Pacific-Basin Finance Journal 34 (2015) 327–353

Contents lists available at ScienceDirect

Pacific-Basin Finance Journal

journal homepage: www.elsevier.com/locate/pacfin

Comparative credit risk in Islamic and conventional bank

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ARTICLE INFO

Article history:
Received 2 September 2014
Accepted 9 June 2015
Available online 14 June 2015

JEL classification:
G21
G32

Keywords:
Credit risk
Distance-to-default
Z-scores
Nonperforming loans
Islamic banking

ABSTRACT

In this paper, we consider the levels of credit risk in Islamic and conventional banks. One problem with existing studies is the use of accounting information alone to assess credit risk, and this could be especially misleading with Islamic banking. Using a market-based credit risk measure, Merton's distance-to-default (DD) model, we evaluate the credit risk of 156 conventional banks and 37 Islamic banks across 13 countries between 2000 and 2012. We also calculate the accounting information-based Z-score and nonperforming loan (NPL) ratio for the purpose of comparison. Our results show that Islamic banks have significantly lower credit risk than conventional banks as based on DD. In contrast, and as expected, Islamic banks display much higher credit risk using the Z-score and NPL ratio. These findings suggest that the measure chosen plays a significant role in assessing the actual credit risk of Islamic banks.

1. Introduction

Financial institutions lay at the heart of every economy. Substandard banking systems may then have a severe impact on overall economic performance, and may even lead to widespread financial crisis. According to the Bank for International Settlements (2000), credit risk is a leading source of financial instability in the banking sector. The global financial crisis is just the most recent example of where poor credit risk management has had a dire effect on many economies. In response, the Bank for International Settlements (2000) states that to have proper credit risk management systems, banks should properly identify, measure, monitor and

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http://dx.doi.org/10.1016/j.pacfin.2015.06.001
0927-538X/

control credit risk. Appropriate measurement of credit risk provides the foundations for developing prudential monitoring and control mechanisms to manage credit risk. Therefore, measuring credit risk in banking systems is of vital concern for the full range of bank stakeholders, not least regulators.

Islamic banking is one of the fastest growing segments in the global financial market. Although the principles and concepts of Islamic banking date from the very founding of Islam, the application and practice of Islamic banking has only developed relatively recently [for a review of the basic principles of Islamic finance, see Gait and Worthington (2014). The strong growth of Islamic banking combined with fierce competition with conventional banks in the same markets raises some concern among regulators and practitioners about the stability and sustainability of Islamic banks in the long run (Elgari, 2003). Furthermore, because of the *Shariah* (Islamic law) principles by which Islamic banks operate, some Islamic financial products impose additional credit risk on practicing banks (Errico and Sundararajan, 2002; Kabir and Worthington, 2014)]. Non-standardized financial contracts, different modes of financing and complexity in risk management associated with the implementation of *Shariah* pose additional threats to the stability of Islamic banking. Therefore, the study of credit risk is a major concern for the development of prudential risk management systems governing both Islamic and conventional banks.

From a risk management viewpoint, it is important for many different stakeholders (including regulators, but also investors and depositors) to know whether these competing banking systems exhibit different levels of credit risk. In principle, the basis of the conventional banking system is interest, whereas Islamic banks mainly rely on two alternative principles, namely profit-and-loss sharing (PLS) and markup financing. Consequently, a risk-avoiding borrower may choose an Islamic bank given the opportunity to share any losses with the bank (Hasan and Dridi, 2010). In addition, Islamic banks may face withdrawal risk if they share their losses with depositors (Ahmed and Khan, 2007; Siddiqui, 2008). Therefore, Islamic banks rarely have the option to use PLS on the liabilities side (sharing losses with depositors), given it significantly increases credit risk for Islamic banks. Given this scenario, and contrary to intuition, Islamic banks should have higher credit risk than conventional banks. That said, some argue that the risk-sharing practices of Islamic banks are very limited (Chong and Liu, 2009; Abdul-Rahman et al., 2014), with Islamic banks mainly relaying on sales-type products, which are much less risky than conventional debt-based products. Accordingly, the debate over the relative credit risk of Islamic banks remains open.

In response, a number of empirical studies have undertaken comparative analysis of the credit risk of conventional and Islamic banking. Following seminal work by Čihák and Hesse (2010), several other studies (Gamaginta and Rokhim, 2011; Pappas et al., 2012; Abedifar et al., 2013; Beck et al., 2013) have compared the relative stability of Islamic and conventional banks in different periods and across different countries. Some of this literature concludes that Islamic banks are more stable while others find no evidence of differences in credit risk across the alternative banking systems. Clearly, there is always some variation in findings resulting from the sample of banks in different countries and over time.

One more fundamental limitation of this existing research is that the methodological approach used to calculate the credit risk (or stability) of banks is mostly based on accounting information. Some studies have used the Z-score, as based on standard accounting information comprising the return on assets (ROA), the capital to assets ratio and the standard deviation of ROA. Others have used the nonperforming loans (NPL) ratio, loan loss reserve, and loan loss provision as proxies for credit risk. However, using accounting information alone to measure credit risk at the institutional level could pose a number of problems, especially for Islamic banks. For instance, being based on past performance, accounting values and ratios may not be informative in assessing future outcomes, actual asset values may differ from the historical value of assets because of conservative methods of recording (Altman and Saunders, 1997), and accounting figures may be manipulated by management (Agarwal and Taffler, 2008; Bharath and Shumway, 2008).

As alternatives, the extant literature proposes a number of risk measurement techniques using market information, notably Merton's distance-to-default (DD) model, the credit transition matrix, and the mortality rate model. Of these, the first is the most appealing as it is based on seminal work by Black and Scholes (1973) and Merton (1974). This method not only addresses many of the criticisms of accounting-based credit risk models, but also incorporates essential market information, including the share price, market capitalization, and equity volatility. To date, only a single study by Boumediene (2011) has used the DD to compare the level of credit risk in Islamic and conventional banks, specifically nine each conventional and Islamic banks over the period 2005–09. The results of this study suggested that Islamic banks display significantly lower credit risk than conventional banks. However, both the sample size and period are obviously very