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MANAGEMENT | RESEARCH ARTICLE

How size influences the credit risk in Islamic banks

Tariq Alzoubi^{1*} and Muhanned Obeidat¹

Abstract: This research analyses the effects of the bank size and it financing to customer on credit risk, only few researches considered credit risk of Islamic banks by only focus on the determinants of credit risk, in this research, the authors considered a specific issue which is the size of both; the bank itself and the size of their financing to client. Using a sample of 48 Islamic banks from 16 countries around the world over the period from 2008 to 2018, a fixed effect panel data analysis has been applied, the results show that there is a negative relationship between the bank size and credit risk, a negative relationship between the financing to customer and credit risk, and a negative relationship between capital to assets ratio and credit risk.

Subjects: Banking; Credit & Credit Institutions; Risk Management

Keywords: Islamic banks; Islamic financing tools; credit risk; size; panel data

1. Introduction

Islamic banking industry have been growing significantly in the last few decades (El Qorchi, 2005). This rapid growth in the Islamic finance have shed the light on the risk management tools used by Islamic banks which have showed an unavoidable levels of stability during financial crises comparing to conventional financial banks; which have had raised the attention of researchers to the importance of studying the determinants of risks in Islamic banks (Azmi & Ali Abdul Manap, 2017).

In the last decade, and more specifically during and post the 2008 financial crises, the ability of Islamic banks to face various types of risks have been under investigation such as liquidity risk in Islamic banks by Alzoubi (2017), and a notable amount of literature came to existence in testing the stability and efficiency of Islamic banks (Čihák & Hesse, 2010).

Since Islamic banks are prohibited from using interest rates, their exposure to credit risk is greater than conventional banks, and many of existing literature of the determinants of credit risk in Islamic banks have considered the size of banks' assets as one of the determinants among many other determinants of credit risk, while in this study the authors aim to investigate the influence of Islamic bank's size on credit risk by analysing a relatively large sample of Islamic banks across the globe.

ABOUT THE AUTHOR

The author of this paper has a PhD in finance with about ten years of teaching experience. His main research interest is Islamic finance and corporate finance and has published several papers on these topics. The author has supervised several theses in the areas of Islamic finance and corporate finance. He also has examined several master students as an internal examiner.

PUBLIC INTEREST STATEMENT

This research investigates the effect of size on the credit risk of Islamic banks. As banks provide financing to their clients, they will be subjected to credit risk; as some of these clients will not be able to pay back the funds to the bank. By considering the effect of the bank's size and the size of the financing provided to their clients, the results of this paper show that increasing the size of the bank itself and financing provided to their clients will help to decrease the credit risk.









This study aims to fill the gap in the existed literature in Islamic finance on the influence of size on credit risk by taking into consideration not only the size of banks' asset portfolio, but also the size of its financing portfolio through analysing impact of financing portfolio diversification on credit risk using Islamic finance tools and capital adequacy, in addition to banks' asset portfolio (i.e. size) which have never been taken into consideration especially during the and post the 2008 financial crises.

In order to fill the gap in the existing literature in Islamic finance, this study attempts to answer the questions on how the increase in the size of Islamic bank can reduce the credit risk by testing the relationship between the size of Islamic bank and credit risk; and how the increase in the size of Islamic financing tools can reduce the credit risk in Islamic banks.

The remainder of this paper will be organised as follows: section 2 presents the literature review about the topic, Section 3 presents the data and methodology, and section 4 discusses the results and findings of this paper. Subsequently, the conclusion of this paper is presented in Section 5.

2. Literature review

In studying the impact bank size on credit risk in both conventional and Islamic banks, studies by Waemustafa (2013), Waemustafa and Sukri (2015) and Wahyudi et al. (2019) denoted that there is a significantly negative impact of the conventional banks' size on credit risk, while the size of Islamic bank has an insignificant positive impact on credit risk. Depending on the riskiness of bank's asset portfolio, diversification and risk management tools, larger conventional banks have greater ability to engage in credit sales (i.e. take higher risks) which generates stable returns even if the riskiness of their portfolio increased since they have the ability to benefit from economies of scale unlike Islamic banks which are relatively smaller in size (Boumediene, 2011; Cabiles, 2012; Kolapo et al., 2012).

Studies by Shahid and Abbas (2012), Abedifar et al. (2015) and Ahmad and Arif (2004) denoted that banks with higher assets are benefiting from economies of scale in addition to taking advantage from their market power and accumulated abnormal returns. In addition, they have denoted that bank size positively impacts credit risk since banks with greater assets portfolio are benefiting from both economies of scale and economies of scope, in addition to their market power (Mousa & Zaiani, 2018). Moreover, according to Maudos and Solís (2009) the larger the size of the bank, the larger number of transactions increases the levels of risks beard which generates higher margins. However, Rajhi and Hassairi (2013) have found that the greater the Islamic bank size is positively affecting the banks stability.

In addition, Čihák and Hesse (2010) denoted that the size of Islamic bank itself is playing an important role in its stability and its more complexes for larger Islamic banks to adjust their credit risk controlling system than smaller Islamic banks which indicates that the size of the bank's negatively affects the banks credit risk.

Studies by Srairi (2013), Beck et al. (2013) and Siraj and Pillai (2012) documented that the relationship between size and credit risk is significantly positive. Moreover, the greater the size of Islamic bank, the greater its exposure to credit risk until it become close to the levels of credit risk in conventional banks. In addition, this trend in the increase of credit risk by the increase of Islamic bank size can be explained by the similarities in terms of operations and activities with conventional banks. Furthermore, Islamic banks practice their role as a financial intermediary by transferring the conventional funding to the Islamic framework (Ferhi, 2018).

On the other hand, a study by Alharthi (2017), found a significant negative impact of both credit and capital risks on banks' profitability, while bank size significantly affects profitability in a positive direction.

In terms of capital adequacy (total equity to total assets), a study by Supiyadi et al. (2017) denoted that for Islamic banks in order to increase their profitability, Islamic banks needs to raise its capital adequacy as well as their assets portfolio (i.e. bank size). The study also denoted that



increasing the Islamic bank size and capital adequacy through both internal and external financing will reduce the credit risk of Islamic banking. In another words, there is a negative relationship between capital adequacy, Islamic bank size and credit risk.

Moreover, Islamic financing tools have contradictory effects on credit risks in Islamic banks (Kabir & Worthington, 2014; Sundararajan & Errico, 2002), where certain types of equity financing (Musharakah) and debt financing (Murabaha) has a significant positive impact on credit risk (M. Abusharbeh, 2014), Islamic banks needs to diversify their portfolio of Islamic financing tools in order to manage risk effectively and improve the efficiency of their assets portfolio (Ferhi, 2018).

As shown in the literature reviewed above, several authors discussed the determinants of credit risk in both Islamic and conventional banks by considering the influences of different factors (banks characteristics) on the banks' credit risk. In this paper the authors focused on a very specific issue that affects the credit risk in Islamic banks which is the size; considering the size of the bank itself, as well as, the size of the banks' financing of their clients.

3. Data and methodology

Based on a sample of 48 Islamic banks from 16 countries around the world covering the period from 2008 to 2018, the researchers used fixed effect panel data analysis to analyse the effect of the both bank's size and the loan size on credit risk of Islamic banks. The data were collected from the banks' annual reports and financial statements.

Credit risk (CR) measured as the allowance for impairment on financing to total gross financing is used as the research depended variable. This ratio is equivalent to the ratio of provision of loan losses to total loans in conventional banks. This ratio indicates that the financer (Islamic bank) is facing the risk that their clients will not be able to pay back the payments required on their financing. As a result, Islamic banks will not get back the principle amounts provided and/or the expected return on these amounts.

The independent variables are as follows:

Bank size (SIZE): bank size is measured as the natural logarithm of the total assets for Islamic banks. Larger banks are more diversified, which will allow these banks to reduce their credit risk based on their ability to diversify their assets portfolio, as well as, the ability to diversify their financing portfolio (Islamic financing tools such as *Musharkah*, *Mudarabah*, *Murabaha*, *Ijara* and *Istisna*). As a result, we expect that bank's size is expected to have a negative relationship with credit risk.

Islamic financing tools ratio (IFT): Islamic financing tools ratio is measured as total financing (such as Musharkah, Mudarabah, Murabaha, Ijara and Istisna) to total assets. This ratio indicates the percentage of assets invested in financing to clients, as Islamic banks expand their financing to clients it is expected that banks will become more selective and only select clients who have better creditworthiness. As a result, we expect that Islamic financing tools ratio to have a negative relationship with credit risk.

Capital adequacy (CAP): capital adequacy is measured as the total equity to total assets. This ratio represents the percentage of assets financed throw shareholders, unlike financing assets throw liabilities, equity financing represents a more stable source of fund, as these funds will not be withdrawal from the bank, it represents a cushion to absorb many types of risks including the credit risk. As a result, we expect that capital adequacy to have a negative relationship with credit risk.

Data were taken from the bank's annual reports and the following model was applied:

$$CR_{i,t} = \alpha + \beta 1SIZE_{i,t} + \beta_2 IFT_{i,t} + \beta_3 CAPTL_{i,t} + \varepsilon_{i,t}$$
(1)



4. Results and analysis

For our sample Table 1 shows the descriptive results for the period between 2008 and 2018.

From Table 1, we can learn the following; in our sample about 4% of gross financing to clients are considered as allowance for impairment were these impairments range from -0.73% (indicating a recovery of these impairment) to a maximum level of 38.31%. The size of the banks included in our sample range from small banks with total assets of about 46 USD million to large banks with total assets of about 97,334 USD million, the average size of banks in our sample was about 9,000 USD million. Regard the Islamic financing provided to clients; on average about half of the banks' assets were invested in financing to clients were this variable ranged from less than 1% to about 90%. As for their source of financing, Islamic banks in this sample have a capital ratio of 15.66%, which range from as less as 3% to as high as 97%; this wide range is because that this sample include some new banks. Next, Table 2 present the correlation matrix of the research variables between 2008 and 2018.

Now, in Table 3 the regression results of the research model are presented.

From Table 3 we can learn the following; the size of Islamic banks has a negative effect on the credit risk this effect is significant at 1% level. This result confirms our expectations as larger banks are more able to reduce risks through diversification. The literature provided mixed results on how size affects the credit risk. Our results are consistent with the findings of Waemustafa (2013), Waemustafa and Sukri (2015), Wahyudi et al. (2019) and Čihák and Hesse (2010) which showed a negative relationship between the bank's size and the credit risk. On the other hand, Shahid and Abbas (2012), Abedifar et al. (2015), Ahmad and Arif (2004), Mousa and Zaiani (2018), Srairi (2013), Beck et al. (2013) and Siraj and Pillai (2012), showed a positive relationship which has been explained in terms of the benefits of economies of scale, economies of scope and their market power.

The effect of Islamic financing to clients is also negative but insignificant, despite the fact that the relationship is insignificant it shows the correct expected sign, as banks provide more financing to their clients this will allow these banks to become selective, they can afford to choose only good customer with low chance of default, so, this result confirms our expectation.

| Table 1. Descriptive results | | | | | |
|------------------------------|--------|-----------|--------|--------|--|
| | CR | SIZE* | IFT | CAP | |
| Mean | 3.91% | 9,055.92 | 52.07% | 15.66% | |
| Median | 1.90% | 3,951.34 | 57.64% | 12.64% | |
| Maximum | 38.31% | 97,334.35 | 89.42% | 97.06% | |
| Minimum | -0.73% | 46.24 | 0.36% | 2.73% | |
| Standard Deviation | 5.89% | 14,909.93 | 20.41% | 11.68% | |

^{*} Size in millions of US dollars.

Source: Calculated from banks' annual reports, period 2008–2018.

| Table 2. Correlation matrix | | | | | | |
|-----------------------------|---------|---------|---------|--------|--|--|
| | CR | SIZE | IFT | CAP | | |
| CR | 1.0000 | | | | | |
| SIZE | -0.4246 | 1.0000 | | | | |
| IFT | -0.5938 | 0.7676 | 1.0000 | | | |
| CAP | -0.1291 | -0.3112 | -0.0854 | 1.0000 | | |

Source: Calculated from banks' annual reports, period 2008–2018.

| Table 3. Regression analysis | | | | |
|------------------------------|--------------|--|--|--|
| Variable | Coefficients | | | |
| С | 0.9610*** | | | |
| SIZE | -0.0419*** | | | |
| IFT | -0.0196 | | | |
| CAP | -0.1962*** | | | |
| Adj. R square | 64.89% | | | |
| F statistic | 15.2012*** | | | |
| Likelihood ratio test | 322.9483*** | | | |
| Hausman test | 24.6751*** | | | |
| Observation | 462 | | | |

 $CR_{i,t} = \alpha + \beta 1$ SIZE $_{i,t} + \beta_2$ IFT $_{i,t} + \beta_3$ CAPTL $_{i,t} + \epsilon_{i,t}$. The dependent variable is the Credit Risk (CR). The independent variables are as follows: Bank Size (SIZE); Islamic Financing Tools (IFT); Capital Adequacy (CAP) for the period 2008–2018. ***, ** and *, indicate that the coefficients are significant at the 1%, 5% and 10% levels respectively.

As a control variable, capital adequacy ratio was used to understand how the source of financing can influence the credit risk. The result shows a negative and significant effect of capital adequacy ratio which confirms our previous expectation. Capital represents the final defence line for any firm, as this capital increases, it will create a stronger defence against risks which explains this negative relationship. This negative relationship between capital adequacy and credit risk is consistent with the results presented by Supiyadi et al. (2017).

The entire model was significant with f-statistic of 15.2012 significant at 1% level and explanatory power of 64.89%. The analysis of the model also confirms that fixed effect panel data is the most fitted among ordinary least square and random effect models based on the significance of the likelihood ratio and Hausman tests.

5. Conclusion

Many researches were conducted on the issue of credit risk, these researches considered conventional banks, with a very little focus on Islamic banks. Even these few researches on credit risk that considered Islamic banks were mainly on the determinants of credit risk. In this research the authors focused on a specific issue which is the size of both; the bank itself and the size of their financing to client.

By considering a relatively larger size sample of 48 Islamic banks from 16 countries around the world (462 observations) covering the period from 2008 to 2018. The model used in our analysis followed the fixed effect panel data analysis, using the fixed effect model has the advantage of capturing any effect related to the bank and/or year. The results of this paper show that the credit risk is negatively and significantly effect by the banks' size as these larger banks are more able to diversify and reduce risks. There is also a negative but not significant relationship between credit risk and financing to clients which indicate that as banks expand their financing to clients, they become more selective leading to reduction in credit risk. Finally, a significant negative relationship between capital adequacy and credit risk confirm that equity capital act as a cushion to absorb risks.

It is recommended that Islamic banks should increase their sizes to obtain the benefits of diversification; as this increase in their size will magnify the benefits of the diversification process and contribute to the reduction in the credit risk, as well as, other types of risks. Islamic banks are also advised to become more selective in choosing their clients to whom they provide financing; expanding the financing to only credit worth clients will help the banks to avoid being subject to higher levels of credit risk. Islamic banks are advised to have a sufficient amount of equity capital as a protection against risks in general not only credit risk.

It is also recommended to compare the results of this paper on a sample of conventional banks to understand wither there are any differences between Islamic and conventional banks regarding the influence of size on credit risk. In closing, we recommend that the effect of the different types of Islamic financing tools (i.e. Murabaha financing, Musharkah financing, Mudarabah financing, Istisna financing, Ijara financing, etc.) on credit risk be considered to see how each tool will contribute to credit risk.

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