



# Further Evidence on the Stability of Islamic versus Conventional Banks in selected GCC countries from 1999 to 2015

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## Abstract

Based on the theory of financial intermediation from both the perspective of original theory and the Islamic perspective, this paper aims to investigate the level of stability of the Islamic and the conventional banks. It also examines the different timing effects including the period of crisis on the stability of the Islamic and the conventional banks. The study evaluates 51 conventional banks and 50 Islamic banks in selected Gulf Cooperation Council (GCC) using data from the Bankscope database over the period of 1999 to 2015. The study employs two-sample t-test with unequal variance t-test and the non-parametric Wilcoxon test and Mann-Whitney test to compare i) mean of Islamic versus conventional banks over different timing period ii) mean of tested period versus other periods for each of the Islamic and conventional banks. The study suggests that the GCC Islamic banks are more stable compared to their conventional counterparts. However, in testing different timing period, only GCC conventional banks seem to be affected by the crisis period while Islamic banks are less prone to the crisis. Findings of this study contribute to the literature and fill the gap towards extending the theory of financial intermediation through empirical works of investigating the stability of the Islamic and the conventional banks.

Keywords: *Bank stability, z-score, Islamic bank, conventional bank, financial crisis.*

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## 1. Introduction

The member countries of the Gulf Cooperation Council (GCC) countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates. The World Bank describes the GCC countries as hydrocarbon-based economies which place significant importance on their oil and gas industry. These countries share common exposures to the oil market. As the world price of oil decreases, the growth in the GCC countries is expected to slow down to 2.2 percent in 2016 from 3.1 percent in 2015 (World Bank Group, 2015). Thus, the GCC countries is also recognized as “growing by oil and slowing by oil” by the World Bank (The World Bank, 2016).

According to the World Bank Group (2015), an aggregate GDP of the GCC economy was about \$1.6 trillion (2013 figures) with oil and gas industry contributing to more than half of this GDP. Despite considerable diversity among the GCC countries, there are few generalizations that can be made. Among them, even though the economy of the GCC is concentrated in oil and gas, the financial sector development in the GCC has become important which is more of bank-based. The banking sector in the GCC is highly concentrated in the Islamic banking. The total amount of the Islamic banking asset is USD 598.8 billion in 2015, which accounted for 39.5 percent of the global Islamic banking assets (Islamic Financial Services Board, 2016). The market penetration of the Islamic banking continues to increase significantly where countries like Saudi Arabia Islamic banking sector accounted for 49 percent of the total banking sector assets, followed by Kuwait with 39%, Qatar with 26 percent and Bahrain with 13.5 percent (Islamic Financial Services Board, 2016). Table 1 shows the distribution of banks in the selected GCC countries.

Table 1: No. of Banks in selected GCC countries

Country	Islamic Bank	Conventional Bank	Total
Bahrain	19	12	31
Kuwait	11	6	17
Saudi Arabia	5	8	13
Qatar	6	6	12
United Arab Emirates	9	19	28
Total	50	51	101

Sources: Bankscope, 2015

As banking becomes more important to the GCC economy, there is a marked acceleration in credit growth to the private sector. From 2003 to 2008, the private sector credit growth were 45 percent and 35 percent in Qatar and UAE respectively (World Bank Group, 2015). As the oil prices increase, the economy of the country and banking sector are growing as well. However, the global financial crisis (GFC) has affected many countries including the GCC countries. The credit growth was reported to slow down to 4 percent in 2010 (World Bank Group, 2015). The recent global financial crisis has resulted in a series of failure for many conventional banks in many parts of the world and has led to an increased urgency in the re-assessment of the conventional banking model. The issues of financial and banking stability have always been two important issues to central banks around the world since both have direct bearing on the sustainability of the banking industry itself.

In view of the increasing efforts to re-examine the stability of the financial system based on the conventional banking model, the importance of the Islamic banking model has intensified. Various studies (Ariss, 2010; Bourkhis and Nabi, 2013; Kassim and Majid, 2010) found that there is no significant difference between the Islamic and the conventional banks. On the other hand, many studies have found that the Islamic banks (IB) are less riskier than the conventional banks (CB) (Pappas et al., 2012) and the IB performed better than the CB, in terms of capital adequacy ratio, return on average assets, return on average equity and earnings over total assets, in normal and during crisis period (Parashar and Venkatesh, 2010). However, few studies look at the banks stability of both the Islamic and conventional banks. A study by Rajhi and Hassairi (2013) and Okumus and Kibritci (2008) found that the IBs are more stable than the CBs, while, Bourkhis and Nabi (2013) and Altaee et al. (2013) documented no significant effect of crisis on the stability of the Islamic and conventional banks. These findings from earlier studies indicate that there are inconclusive findings on the difference of bank stability between Islamic and conventional banks. Even with these inconclusive findings, this paper reinforces the stability of Islamic banks. Thus, there is an urgent need to investigate the difference between the stability of the Islamic and conventional banks. In this study, the z-score is used as an indicator for bank stability.

The remaining of this paper is structured as follows. Section 2 reviews the literature on the theory of financial intermediation and bank stability measures. Section 3 presents the data and methodology. Section 4 discusses the findings and lastly, the conclusion is drawn in section 5.

## 2. Literature Review

### 2.1 Theory of Financial Intermediation

The theory of financial intermediation is developed by Leland and Pyle (1977) which stated that financial intermediation is a manifestation of asymmetric of information and later introduced a signalling model. Campbell and Kracaw (1980) explained further that the signaling model and the production of information are the main responses to the issues in financial intermediation:

- (1) imperfect market information; and
- (2) The absence of the Rational Expectation Equilibrium.

Grossman and Stiglitz (1980) extended the Rational Expectation Model further with respect to information asymmetry. The role of the financial intermediaries according to Elgari (2003) is basically as the medium between the surplus unit (sources of funds) with the deficit unit (users of funds). Elgari

(2003) differentiated further in terms of the details of the intermediation between the role of the Islamic and the conventional banks. The conventional banks according to Elgari (2003), borrow from the surplus unit and later lend to the deficit unit, while the Islamic banks participate in *mudharabah* or involve in intermediation either with the surplus unit (for sources of funds) or the deficit unit (for the uses of funds).

The role of bank as financial intermediaries also evolves from a simple issue of asymmetric information to the complex risk management. Diamond and Dybvig (1983) explained that bank instability are due to the mismatch of liquidity between the asset side of the bank and the liability side of the bank as the bank lending (asset) tends to be more illiquid than the customer's deposit (bank's liability) resulting in banks' asset to be risky. Additionally, the financial intermediary is also involved in the diversification of risk (Elgari, 2003). Risk management, therefore, is very important in bank management. In the context of the Islamic banks, El-Hawary et al. (2007) explained that the Islamic banks are exposed to specific risks like displacement risk, quality of management, harmonization of the institutional environment, liquidity management and counter-party risk.

Several scholars like Abozaid and Dusuki (2007); Chapra (1995, 1996) discussed the different roles of financial intermediation in the Islamic and the conventional banks. Chapra (1996) used the term interest-based financial intermediation to refer to the financial intermediation in the conventional banks and the equity based financial intermediation to refer to the financial intermediation in the Islamic banks. According to Chapra (1996), as the interest-based financial intermediation depends heavily on available collateral and deposit based on the surplus sector in financing projects, these have been the foundation of considerable spendings and speculations. Chapra also argued that the inequality is extremely apparent as the share of the economy is more on the rich sector of the society. This is nevertheless prohibited in Islam and thus leads to the changing structure of the financial intermediation on the basis of profit-and-loss sharing. The equity based financial intermediation circumvents considerable spending and speculation as the profit-and-loss sharing would encourage only need-based consumption and productive investment (Chapra, 1996). The profit sharing ratio between the entrepreneur and the banks is more stable than the interest rate because it will depend more on the business outcomes rather than on other things. Based on this, Chapra (1996) asserted that equity based financial intermediation is more stable and it can reduce the macroeconomic shocks because it eliminates the unproductive elements in the economy. This view is supported by Abozaid and Dusuki (2007) that the profit and loss financial intermediation supports the small and medium industries in the economy. This financial intermediation minimizes wasteful and unnecessary consumption and promotes investment for need fulfilment, exports, and increases employment and self-employment as documented earlier in Chapra (1995).

These scholars such as Abozaid and Dusuki (2007), Chapra (1995, 1996), Elgari (2003), Khan (1986) and Mohammed (2009) emphasize that the Islamic and conventional financial intermediaries differs in terms of their roles and fundamentals. Adel (2010) explained that the fundamental differences lies in the Shari'ah principles guided by a set of rules and moral values that inculcates and encourages justice. These fundamental differences in the Shari'ah principles which prohibit *riba*, *gharar* and other prohibited activities are the prominent factors for the Islamic banks to become more stable than the conventional banks (Smolo and Mirakhor, 2010).

## 2.2 Empirical Evidence of Z-score as measuring Bank Stability

The principle of the 'Safety First' was developed based on Roy (1952)'s dissatisfaction over the simple rule of maximizing return and also his traumatic wartime experience (Sullivan, 2011). The application of the Safety First principle means that when having wide range of possible actions, including disasters, the gross return should not be less than some quantity (Roy, 1952). The development of this principle leads to the z-score, which indicates the distance from insolvency combining the accounting measures of profitability, leverage and volatility of profitability (Rajhi and Hassairi, 2013). The z-score is inversely related to the probability of a bank's insolvency, that is, the probability that the value of its assets will become lower than the value of the debt. In other words, the higher z-score corresponds to a lower risk of insolvency (Rajhi and Hassairi, 2013).

The z-score is also a measurement for the distance-to-default, which measures the market value of a bank's assets in relation to the book value of its liabilities (Rajhi and Hassairi, 2013). Thus, the higher the z-score, the less probability of insolvency hence, the stable is the bank. The Z-score is denoted as follows:  $Z = (\mu + K) / \sigma$  where  $\mu$  denotes the bank's average return on assets (ROA), K the equity capital in percentage of total assets and  $\sigma$  is the standard deviation of the ROA as a proxy for return volatility of profitability

(De Nicolo, 2000). Many studies used the z-score as a measurement for bank insolvency risk (Rahman, 2010), bank soundness (Bourkhis and Nabi, 2013; Beck, Demirguc-Kunt and Merrouche, 2013) and bank stability (Hsieh et al., 2013; Rajhi and Hassairi, 2013).

### 2.3 Comparison of Bank Stability of Islamic and Conventional Banks

Čihák and Hesse (2008) studied 18 cross-countries data of Islamic and conventional from 1993 to 2004 and found that small Islamic banks are more stable than large conventional banks while large conventional banks are more stable than large Islamic banks. Čihák and Hesse (2010) found similar results and in addition, noted that small Islamic banks tend to be more stable in term of their financial stand than large Islamic banks. Similarly, this result is also supported by Wahid and Dar (2016), which studied Islamic and conventional banks in Malaysia from year 2004 to 2013 and found that large Islamic banks are less stable than the large conventional banks, while the small Islamic banks are found to be more stable than the conventional banks. In addition to this, Wahid and Dar (2016) found that Islamic and conventional banks in Malaysia shared almost the same determinants of stability. The total asset has negative effect while equity total assets and income diversification have positive effect on bank stability of Islamic and conventional banks (Wahid and Dar, 2016). However, cost to income ratio and non-performing loans have negative effect on stability of Islamic banks which is in contrast with the conventional banks. Similarly, return on assets and net loan to total assets have positive effect on the stability of conventional banks, unlike the Islamic banks.

Several studies have pointed out that the Islamic financial system is more stable than the conventional system, due to different separate functional to the deposit and loan in the banks (Khan, 1986) and the inequality that exists between liabilities, short-term deposits and long-term investments in the conventional banks (Mohammed, 2009). Islamic financial systems deal with real sector more than the unsubstantiated contracts without the underlying assets and any transferring of risk in the sale contract (Khan, 1986) and the Islamic financial systems share risk in other contracts as explained by Mohammed Seidu (2009). Bourkhis and Nabi (2013) found that the Islamic banks in 11 selected countries including Bahrain, Bangladesh, Brunei, Egypt, Gambia, Indonesia, Jordan, Kuwait, Malaysia, Mauritania, Pakistan, Qatar, Saudi Arabia, Tunisia, United Arab Emirates and Yemen, are more sound (represented by the z-score) than the conventional banks during their sampling period of 1998-2009. A similar finding is reported by Rajhi and Hassairi (2013) in a study on six Southeast Asian and 10 GCC countries over a period of 2000-2008. Parashar and Venkatesh (2010) found that the Islamic banks (IB) have performed better than the conventional banks (CB) both during normal and financial crisis periods.

However, Bourkhis and Nabi (2013) found no evidence that the Islamic banks are more sound (also represented by the z-score) than the conventional banks during the crisis period of 2007-2008. Similarly, Beck, Demirguc-Kunt and Merrouche (2010) found a very slight difference between the Islamic banks and the conventional banks. The difference is that conventional banks in countries with larger Islamic banks are generally more cost-effective but less stable (Beck et al., 2010). Besides this, Ghassan et al. (2013) studied a time series and found that the sample of Saudi Arabian banks appear to be non-stationary. This non-stationarity suggests that the regression which compares Islamic and conventional banks are to be interpreted with caution.

Even though inconclusive comparison has been documented pertaining to the stability of Islamic and conventional banks, very few studies provide the reasons behind this issue. Nevertheless, there are studies that discuss the reasons for the differences between these two types of bank. The arguments that reinforces the stability of Islamic banks basically lies on the prohibition of *Shari'ah* against exaggerated uncertainty which disallows creation of new debts from old debts and hence, debts must be based on real transactions of sale with real assets (Adel, 2010). Thus, derivatives with high risk like the credit default swaps (CDSs) which was known as one of the main causes of the Global Financial Crisis (GFC) or also known as subprime crisis, are not allowed in the *Shari'ah* principles. To infer, without the highly risky CDSs, this justifies the findings that the Islamic banks are empirically more stable than the conventional banks. In addition, the Islamic banks are assumed to be more stable as risky trading involving gambling, speculation and excessive uncertainties are prohibited (Beck et al., 2013; Siddiqi, 2009). Second, Farooq and Zaheer (2015) suggests that the religiosity of the banking customers and Islamic banks as the religious branding could be the reasons of less risk of withdrawal and generating more deposits during the Global Financial Crisis. The Islamic banks customers' religiosity could suggest brand loyalty and hence implies a more stable environment for the Islamic banks. Third, the risk sharing practices adopted by the Islamic banks

increases the stability of the Islamic banks (Farooq and Zaheer, 2015). Risk sharing allows better risk management than risk transferring. In risk transferring, every unit will transfer the risk due to fear factor and the transfer continues until, worst case is to be shifted to the government (Siddiqi 2009), and hence to be borne by the taxpayer's money. The system is said to protect the lenders and shift the burden onto the borrowers and the public at large (Siddiqi, 2009). Forth, in addition to the current regulations that are applicable to both Islamic and conventional banks, the Islamic banks are regulated by Shari'ah Supervisory bodies and few institutions like Islamic Financial Services Board (IFSB). These additional regulations will ensure the stability of the Islamic banks as highly risky transactions will not be allowed.

## **2.4 Objectives of Study**

The main objective of this study is to investigate the Islamic and conventional banks level of stability, during sampling period and during crisis period. This study extends its scope and includes a comparison analysis of banking models before and after the crisis period.

## **3. Data and Methodology**

### **3.1 Data**

The sample consists of 51 commercial banks and 50 Islamic banks, operating in five Gulf Cooperation Council (GCC) countries, namely Bahrain, United Arab Emirates, Kuwait, Qatar and Saudi Arabia. These countries are selected as they contribute one-third of the global banking assets, have substantial numbers of both Islamic and conventional banks and are practicing a dual banking system. The selection of the sample is also based on complete data availability for the banks during the stated period. The analysed time period of these samples is from 1999 to 2015. In order to evaluate the bank stability over these periods of study, the following periodical categorization is adopted.

- (1) sampling period (1999-2015);
- (2) before the global crisis (1999-2006);
- (3) during the global crisis (2007-2009); and
- (4) after the global crisis (2010-2015)

Data is gathered from the Bankscope database produced by the Bureau Van Dijk.

### **3.2 Methodology**

The study employs two-sample t-test with an unequal variance to investigate the difference between the Islamic and the conventional banks, given different crisis period. The two-sample t-test allows the comparison between two independent groups of samples where unequal variance is adopted since the sample size between the two groups is different thus the variance of the groups will also be different. In this regard, the Satterthwaite approximation is used to obtain a weighted average of the standard errors.

Basically, this study uses the standard techniques by taking the 95 per cent level of confidence or the  $p$ -value of 5 per cent which is generally taken as a standard significance level of accepting or rejecting a null hypothesis. However, the significance level of accepting or rejecting the null hypothesis can be as high as 10 per cent and can be as low as 1 per cent.

To overcome the normality in the panel data, the study employs the non-parametric Wilcoxon test for paired samples and Mann-Whitney test for two independent samples in addition to the parametric t-test. Similarly, the acceptable significance level of accepting or rejecting a null hypothesis can be at 1, 5 and 10 per cent.

### **3.3 Variable and Variable Measurement**

In evaluating and analyzing the stability of these banks, the z-score is used as a measure of bank stability. This stability ratio measure is common in the literature. The method was used as early as in 1952 by Roy as measure of probability of disaster while later used as a measure of bank insolvency risk (Rahman, 2010), bank soundness (Bourkhis and Nabi, 2013; Beck et. al, 2013) and bank stability (Hsieh et al., 2013; Rajhi and Hassairi, 2013).

The z-score is measured by the Return on Asset (ROA) plus Earnings to Total Asset (E/TA) divided by standard deviation on the ROA. The ROA is measured by the Return on Average Asset (ROAA) and defined by the Bankscope as a ratio of returns generated from the assets financed by the bank. The E/TA is defined by the Bankscope as a ratio that measures the amount of protection afforded to the bank by the equity the bank has invested in. The standard deviation of the ROA for the year 1999 is manually computed on the ROA for the period from 1999 to 2015. This standard deviation of the ROA is then applied for the other period during the sampling period of 1999 to 2015. This method of calculation is following various literature like Beck et al. (2013), Cihák and Hesse (2007) and Rahman (2010).

## 4. Analysis and Discussions

### 4.1 Descriptive Statistics

Table 2 summarizes the descriptive statistics of the z-score, which represents the bank stability in this study. The mean z-score for the IBs and the CBs are 1265 and 455.6 respectively, during the sampling period. The Z-Score represents the stability of the banks. Thus, the higher the mean z-score the more stable the bank is. The higher mean of the z-score for Islamic banks depicted in this study suggests that the Islamic banks are more stable than the conventional banks. Before the crisis period, the mean z-score for both the Islamic (1267.5) and the conventional banks (442.6) are higher than during the crisis (1259.3 for the Islamic and 445.9 for the conventional banks). On one hand, this seems to suggest that the stability of the Islamic and conventional banks is affected by the crisis. On the other hand, this also seems to suggest that the Islamic banks are more stable than the conventional banks before and during the crisis. However, the mean z-score after the crisis exceeded the mean z-score before the crisis for both the conventional and the Islamic banks. Generally, based on the mean score, the finding seems to suggest that IBs are more stable as compared to the CBs during all the periods under study. This finding is tested further using the t-test and is reconfirmed by the Wilcoxon and Mann Whitney test. The discussion is presented in the next section.

Table 2: Descriptive statistics

Stability measures	Sampling Period (1999-2015)			Before Crisis (1999-2006)			During Crisis (2007-2009)			After Crisis (2010-2015)		
	Obs	Mean	Std Dev	Obs	Mean	Std Dev	Obs	Mean	Std Dev	Obs	Mean	Std Dev
Z-score (IB)	60	1265.0	191.0	196	1267.5	196.7	137	1259.3	192.3	269	1266.0	186.7
Z-score (CB)	72	455.6	252.3	313	442.6	249.9	139	445.9	258.0	275	475.3	251.7

Notes: IB=Islamic Bank, CB = Conventional Bank

### 4.2 Stability Results

The statistical t-test with unequal variance was performed on the z-score for different banking models, namely the Islamic and the conventional banks. The t-test is run separately for each timing period, namely, on the whole sampling period (1999-2015), before the crisis period (1999-2006), during the crisis period (2007-2009) and after the crisis period (2010-2015). In addition, the non-parametric Wilcoxon and Mann-Whitney tests are used to address the non-normality of panel data.

Table 3 shows that, during the sampling period, the z-score for the Islamic banks is higher than the conventional banks at 1265 and 455.6 respectively. The t-test is significant at 1percent. This is supported by both the non-parametric Mann-Whitney and Wilcoxon tests which are also significant at 1 percent. This seems to suggest that the bank stability is significantly different between the Islamic and the conventional bank. This also implies that there is an evidence that the Islamic bank was more stable than the conventional bank during the sampling period. In addition, before the crisis, the z-score for the Islamic banks are higher than the conventional bank at 1267.5 and 442.6 respectively ( $p=0.01$ ). This also indicates that stability of the Islamic and conventional banks is significantly different before the crisis. This results provide evidence that the Islamic bank is more stable than the conventional bank, before the crisis. This finding is similar to Bourkhis and Nabi (2013) and Rajhi and Hassairi (2013) which noted that the Islamic banks are more stable than the conventional banks.

The findings reported above support the interpretation of theory of financial intermediation by scholars such as Abozaid and Dusuki (2007), Chapra (1995, 1996), Elgari (2003), Khan (1986) and Mohammed Seidu (2009). These scholars emphasize that the Islamic and conventional financial intermediaries differ in terms of their roles and fundamentals as discussed earlier, involving prohibition of *riba*' and practice of profit and loss sharing, which are the key factor to the stability in the Islamic banks (Adel, 2010; Smolo and Mirakhor, 2010). The profits and loss sharing requires greater discipline that will motivate banks to assess risks more diligently (Adel, 2010). In addition to this, the prohibition of *Shari'ah* against exaggerated uncertainty disallows creation of new debts from old debts and hence, debts must be based on real transactions of sale with real assets (Adel, 2010). Thus, derivatives with high risk like the credit default swaps (CDSs) which was known as the main causes of the Global Financial Crisis (GFC) or also known as subprime crisis, are not allowed in the *Shari'ah* principles. To infer, without the highly risky CDSs, this justifies the findings that the Islamic banks are empirically more stable than the conventional banks.

The mean z-score of both the Islamic and the conventional bank are low during the crisis, suggesting that the stability of both banks are affected by the crisis. The stability of the Islamic banks (1259.3) is significantly different and higher than the conventional bank (445.9), with the t-test and the Wilcoxon Mann-Whitney test significant at 1% ( $p=0.01$ ). This provides the evidence that the Islamic banks stability is significantly different from the conventional banks during the crisis. This also provides an evidence that even though both Islamic and conventional banking are affected by the crisis, and the Islamic banks are more stable than the conventional banks, during the crisis period. This finding on the effect of crisis on the Islamic banks is similar to Hasan and Dridi (2010) and Parashar and Venkatesh (2010). The differences in bank stability during crisis as explained by Farooq and Zaheer (2015) which studied the differential behaviour of Islamic and conventional banks in Pakistan during GFC, show that the Islamic banks were less prone to risk of deposit withdrawals and were generating more deposits during this period. The authors suggest that these phenomena as religious branding and implied that the greater financial inclusion of faith-based groups enhances the Islamic banks stability. These findings could be explained by the financial intermediation theory by Diamond and Dybvig (1983). They argued that the different risk management can result in bank's stability or instability. The mismatch of liquidity between the asset side of the bank with the liability side of the bank as the bank lending (asset) tends to be more illiquid than the customer's deposit (bank's liability) and this thus causes the banks' asset to be risky. As the case of Pakistan, the deposits and lending of the Islamic banks are not affected by the crisis period thus decreases the risk of insolvency and hence increases the Islamic bank stability.

After the crisis, the z-score for both the Islamic and the conventional banks are higher than during the crisis period. However, the z-score for the Islamic bank (1266.0) is still higher than the conventional bank (475.3) and the t-test and the Wilcoxon test is significant at 1 percent. This suggests that the Islamic banks are more stable than the conventional after the crisis period. The findings are similar to Kadir et al. (2011) where they found that the Islamic banks in Malaysia are more efficient and perform better during and after the crisis. According to Khamis and Senhadji (2010), the GCC countries have strong fundamentals before the GFC and used their resources in terms of deposits, assets purchases and support from central banks to stabilize the financial sector. As a result of this, the banks in the GCC are not affected by the GFC and the profitability is moderate after the crisis period (Khamis and Senhadji, 2010).

Table 3 : T-test of IB vs CB results (separate on period)

Z-score	Islamic Bank	Conventional Bank	T-test (2-tailed)	Wilcoxon (Mann-Whitney)
Sampling Period (1999-2015)	1265.0	455.6	66.5***	31.3***
Before Crisis (1999-2006)	1267.5	442.6	41.4***	18.8***
During Crisis (2007-2009)	1259.3	445.9	29.7***	14.4***
After Crisis (2010-2015)	1266.0	475.3	41.7***	20.2***

Notes: \*\*\* Significant at 1%, \*\* Significant at 5% and \*Significant at 10%

Again, there is an indication that the conventional banks are less stable and more impacted by the crisis, than the Islamic banks. To ascertain this, a second t-test is conducted to evaluate whether the Islamic banks are more stable and less prone to the crisis. The t-test with unequal variance was performed on the z-score for different timing period namely, on the whole sampling period (1999-2015), before the period

of crisis (1999-2026), during the crisis period (2007-2009) and after the crisis period (2010-2015). The t-test is run separately for each banking models, namely the Islamic, the conventional banks and the whole banking sector combining both the IB and the CB. In addition, the non-parametric Wilcoxon Mann-Whitney test is also used to overcome the normality of panel data.

The t-test and the Wilcoxon test report similar results. The Islamic bank stability is not significantly different throughout the different timing period and seems to suggest that the Islamic banks may not be affected by the 2007-2009 crisis period (see Table 4). This is also similar for the conventional banks for the period before the crisis (see Table 5). However, for the conventional banks, the timing period is significantly difference at 10 percent, during the period of crisis. This suggests that the Islamic banks stability is not affected by the crisis while the conventional banks stability is affected by crisis.

Table 4: T-test of impact of crisis on Islamic banks

Z-score	Tested Period	Other Period	T-test (2-tailed)	Wilcoxon (Mann-Whitney)
Before crisis (1999-2006)	1267.5	1263.8	-0.2	-0.4
During crisis (2007-2009)	1259.3	1266.7	0.4	0.05
After crisis (2010-2015)	1266.1	1264.1	-0.1	0.5

Notes: \*\*\* Significant at 1%, \*\* Significant at 5% and \*Significant at 10%

Table 5: T-test of impact of crisis on conventional banks

Z-score	Tested Period	Other Period	T-test (2-tailed)	Wilcoxon (Mann-Whitney)
Before crisis (1999-2006)	443.0	465.0	1.2	1.3
During crisis (2007-2009)	444.85	458.1	0.6* (1 tailed)	0.6*
After crisis (2010-2015)	475.3	443.6	-1.6	-1.7

Notes: \*\*\* Significant at 1%, \*\* Significant at 5% and \*Significant at 10%

These findings lend support to the earlier evidence that the Islamic banks' fundamentals inherent better risk management and hence increases the bank's stability. Elgari (2003) argued that the Islamic banks have lower risk as a result of risk sharing as compared to the risk transferring concept adopted by the conventional banks. The empirical research by Farooq and Zaheer (2015) provide evidence of risk sharing practices increasing the stability of the Islamic banks where less withdrawal and an increase in deposits were reported during the GFC in Pakistan bank. In addition to this, Beck et al. (2013); Siddiqi, (2009) noted that the Islamic banks can be assumed as stable since risky trading that involve gambling, speculations, excessive uncertainties are prohibited. The study by Beck et al. (2013) also provides empirical evidence that Islamic banks perform better than the conventional banks during crisis in term of capitalization and asset quality. As argued by Siddiqi (2009) risk sharing can be achieved with better risk management and value creation. For a financial system that allows risk transfer, the cost is in the form of insurance costs. Every units will transfer the risk due to fear factor and the transfer continues until, worst it is to be shifted to government (Siddiqi, 2009), and hence to be borne by the taxpayer's money. The system is said to protect the lenders and shifts the burden onto the borrowers (Siddiqi, 2009) and the public at large.

## 5. Conclusions

The study investigates the level of bank stability of both the Islamic and conventional banks, by testing the mean (z-score) difference between the IBs and the CBs, over different timing period, namely on the whole sampling period (1999-2015), before the period of crisis (1999-2026), during the crisis period (2007-2009) and after the crisis period (2010-2015). The study found that the Islamic banks are more stable than the conventional banks, for the five GCC countries. The t-test and the non-parametric Mann-Whitney test are significant at 1 percent for four different timing periods i.e. sampling period, period before crisis, crisis period and period after crisis. This study concludes that the IBs in the selected GCC are more stable than the CBs. The finding is supported by Okumus and Kibritci Artar (2012) which noted that smaller IB are more stable than the financial stability of small conventional banks. Nevertheless, the finding is inconsistent with Altaee et al. (2013) which found that there is no significant difference between the stability of IB and CB during the sampling period of 2003 to 2010.

The study extends to test the mean (z-score) difference between i) before the crisis period and the other periods (i.e. the crisis period and the period after crisis) ii) during the crisis and the other periods (i.e. the period before crisis and the period after crisis) iii) after the crisis and the other periods (i.e. the period before crisis and the crisis period) separately for each the IBs and CBs. The findings show that the z-score of the IBs are less sensitive to crisis and recorded an insignificant reduction as compared to the conventional banks. The t-test and the Wilcoxon tests are not significant for the IBs and is significant at 1 percent for the CBs only during the crisis period. Thus, the 2007-2009 global crisis seem to affect only the conventional banks and not the Islamic banks in these selected GCC countries.

This study draws important practical and policy implications for recommendation in the banking industry. There is evidence that the conventional banks in the GCC countries are affected by 2007-2009 global crisis and the opposite is true for Islamic banks. This could be explained in terms of the commendable liquidity management of the Islamic banks. The findings by AlKulaib et al. (2013) noted that the Kuwait Islamic banks are more liquid with better current ratio than the conventional banks, for the sample period of 2007-2010. Ghenimi and Omri (2014) reported that during the period from 2006-2013, the GCC countries' ROE has a significant impact on the liquidity, which has an interdependence relationship with the financial stability.

In addition, the CBs in these GCC involve in the highly risky derivatives like Credit Default Swaps (CDSs) during these crisis periods. For examples, in 2009, Dubai recorded more than 600 basis points of CDSs spread over 5 year sovereign debt which is higher than Greece (400 basis points) (Khamis and Senhadji, 2010). The Islamic banks have better asset quality compared to the conventional banks as noted by Beck et al. (2013) in their study on the conventional and the Islamic banks in 20 countries. Thus, the policy recommendation for banks in GCC includes a recommendation for banks in GCC to have commendable liquidity management at all time. This empirically provides the reason for bank stability in GCC during 2006 to 2013. Second, the banks in GCC are recommended to ensure the products of the banks to be kept at reasonable risk with acceptable level of uncertainty. Third, the banks in GCC are also recommended to have better asset quality as this ensures the stability of the banks as proven empirically.

Future research could include more proxy of stability such as ROA, ROE and others. Another possible extension could be the examination of the characteristics of the Islamic banks during different crisis and non-crisis periods that warrant a more stable financial system. In term of methodology, a regression which includes more variables could be run to test the statistical difference between the Islamic and conventional banks.

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