

Does Financial Instability of Conventional Banks Affect Financial Stability of Islamic Banks in GCC Countries?

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Abstract

Purpose: The main purpose of this paper is to investigate the relationship between financial stability in Islamic banks and financial stability and soundness in conventional banks for five GCC countries.

Design/methodology/approach: By using time series data, this study employs Pedroni's panel cointegration to test the long-run relationship between financial stability of Islamic banks and financial stability of conventional banks in GCC countries during the period of (2000-2017). Besides, the study also employs Granger causality to test the causal link between stability of two types of banks (Islamic and Conventional). As well as employing Generalized Least Squares (GLS) to examine the effects between independent variables which are financial stability of conventional banks and their profitability, impact of period of financial crisis (2008/2009), oil prices fluctuations, banking concentration and financial sector development and financial stability of Islamic banks (as the dependent variable).

Findings: The findings of this research suggest that there is a long-run, significant and positive relationship between the financial stability of conventional banks and its Islamic counterpart. At the same time, the financial stability of conventional banks is found to Granger caused the stability of Islamic banks.

Originality/value: The results of the study contribute towards understanding the determinants of the financial stability of both Islamic banks and conventional banks and how they affect each other. This is important for policy ramifications by the Central Banks in GCC in terms of treating both types of banks differently to mitigate against future financial crises.

Keywords: financial stability of conventional and Islamic banks, Pedroni's panel cointegration test, Granger causality test, Generalized Least Squares (GLS), GCC countries

1. Introduction

Financial stability of an institution in a financial system of a country has become a challenge in light of significant changes in the entire economy, the financial system, and within the institution itself. The concept of 'financial stability' generally came about in the last decade to indicate the importance of the main functions of financial authorities led by Central Banks (Allen & Wood, 2006). Banks' stability - whether Islamic banks (IBs henceforth) or conventional banks (CBs henceforth) - has been defined by Miah, M. D., and Uddin, H. (2017) as However, the best is to define financial stability of banks as the period when the instability of banks is absence (Allen & Wood, 2006). However, Iqbal, Mirakhor, Krichenne, and Askari (2010) opined that financial stability is an accounting concept, representing the concept of solvency or equilibrium. It means that financial stability is described by the position of the liquid treasury, which shows whether the use of funds exceeds the sources of funds to be covered internally at abnormal times or during financial crises.

The global financial crisis is a lesson for bankers to be more cautious in the future, as no bank was immune to this crisis. During the financial crisis (2008/2009), many CBs suffered bank runs and announced bankruptcy, but no Islamic bank went bankrupt (Ghassan, Fachin, & Guendoz, 2012). Nevertheless, that does not mean that IBs are immune to financial crises; they are affected, even indirectly influenced by the adverse impacts of the financial crises. One of these effects was the fall in oil prices, which mainly affected the IBs of Gulf Cooperation Council (GCC) (Zarrouk, 2012). Thus, this paper attempts to explore the impact of conventional bank instability, also its profitability on the financial stability of IBs and the financial soundness in GCC countries in the long run.

GCC countries are chosen because they have a dual banking system, and the presence of IBs in GCC countries became more prominent, with more than 25% market share out of all GCC Banks' total assets. For example, IBs in all Middle East and North Africa (MENA) countries have only 14% market share out of all total assets of MENA banks (Basu, Prasad, & Rodriguez, 2015). Given the prominence of Islamic banking presence in the GCC countries and operating in parallel with their conventional counterparts, it is therefore imperative to assess whether the financial stability of CBs does indeed affect the financial stability of IBs. Understanding this causal effect will help the Central Banks to design policies to affect IBs and CBs differently to mitigate against future financial crises. That would be the first motivation of this study, and the second is to clarify the importance of banking institutions to the economy as banks play the primary role in financial intermediation which is to allocate surplus funds or deposits from surplus units, savers or lenders, then effectively and efficiently support deficit units, borrowers or investors. That could be allocated physical capital in the economy in order to run the projects and enhance business development and trade in the economy and financial system (Allen & Carletti, 2008). However, Islamic bank has an essential difference from the conventional bank that is the prohibition of interest on loans and deposits because Islamic bank follows the principals of Islamic law (*sharia*). This difference may reflect on the stability of each type of bank to affect the stability of another type.

2. Literature Review

Empirical studies conducted on individual bank's stability focus more on the impact of financial stability or its financial soundness. For example, these studies highlighted the comparison between the financial stability of large and small IBs and CBs. However, the comparison between the financial stability and financial soundness of two types of banks, i.e., both IBs and CBs, is still limited. This current study adopts IBs stability as the dependent variable (measured by Z-score index) and the independent variables as determinants of IBs stability. The most crucial determinant that this paper attempts to explore is the impact of the instability of CBs (measured by Z-score index) on the stability of IBs.

By reviewing the literature of financial stability, studies of bank's stability used to divide each type of bank based on its size into small and large banks. For instance, Čihák and Hesse (2008; 2010) opined that the size of the bank must be taken into account just in order to perform a comparison between the stability of IBs and that of the conventional ones. Čihák and Hesse (2008; 2010) further found that large IBs are riskier than small IBs where they are more stable than their counterparts from CBs. This is well supported by the studies of Shahid and Abbas (2012), and Abedifar, Molyneux, and Tarazi (2013), which assert that large IBs are riskier than small ones where they are more stable than large CBs. As well, large CBs are riskier than the small ones, these also the same findings of Shahid and Abbas (2012), and Abedifar, Molyneux, and Tarazi (2013).

However, Hasan and Dridi (2010) found that IBs performed better in terms of performance compared to the CBs during the financial crisis, and thus they were contributing to financial stability. Meanwhile, Gamaginta and Rokhim (2009) found that IBs are less stable than CBs. However, it is also found that IBs are better capitalized with higher intermediation ratio and higher asset quality, even though they are less cost-effective than the CBs, which perhaps make IBs better stock performance during financial crisis 2008/2009 (Beck, Demirguc-Kunt, & Merrouche, 2013). It is also reported that during the crisis, IBs withstood better than CBs as not a single Islamic bank was declared bankrupt, unlike the CBs (Ghassan, Fachin, & Guendoz, 2013). Notwithstanding the above success story of IBs, the IBs are also found to not insulated against the adverse impact of that crisis as they could also be affected by the indirect impacts of the crises (Ali, 2012).

Acknowledging the on-going debate comparing the stability of both CBs and IBs, this current paper attempts to go beyond this debate to focus more on the effects of the financial stability of IBs on the CBs and vice-versa. In doing so, three categories of variables have been chosen to examine the impact on IBs stability. Specific to bank variables are financial stability of CBs and their profitability, which represented by return on CBs' assets (ROA). For the industry of banking system variables: the competition between banks in the banking system and financial sector development. Moreover, macroeconomic variables are also two variables: first, global financial crisis period, which was selected as a dummy variable which takes one for years 2008-2009 and zero otherwise, and second, oil price fluctuations as an essential variable in the GCC countries.

Fluctuations in oil prices in GCC countries are one of the critical factors that could influence banks' financial soundness. As reported by International Monetary Fund (IMF) (2015) there is a link between economic growth and revenues of oil exports which means that a rise in oil price leads to a more significant government expenditure and a stronger fiscal position which in turn leads to a rise in corporate profitability and strengthen the balance sheets of banks (Callen, Khandelwal, Miyajima, & Santos, 2015). Accordingly, the dropping in oil revenue could be a

significant risk that determines credit default, which harms banks' solvency and adversely affects the real economy (Khandelwal, Miyajima, & Santos, 2016). So, financial soundness is more affected by oil price shocks compared to the impact of just an increase in oil price. As in general financial performance is linked to oil price fluctuations in oil-rich economies, such as in GCC countries (Al-Khazali & Mirzaei, 2017). It is therefore imperative that these countries, like the ones in GCC to be more diversified in terms of managing their economies rather than depending on just on oil sector revenues (Mehrara, 2008).

Besides oil price movements, many studies have also provided evidence that financial stability is adversely affected by the Global Financial Crisis (GFC) with varying impacts across countries and periods for both CBs and IBs (Fu, Lin, & Molyneux, 2014; Ghosh, 2014). For example, IBs were better capitalized with higher ratios of asset quality and more cost-effective (Beck et al., 2013). Furthermore, Beck et al. (2013) also assert that profit-loss sharing (PLS) modes that are adopted by IBs make them more resilient against this crisis than CBs (Abduh, Omar, & Duasa, 2011). However, some studies, such as Bourkhis and Nabi (2013), indicated that there is no significant difference in the stability of CBs and IBs, which are affected similarly due to the financial crisis in 2008.

From the industry-specific of the banking system, the degree of competition between banks is considered as an essential determinant of bank fragility and generally measured by concentration ratio (Note 1) (Al-Khoury & Arouri, 2016). One of the most commonly used measures, that have been adopted to measure banking concentration is the Herfindahl-Hirschman index (Note 2) (HHI), which ranges from 0 (i.e., zero is represented minimum concentration or maximum competition) to 10,000 (i.e., 10,000 is represented maximum concentration or minimum competition). HHI is found to be significantly and negatively related to financial stability, therefore, the higher the banking concentration, the lesser will be the competition, and the lower will be the degree of financial stability (Čihák & Hesse, 2010; Ghassan et al., 2013).

Another variable that represents banking industry efficiency is financial sector development. Thus it may impact bank performance, as it is measured by the ratio of bank credit to the private sector divided by Gross Domestic Product (GDP) (Bongini, Iwanicz-Drozdowska, Smaga, & Witkowski, 2017), the financial sector development in some less developed countries, may enhance bank efficiency and performance. However, results from other studies indicated otherwise. For instance, the studies allude that more significant development of the financial sector could also create more competition, which may adversely impact the profitability of banks (Grove, DeBruine, Lee, & Maldonado, 2014).

Generally, financial stability of a bank is defined as the period of bank instability absence (Allen & Wood, 2006). As indicated, the financial instability of banks could be due to insolvency risk that can be hurt the economy as what happened during financial crises (Fethi & Pasiouras, 2010). Therefore, instability and insolvency of the conventional bank may have an impact on Islamic bank stability. Conventional bank's instability has also been measured by the Z-score index, (ROA plus ratio of capital (or TE=total equity to total asset (TA), divided by standard deviation of ROA) as a common measure used by many studies (Beck et al., 2013; M. Čihák & Hesse, 2008; Martin Čihák & Hesse, 2010; Fu et al., 2014; Ghassan et al., 2013; Ghosh, 2014). Nevertheless, the recent study of Clark et al. (2018) who have used a new approach of the Z-score formula (as shown in 1), which is produced by Mare et al. (2017). Mare et al. (2017) criticized all previous approaches of Z-score index as they are deemed to be less effective. Against this backdrop, this paper will follow Clark et al. (2018), who adopted the following formula:

$$Z_{i,t} = \frac{\mu_{ROA,t} + TE/TA_{i,t}}{\sigma_{ROA,t}} \text{ with } t \in \{1, 2, \dots, T\} \quad (1)$$

Where: $\mu_{ROA,t}$: the moving mean ROA, period t: the current period. Meanwhile, the profitability of CBs, as represented by the return on assets of CBs (ROA_CB), is another important variable that may influence the stability of IBs. Many of researches that study the comparison between IBs, and CBs based on ROA found that there is an impact on Islamic bank's stability (Alturai & Ki, 2013; Siraj & Pillai, 2012; Toumi, Viviani, & Belkacem, 2011; Youssef & Samir, 2015). Thus, this present paper seeks to also examine the effects of ROA_CB on IBs' stability empirically, besides the impact of financial stability of CBs (Z-score index of CBs (ZSC_CB)) on the financial stability of IBs (Z-score index of IBs (ZSC_IB)). Yuksel (2017) tried to identify the relationship between IBs and CBs in terms of term deposit rate by using Granger causality, and the result suggested that there is no clear significant relationship between both types of banks. However, Chong and Liu (2009) affirmed that there is a

significant causality from CBs to IBs. Similarly, Adeloba, Sulaiman, and Dhalan (2011) found one-way causality running from CBs to IBs. However, Kader and Leong (2008) found that there is bi-directional causality between IBs and CBs with regards to base lending rate and home financing, which means that type of bank matters.

Existing literatures also alluded that the type of banks, i.e., whether Islamic or conventional does not matter in terms of financial stability, which matters is the size of banks, as there is individual heterogeneity across banks due to difference in bank size. So, these studies used the total asset of a bank to categorize banks into large and small banks, as bank size has different effects on bank stability (Martin Čihák & Hesse, 2010; Distinguin, Roulet, & Tarazi, 2013; Ghassan et al., 2013). Therefore, this research also attempts to investigate whether the nature of the bank (Islamic or conventional) matters in order to capture the impact of financial stability running from CBs to the financial stability of IBs, or heterogeneity across banks matters more than Islamic or conventional nature of the banks. Understanding the nature of the relationship between macroeconomic variables, industry-specific variables, as well as the financial stability of CBs and IBs, are important to reduce the financial risks of IBs and CBs and mitigate against future financial instability.

3. Data and Methodology

3.1 Theoretical Framework

As mentioned above that the purpose of this research is to investigate whether the nature of the bank (Islamic or conventional) matters in order to capture the impact from the financial stability of CBs on the financial stability of IBs in the long run. Besides, this paper seeks to examine whether heterogeneity across banks matters for both Islamic and conventional nature of the bank. Therefore, an analysis of panel cointegration following Pedroni's (1999, 2004) method will be employed to allow for heterogeneity using coefficients of cointegration equation, and Granger causality.

It is hypothesized that there is a one-way causality from CBs to IBs in terms of financial stability. As shown in Figure 1, this research has taken into consideration two macroeconomic variables, such as the Global Financial Crisis Period (GFCP) and Oil Prices movements Risk (OPR). Moreover, two other variables from banking industry-specific as bank competition (HHI) and financial sector development (FSD), that could impact the stability of IBs. So, the data has been collected from the GCC region, from banking industry of each country, and individual banks, whether IBs or CBs. Therefore, data of variables that are related to CBs such as ZSC_CB and ROA_CB, averages of the series have been taken.

To analyze the relationship between stability of IBs and its conventional counterpart, and other independent variables, balanced panel data have been collected from data stream and bank scope data base for 34 banks (17 IBs and 17 CBs) from 2000 to 2017 for five GCC countries excluded Oman which entered to Islamic banking industry just in 2012. So, function 2 expresses this relation, and panel model 3 explains the regression equation:

$$ZSC_{IB} = f(GFCP, OPR, HHI, FSD, ZSC_{CB}, ROA_{CB}) \tag{2}$$

And the model is:

$$ZSC_{IB_{it}} = \beta_{0i} + \beta_{1i}GFCP_{it} + \beta_{2i}OPR_{it} + \beta_{3i}HHI_{it} + \beta_{4i}FSD_{it} + \beta_{5i}ZSC_{CB_{it}} + \beta_{6i}ROA_{CB_{it}} + \varepsilon_{it} \tag{3}$$

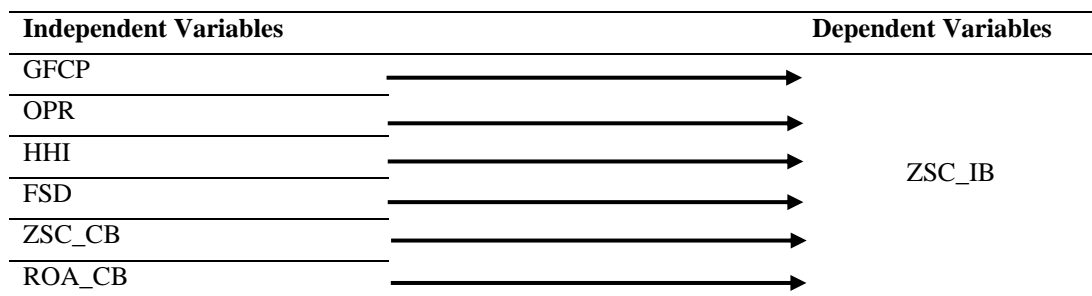


Figure 1. Theoretical framework

Where:

$ZSC_{IB_{it}}$ is Z-score index for Islamic bank (i) in year (t)

β_{0i} : Constant coefficient,

β_{ni} = The slope coefficient and 1... n: number of the variable,

$GFCP_{it}$: Global financial crisis period for the country (i) in year (t),

OPR_{it} : Oil prices risk exposure for the country (i) in year (t),

HHI_{it} : Banks concentration for the banking system of the country (i) in year (t),

FSD_{it} : Financial sector development for the banking system of the country (i) in year (t),

ZSC_CB_{it} is the average of Z-score index for conventional bank (i) in year (t),

ROA_CB_{it} is the average of return on assets for conventional bank (i) in year (t), and

ε_{it} : Term of the random error.

3.2 The Panel Unit Root Test

We start our analysis to test the presence of unit root (data stationarity) of each variable in time series data. It is crucial to test the order of the series or presence of unit root in the series in order to get an appropriate panel model (Musibau, Yusuf, & Gold, 2019). Whereas, there are several tests usually used for this purpose, such as Levin and Lin (1993), Hadri (2000), Levin, Lin, and Chu (LLC) (2002) and Im, Pesaran, and Shin (1997, 2003). Thus, this paper used the most common tests such as Levin et al. (LLC) (2002) and Im, Pesaran, and Shin (1997, 2003) as also considered the two recent unit root tests (Annala & Chen, 2011). According to Musibau et al. (2019), the main hypothesis of panel unit root as established in LLC is as shown in equation (4).

$$\Delta Y_t = \alpha + \lambda t + \gamma Y_{t-1} + \sum_{i=1}^k \beta_i \Delta Y_{t-i} + \varepsilon_t \quad (4)$$

The variable Y_t represents each variable included in this research. In addition to important to check the presence of unit root in time series data, the Pedroni cointegration is also useful to solve the heterogeneity issues and to control the bias of country size (Syed Ali, 2017). In order to examine stationarity of data using unit root tests, the above tests will be implemented using a confidence level of 5% to examine null and alternative hypotheses H0: Data are non-stationary (or it has a unit root) and H1: Data are stationary (or it has no unit root)

3.3 The Panel Cointegration Test

Two groups of tests for panel cointegration were recommended by Pedroni (1999, 2004). First, panel tests within dimension based and include four statistics (Note 3), which essentially pool the coefficients of autoregressive and consider the heterogeneity across banks and common time factors. Second, tests based on the between dimension approach, which includes three groups of statistics (Note 4), which are based on averages of individual autoregressive coefficients associated with the tests of data stationarity or unit root of the residual for each bank in the panel of time series. Pedroni (2004) documented an approach that can overcome the problem of implementing panel data with small samples while allowing heterogeneity for slopes (β_n) and intercepts (β_0) of the equation of cointegration (Mohd. Yusof & Bahlous, 2013; Sapuan, 2013).

The seven tests of Pedroni are based on residuals that estimated, as shown in the long run model (5) as follows:

$$y_{it} = \alpha_i + \sum_{j=1}^m \beta_{ji} x_{jit} + \varepsilon_{it} \quad (5)$$

Where: $\varepsilon_{it} = \rho_i \varepsilon_{i(t-1)} + w_{it}$ are the residuals that estimated from the panel regression. So, Pedroni (1999, 2004)

will be employed by this research to incorporate heterogeneity using Pedroni's panel cointegration test, which allows for cross-section effects of individual banks with heterogeneous intercept and slopes of cointegration equation to be tested, as well as to overcome the problem of the small sample.

3.4 Granger Causality

Granger causality is a common method that is used to examine the causal links between variables, and its mathematical processes are based on the model of linear regression. Test of Granger causality, which suggested by

Granger (1969), has become an important issue in econometrics. It is based on the concept of ‘precedence’ that clarify a relationship among variables (Chen, 2006). Simply, Granger causality can be explained as a follow: if a single variable A_1 Granger causes another variable A_2 , then the past values of A_1 may contain some information that helps predict the A_2 , in addition to the information already contained in past values of A_2 separately (Granger, 1969). As mentioned above that Granger causality is employed by this research to check whether a time series of financial stability of CBs can be useful in forecasting the stability of IBs.

3.5 Generalized Least Squares (GLS)

Despite the presence of long-run relationships that can be tested by using the method of Pedroni’s panel cointegration, this method could not provide the estimation of coefficient (Shaukat, Hasan, & Alhabshi, 2014). So, for the coefficients’ estimation, a feasible generalized least squares (GLS) analysis is proposed because of the form of heteroskedasticity, which may be a misidentification. Thus, this paper used the GLS to test the relationships; such estimation is considered a more powerful test and its results more efficient than ordinary least squares (OLS). As well as to solve problems of serial correlation and heteroskedasticity (Baltagi & Wu, 1999; Hansen, 2007; Miller & Startz, 2018).

Finally, to test whether there is cointegration, we need to accept or to reject the null hypothesis of no cointegration, ($H_0: \rho_i = 1$ for all i) against the alternative of the existence of cointegration, in the within-dimension ($H_A: \rho_i = \rho < 1$ for all i) but for the between-dimension statistics ($H_A: \rho_i < 1$ for all i) (Fowowe, 2011). So, the two hypotheses are presented as H_0 : No cointegration, and H_A : Cointegration exists.

4. Results

Panel unit root tests are conducted for each variable as a requirement for panel cointegration. We start by running the tests of Levin et al. (LLC) (2002) and Im, Pesaran, and Shin (1997, 2003) as the two recent and common unit root tests (Annala & Chen, 2011). As shown in Table 1 test of data stationarity at the level I(0), FSD has a unit root, as well as OPR has a unit root according to IPS tests. Thus, unit root tests at first difference I(1) must be run to check data stationarity, which is required for analyzing using the panel cointegration test.

Table 1. Unit root tests (at level)

H_0 : variable have a unit root or variable is non-stationary				
Variables	LLC	IPS		Decision
OPR	-1.80692 [0.0354] **	0.14665 [0.5583]		Inconclusive
GFCP	No result	-4.00270 [0.0000] *		Inconclusive
HHI	-21.8686 [0.0000] *	-17.2603 [0.0000] *		Reject H_0
FSD	-0.28972 [0.3860]	2.39283 [0.9916]		Do not reject H_0
ROA_CB	-8.65438 [0.0000] *	-5.90738 [0.0000] *		Reject H_0
ZSC_CB	-4.24484 [0.0000] *	-4.80687 [0.0000] *		Reject H_0
ZSC_IB	-3.53092 [0.0002] *	-1.77120 [0.0383] **		Reject H_0

Note: * Indicate to the significance level at the 1%, ** Indicate to the significance level at 5%.

As shown in Table 2, tests of unit root results on the first differences I(1) for all variables are significant at the 1% level of significance, which is to reject the non-stationary hypothesis and accept the alternative hypothesis of no unit root and data are stationary.

Table 2. Unit root tests (at first difference)

H_0 : variable have a unit root or variable is non-stationary					
Variables	LLC		IPS		Decision
OPR	-10.5935 [0.0000]		-6.97721 [0.0000]		Reject H_0
GFCP	-15.0676 [0.0000]		-11.2342 [0.0000]		Reject H_0
HHI	-25.2806	[0.0000]	-13.8146	[0.0000]	Reject H_0
FSD	-6.46284	[0.0000]	-8.95593	[0.0000]	Reject H_0
ROA_CB	-13.8347	[0.0000]	-9.59270	[0.0000]	Reject H_0
ZSC_CB	-18.8679	[0.0000]	-13.6864	[0.0000]	Reject H_0
ZSC_IB	-10.2535	[0.0000]	-13.6864	[0.0000]	Reject H_0

Note: All results of unit root test of all variables in I(1) are significant at the 1% significance level.

Hence, all variables are I(1), then Pedroni’s panel cointegration tests are eligible to be used for examining the presence of a long-run relationship between the financial stability of both CBs and IBs. As shown in Table 3, and according to Pedroni’s tests based on three specifications: individual intercept, individual intercept and individual trend, and no intercept and trend for variables: ZSC_IB GFCP OPR HHI FSD ZSC_CB and ROA_CB. The result shows that the null hypothesis of no cointegration (at usually 0.05 level of significance) is rejected; instead, the alternative hypothesis is accepted. Thus, the presence of cointegration expresses that a long-run relationship between variables that are described as cointegrated variables. That means financial stability of IBs is cointegrated with OPR, GFCP, HHI, FSD, financial stability of conventional, and their profitability. As well as it is appeared by using Granger causality Table 4; as a result, the null hypothesis of ZSC_CB does not Granger cause ZSC_IB is rejected. So, it means that financial stability of CBs Granger causes its Islamic counterpart. The result is consistent with the study of Chong and Liu (2009) and Adeloba et al. (2011), which affirmed that there is a significant causality from CBs to IBs. However, it does not agree with the findings of Kader and Leong (2008), that there is bi-directional causality between IBs and CBs.

Table 3 Pedroni’s panel cointegration tests

	Intercept		Intercept +Trend		None	
	Statistic	Weighted Statistic	Statistic	Weighted Statistic	Statistic	Weighted Statistic
Panel v-Statistic	-0.7967	-1.7410	-2.1116	-2.9892	-0.6698	-2.7973
Panel rho-Statistic	2.3889	3.4456	3.060107	4.2683	1.7349	2.7062
Panel PP-Statistic	-11.7969*	-10.7299*	-17.2678*	-18.0248*	-9.5713*	-3.9497*
Panel ADF-Statistic	-4.6106*	-6.5323*	-6.4195*	-6.5003*	-9.2188*	-4.5633*
Group rho-Statistic	5.0197		5.6041		4.1123	
Group PP-Statistic	-12.5414*		-21.0872*		-7.9961*	
Group ADF-Statistic	-5.9774*		-8.2988*		-7.1574*	

Note: * Indicate to the significance level at the 1%

Table 4. Granger causality test

Lags: 2	Null Hypothesis:	Obs	F-Statistic	Prob.
	ZSC_CB does not Granger Cause ZSC_IB	272	3.64027	0.0276**
	ZSC_IB does not Granger Cause ZSC_CB		0.14355	0.8663

Note: ** Indicate to the significance level at 5%.

As mentioned, that GLS is proposed to be used by this research because of the heteroskedastic case and the serial correlation (Baltagi & Wu, 1999; Miller & Startz, 2018). As shown in Table 5 that the null hypothesis of homoscedasticity is rejected, meaning that the heteroscedasticity is present in the data. As well as the problem of serial correlation is existed in the data according to the results shown in Table 6 since we fail to reject the null hypothesis of no serial correlation.

Table 5. Heteroskedasticity test

Heteroskedasticity Test: ARCH	
F-statistic: 4.124067	Prob. F(1,303): 0.0432**
Obs R-squared: 4.095545	Prob. Chi-Square(1): 0.0430**

Note: ** Indicate to the significance level at the 5%

Table 6. Serial correlation LM test

Breusch-Godfrey Serial Correlation LM Test:	
F-statistic: 47.96412	Prob. F(2,297): 0.0000*
Obs R-squared: 74.70586	Prob. Chi-Square(2): 0.0000*

Note: * Indicate to the significance level at the 1%

The results of the coefficients' estimation using GLS procedures are shown in table (4.7). It is found that the financial stability of CBs has a positive and significant impact on the financial stability of IBs. This result supported the current result presented by Granger causality (ZSC_CB Granger Cause ZSC_IB) and other studies such as Chong and Liu (2009) and Adeloba et al. (2011). Also, financial sector development was significantly and positively related to IBs' stability. This result supports the result of Bongini et al. (2017), and it is opposite from results of Growe et al. (2014). While, financial crisis period, oil price volatility risk, and profitability of CBs have a negative impact, even though they have not a significant impact on financial stability of IBs. The proxy of banking concentration variable (HHI) has no significant effect on the financial stability of IBs. Such results in line with some studies in the literature of banking concentration proxied by HHI (Chen, Wu, Jeon, & Wang, 2017; İskenderoğlu & Tomak, 2013). Even though in our study, there is a positive relationship between HHI and stability of IBs.

Table 7. Cross-sectional time-series FGLS regression

Coefficients: generalized least squares						
Panels: homoskedastic						
Correlation: no autocorrelation						
Estimated covariances = 1; Number of obs = 306						
Estimated autocorrelations = 0; Number of groups = 17						
Estimated coefficients = 7; Time periods = 18; Wald chi2(6) = 23.97						
Log likelihood = -1287.01; Prob > chi2 = 0.0005						
zsc_ib	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
gfcf	-2.124008	5.478441	-0.39	0.698	-12.86156	8.613539
opr	-7.627165	4.979523	-1.53	0.126	-17.38685	2.13252
hhi	.1247089	5.208361	0.02	0.981	-10.08349	10.33291
fsd	.1728518	.0597517	2.89	0.004*	.0557407	.2899629
zsc_cb	.508683	.1965062	2.59	0.010*	.1235379	.8938282
roa_cb	-.053362	1.207102	-0.04	0.965	-2.419238	2.312514
cons	7.103418	20.69283	0.34	0.731	-33.45377	47.66061

Note: * Indicate to the significance level at the 1%

5. Discussion and Conclusion

This paper attempts to examine the impact of financial stability of CBs and their profits on the financial stability of IBs located in 5 countries, which are GCC countries between 2000 and 2017. In addition to some other variables such as the impact of the period of the financial crisis (2008), oil price fluctuations, banking concentration, and financial sector development, Pedroni's panel cointegration test is performed to estimate the long-run relationship among the variables. The unit root test is found that all variables became stationary at the first difference, and that is considered as a prerequisite to use panel cointegration test. This study follows Pedroni's method, which allows for heterogeneity in the coefficients of cointegration equation, as indicated that the heterogeneity of individual banks may matter more than the nature of the bank, whether Islamic or conventional (Ghassan et al., 2013).

The results of Pedroni's panel cointegration test indicated that the variables are cointegrated, meaning that there is a long-run relationship between variables. These results are supported by the Granger causality test, which indicated that the financial stability of CBs Granger causes the stability of IBs. These results consistent with Chong and Liu (2009) and Adeloba, Sulaiman, and Dhalan (2011) as they found a significant causality from CBs to IBs, as well as Kader and Leong (2008) found bi-directional causality between IBs and CBs regarding base lending rate.

As it is found that there is heteroskedasticity presence in the data as well as serial correlation, GLS was proposed to be used to examine the impact of GFCP, OPR, HHI, FSD, ZSC_CB, and ROA_CB on ZSC_IB. From findings, ZSC_CB has a significant positive relationship related to stability of IBs. However, ROA_CB has an insignificant negative relationship with stability of IBs. According to this finding, if CBs are not stable, the IBs will be not stable as well. Nevertheless, more profitability achieved by CBs will lead to less stability of IBs. This is important for policy ramifications by Central Banks in GCC countries regarding treating both types of banks differently to mitigate against the future financial crises.

For other variables, GFCP has a negative relationship related to the stability of IBs, even though it has an insignificant impact. Oil price fluctuations affect the financial stability of IBs insignificantly and negatively. Market concentration proxied by HHI has an insignificant and positive relationship, as it is insignificant so, it is opposite from the hypothesis of HHI that found already by some studies (Čihák & Hesse, 2010; Ghassan et al., 2013). That means higher banking concentration (or lower competition) leads to higher stability of IBs. This result consistent with study of Srairi (2013), who used concentration ratio to measure banking concentration, as well study of Rajhi and Hassairi (2013), who found a positive relationship between HHI as a measurement of banking concentration and financial stability of large banks in Southeast Asian countries.

Finally, for the development of the financial sector, the result shows that it has a significant positive relationship related to the financial stability of IBs. Meaning that the more significant development of the financial sector leads to enhance bank efficiency and profitability, the same that found by Growe et al. (2014). As also summarized by IMF (2018) that the financial system in the GCC countries over the last decades has developed significantly. GCC banks and equity markets are supported by a booming sector of Islamic finance, a combination of buoyant economic activity, and the reforms of the financial sector. Further, development and inclusion of financial sector in GCC economies seem to be associated with stronger economic growth.

The main purpose of this study is to clarify the relationship between financial stability and soundness for two types of banks IBs and CBs. Thus, this study presents this contribution to the current literature via its result to prove that there is a long run, positive and significant relationship between stability of CBs and stability of IBs. Moreover, it is consistent with what has found using Granger causality that conventional bank stability determines its counterpart of IBs. So, regulators and policymakers in Central Banks of GCC should take into consideration the adverse influence of the conventional bank's instability on the stability of Islamic bank in the long run.

Future researches should add more relevant variables to this current model and/or use different measures and methodologies. Also, take into account this current model and attempt to examine how to develop the banking system as well as Islamic bank performance to be separated from the effects of instability of CBs. Hence, future researches should study more issues about the differentiation between IBs and CBs to enhancing rules and regulations in this regard.

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Notes

Note 1. Concentration ratio is the sum of deposits (or assets) for three (some of the studies five) largest banks divided by the deposits (or the total assets) of all banks in the banking system.

Note 2. HHI is the sum of squared market shares of all banks using bank deposits (also, some studies have used bank's loans or bank's total assets).

Note 3. Panel v-statistic, panel PP-statistic, panel ρ-statistic, and panel ADF-statistic.

Note 4. Group ρ-statistic, group PP-statistic, and group ADF-statistic.