executed by the central bank or the government by banning him/her from the banking facilities for good. Thus, the practice of defaulting willingly would decrease. But the precondition to implementing this step is to ensure Islamic Banking all over the country which is absent now. Banned individuals would move to conventional banking to get banking facilities. Later penalty clause comes into discussion. But due to the resemblance of a type of usury in the penalty clause, it was rejected by the scholars. Then this undertaking or *al-iltizam bi-al-tabarru'* was proposed as a one-sided promise by the debtor. To implement *al-iltizam bi-al-tabarru'*, two fundamental conditions are provided:

(1) If a person fails to repay debt due to financial inability within time, then firstly, s/he has to be given the chance to repay within additional time. No financial pressure can be imposed on him.

(2) When the failure to repay occurs without any reason rather due to the irresponsibility of the debtor, then donation through *al-iltizam bi-al-tabarru'* can be collected as per the advice from the Sharī'ah Board of the Islamic Bank for the Charity Fund. The bank will not be able to use the donation for its purpose (Usmani, 2009, pp. 280–281).

But nowadays, the first condition is waived and not followed. By and large, with every client in *murābaḥah* contract, "Undertaking to Donate" is attached. Then the donation is collected from everyone irrespective of being unable or irresponsible to repay. Though as per the contract, there is no wrong here in practice, collecting donations in such a way without verifying the real cause does not match with the vision of Sharī'ah principles. Again, some Islamic Banks waive the donation provided that the debtor appeals to the bank stating the inability to repay in due time. This is worthy of appreciation, although it is necessary to ensure that the bank takes the responsibility to investigate the reasons for defaulting and waive the incapable individuals. There is no alternative to implement the Sharī'ah principle in each segment of the Islamic Banking procedure. The derailments from the Sharī'ah principles in any part of the Islamic Banking procedure is a disgrace to the establishment of the whole Islamic Financial System and its divine philosophy of justice in every financial transaction. If the second condition, directing the donations mandatorily to the bank's charity fund, is waived then the whole system will be corrupted and the bank's income will be contaminated.

al-iltizam bi-al-tabarru' was approved by the following experts:

(1) The Council of Present Issues in Pakistan (*Majlis-e-Tehqeeq Masail-e-Hazira*) approved *al-iltizam bi-al-tabarru'* in 1992 AD (1412 AH). The then Islamic Scholars and Banking experts participated in a conference and passed a resolution together where the eighteenth resolution was on "Undertaking to Donate by the Debtor" (Ludhyanvi, 2003, p. 111).

(2) The *Fatwā* and Sharī'ah Supervisory Board of Kuwait Finance House approved it [16].

15. But in a resolution of the Al-Baraka Symposium, the penalty clause is considered valid provided that the penalty money is donated. But again, this is self-contradictory, hence, not acceptable (AAOIFI, 2016, p. 252).

16. Fatwā No. 520 from the book: Al-Fatawa Al-Shar'iyyah Fi Al-Masa'il Al-Iqtisadiyyah, Vol. 1 (cited in AAOIFI, 2016, p. 251).

(3) It was also the decision of the sixth Al-Baraka Symposium which approved the undertaking by the debtor (AAOIFI, 2016, p. 252).

(4) Accounting and Auditing Organization for Islamic Financial Institutions, Bahrain also approved it in their different Shari'ah Standards [17].

5. Scholar opinions on the actual financial compensation concept

This discussion on charging fine or extra money from a defaulting client in the name of recovering loss is not new at all. Almost for more than two decades, scholars have been discussing the issue to find out a Sharīʿah-compliant way to handle such events. Conventional banks increase the interest rate at the occurrence of default of the due date being over. Since no such provision is possible in Islamic Banking, opportunist clients started to skip payments in *murābaḥah* agreements. In a country where the whole economy is run under Islamic Financial System, there enacting laws binding the defaulters within legal actions is easier. But in the mixed economy, things are difficult to implement. These clients can shift toward conventional banking easily whenever they need it. To get control over the situation the present scholars proposed two measures which are:

(1) Receiving actual financial loss on certain conditions;

(2) One-sided compulsory donation agreement.

5.1 Conditions on receiving actual financial compensation

The validity of the second measure is already understood from the aforesaid discussion of *al-iltizam bi-al-tabarru'*. But the first one needs a detailed focus here. The question arises if there is any financial loss that incurs due to the late payment or not. First, the opinion of collecting actual loss is an isolated view of five/six individuals amongst a large assembly of scholars (Binti Zulkipli, 2019, p. 194) [18]. Second, the conditions they provided on the execution of this measure are nearly impossible. The conditions are as follows:

(1) The client is not unable to repay i.e. s/he is delaying for no valid reason. The proof of this can be brought out in various ways, like– self-incrimination (testification), witness, information on his/her investments in other institutions, possession of other wealth, etc.

(2) There is no Sharīʿah approved, the valid reason behind the delay; viz. if the client is poor, then the measure cannot be applied.

(3) One month of extended period is allowed even after the due date is over. During the extended period, notice and letters from the bank are to be mailed stating the possible actions against him/her (Usmani, 2011, p. 140).

(4) There has to be an actual financial loss on the bank's part incurred at the delay of repayment by that particular client; otherwise, the measure cannot be executed. To prove this, profits against all liquid assets of the bank have to be realized. Only then, it will be proved that, in absence of that particular client's money, a certain amount of profit is missed by the bank. On the contrary, even if at that time, there exists no profit in the bank's income and liquid assets remain under the bank's holding, it will be

17. Sharīʿah Standards No. 3, Section 2/1/8.

18. Shaykh Abdullah bin Sulaiman Al-Manea, Shaykh Mustafa Ahmad Al-Zarqa, Dr. Mohamad Akram Laldin, Dr. Wahbah Mustafa al-Zuhayli, Dr. Abdul Hameed Al Baali.

considered as no loss incurred at the bank's side (AAOIFI, 2016, pp. 263–266; Usmani, 2011, p. 140).

(5) Compensation to be received must equal the actual loss incurred; it cannot cross the actual amount. That is why the compensation to be received cannot be fixed at the inception of the contract. It will be determined at the occurrence of default.

(6) The bank cannot keep any type of asset as a mortgage to recover the debt amount. Also, there cannot be any guarantee for the debt. If there are, then the measure is unnecessary and cannot be executed (AAOIFI, 2016, p. 287).

SAC BNM (Sharīʿah Advisory Council of Bank Negara Malaysia) passed a Sharīʿah resolution in this context on May 20, 2010. The actual loss recovery method is described in that resolution as said above (Binti Zulkipli, 2019, p. 188).

5.2 Assessing the actual financial loss

How the actual loss would be determined, that needs further discussion. Notable opinions of some scholars are as follows:

(1) One way is the profit margin gained by the bank for the number of days, the payments are delayed, at that rate compensation can be imposed. For example– payment is delayed for 3 months and for that three months, the bank's profit was shared with the depositors at 5%. Then the bank can receive compensation at a 5% rate from the actual defaulters (AAOIFI, 2016, pp. 264–280). This is the opinion of Shaykh Al-Siddiq Mohammad al-Amin Al-Darir and also Dr. Ali Ahmad As-Salus (AAOIFI, 2016, p. 293).

(2) Some scholars emphasized the court interference. It is stated in the civil law of Jordan (AAOIFI, 2016, p. 291). Dr. Wahbah Mustafa al-Zuhayli emphasized this opinion in several articles written for AAOIFI (AAOIFI, 2016, p. 341).

(3) Shaykh Abdullah bin Sulaiman Al-Manea was told to determine the loss in currency value. For example, "B" owes "A" US$1 million. The last date to repay is May 1. When the debt was issued, one dollar was BDT 80. On May 1, the value became BDT 75. Money was asked on May 1 by "A," but "B" skipped the payment for no reason. When the compensation was about to be executed, it was observed that the per dollar value was reduced to BDT 70. So, "A" incurred a loss of BDT 5 per dollar due to the irresponsible behavior of client "B." It would be considered as an actual loss (AAOIFI, 2016, p. 293).

(4) SAC BNM in another resolution approved to receive compensation up to a maximum of 1% of the debt value.

5.3 Evidence presented to support actual financial compensation

Though the view of receiving actual compensation is isolated from a large number of other scholars, some Sharīʿah evidence is presented by the scholars who advised this method. According to AAOIFI (2016) by and large the evidence or *Dalīl* that is presented them is the aforesaid *ḥadīth*- لا ضرر ولا ضرار – "*Neither harm nor reciprocating harm*" (Ibn Hanbal, 2008, *ḥadīth* no. 2865). Their stand on this is the only way to recover the loss incurred due to the defaulter's action is by imposing actual compensation on him/her. Financial loss has to be recovered by financial compensation, not otherwise (AAOIFI, 2016, p. 274).

Besides, another *ḥadīth* is also taken as evidence – لي الواجد يحل عقوبته – "*Delay in payment on the part of one who possesses the means makes it lawful to dishonor and punish him*" (Ibn Hanbal, 2008, *ḥadīth* no. 17946). In the light of this *ḥadīth*, the permissibility of punishing the

defaulter is inferred. Punishment can be in many forms where actual financial compensation is also included (Usmani, 2011, p. 143).

5.4 Reasons behind the refusal of actual compensation concept by the majority of scholars

It is the established, recognized, and by and large accepted opinion that at the maturity of debt accepting any form of financial compensation from the defaulter is invalid and illegal. It would be considered usury or *ribā*. Shaykh Mufti Taqi Usmani discussed this opinion in detail stating that the majority of the scholars or Ulamā did not accept the first opinion that permits acceptance of financial compensation. The proposal neither goes with the Sharīʿah principles nor antidotes the defaulters' behaviors (Usmani, 2011, p. 141).

So, curiosity arises about what could be the majority's evidence against this method. Association of *ribā* in imposing anything extra in advance with the return of the original debt value is a universally recognized concept across all schools of thought. From the opinion of Imam Al-Jassas which defines *ribā* as– هو القرض المشروط فيه الأجل وزيادة مال على المستقرض i.e. such a debt where both maturity period and excess return from the borrower is conditioned (Al-Jassas, 1980, p. 557). Lending anyone with the condition of excess return in association with a maturity date is known as *Ribā al-Qarḍ*. Another type of *ribā* that was in vogue during the *jāhiliyya* (age of ignorance) is *Ribā al-Dayn* which is increasing the maturity date in credit sales and loan repayments with the condition of excess return in payments. Both the forms were in vogue before Islam had arrived.

Generally, during the *jāhiliyya*, when debtors failed in repayments on the due date, excess money had been collected from them. Then it was told to the defaulters– إما أن تقضى وإما ان تربى i.e. *either pay now or pay in excess after increasing time* (Imam Malik Ibn Anas, 2017, *ḥadīth* no. 1380). Shaykh Ibn Taymiyyah (1228 AH–1263 AH) stated clearly on this issue– أما المعاملة التي يزاد فيها الدين والأجل فهي معاملة ربوية i.e. *the transaction where debt value and credit period is increased is a usury associated transaction* (Ibn Taymiyyah, 1997, p. 439). It becomes evident here that taking excess as financial compensation against the debt payment is similar to *ribā al-dayn* of the *jāhiliyya*. Here, what is received as excess is not important, rather important is receiving anything excess in the credit transactions. No classical explained as such that taking financial compensation would not be considered as *ribā*.

On the other hand, for the approval of financial compensation in credit dealings, it is said that the *ribā* of *jāhiliyya* has no resemblance with it and that was used to be imposed in every default case. But here, the financial compensation is to be imposed on only the deliberate defaulters even after they are provided a month of extra credit period so that his/her financial status is revealed to the bank.

The reality differs from the rebuttals of the supporters of financial compensation. All the conditions mentioned to execute the financial compensation method are difficult to implement. Because each of the defaulters claims himself to be unable to pay and it is also hard to establish by a bank that a defaulter is not unable without the help of legal proceedings. It not only will create a lengthy event just to prove the defaulter's ability but also incur bank additional costs which may outgrow the actual loss of the bank in the case of default. The only hassle-free way to understand the inability by the bank is that a defaulter is unable when he/she declares himself/herself bankrupt. This is also a rare phenomenon and then the conventional banks also waive charging interest on him/her. The conditions are not valid from the reality perspective (Usmani, 2011, p. 142).

Another rebutting argument comes from the supporters of financial compensation – in the *ribā* of *jāhiliyya*, the excess return is predetermined. There is no relation to the actual loss incurred. But in imposing financial compensation, the value would not be determined during the inception of the contract, rather it will be evaluated at the occurrence of default.

But the fact is, the actual financial loss that has been mentioned in the proposal is completely vague and invalid from the Islamic point of view. Because the dealers of a usury claim usury in credit dealings from the loss-recognizing perspective. The arguments presented usually for the support of *ribā* by the usury dealers or the conventional capitalistic finance experts mainly focus on the excess return that compensates the forgone profit that could have been realized if the money was not left at the borrower's or the debtor's end. So, this fades the distinction line between the conventional interest-seeking financial system and the Sharīʿah-compliant Islamic Financial System.

Even if the payments arrived on due time, it would not be ensured that the amount could have earned profit. The concept of this opportunity cost is a possibility, not a sure thing (Hammad, 1985, p. 110). According to Islam, no type of loss is acceptable against credit dealings. It is a wrong concept that loss must occur due to the delay in payments. In Islamic Economics, the money price is not acceptable and only profit is not fixed in business transactions. Usury concept brings the idea of only profit at transactions and price for money in lending. That is why, fundamentally, *ribā* is a forbidden concept in Islam (Hammad, 1985, p. 110). Therefore, financial compensation cannot be accepted in Islamic Finance.

The international forums on *Fiqh* Study also rejected the financial compensation concept. The mentionable decisions are the following:

(1) International Islamic Fiqh Academy, Jeddah: Resolution no. 53 (Hammad, 1985, p. 110).

(2) Kuwait Finance House: *Fatwā* no. 932 (AAOIFI, 2016, p. 272).

(3) AAOIFI Sharīʿah Standards No. 3, Section 2/1/2.

5.5 Rebutting the evidence for the actual compensation concept

How the evidence used for financial compensation is refuted-is also to be discussed. The *ḥadīth* presented for financial compensation – "*Neither harm nor reciprocating harm*" – only states that harm cannot be caused. But to understand what is harmful and what is not, other pieces of evidence from Sharīʿah are to be taken into consideration. The events where compensations are valid are also to be determined based on Sharīʿah. That is why, *ḥudūd*, penal codes, etc. are not considered as loss or harm; although these are also harming in a sense. But Sharīʿah does not declare these as harms (Atasi, n.d., p.25).

Moreover, the loss considered against the delay in payments is not recognized in Sharīʿah as an established loss. Otherwise, usury would have been approved in Islam. The way of compensating Sharīʿah also needs to be under the Sharīʿah principles. There is a ḥadīth that tells us about the punishment of defaulters – لي الواجد يحل عقوبته و عرضه – "If one who can afford it delays repayment, his honor and punishment become permissible" (Ibn Hanbal, 2008, *ḥadīth* no. 17946). In this *ḥadīth*, punishment is mentioned in not specific, rather vastly comprehensive. It is not necessarily to be in the form of financial compensation. It can be physical punishment too. Though financial compensation is a kind, in reality, punishment can only be imposed by the state or the court and the amount must be directed to the government treasury. The creditor cannot impose any punishment on the debtor without court interference (Usmani, 2011, p. 143).

In addition, the losses considered to implement financial compensation are directly opportunity costs. It has already been evident that opportunity cost is not supported by Sharīʿah and it is the source of usury-based thoughts. Therefore, based on Islamic *Fiqh* and its comprehensive principles, the concept of actual financial compensation has to be rejected.

Here, the second opinion of one-sided undertaking to donate is prominent. If the financial compensation is allowed, the process will be generalized in every financial transaction

gradually and ultimately *ribā* will appear practically in vogue. Dr. Rafic Yunus al-Masri said in this context: إن هذه الاقتراحات أخشى أن تتخذ ذريعة في التطبيق العملي إلى الربا، فتصبح الفائدة الممنوعة نظرياً تمارس عملياً باسم العقوبة "جزاء التأخير"، وينتهى الفرق إلى فرق في الصور والتخريجات فحسب، وأرى أن هذا الاقتراح i.e. من جنس اقتراحات أخرى عصرية مماثلة تحوم حول الحمى، وربما تؤول إلى الدخول من النوافذ بعد أن أقفل الباب *these vague proposals warn us that these would be used as the media of receiving usury in practice. The forbidden ribā would be introduced newly as late penalty, like-the interest in today's finances. Ultimately, the difference between fine and usury would exist in names only. What I suppose, the inclusion of such proposals fundamentally insecures the central concept of Islamic Finance. It is just like making entry through the window when the main entrance is closed* (AAOIFI, 2016, p. 271). Dr. al-Masri here brought out the reality in a nutshell.

6. Comments on the fund management proposals in the light of Sharīʿah

The proposals arose in the banking community regarding the fund management in the COVID-19 crisis are inspected in the light of Sharīʿah:

6.1 Proposal 1: In case of exceptional need, the money accumulated in the compensation fund can be added to the Income account

(1) It has already been discussed that the precondition behind the approval of receiving compensation, which is *al-iltizam bi-al-tabarruʿ*, cannot be directed to the bank's usable accounts. If it goes to the bank's funds, it would be obvious usury.

(2) When offer and acceptance are performed in contract, then it becomes complete i.e. legally the contract is established. But in *Tabarruʿ*-based contracts such as *Hibah*, *Sadaqah* and *Wasiyyah* "*Qabz*" or constriction is simultaneously important to make a contract complete. In this connection, the principle of Islamic *Fiqh* is– لا يتم التبرع إلا بالقبض – "volunteered contract becomes completed by constriction" (Al-Zarqa, 2004, p. 13) [19].

So, after the contract has been completed, there remains no way other than sending the money to the charity account. Here, the owner of the money is neither the bank nor the client/debtor. The bank is the agent to spend the money. Therefore, using the fund by the agent is misconduct and will be considered as theft and unauthorized possession.

6.2 Proposal 2: Directly adding the compensation to the bank's income and declaring it as a usury percentage during the income declaration through financial statements. It will be accounted as usury so that the depositors can donate the ribā portion from their share of profit

This is also against the Sharīʿah principles. Receiving usury is itself a sin and an illegal act. Moreover, here it is going to be done through declaration which is defiance towards Sharīʿah. On the other hand, donating the *ribā* portion by the depositors is uncertain and it does not soothe the sin of taking part in a *ribā*-based contract. The whole process of this proposal is unacceptable.

6.3 Proposal 3: The donated money by the debtor would be utilized by the bank in act of charities to its poor clients or customers

This is unjust again. The donation from the debtors cannot be used by the bank for its purpose. Clear guidelines should be stated in the Sharīʿah governance of the compensation fund of Islamic banks.

19. Al-Madkhal Al-Fiqhī Al-ʿĀmm, Section 30/13.

6.4 Proposal 4: The loss bank incurs due to the late payment of debt or delay in the repayments, would be collected from the defaulting clients

From the Sharīʿah analysis above, this proposal of compensation that is incurred is not acceptable. Even if the opinion is accepted for the sake of debate, is it possible to use the compensations in the light of the COVID-19 situation?

The answer here is a no. Because the funds created in Islamic Banks in Bangladesh at present are created through donation contracts. Here the contracts are completed through donations and banks are not the owner of those funds. The money newly to be received by the banks in the name of financial compensation cannot be mixed with the present funds, also named as compensation, although these are the funds that came via one-sided undertaking of donation by the debtors. So, the banks have no funds previously as financial compensation practically and the approval to receive financial compensation now cannot suffice the necessary measures of tackling the liquidity crisis of the Islamic Banks.

Moreover, in reality, the opinion of financial compensation is an isolated view of few scholars. It cannot be implemented by going against the united views of the internal forums of scholars which are Sharīʿah compliant. Also, the preconditions associated with the execution of the method are much more to be compliant. Still, Bangladesh does not have a versatile Sharīʿah compliance guideline for all the sectors of the economy. Islamic Banking system has no separate government act too. Under this circumstance, it is not possible to prove a defaulter able to repay as per the Sharīʿah. The patronizers of the financial compensation concept were divided in their opinions in evaluating the compensation value. So, another discrepancy is evident in the method. Above all, conduct where the possibility of association with usury is higher and Sharīʿah compliance risk is increased must be avoided to preserve the Sharīʿah compliance in Islamic Banking.

6.5 Proposal 5: Compelling the debtor to donate by the central bank or any third party, where the bank itself will not take part

This proposal does not make the compensation valid, though by contract bank is not asking for compensation or fine due to the failure to repay. When any third party is getting involved in collecting the compensation externally for such a transaction where the third party itself is not a party at all, then the third party is acting as the agent of the bank. So, ultimately the money is being asked by the bank as fine or compensation via its agent whether it be the central bank or any other authority. Moreover, it is evident in the Sharīʿah principles that no additional cost or loss is recognized against the delay or failure in repayment by the debtor. So, involving a third party in collecting compensation is a vague idea.

7. Recommendations

7.1 Sharīʿah compliant directives to tackle the crisis

The steps that should be followed in general without deviating from Sharīʿah principles and tackling any crisis soon:

(1) Cutting on those expenditures which are not necessities for the bank and its employees.

(2) Taking necessary steps for the sale of existing mortgages, but before that, the related client must be informed first.

(3) Banking experts and Sharīʿah scholars jointly can research to find out new ways to tackle liquidity crises. A combined effort can lead to a better solution.

(4) Applying for *Qarḍ al-Hasan* to the Central Bank during a crisis.

(5) Asking to clear the earlier debts before letting the defaulters get any new loan facility from the incentives received from the government or the central bank.

(6) Arranging consultancy for the defaulters from the bank's Sharīʿah team so that their problems are understood and the Sharīʿah teachings become clear to them in financial dealings.

(7) Using blockchain technology to maintain the client data so that if a defaulter was irresponsible in repayments s/he can be brought under formal actions to clear his/her debts.

(8) When nationally, it is told to relax the payment collection during the crisis period; the guideline must focus on the unable debtors. The able and irresponsible debtors who delay in repayments must be taken into action to fasten their debt clearance process during the crisis period. Relaxing the system for all types of clients is a wrong decision. The central bank should be careful in implementing such guidelines in the industry. Sharīʿah's principles also tell to allow chances for the unable and incapable debtors, not the able and irresponsible ones.

(9) Reducing investments in the *murābaḥah* method in the export-import deals along with *Bayʿ al-Istijrār* (supply contract), *Mushārakah* and *Muḍārabah*. These modes come with increased investment risk in export-import contracts. *Istiṣnāʿ*, *Salam* and *Ijārah* modes are to be increased to mitigate risks. These methods are allowed to use the penalty clause as per the Sharīʿah principles. Before introducing any new financial deal in the banking practice, consultation with the Sharīʿah board is a must.

Alternative proposals to withstand the COVID-19 situation

(1) The institutional defaulters can be proposed to provide equity share with the bank if they are unable to repay. The bank sells the share later to recover its own money. According to Sharīʿah, it goes under the Sale of Debt category; i.e. Sale of Debt by the Debtor. The debtor here transfers the debt to the creditor in exchange for his other wealth. This method is valid. In Sharīʿah Terminology, it is known as *Bayʿ al-Dayn min-al-Madyun*- بيع الدين من المديون (AAOIFI Sharīʿah Standards, 2021) [20].

(2) Another way is keeping a certain percentage of institutional clients' company shares as mortgage to the bank and providing power of attorney over those mortgaged shares to the bank. In case of necessity, the bank can cash the shares and recover money. This is also valid according to Sharīʿah.

7.2 Sharīʿah governance principles of the compensation fund

The donations collected by Islamic Bank as *al-iltizam bi-al-tabarruʿ* are to be managed as per the Sharīʿah principles. The Sharīʿah governance principles in this context are stated below-

(1) Strict measures of not including the donated fund into the income account have to be taken in each Islamic Bank. Moreover, the money cannot be used for any purpose of the bank. Even, it cannot be proxied for the provisional reserve requirements. If it is done, in extreme cases, the bank might use the funds to take back the depositor's money which would be illegal and unjust. The bank is not the owner of the funds

20. Sharīʿah Standards No. 59. According to this standard, the condition of Sale of Debt being valid is- Ribā cannot evolve in this transaction. That is why, values of debt and wealth must be equal and the transaction must be in cash; not in credit.

accumulated through *al-iltizam bi-al-tabarru'*. So, taking control in the name of compensation is not valid.

(2) The donated money should be directed to any third party other than the bank. That organization should not be related to the bank in any form of financial dealings. It will act as the trustee and the control over the donation fund must not remain under the jurisdiction of the bank. This was the decision made in 1992 by the Sharī'ah scholars in association with the then bankers. This was indeed a foresighted decision that is evident by this time as the deviation from Sharī'ah principles is observed in the practice. As the control remains with the bank nowadays, the chances of misusing and violating Sharī'ah are increasing.

(3) The take care organization shall donate from the fund directly to the poor and for the humanitarian activities amongst the Muslim community according to the philosophy of Islam. If the fund is used in any business activity, the profit earned also must be donated. Sharī'ah scholars also warned to not donate on behalf of the bank i.e. the bank's name must not come in the mass donation since the bank is not the owner of the fund as discussed in the previous sections (Usmani, 2009, pp. 280–281).

(4) The trustee organization can use the fund for *qarḍ al-hasan* to appropriate needy individuals (Usmani, 2011, p. 77).

(5) In practice, it is observed that the date of the last payment is not accounted as the expiry date, rather the date is recorded as deferred and the donation amount is accounted as the original value of the transaction. It must be stopped because of associated usury.

(6) The bank also should not receive the donation fund as a loan for tackling any crisis. Though the bank is not the owner of the donation/compensation fund, the money is being directed through the bank from the debtors. So, receiving loans from the fund by the bank itself is also risky in case of any evolved association of any form of *ribā*.

7.3 Sharī'ah prescribed ways to recover late payments

Failing in repayment at the due time can be due to two possibilities:

(1) Being unable to repay,

(2) able to repay but irresponsible in repayment.

In the Qur'ān, it is stated– وَإِن كَانَ ذُو عُسْرَةٍ فَنَظِرَةٌ إِلَىٰ مَيْسَرَةٍ ۚ وَأَن تَصَدَّقُوا خَيْرٌ لَّكُمْ ۖ إِن كُنتُمْ تَعْلَمُونَ – "*If it is difficult for someone to repay a debt, postpone it until a time of ease. And if you waive it as an act of charity, it will be better for you, if only you knew*" (Qur'ān, 2:280). So, if a person is unable, he has to be allowed additional time to repay until he becomes able financially. This is divine order from the Creator.

Now, what is the touchstone to understand whether a person is unable or not? In a resolution of Islamic Fiqh Academy, Jeddah, it is declared- ضابط الإعسار الذي يوجب الإنظار ألا يكون للمدين مال زائد عن حوائجه الأصلية، يفي بدينه نقداً أو عيناً i.e. the level of inability which will be appropriate to provide additional time for the debtor is having no excess wealth in any form (cash or non-cash, tangible or intangible) under the debtor's ownership with which the debt can be cleared [21]. According to *Fatwā* no. 993 of Jordan Islamic Bank, the person will be considered capable if he/she has any tangible and intangible asset (AAOIFI, 2016, p. 287).

21. Majallat Majma' al-Fiqh al-Islāmī, 7/2/218 (cited in AAOIFI, 2016, p. 287).

When the case is opposite, being irresponsible in repayment, it has been prohibited in Islamic Sharīʿah. This is the real defaulting in loan repayments. In the *ḥadīth*, it is written– مطل الغني ظلم – "*Procrastination (delay) in paying debts by a wealthy man is injustice*" (Bukhari, 2004, *ḥadīth* no. 799). Also, it is mentioned in another *ḥadīth*- لي الواجد يحل عقوبته و عرضه – "*If one who can afford it delays repayment, his honor and punishment become permissible*" (Ibn Hanbal, 2008, p. 388).

Therefore, based on the above considerations, a creditor, bank or any financial institution can take the following necessary steps in recovering debt from the real defaulter who is irresponsible in debt repayments as per the Sharīʿah:

(1) Repeatedly asking for repayments when the time is over.

(2) If the actual defaulter has any deposit account with the same bank, the bank can debit the account with the exact amount of debt without any approval.

(3) The court can order the debtor to settle debt with similar wealth s/he owns now. This is also possible with assets that are dissimilar to the debt. The bank can sell the dissimilar assets to recover the debt at the court's approval or lease to recover the payment amount.

(4) Such irresponsible debtors can be blacklisted in the industry to save the economy from unethical practices in the future. Using debtor's historical information through blockchain technology can be of great help here.

(5) Also, his ability to testify in any legal proceedings can be limited by the jurisdiction of the court. His/her discretion of financial transactions can be limited by the court. Such legal actions are valid and can help to improve the overall integrity of the financial dealings.

(6) An irresponsible defaulter can be imprisoned, punished and restricted from foreign tours.

(7) His/her installment facilities in the existing transactions can be revoked by the court and declared as payable in cash.

(8) The cost of legal proceedings and processes associated with loan recovery from such defaulter can be collected from the same defaulter. But such amounts must be incurred not corrupted [22].

(9) If such a defaulter is engaged in a *murābaḥah* contract, his/her product can be taken back by the bank provided that certain conditions are fulfilled. According to the AAOIFI Sharīʿah Standards No. 8, Section 5/4; it is permissible to not register the product with the buyer until full payment is done. So, the ownership stays with the bank. Alternatively, the bank can sell the product to the third party on behalf of the defaulter to recover the unpaid balance. In both alternatives, the conditions are the product has to be intact or in its original form and the product has not been handed over. When the bank is retaining the product to itself (taking back), it has to return the exact received amount from the buyer. When the bank is selling to the third party, it has to keep only the due balance of the repayment value from the sales proceed and return the rest amount to the original buyer.

22. AAOIFI Sharīʿah Standards No. 3, Section 2/1/4.

(10) The provision of "undertaking to donate" in case of failure during the inception of the financial contract is already discussed. It can be used as a precaution to avoid legal proceedings. If the client defaults due to one irresponsibility, s/he has to donate an amount to any *Tabarru'*-based Islamic Insurance company from where anyone can be benefitted (AAOIFI, 2016, p. 238).

8. Conclusion

The problems of delayed repayments from the debtors and ensuing liquidity issues that arose in Islamic banking due to the COVID-19 are not only important for the sake of COVID-19 but also for the associated problems prevailing for long in the industry. It was important to find out the loopholes in the system to fix them as early as possible so that any future crisis can be tackled vibrantly. The ideological promotion of Islamic Finance needs to be spread all over the economy. *Mushārakah* and *muḍārabah* based financing processes need to be addressed more. The risk of default is reduced in these methods. The general public should be acquainted with the profit-loss based *muḍārabah*. This has to be accustomed in the society. Islamic financial literacy is another necessary issue to be taken care of. Without knowledge and awareness against *ribā*, the general masses cannot comprehend the concealed harms of usury and the grandeur of Islamic Banking in following Sharīʿah. Also, the desired behavior of Muslims in financial transactions and the teachings of *muʿāmalāt* can be disseminated through proper literacy programs. Bangladesh needs a completely separate Islamic Banking Act to implement Sharīʿah governance in Islamic Financial Transactions and Sharīʿah-compliant organizations. To speed up the loan repayment legally, the Sharīʿah compliant ways other than the compensation (donation in practical form in Bangladesh) should also be followed. The necessity of a separate law is felt here too. The transactions where financial penalties, legal as per the Sharīʿah, can be practiced in the industry at an increased rate are *Istiṣnāʿ*, *Salam*, *Ijārah*, etc.

An individual's wealth is secured from others in Islamic Sharīʿah. Each individual is entrusted with each individual's wealth and life. No harm can be caused without any valid reason. The term compensation used in vogue in Bangladesh is *al-iltizam bi-al-tabarru'* (undertaking to donate). It is approved globally with certain conditions. This donation fund needs to be governed by strict Sharīʿah principles, otherwise, misuse may arise in the process. The original concept of collecting actual financial compensation is not supported by Sharīʿah principles and is rejected by the international *fiqh* forums. Willingly defaulting on credit payment is a grave sin in Islam. It must be avoided by a Muslim and the banks must take Sharīʿah-compliant steps to tackle this.

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Vulnerability of Islamic banking in ASEAN

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Received 18 October 2021
Revised 1 December 2021
7 February 2022
Accepted 5 April 2022

Abstract

Purpose – This research evaluated the impact of credit risk, liquidity risk, profitability, economic growth and good governance on the vulnerability of the Islamic banking system in the Association of Southeast Asian Nations (ASEAN).

Design/methodology/approach – The panel regression analysis was used to obtain data from five ASEAN countries that had operated Islamic banks from 2010 to 2019.

Findings – The results obtained from the vulnerability model indicated that bank liquidity risk, profitability and good governance have significant impacts on vulnerability. Conversely, credit risk and economic growth showed an insignificant effect on susceptibility. Good governance helps increase investment attractiveness for economic growth and development in Islamic banks in ASEAN.

Research limitations/implications – Some of the limitations of this research include its focus on the vulnerability of Islamic banks in ASEAN countries. The average value of six indices is used as a single index per country with good governance. Therefore, further research needs to consider using all six indices of good governance as factors affecting the vulnerability of Islamic banks, such as control of corruption, government effectiveness, political stability, absence of violence, regulatory quality, the rule of law voice and accountability.

Practical implications – This research describes banking financial circumstances and their internal activities. Furthermore, it helps managers or banking practitioners in the proper management of finance, specifically at the vulnerability level, to aid in the early detection of crisis to enable early aversion or minimal impact.

Social implications – This research is expected to assist governments in ASEAN countries to establish public policies and build good governance to increase investment interest in the Islamic banking industry.

Originality/value – This research is the author's first attempt at discussing the issues of bank vulnerability related to good governance faced by the Islamic banking system in ASEAN.

Keywords Liquidity risk, Profitability, Good governance, Bank vulnerability

Paper type Research paper

Introduction

Several countries and institutions have evaluated the contagious effect of the subprime mortgage crisis, with the majority showing signs of recession. The crisis in Greece, Spain,

JEL Classification — G21, G28. **KAUJIE Classification —** I41, I51, L27

Islamic Economic Studies
Vol. 29 No. 2, 2022
pp. 159-168
Emerald Publishing Limited
e-ISSN: 2411-3395
p-ISSN: 1319-1616
DOI 10.1108/IES-10-2021-0040

Turkey, and Southeast Asia, the decrease in China's economy and the conservative policy of raising interest rates in the USA led to an increase in international interest rates. In addition, the 2019 Coronavirus Disease (COVID-19) pandemic significantly affected the dynamics of the 2020 world economy, including countries in Southeast Asia. Some of these phenomena suggest a repetition of these crises.

The rapid and stable growth of the Islamic finance industry has made Southeast Asia an essential part of global Islamic finance, with countries in the Association of Southeast Asian Nations (ASEAN) region diverging variations towards its development. Malaysia and Indonesia are the top two countries in ASEAN aggressively establishing Islamic banks, followed by Brunei Darussalam. Furthermore, Singapore, a Muslim minority country, the Philippines and Thailand also have ambitions to build this industry. The increasingly fierce competition in the financial services industry negatively impacts Islamic banks' performance. Therefore, some issues such as limited capital, sources of funding and human resources have not constrained these banks. Several preliminary research have been conducted on banking vulnerabilities to the crisis by using event-based identification (Demirgüç-Kunt and Detragiache, 1998; Laeven and Valencia, 2012). Similarly, research identified vulnerabilities based on the continuous index development, specifically from the associated components (Eichengreen and Arteta, 2002; Aykut, 2002; Bhattacharya and Sinha Roy, 1998; Sevim *et al.*, 2014; Musdholifah, 2015). These research studies only measured the potential for a banking crisis and identified its vulnerabilities without examining the associated potential factors. Therefore, this research aims to assist bank managers and policymakers identify bank vulnerabilities.

This research modifies the identification of bank vulnerabilities by adding the variable good governance as one of the determinants. According to Kaufmann *et al.* (2002), applying this variable in the banking world can improve wrong policies, protect the interests of stakeholders sector, and enhance compliance with applicable laws and general ethics to create a healthy banking system. This is in addition to the theory of financial intermediaries, which states that banks need to maintain the principle of prudence and profit-orientated. Research on bank vulnerability generally measures the potential for crises in the aggregate. Similarly, this research tries to measure a bank's exposure to avoid a systemic crisis by identifying and testing the factors capable of triggering the vulnerability of Islamic banks in ASEAN.

Literature review

Theory of intermediation

According to Gurley and Shaw (1956), the theory of financial intermediation indicates that banks play significant roles as dominant supporters in a country's economy to distribute funds to the needy. Banks play an essential role in the economy by facilitating the payment process, thereby achieving financial stability and implementing monetary policy.

The primary function of banking is financial intermediation, namely purchasing surplus funds from the business sector, government and households, which are channeled to deficit economic units. The financial intermediation function arises due to high monitoring, liquidity, and increased price risk associated with asymmetric information between fund owners and users. Saunders *et al.* (2006) stated that an intermediary financial function is as follows: (1) broker, (2) asset transformers, (3) delegated monitor, and (4) information producer.

The banking intermediation function has changed due to alterations in the economic environment and financial market, specifically in developed countries, such as the European Union (Bikker and Wesseling, 2003). The information technology, deregulation, liberalization, and internationalization results have made the theory of financial intermediation irrelevant to current business practices (Bikker and Wesseling, 2003). These factors reduce transaction

costs and information asymmetry between savers and investors, thereby contradicting the classical financial intermediation function.

Theory of financial instability

The theory of financial system stability is based on the approach created by Hyman Minsky (1986), a classical economist from the USA. According to Minsky, the cause of financial system instability does not only come from exogenous or external factors, such as wars or economic disasters, rather it is also obtained from endogenous or internal factors with a much greater dominance. Minsky further stated that when financial/economic conditions are stable, it promotes economic actors to be more daring to take risks. Financial crises emerge in conditions of overconfidence, and their impact is more significant. Endogenous factors come from internal management and the values of its financial ratios, while its exogenous counterpart comes from external banks, such as macroeconomic variables with a systemic impact.

Kaminsky *et al.* (1998) defined a banking crisis as a situation in which an attack on the exchange rate system causes a sharp depreciation on its rate, thereby leading to a significant decline in international and local reserves. According to Frankel and Rose (1996), a financial crisis significantly changes several potential or actual value indicators. Therefore, it is necessary to investigate the episode of massive depreciation to determine when it can be held or withdrawn by the authorities, the situations that increase them and factors responsible for making the problem difficult to control. Kaminsky and Reinhart (1999) stated that the crisis that hit countries was caused by several indicators, including the balance of payments, economic growth, inflation, exchange and interest rates, and the money supply. These indicators can be used as indicators for the early detection of crisis vulnerabilities.

Previous empirical research

Vulnerability is measured using the *Z*-score, a tool to assess the probability of a bank facing financial failure (Khasawneh, 2016). This research aims to evaluate and measure vulnerability using the *Z*-score analysis tool as the dependent variable to measure individual bank risk. *Z*-score reflects a bank's strength by calculating its financial ratios. Abedifar *et al.* (2013) stated that commercial banks' sensitivity to public response leads to liquidity-related problems and bankruptcy. The *Z*-Score level of vulnerability can be seen as a computed mean of return on assets (ROA) plus the capital to asset ratio (equity capital/total assets) divided by the standard deviation of returns on assets. In addition, the *Z*-score is used to measure a bank's default and assess its bankruptcy (Demirgiic and Huizinga, 1999; Khan *et al.*, 2017; Mokni *et al.*, 2016). It is also used to measure the ability of capital and income to cover losses over a certain period (Lepetit and Strobel, 2015). Khasawneh (2016) stated that the higher the *Z-score*, the lower the probability value of the bank experiencing financial failure. Therefore, an increase in *Z-score* implies a decrease in the probability of bankruptcy risk and better financial stability.

Research on bank vulnerability has been empirically proven with mixed internal and external factors. The bank's internal factors include profitability, credit, and liquidity risk, while their external factor consists of macroeconomic variables, including economic growth and good governance. One of the internal factors that affect bank vulnerability is credit risk. Al-Khouri and Arouri (2016), Demirgüç-Kunt and Detragiache (1998), Hardy and Pazarbaşioğlu (1999), Laeven and Valencia (2012), Ghenimi *et al.* (2017), Al-Khouri and Arouri (2016), and Ali and Puah (2018) stated that credit risk influences bank vulnerability significantly. Credit that has trouble means potential for failure to repay large amounts of praise from creditors. Failure to repay the loan can affect the bank in obtaining income in its operational activities, thereby increasing vulnerability.

Furthermore, liquidity risk also affects the vulnerability of banks in accordance with the research by Ali *et al.* (2019), Ali and Puah (2018), Trad *et al.* (2017) and Čihák and Hesse (2010). According to them, it stated that the higher the liquidity risk, the riskier the bank's condition. High liquidity risk is caused by increased funding; therefore, when small funds are collected, it increases the bank's vulnerability. Conversely, a decrease in liquidity risk lowers the bank's lack of effectiveness in channelling financing. This indicates the higher the number of this variable, the more significant the proportion of bank assets invested in the form of credit, thereby reducing its liquidity level, which in turn affects its stability.

Profitability also affects banks vulnerability, which is in accordance with the research conducted by Trabelsi and Trad (2017), Ghenimi *et al.* (2017), Ozili (2018), Hamza and Saadaoui (2013), and Ariefianto and Soepomo (2013). This means that increased funds due to a rise in profit decreases vulnerability. According to Gitman (2003), profitability is a factor that needs to receive significant attention because to carry on its life, companies need to be in favorable condition. This means that banks will find it difficult to attract external capital without profit. Creditors, company owners, and the company's management always try to increase profits for future survival.

The causes of bank vulnerability are influenced by internal and external factors, such as economic growth. Trabelsi and Trad (2017), Ghenimi *et al.* (2017), Trad *et al.* (2017), Srairi (2013), Rajhi and Hassairi (2013), Ariefianto and Soepomo (2013), and Wong *et al.* (2010) stated that higher economic growth is associated with an increase in credit and other banking activities.

The variable good governance is one of the determinants of bank vulnerability added in this research. In the banking world, the application of good governance is used to protect the interests of industry stakeholders and enhance compliance with applicable laws and general ethics. In addition, it helps to enhance investment attractiveness for economic growth and development in a country. Good governance is the effectiveness of high-level organizations, specifically in the performance of economic policies and their impact on the vulnerability of a country's banking industry. It also increases investors' confidence and affects banks' performance, reducing its system's vulnerability. This argument is based on Ali and Puah (2018), which stated that future research need to analyze the relationship between regulation and bank vulnerability using other advanced econometric statistical approaches. Ali *et al.* (2019) recommend further research to determine the role of risk and corruption in an integrated macroeconomic environment.

Bank vulnerabilities are generally related to the characteristic variables and economic situation of a country. For example, this survey was conducted only to predict factors influencing a bank's vulnerability. Most research use guide theory as a theoretical basis, while others attempt to develop or even refute its usage. This research shows that external factors of banks have an indirect effect on banks' vulnerabilities.

Furthermore, the previous empirical research focused on the analysis of profitability and efficiency, where the analysis of banking vulnerabilities was minimal. The existing literature differentiates past research according to their sample data, different methodological approaches and objectives. This research is also in line with several methods and theoretical assumptions used in preliminary research. It means consistency with the existing literature and differentiates itself by highlighting some relevant determinants of Islamic bank vulnerability in ASEAN. Therefore, it attempts to elucidate the relationship between the vital internal determinants of bank vulnerability.

In summary, previous research found mixed responses on how bank internal and external factors affect their vulnerability. Several research studies attempted to build consensus with insufficient data due to a lack of empirical support and demands clarity in the existing body of knowledge, specifically in developing countries in ASEAN. Therefore, due to the impact of factors that influence the vulnerability of Islamic banks in ASEAN, the following hypotheses were proposed.

H1. There is a significant impact of credit risk on bank vulnerability.

H2. There is a significant impact of liquidity risk on bank vulnerability.

H3. There is a significant impact of profitability on bank vulnerability.

H4. There is a significant impact of economic growth on bank vulnerability.

H5. There is a significant impact of good governance on bank vulnerability.

Methodology

Data

This research used the panel data type, which is a combination of time series and cross-section data from 2010 to 2019 in ASEAN that have implemented the Islamic banking system, namely Indonesia, Malaysia, Brunei Darussalam, Thailand and the Philippines. The good governance data were sourced from the WGI released by the World Bank and the country economy.

Estimating model

For a comprehensive analysis, a third empirical model that examines the factors affecting the bank's vulnerability was constructed. This is in accordance with the research by Trabelsi and Trad (2017), Ghenimi *et al.* (2017), Diaconu and Oanea (2014), Trad *et al.* (2017), Ozili (2018), Čihák and Hesse (2010), Korbi and Bougatef (2017) and Khasawneh (2016). Three types of variables, namely bank characteristics, economic conditions and good governance, were used to estimate banks' vulnerability as given in equation (1). The description of the research variables is shown in Table 1.

Name	Symbol	Measurement	Source
Vulnerability	VUL	*Z*-score is computed as the mean of return on assets (ROA) plus the capital to asset ratio (equity capital/total assets) divided by the standard deviation of ROA	Čihák and Hesse (2010), Beck *et al.* (2013), Khasawneh (2016)
Credit risk	CRISK	Non-performing financing	Demirgüç-Kunt and Detragiache (1998), Al-Khouri and Arouri (2016), Hardy and Pazarbaşioğlu (1999), Ghenimi *et al.* (2017)
Liquidity risk	LRISK	Total financing to total deposit	Ali *et al.* (2019), Ali and Puah (2018), Trad *et al.* (2017), Čihák and Hesse (2010)
Profitability	ROE	Return on equity	Trabelsi and Trad (2017), Ghenimi *et al.* (2017), Ozili (2018), Hamza and Saadaoui (2013)
Economic growth	GDP	The percent rate of increase in actual gross domestic product (GDP) or real GDP	Khasawneh (2016), Ghenimi *et al.* (2017), Ali and Puah (2018), Trad *et al.* (2017), Srairi (2013), Rajhi and Hassairi (2013), Wong *et al.* (2010)
Good governance	GGV	The combined average value of the six indices of good governance is the institutional quality	Olson *et al.* (2000), Kaufmann *et al.* (2013)

Table 1. Description and measurement variable

$$VUL_{it} = B_1 CRISK_{it} + B_2 LRISK_{it} + B_3 ROE_{it} + B_4 GDP_{it} + B_5 GGV_{it} + e_{it} \quad (1)$$

Results and discussion

Table 2 shows the descriptive statistics of the sample data from the number of samples, average value, standard deviation, maximum and minimum of VUL, CRISK, LRISK, ROE, GDP and GGV.

Table 3 shows the correlation coefficient between independent variables, which indicates no multicollinearity in the regression model.

Table 4: Chow, Hausman and Lagrange multiplier (LM) tests, the best model for the vulnerability of Islamic banks in ASEAN is random effect.

The results show that LRISK, ROE and GGV significantly influence the vulnerability of Islamic banks in ASEAN, as opposed to CRISK and GDP. Credit risk has no significant impact on the vulnerability of Islamic banks in ASEAN, as reflected in the NPF because the nonperforming financing is not prominent in nominal terms with an average of 2.5%.

Liquidity risk has a significant positive effect on the *Z*-score of bank vulnerability because the increase in the number of loans provided is complementary to the rise in profit before tax. Conversely, a rise in the number of loans is followed by a profit before tax because the loan amount is converted more into bank assets. This indicates the higher the FDR, the greater the banks' profit which means that liquidity risk significantly affects bank vulnerability. According to Gurley and Shaw (1956), banking is a dominant supporter of a country's economy by intermediating funds between the needy and the rich. Banks play essential roles in the economy, such as facilitating the payment process, achieving financial stability, and implementing monetary policy to ensure stability. This research's results are in line with Ali *et al.* (2019), Ali and Puah (2018), Trad *et al.* (2017) and Cihák and Hesse (2010), which stated that liquidity risk has a significant effect on bank vulnerability.

Furthermore, this research indicates that ROE has a significant effect on the vulnerability of Islamic and conventional banks. This means that the higher the ROE, the lower the bank's vulnerability and ability to generate profit for common shareholders. Investors often use it in making decisions to purchase shares of a company. For instance, when the ROE to vulnerability ratio is higher, it is good because it shows the income received is getting better.

Table 2. Descriptive statistics

Variable	Observations	Mean	Maximum	Minimum	Std. dev
VUL	50	3.268	11.907	−3.713	4.711
CRISK	50	2.575	6.200	0.010	1.580
LRISK	50	76.398	104.555	42.540	20.020
PRO	50	1.798	24.060	−56.110	17.529
GRW	50	4.262	7.500	−2.500	2.611
GGV	50	0.013	0.714	−0.539	0.410

Table 3. Correlation matrix of an included variable vulnerability model

	KRE	LIK	PRO	GRW	GGV
KRE	1.000				
LIK	−0.071	1.000			
PRO	0.115	0.101	1.000		
GRW	0.164	−0.257	0.478	1.000	
GGV	−0.440	0.219	−0.006	−0.595	1.000

Variables	Common effect	Fixed effect	Random effect
C	−1.499 (−1.18)	2.246* (0.03)	−1.499 (−1.22)
CRISK	−0.281 (−1.50)	0.155 (1.04)	−0.280 (−1.56)
LRISK	0.057*** (5.01)	0.005 (0.55)	0.057*** (5.20)
ROE	0.104*** (7.09)	0.060*** (5.37)	0.104*** (7.35)
GRW	0.190 (1.41)	0.03 (0.34)	0.191 (1.46)
GGV	8.733*** (11.37)	−0.300 (−0.21)	8.733*** (11.80)
Chow test		$X = 64.33***$ $F = 26.20***$ Ho: Fixed effect not consistent	
Hausman test		$X^2 = 6.85$ Ho: Fixed effect not consistent	
Lagrange multiplier (LM) test		Breusch–Pagan LM = 16.18* Ho: Fixed effect consistent	

Note(s): *t*-statistic in brackets; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 4.
Results of estimating vulnerability equations of Islamic banks

These results support the research conducted by Trabelsi and Trad (2017), Ghenimi *et al.* (2017), Ozili (2018), Hamza and Saadaoui (2013) and Ariefianto and Soepomo (2013), which prove that profitability has a significant effect to bank vulnerabilities.

Economic growth has an insignificant effect on the *Z*-score banks that are a proxy of vulnerability Islamic banks in ASEAN. The empirical tests based on data from five ASEAN countries from 2010 to 2019 show that increased economic growth has no direct impact on rise in vulnerability of Islamic banks. Therefore, the increase in economic growth banks from 2010 to 2019 did not lead to bank loan payment due to the adjustments during the 2008 to 2009 crisis. The results of this research are supported by the studies of Khasawneh (2016) and Ali and Puah (2018), which prove that the variable economic growth has an insignificant effect on bank vulnerability.

Good governance has a significant positive effect on the vulnerability of Islamic banks and other nongovernmental business entities. Its implementation is considered appropriate to improve the previous lousy image of the banking industry, protect stakeholders' interests and enhance their compliance with applicable general laws and ethics for stability. In addition, good governance helps make a country's investment in economic growth more attractive. In terms of policy formulation and actual implementation, it has high organizational efficiency, specifically in terms of the performance of economic policies and their impact on the vulnerability of a country's banking industry. It can also increase investor confidence in investing, specifically in Islamic banks. The results of this research support the study of Olson *et al.* (2000), which stated that countries with good governance have higher productivity levels to promote better economic growth. According to Kaufmann *et al.* (2013), good governance plays a significant (positive) role in increasing economic growth in the long term.

Conclusions

In conclusion, the panel data regression results using the random-effects model show that LRISK, ROE and GGV significantly influence the vulnerability of Islamic banks in ASEAN, as opposed to CRISK and GDP. This research is expected to provide an academic contribution in determining the influencing factors originating from internal and external aspects of banks to determine and avoid a banking crisis.

Therefore, due to the significant effect of good governance on the vulnerability of Islamic banks in ASEAN, sustainable and synergized cooperation between the government, central banks, and all levels of society is needed to support efforts to accelerate the market share of

Islamic banks in ASEAN. However, Islamic banks need to always pay attention to internal and external factors affecting their stability, such as profit-sharing-based financing, which has a high-risk level. Islamic banks need to conduct stricter monitoring and assistance on the funding provided to avoid the risk of bad loans and reduce the burden of operational costs.

This research is expected to serve as input and recommendation for governments in ASEAN countries to establish public policies and build good governance to increase investment interest in the Islamic banking industry. The financial sector development is expected to bring positive changes to a country's economy because it plays an essential role in enhancing the economy. The role of intermediation banking institutions is very influential on economic growth and development.

Some of the limitations of this research include its focus on the vulnerability of Islamic banks in ASEAN countries. The average value of six indices is used as a single index per country with good governance. Therefore, further research needs to consider using all six indices of good governance as factors affecting the vulnerability of Islamic banks, such as control of corruption, government effectiveness, political stability, absence of violence, regulatory quality, the rule of law voice and accountability. In addition, it is necessary to consider using macroeconomic variables, such as inflation, interest rates, profit sharing equivalents, and investment levels in all countries, that have operated an Islamic banking system.

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