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Asymmetric Impact of Oil Prices and Stock Prices on Bank's Profitability: Evidence from Saudi Islamic Banks

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Abstract

The soundness of financial institutions including banks depends on both internal factors and external factors. The profitability of the banks largely affected by external shocks like oil prices and stock prices. As an oil-exporting country, Saudi economy particularly its banking sector largely rely on the oil prices. This study examines the asymmetric impact of oil prices and stock prices on Saudi Islamic banks' profitability for the period 2000-2020. Two Saudi Islamic banks' profitability is examined by the factors like Return on Equity (ROE) and Return on Assets (ROA) with the help of a nonlinear autoregressive distributed lag (NARDL) model. The estimated results are observed to be unbiased and robust. The results of this study show that OILP and STOCKP have significant role in determining the Islamic banks' profitability in Saudi Arabia. Both higher oil prices and stock prices have positive influence on ROE and ROA of Saudi Islamic banks. This study suggest that development and efficiency of Saudi stock market is important and macroeconomic policy should support the country's economic diversification. The management of Islamic banks need to focus on effective risk assessment and market monitoring tools to face the fluctuation of oil prices and their stock prices as these factors affect their profitability. Besides, Saudi Islamic banks need to diversify their investment portfolios into more productive and export oriented private sectors such as Small Medium Enterprises (SMEs). This strategic policy will enable Islamic banks to absorb any future shock of oil prices without affecting their profitability.

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I. Introduction

1.1. Background

A sound banking system is a prerequisite for the economic growth and development any economy (Habibullah & Eng, 2006; Priscilla & Ezeanyeji, 2019). Islamic countries mostly maintain dual banking systems i.e., conventional bank and Islamic bank (Massah and Al-Sayed, 2015). Islamic bank adopts Shariah principles and becomes a predominant player across the globe. Its performances outrun the counterpart and even proven resilient to face economic and financial crisis over the last few years (Tlemsani & Al Suwaidi, 2016). One of the key factors behind this success of Islamic banks is because of their Shariah compliant products and services. It finances long-term and short-term development projects and experiences sustainable growth in most of the Islamic countries (Thorsten Beck, Demirgüç-Kunt, & Merrouche, 2010; M. A. Hassan, Hafsa, & Muhammad, 2011).

In Saudi Arabia, Islamic banking industry is well-developed which comprises of four Islamic banks, namely, Bank Al-Rajhi, Bank Al-Jazira, Bank Al-Bilad, and Bank Al-Inma. These banks aggregately possess 28.0% of total banking assets in the Kingdom. Al-Rajhi is the largest Islamic bank that owns 57.7% of the Islamic banking market share. In other estimation, the rest of three Islamic banks i.e., Al-Bilad, Al-Inma, Al-Jazira collectively hold 28.0% of total banking assets (Khan, Amin, Khokhar, Hassan, & Ahmad, 2018). Despite the world economic uncertainty, Saudi Islamic banking industry had witnessed a remarkable improvement in terms of achieving higher profit margins, lower cost of fund, asset size and quality, product-diversity, and outreach. This industry is growing at a rapid pace that contribute to the largest proportion of financing (82%) with the participation of conventional banks' offering Islamic banking products and services (Fitchratings, 2021). The conventional banks are attracted by the higher profitability and growth of Islamic banks.

The relations of bank's profit with economic growth via financial sector development is well-established. Besides, the stock market development has significant impact on capital accumulation, productively and growth of banking sector (King & Levine, 1993; Levine & Zervos, 1998) . Bank and capital market are much related where one can be developed at the cost of other (Allen & Gale, 1999). Bank's profitability is affected by its stock value. The bank faces challenging condition once its value of stock falls. On the other hand, bank's profitablity depends on external shocks of oil prices and stock prices (Alaagam, 2019; Hesse & Poghosyan, 2009). For instance, the fluctuation in oil prices may harm bank's profit directly due to the expansion of oil-based lending for businesses and projects and surplus liquidity. The banking sector of oil exporting country may be adversely affected by the decrease of oil

prices. This leads to fall of exports, government revenues and fiscal balance, GDP growth and equity prices, which creates negative impact on banks' balance sheets and credit expansion. Besides, increase in oil prices might link to higher domestic demand which restore the higher banking performance by lending to low non-performing loan. In contrast, realizing the mechanism from aggregate supply side, oil price hike is beneficial to the Saudi economy as its product capacity expanded and lead to higher economic growth. This fact is proven by the incident of higher oil prices between 2005 and 2008 where most of the oil-based economies including Saudi Arabia funded long-term investment project for diversifying their domestic economies.

Being a major oil-exporting country in MENA region, Saudi economy and its financial sector including banking industry largely rely on oil prices. According to Saudi General Authority of Statistics, the Saudi economy contracted by 7 percent in the 2020Q2 because of 61.8% decrease in oil exports, and both government and private sectors experienced a declining growth rates of 10.1 percent and 3.5 percent, respectively (General Autority of Statistics, 2020). On the other hand, Saudi stock market is appearing as one of key players due to its inclusion in the emerging market (Suhad & Tahar, 2021) and any volatility of this market also affect the banking sector (Alkhareif, 2016) .

Previous studies conducted in Saudi Arabia focused on determinants of banks profitability by emphasizing the internal factors i.e., asset, liability, bank size, leverage ratio etc., while some other studies focus on the efficiency and productivity analysis of both conventional and Islamic banks in Saudi Arabia (M. Hassan, Amin, Khokhar, & Khan, 2020; M. Hassan, Khan, Amin, & Khokhar, 2018; Khan et al., 2018; Khokhar, Hassan, Khan, & Amin, 2020). As far as the existing literature is concerned, no study has conducted that examined the external factors like oil prices and stock prices that affect the Islamic banks' profitability in Saudi Arabia by using non-linear approach. This study is an attempt to fill the gap in the existing literatures.

1.2. Objective

This study attempts to examine the non-linear relations of oil prices and stock prices on the profitability of Saudi Islamic banks. The rate of Return on Equity (ROE) and Return of Assets (ROA) are used as the proxies of banks' profitability. This study includes two Islamic banks, such as Bank Alrajhi and Bank Aljazira for the asymmetric analysis. The study objective is achieved by a nonlinear autoregressive distributed lag nonlinear autoregressive distributed lag (NARDL) model (Y. Shin, Yu, & Greenwood-Nimmo, 2014). This study is an attempt to contribute in the existing literatures by extending the asymmetric analysis with NARDL model.

Apart from this section, the rest of this paper is structured as follows: section two highlights on relevant past studies in relations to the variables under study, section three focuses on the data and research method, section four concentrates on the result and discussion of the estimated NARDL model and final section makes concluding remarks with policy recommendations.

II. Literature Review

This section highlights on the existing literatures on the bank's profitability indicators such as Return on Equity (ROE) and Return on Assets (ROA). Also, the findings past studies that focus on the its relationships among the oil prices, stock prices and GDP. The main purpose of reviewing the extant literature is to make the theoretical foundation for constructing the models.

2.1. Banks' Profitability
The existing studies highlighting on bank's profitability is presented by the proxy of two common factors such as Return on Equity (ROE) and Return on Assets (ROA). Some studies measure the bank's profitability with these two indicators and consider as endogenous variables (Anwar & Herwany, 2006; Arora & Arora, 2013; T. Beck, Demirgüç-Kunt, & Levine, 1999; Kosmidou, 2008; Naceur & Goaied, 2008; E. Sharma & Mani, 2012; Staikouras & Wood, 2004; Sufian & Habibullah, 2010). Both ROE and ROA are the components of bank's income statement which are calculated as the profit after paying the tax.

The return on equity (ROE) indicates bank's management ability and efficiency to utilize the funds of shareholders and it plays a key role in destemming the degree of financial leverage of the institution (Hassan & Bashir, 2003). On the other hand, ROA indicates the profit gained per value of assets which also shows the managerial capacity to gain profits by utilizing banks' investment and financial (Hassan & Bashir, 2003). It also describes the bank's ability to gain returns from diversified assets' portfolio (Rivard & Thomas, 1997; Rosly & Bakar, 2003). Since ROE is influenced by ROA and the latter might be lower, the banks usually apply financial leveraging principles to enhance ROE for achieving the competitive advantages (Hassan & Bashir, 2003).

2.2. Determinants of Banks' Profitability

Empirical studies that measure the bank profitability are categorized into two factors i.e., internal and external. This study focuses on the oil prices, stock prices and GDP as the external factors of Islamic bank's probability. These are the factors that are not controlled by the bank's management; however, they have positive effect on the bank's profitability. Following sub-section reviews related literatures on these external factors of bank's profitability.

2.2.1. Oil Prices and Banks' Profitability

The oil-exporters depend on oil export which also creates a positive link with the profitability of their banking industries. Despite the fact, many studies ignore this factor in determining the bank's profitability (Demirgüç-Kunt & Huizinga, 1999; Hassan & Bashir, 2003). Only few studies focus on oil price as an external factor of bank's profitability. Hesse and Poghosyan (2009) highlight on MENA region by dividing the banks into three types: Islamic, conventional, and investment banks. Zantioti (2009) and Kpodar and Imam (2010) concentrate on Islamic banks' profitability and observe that oil prices have positive and significant impact as it improves the banks' financial condition with higher outreach in the case of net oil exporters in MENA region. Conversely, the net oil importing countries in the same region experience positive effect of GDP on bank's profitability. This happens because of the increasing flow of deposits and economic activities. Besides, Hesse and Poghosyan (2009) evaluate the indirect impact of oil shocks on the Islamic, conventional and investment banks' profitability in MENA region. This study also focuses other institutional and macroeconomic variables. Essayyad and Madani (2003) conduct a similar study and observe a positive link between bank's profitability and oil prices in Saudi Arabia. Kpodar and Imam (2010) also experience the similar findings.

2.2.2. Stock Market and Banks' Profitability

The outcome of existing literatures focusing on the stock market and bank's profitability are mixed. The positive linkage is expected between the development of stock market and bank's performance because a well-developed stock market ensures the easy flow of information to banking institutions enabling them to evaluate the potential risk of investment. Besides, a sound stock market creates confidence among the borrower to obtain credit from the bank which also lead to increase the banks' profit. On the contrary, the stock market can also affect negatively on the bank's profitability. This might be the case of a competitive market where stock market appears to substitute to the banking sector.

Eichengreen and Gibson (2001) examine the determinants of Greek commercial banks' profitability and observe that two factors i.e. market share and concentration ratios of Greek banks have positive relation with banks' profitability. Kaya (2002) find a positive link of market share with banks' profitability in term of ROE. Hassan and Bashir (2003) identify a positive and significant role stock market development and banks' profitability. In contrary to these findings, Rossi, Borroni, Lippi, and Piva (2018) observe that stock market has negative relation with banks' ROA and ROE.

2.2.3. Real GDP Growth and Banks' Profitability

Many studies focus on macroeconomic and financial determinants of bank's profitability. These are GDP growth, interest rates, inflation, stock market instability (U. Albertazzi & L. Gambacorta, 2009; Athanasoglou, Brissimis, & Delis, 2008; Beckmann, 2007; Lee & Hsieh, 2013). The existing literatures also reveal the mixed results. Some studies find no influence (P. Sharma, Gounder, & Xiang, 2013) while others explore negative impact on banks' profitability (Ben Ameur & Mhiri, 2013; Ben Naceur & Omran, 2011; Sufian, 2009; Tan & Floros, 2012; Yanikkaya, Gumus, & Pabuccu, 2018). On the contrary, some other studies observe that economic growth enhance bank's profitability. This is due to the economic boom and increasing demand for banking products and services (U. Albertazzi & L. Gambacorta, 2009; Athanasoglou et al., 2008; Davydenko, 2011; Dietrich & Wanzenried, 2014a; Flamini, McDonald, & Schumacher, 2009; Zeitun, 2012). With this mixed result, this study is an attempt to examine the positive relation of bank's profit and GDP growth in Saudi Arabia.

III. Methodology

3.1. Data

The study focuses on annual data (2000-2020) of two largest full-fledged Islamic banks in Saudi Arabia i.e., Bank Alrajhi and Bank Aljazira. Only two Islamic banks are selected due to their early Islamic banking operation in Saudi Arabia whereas other two banks such as, Bank Albilad and Bank Alinma started their Islamic banking in 2004 and 2006, respectively. It considers two profitability indicators of banks i.e., Return of Equity (ROE) and Return of Assets (ROA) as the endogenous variables whereas stock prices of Alrajhi and Aljazira, oil prices and real Gross Domestic Product are considered as the exogenous variables. All the data are extracted from Bloomberg database.

3.2. Model Specification

Table 1 shows the description of the variables with the measurement unit and formula of extracting the dependent variables.

Table 1. Definition of variables

Levelling	Description	Measurement
ROE	Return of Equity is the ratio of net profit to shareholders' equity	$ROE = \dfrac{\text{Net Profit}}{\text{Total Equity}}$
ROA	Return of Asset is the ratio of bank net profit to total assets	$ROA = \dfrac{\text{Net Profit}}{\text{Total Assets}}$
STOCKP	Stock prices (USD)	Converted to natural logarithm.
OILP	Brent Oil price (USD)	Converted to natural logarithm.
RGDP	Real Gross Domestic Product (USD)	Real GDP is calculated from GDP Deflator and converted to natural logarithm.

Source: Bloomberg (2021)

This study adopts a nonlinear autoregressive distribution lag (NARDL) approach to show the long-run and short-run asymmetric relations of ROE and ROA with STOCKP, OILP and RGDP are constructed based on the approaches of by Shin, Yu, & Greenwood-Nimmo (2014) and Shin and Smith (2001):

$$ROE_t = \theta_0 + \theta_1 STOCKP_t^+ + \theta_2 STOCKP_t^- + \theta_3 OILP_t^+ + \theta_4 OILP_t^- + \theta_5 RGDP_t + e_t \qquad (1)$$
$$ROA_t = \theta_0 + \theta_1 STOCKP_t^+ + \theta_2 STOCKP_t^- + \theta_3 OILP_t^+ + \theta_4 OILP_t^- + \theta_5 RGDP_t + e_t \qquad (2)$$

where $\theta = (\theta_0, \theta_1, \theta_2, \theta_3, \theta_4, \theta_5,$ and $\theta_6)$ indicates the cointegrating vector of long-run coefficients; and e_t is the error term which is assumed to follow normal and independent distribution with zero mean value and constant variance.

$$STOCKP_t^+ = \sum_{i=1}^{t} \Delta STOCKP_i^+ = \sum_{i=1}^{t} \max(\Delta STOCKP_i, 0) \qquad (3)$$
$$STOCKP_t^- = \sum_{i=1}^{t} \Delta STOCKP_i^- = \sum_{i=1}^{t} \max(\Delta STOCKP_i, 0) \qquad (4)$$
$$OILP_t^+ = \sum_{i=1}^{t} \Delta OILP_i^+ = \sum_{i=1}^{t} \max(\Delta OILP_i, 0) \qquad (5)$$
$$OILP_t^- = \sum_{i=1}^{t} \Delta OILP_i^- = \sum_{i=1}^{t} \max(\Delta OILP_i, 0) \qquad (6)$$

The long-run relationship of ROE and ROA with STOCKP and OILP increase are θ_1 and θ_3, and decrease are θ_2, and θ_4 which are assumed to be positive and negative, respectively. Since θ_2 and θ_4 are predicted to be positive which are supposed to change in identical direction, for example, any increase in STOCKP impact positive long-run changes in ROE and ROA as related to the effect of STOCKP decrease on ROE and ROA of an identical extent i.e., $\theta_1 > \theta_2$. Hence, the long-run relationship as shown in Eq.1 and Eq.2 indicate the non-linear and long-run STOCKP change pass-through to the ROE and ROA.

$$\Delta ROE_t = \theta + \beta_0 ROE_{t-1} + \beta_1 STOCKP_{t-1}^+ + \beta_2 STOCKP_{t-1}^- + \beta_3 OILP_{t-1}^+ + \beta_4 OILP_{t-1}^- + \beta_5 RGDP_t + \sum_{i=1}^{p} \mu_i \Delta ROE_{t-i} + \sum_{i=0}^{q} (\omega_i^+ \Delta STOCKP_{t-i}^+ + \omega_i^- \Delta STOCKP_{t-i}^-) + \sum_{i=0}^{q} (\xi_i^+ \Delta OILP_{t-i}^+ + \xi_i^- \Delta OILP_{t-i}^-) + \sum_{i=0}^{s} \tau_i \Delta RGDP_{t-i}^+ + \varepsilon_t \qquad (7)$$

$$\Delta ROA_t = \theta + \beta_0 ROA_{t-1} + \beta_1 STOCKP_{t-1}^+ + \beta_2 STOCKP_{t-1}^- + \beta_3 OILP_{t-1}^+ + \beta_4 OILP_{t-1}^- + \beta_5 RGDP_t + \sum_{i=1}^{p} \mu_i \Delta ROA_{t-i} + \sum_{i=0}^{q} (\omega_i^+ \Delta STOCKP_{t-i}^+ + \omega_i^- \Delta STOCKP_{t-i}^-) + \sum_{i=0}^{q} (\xi_i^+ \Delta OILP_{t-i}^+ + \xi_i^- \Delta OILP_{t-i}^-) + \sum_{i=0}^{s} \tau_i \Delta RGDP_{t-i}^+ + \varepsilon_t \qquad (8)$$

Two of the exogenous variables are shown in asymmetric form while RGDP is presented as liner form; p, q and s indicate the lag orders. The long-run parameters ($\theta_1 = -\beta_1/\beta_0$), ($\theta_2 = -\beta_2/\beta_0$), ($\theta_3 = -\beta_3/\beta_0$), and ($\theta_4 = -\beta_4/\beta_0$) show the long-run effect of STOCKP and OILP (exogenous variables) increases and decreases, respectively, on ROE and ROA (endogenous variables). Besides, $\sum_{i=0}^{q} \omega_i^+$ and $\sum_{i=0}^{q} \omega_i^-$ and $\sum_{i=0}^{q} \xi_i^+$ indicate the short-run effect of STOCKP and OILP increases and decreases on ROE and ROA, respectively. Thus, Eq.7 and Eq.8 present the asymmetric long-run and short-run effect of STOCKP and OILP on ROE and ROA.

3.3. Method

As mentioned outset that this study applies NARDL approach which is developed by Y. Shin et al. (2014). While many studies use ARDL approach introduced by M Hashem Pesaran, Shin, and Smith (1999) and later on developed by M.H. Pesaran, Shin, and Smith (2001), this study focuses on NARDL approach to examine the non-linear relationships among the variables. Following stages are maintained in estimating NARDL model: i) unit root test for detecting the absence of I (2) and presence of I (0) or I (1) or both; ZA tests to detect the structural breaks, ii) general-to-specific principles similar to OLS technique on Eq.7 and Eq. 8 to construct final NARDL model via trimming the insignificant lags, iii) NARDL bound test method to identify the cointegrating variables (Y Shin, Yu, & Greenwood-Nimmo, 2011) with the null hypothesis (no cointegration) (H_n: $\beta_0 = \beta_1^+ = \beta_2^- = \beta_3^+ = \beta_4^- = \beta_5 = 0$) is inspected against the alternative hypothesis (presence of cointegration) (H_a: $\beta_0 \neq \beta_1^+ \neq \beta_2^- \neq \beta_3^+ \neq \beta_4^- \neq \beta_5 \neq 0$), iv) long-run and short-run asymmetric relations between the endogenous and exogenous variables by applying Wald test, v) non-linear cumulative dynamic multiplier (CDM) effects by the following equations:

$$m_k^+ = \sum_{j=0}^{k} \frac{\delta ROE_{t+i}}{\delta STOCKP_{t-1}^+}, \quad m_k^- = \sum_{j=0}^{k} \frac{\delta ROE_{t+i}}{\delta STOCKP_{t-1}^-}, \text{ k=0,1,2,3,... (9)}$$

$$m_k^+ = \sum_{j=0}^{k} \frac{\delta ROA_{t+i}}{\delta STOCKP_{t-1}^+}, \quad m_k^- = \sum_{j=0}^{k} \frac{\delta ROA_{t+i}}{\delta STOCKP_{t-1}^-}, \text{ k=0,1,2,3,... (10)}$$

$$m_k^+ = \sum_{j=0}^{k} \frac{\delta ROE_{t+i}}{\delta OILP_{t-1}^+}, \quad m_k^- = \sum_{j=0}^{k} \frac{\delta ROE_{t+i}}{\delta OILP_{t-1}^-}, \text{ k=0,1,2,3,... (11)}$$

$$m_k^+ = \sum_{j=0}^{k} \frac{\delta ROA_{t+i}}{\delta OILP_{t-1}^+}, \quad m_k^- = \sum_{j=0}^{k} \frac{\delta ROA_{t+i}}{\delta OILP_{t-1}^-}, \text{ k=0,1,2,3,... (12)}$$

Note that, k→∞, $m_k^+ \to \theta_1$, and θ_3, and $m_k^- \to \theta_2$ and θ_4.

IV. Results and Analysis

4.1. Descriptive Statistics

Table 2 displays the descriptive statistics of variables under this study where it indicates that ROE is less volatile than ROA while oil price is less volatile than stock prices. The real GDP of Saudi Arabia appears to be fourth least volatile variable where stock prices are highest volatile variable throughout the study period between 2000-2020.

Table 2. Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
ROA_R	3.247640	3.070900	7.292900	0.198114	1.855891
ROE_R	0.229315	0.220321	0.418235	0.152878	0.075460
ROA_J	0.11995	0.092962	0.470678	0.006136	0.103784
ROE_J	0.022664	0.022448	0.032926	0.015099	0.004794
STOCKP	64.60654	64.15582	150.1119	17.00530	31.23058
OILP	55.65333	48.29000	92.40000	31.23000	20.03583
RGDP	14.51190	14.49900	14.76630	14.12686	0.225578

Source: Bloomberg (2021)

4.2. Stationary and Structural Break Test

Table 3 displays the result of both Dickey-Fuller (ADF) and Phillips-Perron (PP) test (Dickey & Fuller, 1979; Perron, 1989) with the integration order of variables under study which indicate that all the five variables have mixed order of I (0) and I(1) and most importantly none of the single variable is falling under integration order of I(0). Afterwards, this study conducts the Zivot-Andrews (ZA) test (Zivot & Andrews, 1992) to identify the possible structural break point. In table 3, two structural break points have been identified. Based on these result, two dummy variables (2008 and 2014) are created which are included in the NARDL model as exogenous variables. The justifications of considering two dummies in 2008 and 2014 are for controlling the external shocks of global financial crisis of 2008 and fall of world oil prices on the Islamic banking profitability (ROE and ROA) in Saudi Arabia. Some studies find that the financial crisis of 2008 have negative impact on the banks' performances (Gulati & Kumar, 2016; Tzeremes, 2015).

Table 3. Unit Root With Structural Break Test Results

	ADF		PP-Test		Zivot Andrews	
	I(0)	I(1)	I(0)	I(1)	t-stat	Break Point
ROA_R	-1.29[1]	-3.04*** [0]	-2.50[1]	-3.02**[4]	-2.12***[1]	2008
ROE_R	-5.02***[1]	-2.13***[0]	-3.92**[0]	-4.15***[2]	-4.44*[2]	2008
ROA_J	-1.12[1]	-2.24*** [0]	-1.70[1]	-3.08**[4]	-3.11***[1]	2008
ROE_J	-4.02***[1]	-2.16***[0]	-2.99***[0]	-3.90***[2]	-4.14**[2]	2008
STOCKP	-3.62[0]	-3.71***[0]	-1.75[1]	-3.55***[1]	-3.54***[1]	2014
OILP	-2.22[1]	-3.98***[1]	-2.53[5]	-6.86***[16]	-3.50**	2014
LRGDP	-3.78[1]**	-4.74**[0]	-4.18[1]**	-4.63**[5]	-4.21***[1]	2008

Note: An intercept and trend option is used for ADF followed by the null hypothesis: the series contain a unit root. In the case of ADF test, numbers in [ ] indicate optimal lags and for PP test, number in [ ] is Bandwidth: (Newey–West automatic) using Bartlett kernel. SC is applied for selecting the optimal lag order. The subscript R and J stand for Alrajhi and Aljazira, respectively. Superscript *, **, and *** indicate the rejection of the null hypothesis at 10%, 5%, and 1%, respectively.

4.3. Brock, Dechert and Scheinkmakn (BDS) Test

Apart from the stationary and the structural break test results, this study also conducts Brock, Dechert and Scheinkmakn (BDS) test for detecting the nonlinear dependencies of both endogenous and exogenous variables as recommended by Broock, Scheinkman, Dechert, and LeBaron (1996). The results in table 4 suggest rejecting the null hypothesis of the error terms which are assumed to follow independent and identical distribution of across various dimensions. The rejection of null hypothesis indicates the existence of nonlinearity among the variables and hence justifies to estimate NARDL model.

Table 4. BDS Non-Linearity Test Results

Series	Embedding Dimension=m				
	m=2	m=3	m=4	m=5	m=6
ROA_R	0.080083***	0.091148***	0.040173*	0.073897**	0.087153***
ROE_R	0.11***	0.15421***	0.19445***	0.209906***	0.232351***
ROA_J	0.072465***	0.106602***	0.119336**	0.096786*	0.0606*
ROE_J	0.057368***	0.072339***	0.083339***	0.084906***	0.098842***
STOCKP	0.061468***	0.124135***	0.1656***	0.196757***	0.218591***
OILP	0.09831***	0.157826***	0.190061***	0.185654***	0.157062***
RGDP	0.189889***	0.314598***	0.404203***	0.460978***	0.487706***

Note: The subscript R and J stand for Alrajhi Bank and Aljazira Bank, respectively. Superscript *, **, and *** indicate the rejection of null hypothesis at 10%, 5%, and 1%, respectively.

4.4. Selection of Optimal Lag Order

One of the requirements prior to estimating NARDL model is to select an appropriate lag orders of endogenous and exogenous variables. The Schwarz Criteria (SC) lag length criteria has been chosen for the estimation of final NARDL model. Figures 1-4 depict four set of appropriate NARDL models which are derived from top twenty models from each set.
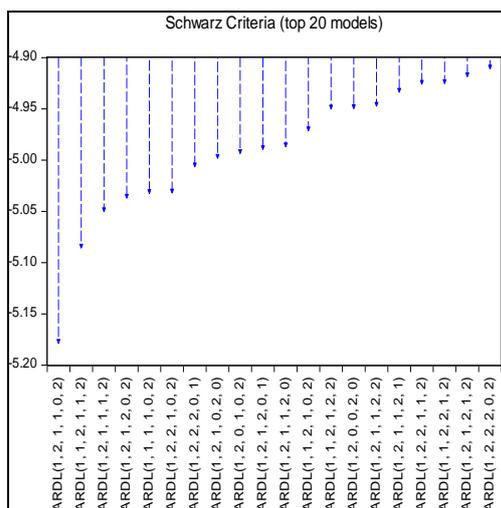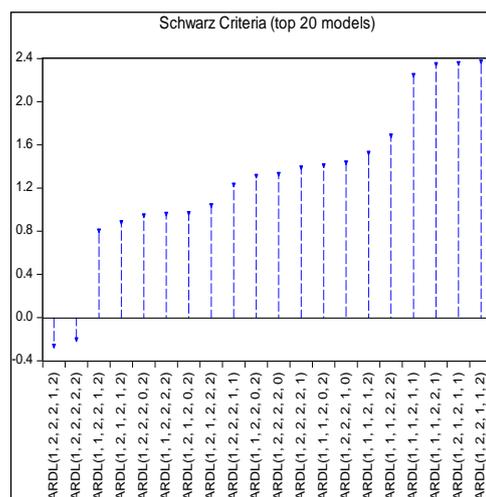

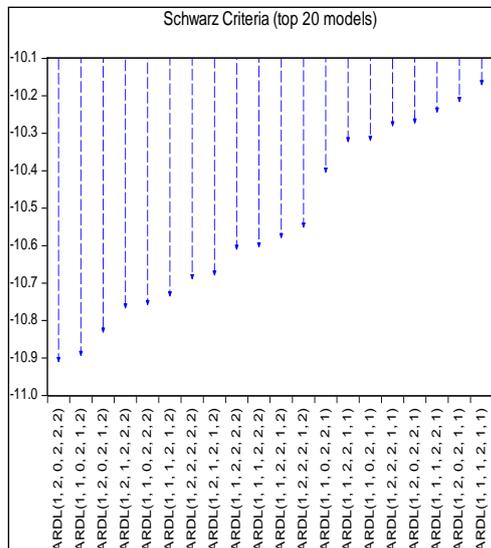**Figure 1.** ROE$_R$, RGDP OILP, STOCKP

Figure 2. ROA$_R$, RGDP OILP, STOCKP

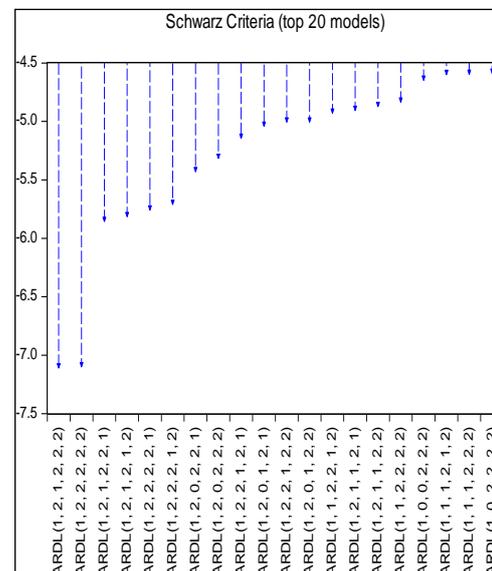**Figure 3**. ROE$_J$, RGDP OILP, STOCKP

Figure 4. ROA$_J$ RGDP OILP, STOCKP

4.5. Bound Test for Cointegration

In this study, a baseline model is constructed for identifying cointegrating relations among endogenous and exogenous variables where two tests are applied i.e., F-test, and T-test. The general principle is that if the estimated value of F–statistics and T-statistics are greater than their respective critical values (upper limit), null hypothesis of no cointegration is rejected. The results of table 5 show the evidence of rejection of null hypothesis at 1% significant level, thus confirming that in the long run variables move together.

Table 5. NARDL Bound testing for cointegration

Model	Long-run relationship		Decision
	t_{BDM}	F_{pss}	
ROE_R, RGDP OILP, STOCKP	-4.86***	15.78***	Cointegration
ROA_R, RGDP OILP, STOCKP	-4.10**	47.55****	Cointegration
ROE_J, RGDP OILP, STOCKP	-3.90**	16.13***	Cointegration
ROA_J, RGDP OILP, STOCKP	-6.25***	23.35***	Cointegration

Significance level	t-statistics		F-statistics	
	Lower bound	Upper bound	Lower bound	Upper bound
1%	-3.43	-4.79	4.53	6.37
5%	-2.86	-4.19	3.13	4.61
10%	-2.57	-3.86	2.58	3.86

Note: Number of parameters (K) appear in original model K=5, Critical Value for Finite sample, N=30; The subscript R and J stand for Alrajhi and Aljazira, respectively. Superscript *, **, and *** indicate the rejection of null hypothesis at 10%, 5%, and 1%, respectively.

4.6. Results of NARDL Estimation

4.6.1. Short-run Relation

Table 6 displays the NARDL estimated results for two models i.e., ROE_R and ROE_J. In the short-run for ROE_R, both positive and negative shocks of OILP have significant impact on ROE_R where the positive shocks dominate over the negative one, suggesting that a 1% increase in OILP will increase the ROE_R by 0.002% whereas 1% decrease in OILP will increase the ROE_R by 0.001%. This finding is similar to Zantioti (2009) that focuses on net oil exporting countries in MENA region. Again, in the short-run for ROE_J, positive shocks of OILP has no impact on ROE_J, but negative shock of OILP has significant impact on ROE_J, implying that 1% decrease in OILP will increase the ROE_J by 0.001%. The reason might be the case of increasing net profit of banks and decreasing the value of total equity. It also indicates that bank's expansion of oil-based lending and issue of surplus liquidity.

Table 6. Estimated Results of NARDL Models Based on ROE

	ROE$_R$, LRGDP OILP, STOCKP				ROE$_J$, LRGDP OILP, STOCKP			
	Coeff	Std. Error	t-stat	Prob	Coeff	Std. Error	t-stat	Prob
Panel A: Long-run Estimation								
C	3.024	2.041	1.482	0.198	1.932	0.308	6.280	0.008
ROE(-1)	-0.877	0.180	-4.865	0.005	-0.382	0.508	0.752	0.506
RGDP(-1)	0.191	0.144	1.333	0.240	0.135	0.022	6.217	0.008
OILP_POS(-1)	0.001	0.001	0.645	0.547	0.001	0.000	4.226	0.024
OILP_NEG(-1)	0.000	0.000	0.200	0.850	0.000	0.000	-6.784	0.007
STOCKP_POS(-1)	0.001	0.000	2.170	0.082	0.000	0.000	-0.800	0.482
STOCKP_NEG(-1)	0.002	0.000	3.930	0.011	0.002	0.000	5.964	0.009
Panel B: Short-run Estimation								
D(RGDP)	0.557	0.094	5.949	0.002	0.287	0.018	15.922	0.001
D(RGDP(-1))	0.178	0.058	3.077	0.028	0.013	0.004	3.611	0.037
D(OILP_POS)	0.002	0.000	4.407	0.007	-	-	-	-
D(OILP_NEG)	-0.001	0.000	-4.359	0.007	-0.001	0.000	-18.791	0.000
D(OILP_NEG) (-1)	-	-	-	-	-0.000	0.000	-13.600	0.001
D(STOCKP_POS)	-	-	-	-	0.000	0.000	6.375	0.008
D(STOCKP_POS(-1))	-	-	-	-	0.001	0.000	21.181	0.000
D(STOCKP_NEG)	0.001	0.000	9.341	0.000	0.001	0.000	21.181	0.000
D(STOCKP_NEG(-1))	0.001	0.000	5.936	0.002	0.000	0.000	-7.092	0.006
ECT(-1)	-0.877	0.064	-13.763	0.000	-0.821	0.024	16.063	0.001
Panel C: Model Diagnostics								
BG LM		5.42(0.10)				6.77 (0.08)		
RESET		0.39 (0.56)				0.79(0.51)		
ARCH		2.34(0.12)				7.19(0.07)		
Jarque Bera-Normality Test		1.03 (0.59)				0.84(0.65)		

Note: Two dummy variables are excluded in the final NARDL model because of their insignificant values. The subscript R and J stand for Alrajhi and Aljazira, respectively. Superscript *, **, and *** indicate the rejection of null hypothesis at 10%, 5%, and 1%, respectively

Interestingly, positive shocks of STOCKP has no impact on ROE$_R$, but negative shock of STOCKP has significant impact on ROE $_R$. It indicates that 1% decrease in STOCKP will decrease the ROE$_R$ by 0.001%. Both positive and negative shocks in STOCKP have significant impact on ROE$_J$, indicating that, a 1% increase in STOCKP will increase the ROE$_J$ by 0.001% whereas 1% decrease in STOCKP will decrease the ROE$_J$ by 0.001%. These outcomes are consistent with Eichengreen and Gibson (2001), Hassan and Bashir (2003) and Kaya (2002).

The RGDP has significant impact on ROE$_R$ and ROE$_J$, where the magnitude of the impact is observed higher (0.55%) in case of ROE$_R$ than (0.29%) for the ROE$_J$. These results are in line with the studies   Dietrich and Wanzenried (2014b), Zeitun (2012), Muhamad, Amir, and Abdelhakim (2013). The coefficient of the error correction term (ECT) of ROE$_R$ and ROE$_J$ are is -88% and -82% indicating that market disequilibrium is adjusted at a speed of 88% and 82% per period, respectively. In other words, the mark equilibrium can be achieved with around one year.

Table 7. Estimated Results of NARDL Models Based on ROA

	ROA$_R$, LRGDP OILP, STOCKP				ROA$_J$, LRGDP OILP, STOCKP			
	Coeff	Std. Error	t-stat	Prob	Coeff	Std. Error	t-stat	Prob
Panel A: Long-run Estimation								
C	3352.483	1433.714	2.338	0.144	26.649	2.617	10.182	0.010
ROE(-1)	0.429	0.695	0.617	0.600	-0.743	0.119	-6.251	0.025
RGDP(-1)	6.249	101.250	-2.333	0.145	1.869	0.182	-10.245	0.009
OILP_POS(-1)	1.546	0.591	2.617	0.020	0.015	0.002	7.152	0.019
OILP_NEG(-1)	-0.370	0.181	-2.041	0.051	-0.005	0.000	-14.357	0.005
STOCKP_POS(-1)	0.116	0.039	-2.945	0.099	0.003	0.001	2.711	0.113
STOCKP_NEG(-1)	-0.135	0.025	5.489	0.032	-0.025	0.005	5.301	0.034
Panel B: Short-run Estimation								
D(RGDP)	2.750	4.993	30.596	0.001	1.868	0.045	41.102	0.001
D(RGDP(-1))	3.846	3.089	33.613	0.001	0.469	0.026	18.318	0.003
D(OILP_POS)	0.925	0.029	31.516	0.001	0.013	0.000	55.855	0.000
D(OILP_POS(-1))	0.893	0.027	33.352	0.001	-	-	-	-
D(OILP_NEG)	-0.303	0.009	-32.136	0.001	-0.006	0.000	-62.052	0.000
D(OILP_NEG(-1))	-0.181	0.006	-27.982	0.001	-0.003	0.000	-26.537	0.001
D(STOCKP_POS)	0.164	0.005	34.384	0.001	0.004	0.000	29.633	0.001
D(STOCKP_POS (-1))	-	-	-		0.003	0.000	19.824	0.003
D(STOCKP_NEG)	-0.363	0.011	-31.785	0.001	0.004	0.000	21.029	0.002
D(STOCKP_NEG(-1))	-0.323	0.011	-29.836	0.001	-0.005	0.000	-13.164	0.006
ECT(-1)	0.429	0.014	31.599	0.001	-0.743	0.015	-50.895	0.000
Panel C: Model Diagnostics								
BG LM		7.05 (0.25)				8.29 (0.21)		
RESET		5.53(0.09)				0.13 (0.91)		
ARCH		0.18(0.67)				0.29 (0.54)		
Jarque Bera-Normality Test		2.15 (0.34)				1.35 (0.51)		

Note: Two dummy variables are excluded in the final NARDL model because of their insignificant values. The subscript R and J stand for Alrajhi and Aljazira, respectively. Superscript *, **, and *** indicate the rejection of null hypothesis at 10%, 5%, and 1%, respectively

Table 7 shows the short-run relations of ROA$_R$ and ROA$_J$ with exogenous variables. In the short-run (ROA$_R$), the positive and negative shocks of OILP have significant influence on ROA$_R$, implying that a 1% increase in OILP will increase the ROA$_R$ by 0.92% whereas 1% decrease in OILP will increase the ROA$_R$ by 0.30% which clearly show the dominance of positive effect is more than the negative one. Again, both the positive and negative shocks of STOCKP have significant effect on ROA$_R$, showing that a 1% increase in STOCKP will increase the ROA$_R$ by 0.16% while 1% decrease in STOCKP will increase the ROA$_R$ by 0.36% a dominance of negative shocks over the positive one.

In the short-run (ROA$_J$), both positive and negative changes of OILP have significant impact on ROA$_J$, suggesting that a 1% increase in OILP will increase the ROA$_J$ by 0.01% but 1% decrease in OILP will increase the ROA$_J$ by 0.01%. On the other hand, the positive and negative shocks of STOCKP have significant impact on ROA$_J$ with the dominance of the latter one, implying that 1% increase in STOCKP will increase the ROA$_J$ by 0.003% but 1% decrease in OILP will increase the ROA$_J$ by 0.005%. Besides, RGDP has significant impact

on both ROA_R and ROA_J, and the magnitude of the impact is observed higher (2.75%) in case of ROA_R than (1.87%) for the ROA_J.

The coefficient of the error correction term (ECT) of ROA_R and ROA_J are is -43% and -74% indicating that market disequilibrium is adjusted at a speed of 43% and 74% per period, respectively. In other words, the mark equilibrium is achieved within one and half year to two years.

4.6.2. Long-run Relation

The long-run cointegrating equations are presented in table 8 and table 9 which are based on the estimated NARDL results of tables 6 and 7. Table 8 displays the long-run relations of ROE with the exogenous variables. In the long-run, there is both positive and negative significant impact of OILP on ROE_J with the dominance of latter over the earlier one, in contrast to ROE_R where OILP has no significant impact. It indicates that 1% increase in OILP is related to the increase in ROE_J by 0.004%, and 1% decrease in OILP is associated to the increase in ROE_J by 5.78%, assuming the influence of other variables constant. Moreover, there is both positive and negative impact of STOCKP on ROE_R with the dominance of latter implying that that 1% increase in STOCKP is related to the increase in ROE_R by 7.433 %, and 1% decrease in STOCKP is associated to the decrease in ROE_R by 0.002%, assuming the effect of other variables constant. On the other side, there is only negative and significant impact of STOCKP on ROE_J indicating that 1% decrease in STOCKP is linked to the decrease in ROE_J by 0.01%, assuming the outcome of other variables constant. In addition, RGDP has positive and significant impact on the ROE_J showing that 1% increase in RGDP is related to the increase in ROE_J by 0.353%. This result is consistent with Athanasoglou et al. (2008) Dietrich and Wanzenried (2014b).

Table 8. Long-run Relation Based on ROE

Variable	ROE_R				ROE_J			
	Coeff	F-stat	P-value	Decision	Coeff	F-stat	P-value	Decision
RGDP(-1)	0.218	0.082	0.780	Absence	0.353	1.966	0.011	Presence
OILP_POS	6.841	1.527	0.245	Absence	0.004	0.097	0.021	Presence
OILP_NEG(-1)	9.168	0.001	0.971	Absence	-5.780	12.047	0.006	Presence
STOCKP_POS	7.433	25.097	0.002	Presence	-7.454	1.676	0.120	Absence
STOCKP_NEG(-1)	0.002	18.338	0.002	Presence	0.006	9.085	0.013	Presence

Note: The long-run relation is obtained by $\theta_1= -\beta_1/\beta_0$, $\theta_2= -\beta_2/\beta_0$, $\theta_3= -\beta_3/\beta_0$, $\theta_4= -\beta_4/\beta_0$, for positive and negative shocks of the OILP and STOCKP, respectively. The subscript R and J stand for Alrajhi Bank and Aljazira Bank, respectively. Superscript *, **, and *** indicate the rejection of the null hypothesis at 10%, 5%, and 1%, respectively.

Table 9 shows the long-run relations of ROA with the exogenous variables. In the long-run, positive and negative shocks of OILP have significant impact on both ROA_R and ROA_J. It suggests that a 1% increase in OILP will increase the ROA_R by 3.604 % and will increase ROA_J by 0.020% whereas 1% decrease in

OILP will increase the ROA_R by 0.862%. and will increase ROA_J by 0.001%, assuming the effect of others constant. Again, the positive and negative shocks of STOCKP have significant impact on ROA_R but only negative shock of STOCKP has significant impact on ROA_J. It implies that a 1% increase in STOCKP will increase the ROA_R by 0.27 % whereas 1% decrease in STOCKP will increase the ROA_R by 0.31% and will increase the ROA_J by 0.03%, with the assumption of ceteris paribus. Moreover, RGDP has significant impact on ROA_J implying that a 1% increase in GDP will increase the ROA_J by 2.51%.

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Table 9. Long-run Relation Based on ROA

Variable	ROA$_R$				ROA$_J$			
	Coeff	F-stat	P-value	Decision	Coeff	F-stat	P-value	Decision
RGDP(-1)	14.54	0.064	0.813	Absence	2.513	17.696	0.006	Presence
OILP_POS(-1)	3.604	36.038	0.004	Presence	0.020	18.544	0.005	Presence
OILP _NEG(-1)	-0.862	42.077	0.003	Presence	-0.001	28.445	0.002	Presence
STOCKP_POS	0.270	15.513	0.017	Presence	0.004	0.1070	0.755	Absence
STOCKP _NEG(-1)	0.314	102.82	0.000	Presence	0.033	33.855	0.001	Presence

Note: The long-run relation is obtained by $\theta_1= - \beta_1/ \beta_0$, $\theta_2= -\beta_2/ \beta_0$, $\theta_3= - \beta_3/ \beta_0$, $\theta_4= -\beta_4/ \beta_0$, for positive and negative shocks of the OILP and STOCKP, respectively. The subscript R and J stand for Alrajhi Bank and Aljazira Bank, respectively. Superscript *, **, and *** indicate the rejection of the residuals null at 10%, 5%, and 1%, respectively

4.6.3. Asymmetric Relationships

The Wald test statistics are applied to detect the long-run and short-run asymmetric relations with the null hypothesis of symmetry. Table 10 shows the absence of both long-run and short-run asymmetric relations of OILP and STOCKP in the case ROE_J, and there exist only long-run asymmetric relations of OILP for ROE_R. In contrast, long-run asymmetric relations of OILP and STOCKP with ROA exist in the case of both models. Again, this study confirms short-run asymmetric relations of OILP and STOCKP with ROA_R, while this relation of STOCKP presence with ROA_J.

Table 10. Wald test for Long-run and Short-run Asymmetry

Variable	ROE$_R$		ROE$_J$		ROA$_R$		ROA$_J$	
	Long-run asymmetry				Long-run asymmetry			
	F-stat	P-value	F-stat	P-value	F-stat	P-value	F-stat	P-value
OILP	2.999	0.059	1.508	0.248	16.059	0.016	79.029	0.000
STOCKP	0.829	0.3839	0.057	0.815	64.826	0.016	17.800	0.006
	Short-run asymmetry				Short-run asymmetry			
OILP	0.199	0.1409	0.508	0.142	79.756	0.001	1.007	0.354
STOCKP	0.249	0.123	0.571	0.752	28.988	0.006	65.402	0.000

Note: The subscript R and J stand for Alrajhi Bank and Aljazira Bank, respectively. Superscript *, **, and *** indicate the rejection of the residuals null at 10%, 5%, and 1%, respectively.

4.6.4. Asymmetric Adjustment Process

Figure 4-8 exhibit the cumulative dynamic asymmetric multiplier outcome for a total of 15 years with the reaction of ROE and ROA on the positive and negative changes in STOCKP and OILP. The solid black line shows the adjustment process of ROE and ROA with the positive and negative changes in STOCKP and OILP while the light dash red line which also known as the asymmetric line is situated between lower and upper band under the area of 95% confidence interval. The general rule of detecting the presence of asymmetric relation between the variables is that the zero straight line must crosses between the two boundary (lower and upper) which also indicate the statistically significant result.
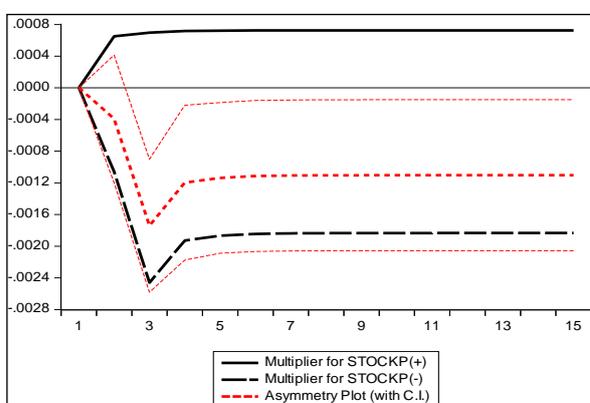
Figure 4. ROE$_R$ -STOCKP
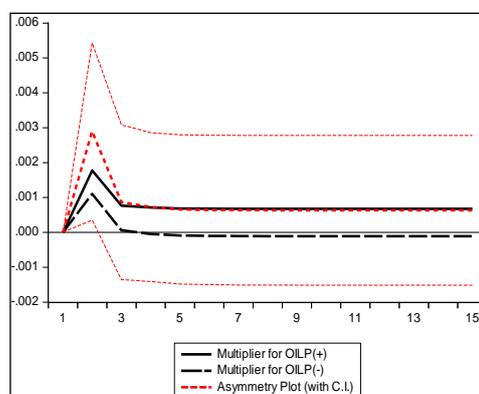
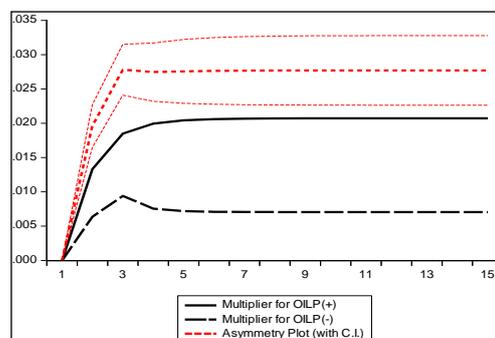Figure 5. ROER −OIL
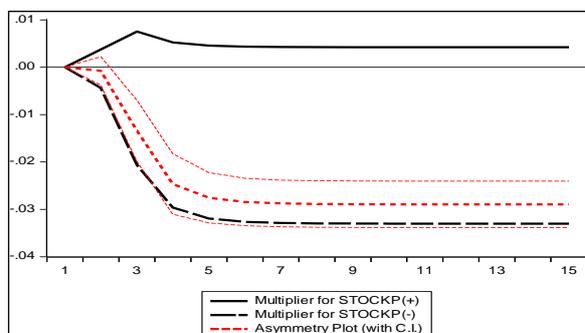
Figure 6. ROAJ - STOCKP

Figure 7. ROAJ - OILP

Figure 4- figure 7 present the scenario which is in line with the findings reported in table 10. The cumulative dynamic asymmetric multiplier graphs (Figure4 – Figure 7) shows that the effect of positive and negative change of STOCKP and OILP on ROA and ROE takes around 3-4 years to achieve long-run equilibrium.

4.7. Robustness Check

Since NARDL model follow the same assumptions as Ordinary Least Squared (OLS) model, it is important to check the assumptions of residuals. The residuals are to be free from normality issue, serial correlation and heteroscedastic distribution. In addition, all the models are to be rightly specified. As can be observed from tables 4.5 and 4.6, the residuals from all the estimated NARDL models have no serial correlation, with normal and homoscedastic distribution as evident from Breusch-Godfrey LM test, Jarque-Bera test and White test, respectively. Moreover, the Ramsay reset test indicates that all the models have exact functional forms. At the last stage of model diagnostics, the CUSUM and CUSUMSQ tests are conducted as suggested by Pesaran (1997) for checking the NARDL models' stability which are presented in Figure 8 and Figure 9.
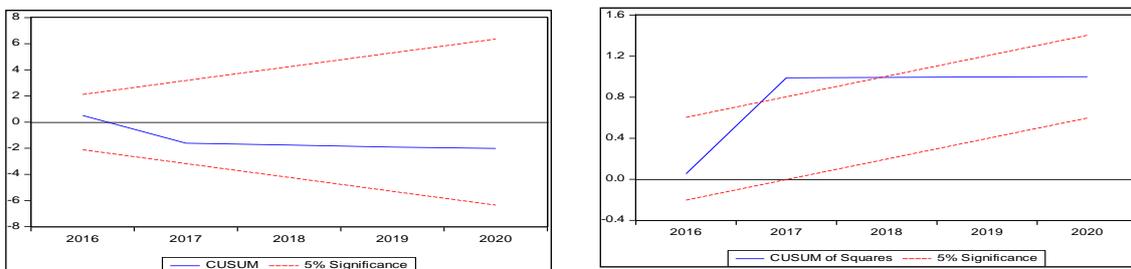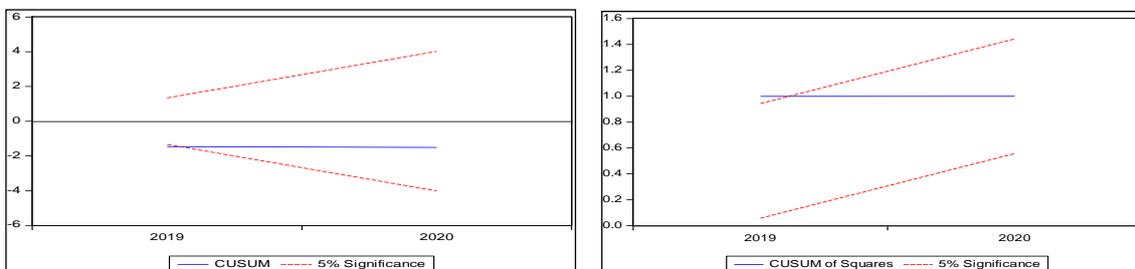

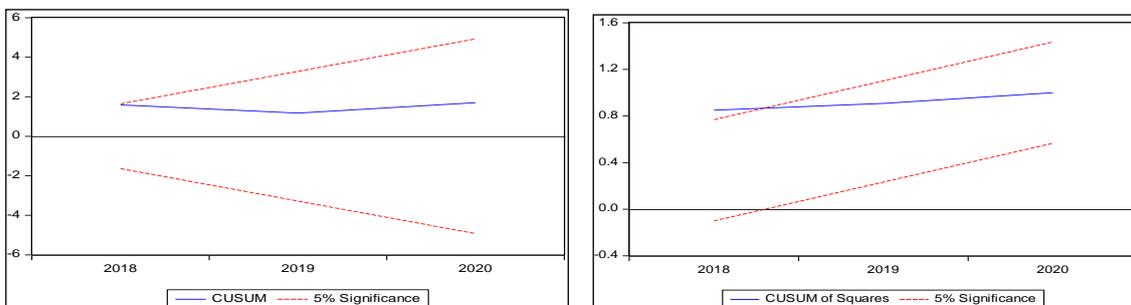**Figure 8.** ROE_R, RGDP OILP, STOCKP

Figure 9. ROA_R, RGDP OILP, STOCKP
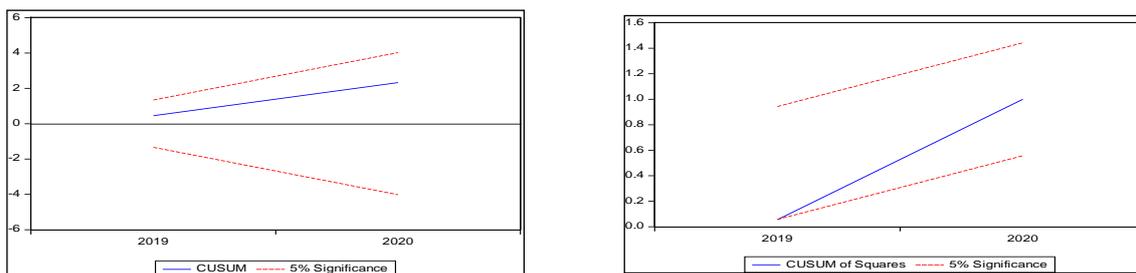

Figure 10. ROE_J, RGDP OILP, STOCKP

Figure 11. ROA$_J$, RGDP OILP, STOCKP

4.8. Analysis

As discussed in previous section, the higher oil prices and stock prices lead to increase the two Islamic banks' profitability in Saudi Arabia. As an oil-exporting country, Islamic banks enjoys the benefit of higher oil prices. The banks are inclined to make investment decisions on the oil-based projects. Besides, Islamic banks' stock prices are generally affecting their profitability. This is because of the development of Saudi financial sector ensures a sound and well-functioning stock market with easy and available information helpful for financial institutions like banks to assess potential risk and make right investment decision. Saudi Islamic banks have created higher confidence level among the investors and it also provides them lucrative dividends. As a result, Islamic banks' stock prices become higher over the years which lead to gain higher profitability in terms of ROA and ROE. Lastly, the positive link between real GDP growth with the profitability of Islamic Banks' which is confirmed by this study indicate that economic growth flourish Islamic banking sector by creating higher demand for Islamic banking product and services both in the short-run and long-run. In past few years, economic growth along with national development plan enable financial institutions particularly Islamic banks to take part in diversified investment projects to achieve Saudi Vision 2030.

V. Conclusion and Policy Recommendations

5.1. Conclusion

This study examines the asymmetric impact of oil prices and stock prices on two largest Islamic banks' profitability for the period 2000-2020. It considers two determinates of banks' profitability i.e., ROE and ROA which are affected the three external factors such as oil prices, stock prices and real GDP. It applies a nonlinear autoregressive distributed lag nonlinear autoregressive distributed lag (NARDL) model to achieve the objective.

In the case of ROE, the short-run negative shocks of OILP have significant impact on both ROE_R, where positive shocks dominate over the negative one, and ROE_J where positive shocks of OILP has no impact and negative shock of OILP has significant impact on ROE_J. On the other hand, positive shocks of STOCKP has no impact on ROE_R, but negative shock of STOCKP has significant impact on ROE_R. Both positive and negative shocks in STOCKP have significant impact on ROE_J. In the case of both models, RGDP has significant impact on ROE_R and ROE_J.

In the case of ROE, the long-run positive and negative shocks of OILP have significant impact of on ROE_J with the dominance of latter one, in contrast to ROE_R where OILP has no significant impact. Besides, both positive and negative shocks of STOCKP have significant impact on ROE_R with the dominance of latter, however, only negative shocks of STOCKP have significant impact on ROE_J. In this study, the long-run and short-run asymmetric relations of OILP and STOCKP are not confirmed in the case ROE_J, whereas the long-run asymmetric relations of only OILP is confirmed for ROE_R. The study also finds that RGDP has positive and significant impact on the ROE_J in the long-run.

In the case of ROA, the short-run positive and negative shocks of OILP have significant influence on both ROA_R, where the dominance of positive effect is more than the negative one, and ROA_J, where the changes in both effect are the same. On the other hand, the positive and negative shocks of STOCKP have significant effect on both ROA_R and ROA_J showing a dominance of negative shocks over the positive one. Besides, RGDP has significant impact on both ROA_R and ROA_J.

In the case of ROA, the long-run positive and negative shocks of OILP have significant impact on both ROA_R and ROA_J. Besides, positive and negative shocks of STOCKP have significant impact in the case of ROA_R while only negative shock of STOCKP has significant impact on ROA_J.

In this study, the long-run and short-run asymmetric relations of OILP and STOCKP are not confirmed in the case ROE_J, whereas the long-run asymmetric relations of OILP is only confirmed for ROE_R. On the other hand, the long-run asymmetric relations of OILP and STOCKP is established for both ROA_R ad ROA_J, while the short-run asymmetric relations of OILP and STOCKP is confirmed with ROA_R and STOCKP with ROA_J.

Based on the above finding, it is clear that OILP and STOCKP have significant role in determining the Islamic banks' profitability in Saudi Arabia. Although both positive and negative shocks of OILP and STOCKP are significant in most cases, the higher oil prices and higher stock prices are observed to be

dominant factors affecting the profitability of two largest Islamic banks in Saudi Arabia. In addition, real GDP growth as an important external factor affect the Islamic banks' profitability.

5.2. Recommendation

A few policy recommendations are provided based on the empirical analysis. The findings of this study recommends that policymakers should pay attention to increase the sound and development and efficiency of Saudi stock market to achieve the higher profitability of Islamic banking sectors which may attract foreign investments and boost the Saudi economy. This finding is also important for the portfolio managers to make decision on acquiring Islamic banks' stock. It would be profitable to buy Islamic banks' stock when the trend of oil prices is higher. Besides, macroeconomic policy should focus economic diversification for preparing any external shocks in the global market. Based on the evidence of this study that any negative shock of oil prices will affect Islamic banks' profitability, the management of Islamic banks need to pay attention of the risk assessment, market monitoring, and particularly tying Islamic banking capitalization to oil price and stock price shocks might help facing the market fluctuation as these two factors affect their profitability. Since oil price is one of the key determinants of Saudi Islamic banks' profitability, there is an urgent need for strategic policy to absorb any future shocks. In this regard, Islamic banks can play a pivotal role and support the government to effectively implement the Saudi economic diversification plan termed as Saudi Vision 2030. Saudi Islamic banks and other related financial institutions need to diversify their investment portfolios into more productive and export oriented sectors. These institutions can invest more on Small and Medium Enterprises (SMEs) to help achieve higher efficiency, productivity, and competitiveness of the industries. Thus, the diversified investments policy of Islamic financial institutions into private sector can not only facilitate rapid growth of export oriented high-value added industries but also generate huge employment opportunities and attract foreign investment in transport, communication, tourism, IT and other manufacturing industries. This study suggests that any future study can be conducted in identifying the internal factors of Islamic as well as conventional banks' profitability and economic diversification with panel data analysis in Saudi Arabia.

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