A Comparative Study of Stability & Consumer Confidence between Islamic & Conventional Banks in Bangladesh

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Abstract- **This study exhibits a comparative analysis of consumer confidence and bank-level stability factors between Islamic and conventional banks in Bangladesh. The study finds that despite having lower liquidity Islamic banks are able to provide higher consumer confidence levels than conventional banks. Islamic banks have reported very small Non performing asset (NPA), and shown a positive and significant relationship with liquidity implying that during the crisis Islamic banks tend to take rigid risk strategies compared to conventional banks. Cost income ratio (CIR) is inversely and insignificantly related in both types of banks. As increase in cost decreases the stability of the bank, profit before tax (PBT) gives expected positive and significant relationship in all cases. Increase in PBT increases the stability and consumer confidence level but the level of significance is higher in case of Islamic banks. CC represents consumers' confidence and shows positive result in all cases but with an exception with conventional bank in TQ factor.**

Keywords: Islamic Bank, Conventional Bank, Stability, Consumer Confidence, Unit Root Test, Random Effect Regression

I. INTRODUCTION

The stability of the banking sector is instrumental in ensuring the steadiness of the entire financial system of an economy. Banks are the key players in payment system, money creation, savings, investment and ensuring overall economic goal.

Bank's stability is normally reflected by liquidity (LQ), return on asset (ROA), value (TQ), and consumers' confidence (CC) measured by the percentage of deposit in the total liability. Islamic banks have a different and unique form of product mix which protect their stability in case of financial crisis.

Generally, there is a distinctive characteristic of liquidity management of Islamic banks compared to conventional banks. Similarly, the unique product mix is complied with the requirement of Basel Accord. It often impacts different level of risk capital and credit risk. While being exposed to same market conditions of an economy, whether the product mix of Islamic banks has analogous consequence towards prevailing stability and confidence of the consumers like conventional banks is salient to determine.

An econometric approach has been used for the comparison of stability and consumer confidence using actual data rather than any perceived or established outcome. It is done by examining the stability factors of bank performance (ROAV - volatility) and firm value (Tobin Q) both in the Islamic and conventional commercial bank because the level of non-performing assets (NPA) as a result of bad loan screening lending to sub-prime borrowers (reflected in loan-loss provisioning). Finally, through sensitivity to deposit (consumer confidence) over total liabilities it is examined that

whether the results are different or same in the two banking sectors.

II.　　LITERATURE REVIEW

Several researches have been conducted on the stability factor of various types of banks and financial institutions. With the emergence of Islamic banks and its outstanding contribution to the financial market and country's economy, authors have also conducted a number of studies to compare between these two major types of banks in many countries.

This paper has been prepared based on the knowledge of previously conducted researches and similar result has been found in most cases. Rochet (1992) noted that capital regulations cannot control the risk taking behavior of the banks [14]. So effectiveness is largely dependent on whether the banks are maximizing their value. Banks often shift their product mix to riskier asset with higher leverage ratios. So to correct it they should use solvency ratio rather than leverage ratios. Many of the Islamic scholars believe that sphere of profit in Islamic banking is interrelated.

Among other more recent studies, Alaro, Razzak and Hakeem (2011) found that in terms of risk management Islamic banks are more competent than conventional banks [2]. Another study of Malaysia's Financial Stability Report (2011) found that the countries where Islamic banks are major and key player of the economy are less instable than those which are managed by conventional banks.

Hadeel Abu Loghod (2010) noted that the major reason behind the higher deposits and liquidity of Islamic banks are their specialized products such as Mudaraba, Musharakah, Murabahah, Ijarah, and profit and loss sharing mechanism [11]. In Bangladesh Islamic banks are adapting new techniques both quantitative and as well as qualitative to manage their credit risk and uphold the consumer confidence in their banking mechanisms. Hasan and Dridi (2010) found that the asset growth of Islamic banks was double than that of other conventional banks in 2007-2009 [18]. Again, higher loan to asset ratio negatively impacts the stability. Biancone & Radwan (2016) stated that variety is the financial instruments offered by Islamic finance has not only depicted a positive growth but also is recognized as a lucrative investment opportunity [26].

Size of the ban and net working capital have positive but insignificant relation with the liquidity risk in Islamic banks whereas negative relation s found in case of conventional bank for size of the bank [23]. Competitive condition could not define any significance in relationship between the weighted assets ratio and Islamic bank behavior.

Cost income ratio is another measure of efficiency. The lower the ratio the higher the profitability will be. And it is negatively related to Z-scores. Banks often think that their poor financials maybe improved with higher loan disbursement [17].

The prohibition of predetermined income (interest income) with the commands of Quran is another prominent cause of lower non performing loans of Islamic banks compared to their counter parties [18]. Many studies [7,18 & 21] have found superior performance by Islamic banks and their larger contribution in keeping the economy stable.

Iqbal and Molyneux (2005) have used frontier approach to conduct their study while others have used simple ratios, Z-scores and regression model [20]. (Berger, Hunter & Timme, 1993) By focusing on cost management by the two types of banks and it was found that the revenue sides held most inefficient forces [4]. The studies have proved that Islamic banks are more efficient and profitable than conventional banks in other countries as well. The

practice of Islamic banking in Bangladesh is in its mid 30s with the emergence of Islami Bank Bangladesh Limited in 1983. Several since then several studies have conducted to decide upon its performance and significance of the country's financial sector. This paper is one to find out the recent stability factor and level of confidence of the consumers of the two major types of banks operated in Bangladesh.

III.   METHODOLOGY

Based on the availability of data 7 Islamic Banks (listed) and 24 conventional banks are taken into consideration for conducting the study. The period of data set is 2007 to 2017. The data are collected from the annual reports of the banks listed in the country's stock exchange for the above mentioned period. The variables are: Return on banks average asset (ROA), Non performing asset proxied by loan loss provision over total asset (NPA), Liquid asset over total asset (LIQ), Equity over earning (TQ), Consumer confidence proxied by deposit over total liabilities and equity (CC), Cost income Ratio (CIR), Profit before tax (PBT), Loan loss provision over total loan (LLP), Equity to asset ratio. (ETA), Net loan over total asset (NLTA). Here, ROA, NPA, LI and TQ are the dependent variables while rest others being the independent variables [15].

A.   Unit Root Test- Augmented Dickey Fuller

Accurate result cannot be derived from a non-stationary time series data set. So, the precondition of running any econometric analysis is to conduct a unit root test. Apart from that, according to Engle and Granger (1987), a long-run relationship exists only when there is a similar order of integration between the variables [29]. The Augmented Dickey-Fuller (ADF) test is extensively used for

testing stationarity of the variables (Dickey, Fuller, 1979, 1981) [32].   Later on a modification was incorporated by Phillips and Perron (1988) to give it a more comprehensive look [33].   The test is conducted at individual variables in level log form and the first differenced log form. If the log forms or first differenced log forms reject the null hypothesis (H_0: series has a unit root), the time series is stationary. The unit root test is run on the basis of the following model:

$$\Delta y_t = \partial + by_{(t-1)} - 1 + e_t \qquad (1)$$

Here,

Δ = 1st difference operator

∂ = constant/intercept

e_t = error term

Sometimes variables have auto correlation. To deal with this problem Dickey Fuller had developed the following three models:

1. Type 0=No intercept, no trend
2. Type 1=Intercept but no trend
3. Type 2=Intercept and trend

$$\Delta y_i = \beta_1 y_{i-1} + \sum_{j=1}^{p} y_j \, \Delta y_{i-j} + \varepsilon_i \qquad (2)$$

$$\Delta y_i = \beta_0 + \beta_1 y_{i-1} + \sum_{j=1}^{p} y_j \, \Delta y_{i-j} + \varepsilon_i \qquad (3)$$

$$\Delta y_i = \beta_0 + \beta_1 y_{i-1} + \beta_2 i + \sum_{j=1}^{p} y_j \, \Delta y_{i-j} + \varepsilon_i \qquad (4)$$

To make the data set stationary differentiation is required.

H_o= Variables is not stationary or got unit root.

H_1= Variables is stationary or does not have unit root.

B.   Granger Causality

Being proposed in 1969 by Clive Granger, Granger causality is used to test the appropriateness of one time series data for another. It tests the "predictive causality". Regression may reveal a mere causality only. Stationary data set s a prerequisite for testing Granger causality and VAR model. A series of t-

test and F-test on lagged values of X can determine whether X variable Granger cause Y variable (Y value is also lagged). If the time series is already stationary then level data is used for this test. If the data set is non-stationary then first differentiation is used and then 2nd differentiation f required.

H_0: Null Hypothesis: Variable X does not cause variable Y

H_1: Alternative Hypothesis: Variable X causes variable Y.

IV.   RESULTS AND INTERPRETATIONS

A. Descriptive Statistics

Here (Table 01) the mean of PBT is for Islamic bank (2480) is higher than that of conventional banks (2060). This difference is attributed to two main factors. First, to some extent the nature of accounting treatment of PBT in profit - loss sharing arrangement may be counted as a financial cost, and second but to a great extent Islamic banks earn high PBT owing to its prices. Another difference is shown in NPA because Islamic banks show NPA under profit loss sharing adjustment. The mean value of cost income ratio, CIR for Islamic bank is 0.32 and for nonislamic banks is 0.45.

1) Islamic Banks

TABLE 01: DESCRIPTIVE STATISTICS OF ISLAMIC BANKS

Particulars	CC	CI	ETA	LI	NL	NPA	PB	RO	TQ
Mean	0.8	0.3	0.02	0.1	0.7	0.03	24	0.02	5.92
Median	0.8	0.3	0.07	0.1	0.7	0.03	18	0.01	5.97
Maximu	1.0	1.2	0.13	0.2	8.5	0.08	12	0.24	37.0
Minimum	0.6	-	-	0.0	0.0	0.02	-	-0.10	-8.56
Std. Dev.	0.0	0.3	0.16	0.0	1.0	0.01	32	0.04	6.28
Skewness	-	0.8	-	0.2	7.0	1.13	1E-	2.46	1.88
Kurtosis	4.0	3.2	8.90	2.5	53.	4.15	5E-	19.13	12.4
Sum	51.	32.	1.06	11.	48.	2.14	2E	1.06	372.
Sum	0.2	7.1	1.67	0.1	64.	0.01	7E	0.10	2446

2) Conventional Banks

TABLE 02: DESCRIPTIVE STATISTICS OF CONVENTIONAL BANKS

Particula	CC	CI	ETA	LIQ	NLT	NP	PBT	ROA	TQ
Mean	0.74	0.4	0.075	0.26	0.680	0.05	2060	0.0114	8.320
Median	0.80	0.4	0.073	0.24	0.702	0.05	1.82E+	0.0122	6.024
Maximu	0.90	0.8	0.154	0.6	1.044	0.17	7.11E+	0.0323	37.49
Minimu	0.02	0.2	-	0.03	0.068	0.01	-	-	-
Std.	0.21	0.1	0.033	0.08	0.129	0.03	1.86E+	0.0162	6.759
Skewnes	-	1.4	-	0.58	-	1.38	-3.69E-	-	2.112
Kurtosis	9.88	6	18.09	5.14	9.288	4.66	3.539E-	98.211	9.513
Sum	106.	64.	10.83	37.5	98.02	8.46	2.97E+	1.6474	1198.
Sum Sq.	6.32	1.6	0.160	0.94	2.404	0.21	4.92E+	0.0377	6532.

ADF test is conducted to test the stationary of the data set. If there is a trend in data set then 1st differentiation is needed to be conducted to remove the nonstationary property. If not fully removed then 2nd differentiation is applied. In this study all the variable are already stationary. The probability for ROA is 0.00, TQ is 0.01, CIR is 0.00, CC is 0.002, PBT is 0.003, NLTA is 0.03, LIQ is 0.004. That means variables do not have any unit root.

TABLE 03: GRANGER CAUSALITY TEST

Null Hypothesis:	F-Statistic	Probability
CC does not Granger Cause LIQ	11.3918	2.00E-05
CC does not Granger Cause NPA	0.12935	0.0788
CC does not Granger Cause ROA	0.07598	0.0269
CC does not Granger Cause TQ	8.41658	0.0003
CIR does not Granger Cause LIQ	0.11311	0.02931
CIR does not Granger Cause NPA	0.26278	0.07693
CIR does not Granger Cause ROA	21.1024	8.00E-09
CIR does not Granger Cause TQ	0.24811	0.03806
ETA does not Granger Cause LIQ	0.77133	0.0342
ETA does not Granger Cause NPA	0.94309	0.00916
ETA does not Granger Cause ROA	4.005	0.0201
ETA does not Granger Cause TQ	1.93172	0.0483
NLTA does not Granger Cause LIQ	0.44216	0.0434
NLTA does not Granger Cause NPA	1.40924	0.02474
NLTA does not Granger Cause ROA	20.5199	1.00E-08

NLTA does not Granger Cause TQ	2.7111	0.0696
PBT does not Granger Cause NPA	0.64837	0.0243
PBT does not Granger Cause ROA	0.02564	0.05247
PBT does not Granger Cause TQ	3.08221	0.0487
PBT does not Granger Cause LIQ	0.44744	0.0401

As the value of the almost all of the probability is less than 0.05 so there is a causality relation between them. But few variables show the opposite outcome.

B. Fixed Vs. Random Effect- Hausman Test

The probability of the Hausman Test is derived as 1.00 and it indicates that Random Effect Model is best suitable for this data set to conduct regression model. 90% confidence level is considered and 10% level of significance is allowed in conducting the regression model.

C. Random Effect Regression

TABLE 04: COEFFICIENTS OF THE INDEPENDENT VARIABLES WITH ROA

	Islamic Bank	Conventional Bank	All Bank
Cons	0.141295	0.004964	0.026824
CC	0.145595	0.003866	0.003138
CIR	-0.024832	-0.025941	-0.053455
PBT	2.80E-12	7.01E-12	2.98E-12
ETA	0.127956	-0.007491	0.002977
NLTA	0.014979	0.016668	-0.010159

TABLE 05: COEFFICIENTS OF THE INDEPENDENT VARIABLES WITH TQ

	Islamic Bank	Conventional Bank	All Bank
Cons	17.56869	0.80658	10.41641
CC	-28.93446	-9.349169	-9.584313
CIR	-4.688297	-19.01269	-9.9664
PBT	-5.43E-10	1.12E-09	-6.86E-10
ETA	-11.75549	112.2729	-29.33747
NLTA	-1.708535	1.995513	-0.578676

TABLE 06: COEFFICIENTS OF THE INDEPENDENT VARIABLES WITH LIQ

	Islamic Bank	Conventional Bank	All Bank

Cons	0.036708	0.227645	0.20999
CC	0.144223	0.002817	-0.017617
CIR	0.039501	0.082031	0.05965
PBT	2.41E-12	-1.24E-12	1.22E-12
ETA	0.157697	-0.217199	0.204524
NLTA	0.004615	-0.025824	0.007305

TABLE 07: COEFFICIENTS OF THE INDEPENDENT VARIABLES WITH NPA

	Islamic Bank	Conventional Bank	All Bank
CC	0.046574	0.088268	0.083362
CC	0.019791	0.027896	-0.058131
CIR	0.000376	0.044299	0.011664
PBT	7.22E-13	2.66E-12	1.71E-12
ETA	0.001104	-0.168077	0.039833
NLTA	0.001963	-0.068857	0.000984

These tables (4,5,6,7) give the comparative results of the four regressions, which shows how the two types of banks are impacted by changes in financial conditions. ROA which is the return on average asset is one stability factor. CIR is inversely and insignificantly related in both types of banks. A rise in cost decreases the stability of the bank.

ETA is significantly and positively related in case of Islamic bank. But it shows inverse and insignificant result for conventional banks. PBT gives expected positive and significant relationship in all cases. Increase in PBT increases the stability and consumer confidence level.

Furthermore, Islamic banks reported very small NPA, and have shown a positive and significant relationship with liquidity. NLTA shows expected inverse relation with liquidity factor but it is insignificant in case of Islamic banks. CC represents consumers' confidence. And positive result in all the cases but with an exception with conventional bank in TQ factor has been found.

And the result is more significant with the Islamic banks than conventional banks.

The effect of instability is measured by Tobin's Q model. It also assesses whether there is similar impact on conventional and Islamic banks. Tobin Q for all banks is inversely, but significantly, related to bank specific factors of PBT, ETA, NLTA, CC, CIR for all banks. This indicates that the bank value increases with the decrease in stability factor. On the other hand, a positive relationship for PBT is found for conventional banks indicating that profitability factors posit significantly for bank values.

D. Significance of Model

TABLE 8: SIGNIFICANCE TEST

Islamic Bank				
	ROA	TQ	LIQ	NPA
F-Statistics	4.368033	3.71891	2.02392	0.53405
Prob (F-Stat)	0.001957	0.00555	0.08889	0.047
Conventional Bank				
	ROA	TQ	LIQ	NPA
F-Statistics	57.08982	14.0647	0.47745	4.64342
Prob (F-Stat)	0.05	0.01	0.09	0.0006
All Bank				
	ROA	TQ	LIQ	NPA
F-Statistics	11.11861	10.6274	1.04802	3.13205
Prob (F-Stat)	0.005	0.002	0.039	0.00957

As it is known that if the P value of F statistics is less than 0.10 then the model is significant. The lesser the value the more significant the model become. It is seen that in most of the cases P value of F statistics is less than 0.10 so the regression models are significant enough to describe the relationship among dependent and independent variables.

V.   FINDINGS AND CONCLUSION

Conventional banks charge average fixed interest rate regardless of the profitability of the project. Islamic banks charge proportional cost of financing in according to the profitability of the project which is totally contrary to the system of conventional. Conventional banks do not always utilize their full investment opportunities. Some portion is remained unused. On the other hand, Islamic banks make the best use of their investment opportunities which were untapped in the economy. This leads to a direct linkage between the success of the project and the income of Islamic Banks. In other words, the rise and fall in the projects' return financed by a bank effects its net income. Thus the Islamic banking system is very much concerned about the performance of the project for which financing has been provided.

Productivity is hampered in two folds in conventional banks. First of all, the capacity and resources are not used to recover non performing loans rather these are being involved in choosing new projects. Loan loss provision also hampers profitability. On the other hand, Islamic bank practice profit-loss-sharing mechanism which is a fruitful way to recover loans. The borrower faces a fixed or nonflexible loan payment schedule in conventional banks. It burdens them with an uncertainty in cash flows. Consequently, the economy with more of conventional banks faces a cyclical volatility in its performance. This instability continues because of the fixed payment schedule. But the Islamic banks receive a certain portion of the income derived by its investments in addition to the principal payment. And it is not obligatory to make payment when there is no earning. Loss is also shared by the Islamic banks in proportionate basis. This mechanism encourages the entrepreneurs to a good extent. They need not

to pay a higher (fixed) amount when lower profit is earned. In this way the gap or spread between profits and payment commitment is lessened by large margin. All this issues have uphold the consumers' faith in Islamic banks more than conventional banks. And thus deposit is also higher in case of Islamic banks. As it is said before that stability and performance comes hand in hand with consumer confidence, Islamic Banks have managed to outperform in stability factor as well.

REFERENCES

[1] AI-Abdullatif, S. Abdullah, "The application of the AAOIFI accounting standards by the Islamic banking sector in Saudi Arabia", Doctoral dissertation, Durham University, 2007.

[2] Alaro, A. Razzak., & M. Hakeem, "Financial engineering and financial stability: the role of Islamic financial system", Journal of Islamic Economics, Banking and Finance, vol. 7(1), 25-38, 2011.

[3] A. Levin, C. F. Lin, and C. S. J Chu, "Unit root tests in panel data: asymptotic and finite-sample properties", Journal of econometrics, vol. 108(1), pp. 1-24, 2002.

[4] A. N. Berger, W. C. Hunter, and S. G. Timme, "The efficiency of financial institutions: A review and preview of research past, present and future", Journal of Banking & Finance, vol. 17(2-3), pp. 221-249, 1993.

[5] A.Q.M. S. Arif, Secretary General, Central Shari'a Board for Islamic Banks of Bangladesh, An Interview, 16 April, 2014.

[6] Azad, M. A. Kalam., and Â. M. R Sir, "Prospects analysis of an Islamic capital market in Bangladesh", Global Journal of Management And Business Research, 2013.

[7] Bader, M. I. Khaled, S. Mohamad, M. Ariff, and T. H. Shah, "Cost, revenue, and profit efficiency of Islamic versus conventional banks: international evidence using data envelopment analysis", 2008.

[8] F. Allen, D. Gale, "Competition and Financial Stability. Journal of Money, Credit and Banking", vol. 36(3), pp. 453-480, 2004.

[9] G. Bekaert, C. R. Harvey, C. Lundblad, and S. Siegel, "Global growth opportunities and market integration", The Journal of Finance, vol. 62(3), pp. 1081-1137, 2007.

[10] G. L. Kaminsky, and C. M. Reinhart, "The twin crises: the causes of banking and balance-of-payments problems", American economic review, vol. 89(3), pp. 473-500, 1999.

[11] H. A. Loghod, "Do Islamic banks perform better than conventional banks? Evidence from Gulf cooperation council countries", Journal of Management, vol. 7(3), pp. 56-72, 2010.

[12] H. I. Mobolaji, and A. R. A. Alaro, "Financial Engineering and Financial Stability: The Role of Islamic Financial System", Journal of Islamic Economics, Banking and Finance, vol. 113(464), pp. 1-14, 2011.

[13] I. S. Drissi, and K. Angade, "Islamic financial intermediation the emergence of a new model", European Journal of Islamic Finance, vol. 12. pp. 1-7, 2019.

[14] J. C. Rochet, "Capital requirements and the behaviour of commercial banks", European Economic Review, vol. 36(5), pp. 1137-1170, 1992.

[15] K. Hussein, "Bank-Level Stability Factors and Consumer Confidence—A Comparative Study of Islamic and Conventional Banks' Product Mix", In Islamic Finance, pp. 86-104. Palgrave Macmillan, Cham, 2016.

[16] K. Mukminin, "Profit maximization in islamic banking: an assemblage of maqasid shariah conception", European Journal of Islamic Finance, vol. 12, 2019.

[17] S. Kwan, R. A. Eisenbeis, "Bank risk, capitalization, and operating efficiency", Journal of financial services research, vo. 1;12 (2-3), pp. 117-31, 1997.

[18] M. Ariff, "Islamic banking, a variation of conventional banking", Monash Business Review, vol. 4(3), pp. 1-8, 2006.

[19] M. Hasan, and J. Dridi, "The effects of the global crisis on Islamic and conventional banks: A comparative study", Journal of International Commerce, Economics and Policy, vol. 2(02), pp. 163-200, 2011.

[20] M. Iqbal, P. Molyneux, and S. Conermann, "Thirty years of Islamic banking. History, Performance and Prospects", Bankhistorisches Archiv, 32(2), 155-158, 2006.

[21] M. K. Hassan, M. and A. H. M. Bashir, 2003 "Determinants of Islamic banking profitability", 10th ERF annual conference, Morocco, vol. 7(1), pp. 2-31, 2003.

[22] M. K. Hassan, and M. F. Dicle, "Basel II and regulatory framework for Islamic banks", Journal of Islamic Economics, Banking and Finance, vol. 1(1), pp. 1-16, 2005.

[23] M. L. Rahman, and S. H. Banna, "Liquidity Risk Management: A Comparative Study between Conventional and Islamic Banks in Bangladesh", Journal of Business and Technology (Dhaka), vol. 10(2), pp. 18-35, 2015

[24] M. Rahim, S. Rohaya, and R. H. Zakaria, "Comparison on stability between Islamic and conventional banks in

Malaysia" Journal of Islamic Economics, Banking and Finance, vol. 113(915), pp. 1-19, 2013.

[25] M. U. Chapra, "The future of economics: An Islamic perspective", Kube Publishing Ltd. vol. 21, 2016.

[26] P. P. Biancone, and M. Radwan, "European companies: evaluation for sharia compliance "opportunities and challenges", European Journal of Islamic Finance, vol. 5, 2016.

[27] P. P. Biancone, and M. Radwan, "Social Finance And Unconventional Financing Alternatives: An Overview", European Journal of Islamic Finance, vol. 10, pp. 1-6, 2018.

[28] R. Ameer, R. Othman, and N. Mahzan, "Information asymmetry and regulatory shortcomings in profit sharing investment accounts", International Journal of Islamic and Middle Eastern Finance and Management, vol. 5(4), pp. 371-387, 2012.

[29] R. F. Engle, and C. W. Granger, "Co-integration and error correction: representation, estimation, and testing, Econometrica" journal of the Econometric Society, pp.251-276, 1987.

[30] S. Kwan, and R. A. Eisenbeis, "Bank risk, capitalization, and operating efficiency", Journal of financial services research, vol. 12(2-3), pp. 117-131, 1997.

[31] T. Beck, Demirgüç-Kunt, A., and O. Merrouche, "Islamic vs. conventional banking: Business model, efficiency and stability", The World Bank, 2010.

[32] A. D. Dickey, D. P. Hasza, and W. A. Fuller, "Testing for unit roots in seasonal time series", Journal of the American Statistical Association, vol. 79(386), pp.355-367, 1984.

[33] P. V. Phillips, and P. Perron, "Testing for a unit root in time series regression", Biometrika, Vol. 1;75(2), pp. 335-46, 1988.