Nwani et al., *Cogent Economics & Finance* (2016), 4: 1185237
http://dx.doi.org/10.1080/23322039.2016.1185237

cogent economics & finance

FINANCIAL ECONOMICS | RESEARCH ARTICLE

Oil price and the development of financial intermediation in developing oil-exporting countries: Evidence from Nigeria

Chinazaekpere Nwani[1]*, Eugene Iheanacho[1,2] and Chijioke Okogbue[3]

Received: 30 December 2015
Accepted: 28 April 2016
Published: 17 May 2016

*Corresponding author: Chinazaekpere Nwani, Department of Economics, Banking and Finance, Gregory University Uturu, P.M.B. 1012, Uturu, Abia, Nigeria
E-mails: c.nwani@rgu.ac.uk, nwanichinaza@gmail.com

Reviewing editor:
David McMillan, University of Stirling, UK

Additional information is available at the end of the article

Abstract: This study examines the relationship between crude oil price and financial sector intermediary development in Nigeria over the period 1975–2011, using the autoregressive distributed lag approach to cointegration analysis. Four measures of financial intermediary development are used including an index of financial intermediary development constructed from three indicators of financial intermediary development using principal component analysis. The results show that crude oil price is a key driver of financial intermediary development in Nigeria. A positive and significant long run relationship between financial intermediary development and crude oil price coexists with a negative short run relationship. The results show that even if we control for economic growth, inflation and trade openness, crude oil price still has significant influence on the development of financial intermediation in Nigeria. The findings of this study have important policy implications for financial intermediary development in Nigeria and other developing oil-exporting countries.

Subjects: Development Economics; Economics and Development; Finance; International Finance; Macroeconomics

Keywords: financial development; oil price; macroeconomic performance; oil-exporting countries; Nigeria; ARDL

JEL classifications: G20; O11; Q32

ABOUT THE AUTHORS

Chinazaekpere Nwani is currently an academic staff in the Department of Economics, Banking and Finance, Gregory University Uturu, Uturu Abia State, Nigeria. His research interests include applied financial econometrics and asset pricing, economics of money, banking and finance and economics of development finance and energy studies.

Eugene Iheanacho holds a PhD in Managerial Economics from Adamson University, Philippines. He is currently a lecturer in the Department of Economics, Abia State University, Uturu and Gregory University Uturu, both in Abia State, Nigeria.

Chijioke Okogbue is currently a PhD student in the Department of Economics, University of Nigeria, Nsukka, Nigeria. His research interest is in development economics.

PUBLIC INTEREST STATEMENT

This study contributes to the still scarce literature examining financial sector development in developing oil-exporting countries. The results highlight the dual effects of crude oil price on economic activities in developing oil-exporting countries. While an increase in oil price provides financial resources for economic activities in these economies, it also stimulates short run economic conditions adversely affecting the ability of financial intermediaries to expand their assets and make credit available to the private sector. The positive long run relationship between financial intermediary development and crude oil price highlights the impact of the recent fall in crude oil prices in the international crude oil market on financial intermediary development in Nigeria and other developing oil-exporting countries. This study concludes that a well-structured economic diversification policy is needed in Nigeria to enhance the development of financial intermediation.

1. Introduction

Given the broad consensus that financial intermediaries in oil-exporting countries are weak and unable to allocate resources efficiently (see Barajas, Chami, & Yousefi, 2013; Beck, 2011; Nili & Rastad, 2007), it is of great importance to understand the macroeconomic drivers of financial sector intermediary development in Nigeria, a developing oil-exporting country. The efficient mobilization of savings and allocation of resources in the economy needs an environment of macroeconomic stability (Beck, Maimbo, Faye, & Triki, 2011; Boyd, Levine, & Smith, 2001). Increased macroeconomic uncertainty makes financial sector credit in the economy unaffordable to the private sector while favourable macroeconomic environment offers lower probability of loan default (Beck et al., 2011; Festić, Kavkler, & Repina, 2011). Recent empirical studies on the influence of macroeconomic activities on the development of financial intermediation have considered some indicators of the macroeconomic environment such as economic growth, inflation rate, investment rate, openness of the economy to international trade and public sector size (see for instance Almarzoqi, Naceur, & Kotak, 2015; Bittencourt, 2011; Boyd et al., 2001; Herwartz & Walle, 2014; Huang, 2010; Naceur, Cherif, & Kandil, 2014; Rother, 1999; Rousseau & Yilmazkuday, 2009). However, the relationship between crude oil prices and financial intermediary development in developing oil-exporting countries has received no attention. This study therefore aims to fill this gap in the literature.

There are a number of channels through which movements in crude oil price may influence the development of financial intermediation in developing oil-exporting countries. Giving that economic activities in these developing economies depend significantly on crude oil price (see Lescaroux & Mignon, 2008; Mehrara, 2008; Moshiri, 2015; Omojolaibi, 2014), an increase in crude oil price will provide the much-needed financial resources for economic activities in these economies (Moshiri, 2015; Omojolaibi, 2014). With crude oil price significantly influenced by several economic and political factors in the international oil market (Alkhathlan, 2013), rather than domestic economic activities and development (Samargandi, Fidrmuc, & Ghosh, 2014), and oil receipt forming a major part of revenue in these countries, movements in crude oil price will influence fiscal spending (Poghosyan & Hesse, 2009), which in turn determines the level of economic activities and the demand for financial intermediary services. The ability of these economies to enhance the development of the financial intermediary sector will therefore be a function of movements in crude oil price.

Evidence shows that movements in crude oil price encourage economic conditions capable of adversely affecting the ability of financial intermediaries to expand their assets and make credit available to the private sector. Specifically, movements in oil price in the international crude oil market exert macroeconomic uncertainties in these economies (see Mehrara & Oskoui, 2007) and the windfall gains from increases in crude oil price encourage rent-seeking which is capable of shifting factors of production away from institutions that stimulate economic activities in the private sector (Beck, 2011). Beck (2011) and Nili and Rastad (2007) identified financial intermediaries among the institutions significantly affected. Nili and Rastad (2007) show that the dominant role of the public sector in resource allocation resulting from the windfall gains from increases in oil price affects the development of financial intermediation leading to the weakness of private sector in oil-exporting countries. Beck (2011) presents empirical evidence that oil-exporting economies have lower levels of financial development and offer less credit to the private sector, despite the fact that they are highly profitable and better capitalized, citing the dominant role of the oil sector as a major factor.

Hou, Keane, Kennan, and Willem te Velde (2015) explain that crude oil price fluctuations in the international oil market will create and increase the level of uncertainty in developing oil-exporting economies causing macroeconomic distortions which could consequently induce firms to reduce their investments. Macroeconomic uncertainties resulting from crude oil price movements in the international crude oil market could influence the degree to which economic activities generate incentives in the private sector and demand for credit in the economy. It could make various economic units in the economy to store their savings in alternative investment channels outside the banking system to hedge against macroeconomic distortions. Such decision by households, firms and other economic units in the economy may impact adversely on the performance of financial

intermediaries that depend significantly on the savings of various economic units to provide credit to investors requiring capital for investment purposes in the economy. Macroeconomic uncertainties created by movements in crude oil prices in the international crude oil market could also influence both the liquidity decisions and the systematic risk exposure of financial intermediaries in oil-exporting countries, which may limit their ability to make credit available to the private sector in the economy. Beck et al. (2011) and Naceur et al. (2014) argue that the decisions of financial institutions on managing liquidity and balancing risk and return may negatively impact their ability to make credit available to the private sector.

With the high level of crude oil price fluctuations observed in the last decade in the international crude oil market, diversification and promotion of a non-oil-led economy through economic reforms could be the right strategy to stimulate the level of economic activities in Nigeria and other oil-exporting countries. The recent reforms in the Nigerian banking sector embarked upon by the central bank of Nigeria are aimed at achieving this broad objective by strengthening the intermediary role of banks in the economy, especially in the area of promoting private sector participation in economic activities. A key question is then: What is the relationship between crude oil price and financial intermediary development in Nigeria? This question has not been answered. Specifically, while empirical studies on the impact of crude oil price on economic growth and macroeconomic performance in Nigeria exist (see Chuku, 2012; Iwayemi & Fowowe, 2011; Muhammad, Suleiman, & Kouhy, 2012; Omojolaibi, 2014; Omojolaibi & Egwaikhide, 2014), the influence of crude oil price on the development of financial intermediation has not been considered. Understanding the relationship between crude oil prices and financial intermediary development could have a significant impact on the formulation and implementation of macroeconomic policies targeting financial sector development. It could also guide the formulation of major economic policies required to diversify the Nigerian economy, given the strong link between financial intermediaries and the private sector.

Controlling for the possible influence of macroeconomic performance and trade openness on financial intermediary development, this study seeks to uncover the long run and short run relationship between crude oil price and financial sector intermediary development in Nigeria, a developing oil-exporting country, using the autoregressive distributed lag (ARDL) approach to cointegration analysis. By examining the effect of crude oil price, macroeconomic performance and trade openness on the development of financial intermediation in a developing oil-exporting economy, this study contributes to a number of studies that have explored financial sector development in oil-exporting economies (see Barajas et al., 2013; Beck, 2011; Kurronen, 2015; Nili & Rastad, 2007; Nwani & Bassey Orie, 2016; Quixina & Almeida, 2014; Samargandi et al., 2014). The results of this study could be a guide to researchers and policy-makers in Nigeria and other developing oil-exporting countries seeking to understand the long run and short run effects of oil price and other indicators of macroeconomic performance on the development of financial intermediation in Nigeria.

The remainder of this study is structured as follows: Section 2 presents the data and methodology of the study. Section 3 presents and discusses the empirical results. Finally, Section 4 offers some concluding remarks on the findings.

2. Data and methodology

2.1. Data

This study uses annual data covering the period from 1975 to 2011. Three widely used indicators of financial intermediary development are employed: credit to the private sector by deposit money banks (% GDP) which excludes credit issued to the public sector (government, government agencies and public enterprises as well as the credit issued by the monetary authority), the ratio of liquid liabilities of banks and non-bank financial intermediaries to GDP and deposit money bank assets to GDP. The volume of domestic credit to the private sector by deposit money banks relative to the size of the Nigerian economy measures the contribution of financial intermediaries to private sector activities through intermediation. The ratio of liquid liabilities to GDP measures the size of the

financial intermediary system relative to the size of the Nigerian economy and the ability of financial intermediaries to meet unanticipated demand to withdraw deposits by customers (Naceur et al., 2014), while the ratio of deposit money bank assets to GDP captures the overall size of the banking sector relative to the size of the Nigerian economy.

These three indicators are used to construct a composite index (*Fintindex*) for financial intermediary development using principal component analysis (PCA). The results in Table 1 show that the first principal component captures about 90.7% of the variations in the variables. The remaining principal components account for only 9.3% of the total variations. Thus, the first principal component is selected for the estimation of the financial intermediation index. Following Ang and McKibbin (2007), the individual contributions of CPS, LIQ and BA to the standardized variance of the first principal component (eigenvector of PC1) are rescaled such that the values sum up to one, giving 33.5, 32.0 and 34.5% respectively. *Fintindex* is calculated as a linear combination of the three selected indicators of financial intermediation with weights given as the adjusted (rescaled) values of the first eigenvector (PC1).

The international crude oil price measured as the Brent spot price (in US dollars per barrel) is used in this study. Real GDP per capita (RGDPC), inflation rate and the ratio of total trade to GDP are included in the study to control for the influence of other components of the Nigerian macro economy. These factors have been identified among the most significant determinants of financial intermediary development (see instance Almarzoqi et al., 2015; Bittencourt, 2011; Boyd et al., 2001; Herwartz & Walle, 2014; Huang, 2010; Naceur et al., 2014). Table 2 provides additional information on all the variables.

This study examines two empirical specifications to determine the relationship between crude oil price and the development of financial intermediation in Nigeria over the sample period and to establish the robustness of this empirical analysis:

$$Fint = f(\text{Oilp, RGDPC, Infr,}) \quad \text{(Model 1)}$$

$$Fint = f(\text{Oilp, RGDPC, Infr, Open,}) \quad \text{(Model 2)}$$

Fint represents financial intermediary development indicators: Fintindex, Pcrd, LIQ and BA. The RGDPC captures the demand for financial intermediary services in the economy. It is believed that the growth of the economy will encourage high demand for financial intermediary services. However, Naceur et al. (2014) found the effect of economic growth on indicators of financial intermediary development to be significantly negative in the Middle East and North African (MENA) regions which consist of major oil-exporting countries. The result could be suggesting that the effect of economic growth on financial sector intermediary development in oil-exporting countries is different. Inflation

Table 1. Principal component analysis

Eigenvalues: (sum = 3, average = 1)

Number	Value	Difference	Proportion	Cumulative value	Cumulative proportion
1	2.719830	2.468482	0.9066	2.719830	0.9066
2	0.251348	0.222526	0.0838	2.971178	0.9904
3	0.028822	—	0.0096	3.000000	1.0000

Eigenvectors (loadings):

Variable	PC 1	PC 1 Rescaled	PC 2	PC 3	
Pcrd	0.580227	33.5%,	−0.541351	0.608502	
LIQ	0.553743	32.0%	0.810089	0.192679	
BA	0.597248	34.5%	−0.225156	−0.769805	

Table 2. List of variables

Variable	Definition	Source
Pcrd	Private credit by deposit money banks (% GDP)	Beck, Demirguc-Kunt, & Levine, 2000. Financial development and structure data-set (Nov. 2013 version)
LIQ	Liquidity liabilities over GDP	
BA	Deposit money bank assets to GDP	
OILP	Annual average of international oil prices (US$)—brent spot price	BP statistical review of world energy (June 2015)
RGDPC	GDP per capita (constant 2005 US$)	World development indicators Database, world bank (Online)
INFR	Inflation, consumer prices (annual %)	
OPEN	Trade openness: Total trade (exports plus imports) % of GDP	

captures the degree of macroeconomic stability in the economy. Boyd et al. (2001) suggest that high rates of inflation could (i) reduce the volume of liquid liabilities issued by financial intermediaries, (ii) reduce the size of bank assets and (iii) discourage incentives for private sector activities and demand for credit facilities. The negative effect of inflation on the development of financial sector intermediation has also been documented by Bittencourt (2011) and Naceur et al. (2014) for Brazil and MENA countries, respectively. In the second specification (Model 2), the ratio of total trade to GDP is included to capture the degree of openness of the Nigerian economy to trade. The openness of the economy to trade is another component of the macro economy that has been widely considered a significant driver of financial intermediary development in many economies (see Baltagi, Demetriades, & Law, 2009; Kim, Lin, & Suen, 2010; Naceur et al., 2014; Rajan & Zingales, 2003).

2.2. Empirical methodology

This study uses the ARDL testing approach to cointegration (ARDL) of Pesaran, Shin, and Smith (2001). Recent studies have shown that the ARDL approach offers some desirable statistical advantages over other cointegration techniques. First, the ARDL technique to cointegration allows for both long and short run relationships between variables in a time series model to be tested for simultaneously (Samargandi et al., 2014). Second, the ARDL test can be applied irrespective of the non-stationarity property and order of integration in a time series data (Bekhet & Matar, 2013; Samargandi et al., 2014). The ARDL offers valid test results irrespective of whether the variables are I(0) or I(I) or integrated of different order (I(0) and I(I)). Comparatively, other cointegration techniques require all the regressors to be integrated of the same order (Pesaran et al., 2001). Third, the ARDL test offers unbiased coefficients of independent variables along with valid *t*-statistics, despite possible presence of endogeneity in time series model (Samargandi et al., 2014). Fourth, the ARDL test allows variables to have different optimal lags, which is not possible with other cointegration techniques (Bekhet & Matar, 2013; Ozturk & Acaravci, 2011). Furthermore, it corrects the omitted lagged variable bias in time series model (Inder, 1993; Samargandi et al., 2014). Finally, the ARDL test is considered very efficient and consistent in small and large sample sizes (Samargandi et al., 2014) and has become increasingly popular among researchers in recent years (Jayaraman & Choong, 2009).The implementation of the ARDL test involves estimating the following models:

$$\begin{aligned}\Delta lnFint_t = {} & \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta nFint_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta lnOilp_{1_{t-i}} + \sum_{i=0}^{n} \beta_{3i} \Delta lnRGDPC_{2_{t-i}} \\ & + \sum_{i=0}^{n} \beta_{4i} \Delta lnInfr_{3_{t-i}} + \beta_5 lnFint_{t-1} + \beta_6 lnOilp_{t-1} + \beta_7 lnRGDPC_{t-1} \\ & + \beta_8 lnInfr_{t-1} + \varepsilon_t \end{aligned} \quad (1)$$

$$\Delta lnFint_t = a_0 + \sum_{i=1}^{n} a_{1i}\Delta nFint_{t-i} + \sum_{i=0}^{n} a_{2i}\Delta lnOilp_{1_{t-i}} + \sum_{i=0}^{n} a_{3i}\Delta lnRGDPC_{2_{t-i}} + \sum_{i=0}^{n} a_{4i}\Delta lnInfr_{3_{t-i}} + \sum_{i=0}^{n} a_{5i}\Delta lnOpen_{4_{t-i}} + a_6 lnFint_{t-1} + a_7 lnOilp_{t-1} + a_8 lnRGDPC_{t-1} + a_9 lnInfr_{t-1} + a_{10} lnOpen_{t-1} + \varepsilon_t \quad (2)$$

where Δ is the difference operator while ε_t is white noise error term. Financial intermediary development (*lnfint*) is captured in the model using financial intermediation indicators: *ln*Fintindex, *ln*Pcrd, *ln*LIQ and *ln*BD. The test involves conducting *F*-test for joint significance of the coefficients of lagged variables for the purpose of examining the existence of a long run relationship among the variables. The null hypothesis of no cointegration among the variables in Equation (1) is (H_o: $\beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$) against the alternative hypothesis (H_1: $\beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq 0$). In Equation (2), the null hypothesis of no cointegration is (H_o: $a_6 = a_7 = a_8 = a_9 = a_{10} = 0$) against the alternative hypothesis (H_1: $a_6 \neq a_7 \neq a_8 \neq a_9 \neq a_{10} \neq 0$). The decision to reject or accept H_o (no co-integration among the variables) is based on the following conditions: if the calculated *F*-statistics is greater than the upper critical bound, then H_o is rejected and the variables are co-integrated; if the calculated *F*-statistics is less than the lower bound, then H_o is accepted and the variables are not co-integrated, but if the calculated *F*-statistics remains between the lower and upper critical bounds, then the decision is inconclusive (Pesaran et al., 2001). Given that the sample size (37 observations) is relatively small, the critical values for the evaluation of the null hypothesis are taken from Narayan (2005). Narayan (2005) computed two sets of critical values: lower bounds I(0) and upper bounds critical I(1) for sample sizes ranging from $T = 30$ to 80.

After testing for cointegration among the variables, the long run coefficients of the variables are then estimated. This study uses Akaike information criterion for selecting the optimal lag length. The existence of cointegration between the variables implies that causality exists in at least one direction. The error correction model for the estimation of the short run relationships is specified as:

$$\Delta lnFint_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i}\Delta nFint_{t-i} + \sum_{i=0}^{n} \beta_{2i}\Delta lnRGDPC_{1_{t-i}} + \sum_{i=0}^{n} \beta_{3i}\Delta lnOilp_{2_{t-i}} + \sum_{i=0}^{n} \beta_{4i}\Delta lnInfr_{3_{t-i}} + \lambda_1 ECM_{t-1} + u_{1t} \quad (3)$$

$$\Delta lnFint_t = a_0 + \sum_{i=1}^{n} a_{1i}\Delta nFint_{t-i} + \sum_{i=0}^{n} a_{2i}\Delta lnRGDPC_{1_{t-i}} + \sum_{i=0}^{n} a_{3i}\Delta lnOilp_{2_{t-i}} + \sum_{i=0}^{n} a_{4i}\Delta lnInfr_{3_{t-i}} + \sum_{i=0}^{n} a_{5i}\Delta lnOpen_{4_{t-i}} + \lambda_2 ECM_{t-1} + u_{2t} \quad (4)$$

ECM_{t-1} is the error correction term obtained from the cointegration model. The error correction coefficients (λ_1 and λ_2) indicate the rate at which the cointegration model corrects its previous period's disequilibrium or speed of adjustment to restore the long run equilibrium relationship. A negative and significant ECM_{t-1} coefficient implies that any short-term movement between the dependent and explanatory variables will converge back to the long run relationship.

2.3. Stability tests: CUSUM and CUSUMSQ test

The stability of the long run coefficients together with the short run dynamics is tested using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests. If the plot of CUSUM and CUSUMSQ statistics stays within the 5% range of the significance level, then all the coefficients in the error correction model are assumed to be stable,

but if the plot of CUSUM and CUSUMSQ statistics crossed the 5% range of the significance level, the coefficients in the error correction model are considered unstable (Bekhet & Matar, 2013).

3. Empirical results

3.1. Descriptive statistics and graphical analysis

Table 3 presents the mean, median, maximum and minimum values and standard deviation for the variables used in this study: four indicators of financial intermediary development (Fintindex, Pcrd, LIQ and BA), crude oil price (OILP) and three control variables (RGDPC, INFR and OPEN) over the period 1975–2011. The average crude oil price over the period is $32.75 with a maximum price of $111.26 and a minimum price of $11.53. The standard deviation (24.44) is significantly higher than the standard deviation of the four indicators of financial intermediary development. Figure 1 explains the trends in the four measures of financial intermediary development in Nigeria over the period 1975–2011.

Figure 1 shows gradual increase in the development of the Nigerian financial intermediary sector from 1975 to 1986. The volume of private sector credit created by deposit money banks gradually increased from below 10% of gross domestic product in 1975 to 17.94% in 1986. The ratio of liquid liabilities to GDP shows that the overall size of the financial intermediary sector in Nigeria increased from below 20% in 1975 to 34.98% in 1986. The size of bank assets increased from below 10% of gross domestic product to 29.73% in 1986. The period from 1990 to 2006 witnessed much fluctuation in financial intermediary development in Nigeria with all the indicators fluctuating significantly over the period. A sharp increase is observed in all the indicators from 2007 to 2009 corresponding to the period of the global financial crisis and a sharp decline afterwards. Figure 1 in general reveals a common trend in all the indicators. The strong positive correlation could be an indication that indicators of financial intermediary development in Nigeria are driven by common factors.

3.2. Unit root tests

All the data are transformed into the natural log form. To determine the order of integration of the variables, the ADF (augmented Dickey–Fuller) test complemented with the PP (Phillips–Perron) test in which the null hypothesis is $H_0 = \beta = 0$ (i.e. β has a unit root), and the alternate hypothesis is $H_1: \beta < 0$ are implemented. The results for both the level and differenced variables are presented in Table 4.

The stationarity tests were performed first in levels and then in first difference to establish the presence of unit roots and the order of integration in all the variables. The results of the ADF and PP stationarity tests for each variable show that both tests fail to reject the presence of unit root for *ln*Fintindex *ln*Pcrd, *ln*LIQ, *ln*BA, *ln*RGDPC, *ln*Oilp and *ln*Open data series in levels, indicating that these variables are non-stationary in levels. The first difference results show that these variables are stationary at 1% significance level (integrated of order one, I(1)). The results of both tests also indicate that *lnInfr* is stationary at level I(0) at 1% level of significance (ADF test) and 5% level of significance (PP test). The different order of integration of the variables makes ARDL the preferred approach to this empirical study.

3.3. Results of cointegration test

The results of the cointegration test, based on the ARDL bounds testing approach, are presented in Table 5. Cointegration is tested on Model 1 and Model 2 using each of the indicators of financial intermediary development as the dependent variable. The results show that the *F*-statistic is higher than the upper bound critical value from Narayan (2005) at the 1% level of significance using restricted intercept and no trend in all the specifications of Model 1 (1a–1d) and specifications 2a, 2b and 2d of Model 2. Specification 2c has the *F*-statistic higher than the upper bound critical value from Narayan (2005) at the 5% level of significance. The results therefore suggest the presence of cointegration between each of the individual indicators of financial intermediary development, oil price and the control variables. Based on the results, the null hypothesis of no cointegration is rejected in

cogent economics & finance

Table 3. Summary of descriptive statistics

	Fintdex	Pcrd	LIQ	BA	OILP	RGDPC	INFR	OPEN
Mean	18.9727	13.7630	23.8289	19.53139	32.7462	687.4747	20.7835	52.1109
Median	16.0879	12.3159	22.2905	17.00513	24.4439	612.1304	13.7202	52.7941
Maximum	38.9354	35.3930	37.6967	43.52546	111.2556	1015.815	72.8355	81.8129
Minimum	9.8911	5.4148	12.8592	9.230804	11.5300	494.2390	5.3822	23.6089
Std. dev.	7.2273	6.4806	7.0995	9.047160	24.4362	157.4995	17.3773	14.8060
Observations	37	37	37	37	37	37	37	37

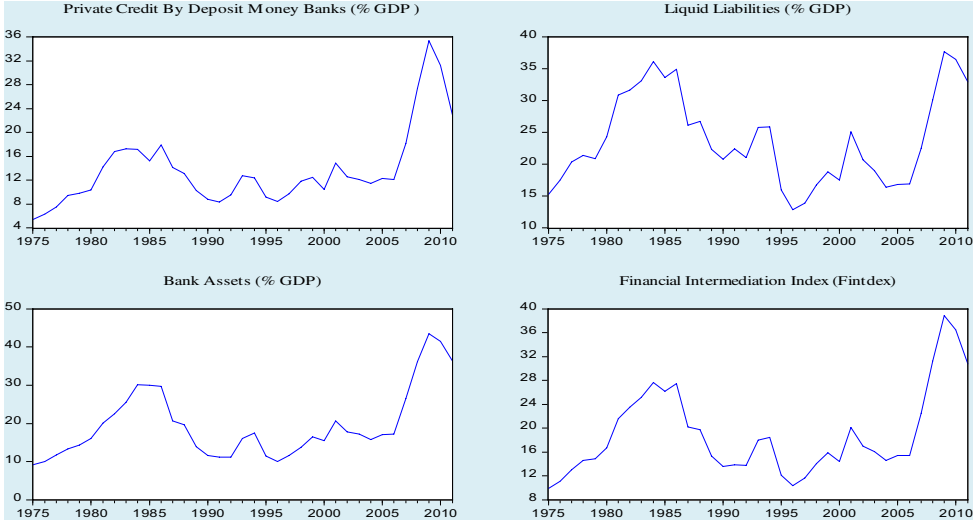


Figure 1. Selected financial intermediary development indicators in Nigeria.

Source: See Table 2.

Table 4. Unit root test

	In level I(0)		First difference I(1)		
Variables	**ADF**	**PP**	**ADF**	**PP**	**Order of integration**
*ln*Fintindex	−2.2866	−1.6636	−4.3519***	−4.1867***	I(I)
*ln*Pcrd	−2.5290	−2.0580	−4.0911***	−3.7030***	I(I)
*ln*LIQ	−1.8559	−1.8559	−4.7014***	−4.6121***	I(I)
*ln*BA	−2.1067	−1.5553	−4.1236***	−4.0335***	I(I)
*ln*OILP	−0.6705	−0.6637	−5.8983***	−5.8983***	I(I)
*ln*RGDPC	−0.2424	−0.6348	−4.6607***	−4.7133***	I(I)
*ln*INFR	−3.7916***	−3.3899**	−6.2540***	13.6213***	I(0)
*ln*OPEN	−1.6896	−2.2992	−7.9429***	−7.8074***	I(I)

Note: All the variables are in the natural log form.

**Level of significance at 5%

***Level of significance at 1%.

Source: Calculated using Eviews 9.

Table 5. ARDL bounds cointegration test

Model	Dependent variable	*F*-statistic	Result
Model 1a ARDL(1, 1, 0, 1)	*ln*Fintindex	8.0956***	Cointegration
Model 1b ARDL(1, 1, 0, 1)	*ln*Pcrd	8.5828***	Cointegration
Model 1c ARDL(1, 1, 1, 2)	*ln*LIQ	6.1849***	Cointegration
Model 1d ARDL(1, 1, 0, 1)	*ln*BA	6.3879***	Cointegration
Critical Value Bounds (Model 1; *K*= 3)	1%	5%	10%
I0 Bound	4.428	3.164	2.618
I1 Bound	5.816	4.194	3.532
Model 2a ARDL(1, 1, 0, 1, 0)	*ln*Fintindex	6.5699***	Cointegration
Model 2b ARDL(1, 1, 1, 1, 1)	*ln*Pcrd	7.7958***	Cointegration
Model 2c ARDL(1, 1, 1, 2, 0)	*ln*LIQ	4.9617**	Cointegration
Model 2d ARDL(1, 1, 0, 1, 1)	*ln*BA	5.5698***	Cointegration
Critical Value Bounds (Model 2; *K* = 4)	1%	5%	10%
I0 Bound	4.093	2.947	2.460
I1 Bound	5.532	4.088	3.460

Notes: *Source of Asymptotic critical value bounds*: Narayan (2005) Appendix: Case II.

Restricted intercept and no trend.

**Level of significance at 5%.

***Level of significance at 1%.

all the eight specifications. This implies that each of the indicators of financial intermediary development, oil price and macroeconomic performance are all bound by a long run relationship in Nigeria.

3.4. Long run and short run estimates

Table 6 presents the long run coefficients of the eight specifications estimated using ARDL approach. The specifications in Table 6 are the same as the specifications described in Table 5. The results for specification 1a give the long run impact of crude oil price on the overall development of financial intermediation captured using *ln*Fintindex1 constructed from the three selected indicators of financial intermediation (Pcrd, LIQ, and BA) using PCA. Controlling for the influence of macroeconomic performance on financial intermediary development using RGDPC (*ln*RGDPC) and inflation rate (*ln*Infr), the study found the coefficient of crude oil price (*ln*Oilp) to be positive and statistically significant at 10% level. With a coefficient of 0.3218, a 1% increase in crude oil price will cause the overall financial intermediary development to increase by about 0.32% in the long run. On the other hand, a 1% decrease in crude oil price will cause the overall financial intermediary development to decrease by 0.32% in the long run. The coefficient of economic growth (*ln*RGDPC) is found to be positive and insignificant while the coefficient of inflation rate (*ln*Infr) is found to be negative and insignificant in explaining the development of financial intermediation in specification 1a.

Specifications 1b–1d capture the effect of crude oil price and macroeconomic performance on each of the three indicators of financial intermediary development in Nigeria over the study period. For specification 1b, with the ratio of domestic private sector credit to GDP (*ln*Pcrd) as the dependent variable, the coefficient of crude oil price (*ln*Oilp) is found to be positive and statistically significant at 1% level. A coefficient of 0.4569 indicates that a 1% increase in crude oil price will cause the volume of domestic banking sector credit to the private sector (as a % of GDP) to increase by about 0.46% in the long run while a 1% fall in crude oil price will cause 0.46% fall in the ability of financial intermediaries to stimulate economic activities in the private sector through credit facilities. The coefficients of economic growth (*ln*RGDPC) and inflation rate (*ln*Infr) are found insignificant. Model 1c with the ratio of liquidity liabilities to GDP (*ln*LIQ) as the dependent variable gives different results. The coefficient of crude oil price (*ln*Oilp) is found to be positive but statistically insignificant. Economic growth and the rate of inflation are found to be the key determinants of the ability of financial

Table 6. Long run coefficients

	Model 1a	Model 1b	Model 1c	Model 1d	Model 2a	Model 2b	Model 2c	Model 2d
Variable	***Fint*** = ***ln*Fintdex**	***Fint*** = ***ln*Pcrd**	***Fint*** =***ln*LIQ**	***Fint*** =***ln*BA**	***Fint*** = ***ln*Fintdex**	***Fint*** =***ln*Pcrd**	***Fint*** =***ln*LIQ**	***Fint*** =***ln*BA**
C	**−2.1983**	**−1.4673**	**−2.6020**	**−2.0805**	**1.0206**	**−2.9058**	**0.1556**	**1.6041**
	[−0.7746]	[−0.5573]	[−0.8532]	[−0.6269]	[0.4027]	[−0.7667]	[0.0524]	[0.5473]
*ln*Oilp	**0.3218***	**0.4569*****	**0.0472**	**0.4815****	**0.3988*****	**0.4452****	**0.1159**	**0.5449*****
	[1.8881]	[2.8326]	[0.2358]	[2.3859]	[3.0094]	[2.5555]	[0.7103]	[3.4199]
*ln*RGDP	**0.7279**	**0.4737**	**1.0120***	**0.6452**	**0.3484**	**0.5460**	**0.6681**	**0.2096**
	[1.4655]	[1.0241]	[1.8435]	[1.1227]	[0.8838]	[1.0073]	[1.4164]	[0.4664]
*ln*Infr	**−0.2075**	**−0.1562**	**−0.3199***	**−0.2398**	**−0.1493**	**−0.1436**	**−0.2378***	**−0.2023***
	[−1.6202]	[−1.3756]	[−1.9397]	[−1.6106]	[−1.5343]	[−1.2311]	[−1.7512]	[−1.7237]
*ln*Open					**−0.3074***	**0.2513**	**−0.2561**	**−0.3073**
					[−1.8069]	[0.8593]	[−1.3172]	[−1.3660]

Note: *t*-statistics in [ ].

*Level of significance at 10%.

**Level of significance at 5%.

***Level of significance at 1%.

intermediaries to meet unanticipated demand by depositors. In Model 1d, with the ratio of deposit money bank assets to GDP (*ln*BA) as the dependent variable, crude oil price (*ln*Oilp) is found to be positive and statistically significant at 5% level. The positive coefficient of 0.4815 suggests that a 1% increase in oil price will cause bank assets (% of GDP) to increase by about 0.48% in the long run while a 1% fall in oil price will cause the volume of bank assets to decline by 0.48%. The coefficients of economic growth (*ln*RGDPC) and inflation rate (*ln*Infr) are found insignificant.

Specifications 1a–1d provide a picture of the effect of crude oil price on financial intermediary development in Nigeria over the study period. To establish the robustness of the results from Model 1 specifications, trade openness (*ln*Open) is included in the model. The results of specifications 2a–2d are consistent with the results of specifications 1a–1d. Specification 2a shows that the coefficient of crude oil price is highly significant (at 1% level). Specification 2b confirms that crude oil price is the key determinant of the ratio of domestic private sector credit to GDP (*ln*Pcrd). Specification 2c shows that crude oil price is insignificant in determining the volume of liquid liabilities of the financial intermediary sector in Nigeria. The results confirm the negative and significant effect of inflation on the volume of liquid liabilities of the financial intermediary sector (% of GDP) in Nigeria. The coefficient of crude oil price in specification 2d is significant at 1% level indicating that crude oil price is a key determinant of the ratio of bank assets to GDP in Nigeria.

Table 7 presents the coefficients of the error correction model for all the eight specifications. The coefficient of ECM (−1) in each of the eight specifications is negative and significant at 1% level. The coefficients suggest that over 30% of the short run disequilibrium is corrected in the long run equilibrium in each of the eight specifications. The short run effect of crude oil price on financial intermediary development is found to be different from the long run effect reported in Table 6. The coefficient of crude oil price in each of the eight specifications is negative and statistically significant for all the four specifications in Model 1 (1a–1d). The coefficients show that a 1% increase in crude oil price will cause the overall financial intermediary development captured using *ln*Fintindex, the ratio of private sector credit to GDP, the ratio of liquid liabilities to GDP and the ratio of deposit money banks assets to GDP to decline by 0.22, 0.21, 0.29 and 0.17%, respectively, in the short run. All the four specifications of Model 1 show that RGDPC and rate of inflation are insignificant short run determinants of

cogent economics & finance

Table 7. Short run error correction estimates

	Model 1a	Model 1b	Model 1c	Model 1d	Model 2a	Model 2b	Model 2c	Model 2d
Variable	***Fint*** **=Δ*ln*Fintdex**	***Fint*=Δ*ln*Pcrd**	***Fint*=Δ*ln*LIQ**	***Fint*=Δ*ln*BA**	***Fint*** **=Δ*ln*Fintdex**	***Fint*=Δ*ln*Pcrd**	***Fint*=Δ*ln*LIQ**	***Fint*=Δ*ln*BA**
ECM(-1)	**−0.3461*** **	**−0.3895*** **	**−0.3388*** **	**−0.3314*** **	**−0.4327*** **	**−0.3652*** **	**−0.4222v**	**−0.4043*** **
	[−6.6842]	[−6.9050]	[−5.9735]	[−5.9393]	[−6.8561]	[−7.4679]	[−5.9600]	[−6.2227]
Δ*ln*Oilp	**−0.2168*** **	**−0.2114** **	**−0.2874*** **	**−0.1652***	**−0.1320***	**−0.1767** **	**−0.2356*** **	**−0.0629**
	[−2.7751]	[−2.5727]	[−3.5427]	[−1.8105]	[−1.7056]	[−2.2100]	[−2.8562]	[−0.7196]
Δ*ln*RGDP	**−0.0955**	**−0.1559**	**−0.1510**	**−0.0904**	**−0.2113**	**−0.4682**	**−0.2389**	**−0.2528**
	[−0.3193]	[−0.4941]	[−0.4935]	[−0.2584]	[−0.7085]	[−1.5153]	[−0.7669]	[−0.7508]
Δ*ln*Infr	**−0.0051**	**0.0087**	**−0.0179**	**−0.0184**	**0.0036**	**0.0045**	**−0.0092**	**−0.0160**
	[−0.1717]	[0.2784]	[−0.5916]	[−0.5298]	[0.1266]	[0.1526]	[−0.3127]	[−0.4992]
Δ*ln*Infr(-1)			**0.0697***				**0.0679***	
			[2.0435]				[1.9927]	
Δ*ln*Open					−0.2511***	−0.1435	**−0.1767***	**−0.3076*** **
					[−2.8419]	[−1.5762]	[−1.9445]	[−3.0906]
R^2	0.8828	0.8986	0.8539	0.8922	0.8912	0.9167	0.8603	0.9097
Adj R^2	0.8586	0.8776	0.8089	0.8699	0.8640	0.8879	0.81	0.8829
D-W stat	1.8671	1.9073	1.9482	1.7344	1.8190	1.9747	1.812	1.821
SCx^2 (1)	0.0965 (0.7250)	0.0000 (0.9956)	0.0116 (0.8988)	0.5693 (0.3970)	0.2480 (0.5670)	0.0344 (0.8240)	0.2976 (0.5127)	0.3096 (0.5151)
Hetx^2 (1)	0.1203 (0.7214)	1.0259 (0.3043)	1.2644 (0.2556)	0.2584 (0.6020)	0.0154 (0.8985)	0.1178 (0.7242)	2.0813 (0.1496)	0.2970 (0.5763)

Note: *t*-statistics in [ ] *p*-values in ().

*Level of significance at 10%.

**Level of significance at 5%.

***Level of significance at 1%.

financial intermediary development in Nigeria over the period. From the results, crude oil price is the key short run driver of financial intermediary development in Nigeria.

The results of the four specifications of Model 2 (2a–2d) are not significantly different from the results of Model 1 specifications. The coefficient of crude oil price in specifications 2a–2c confirms the significant negative effect of crude oil price on the overall financial intermediary development, the ratio of private sector credit to GDP and the ratio of liquid liabilities to GDP. The results of specification 2d show that the short run negative effect of crude oil price on the ratio of bank assets to GDP is insignificant. As in Model 1 specifications, RGDPC and rate of inflation are found to be insignificant. Surprisingly, the coefficient of trade openness is negative and statistically significant in specifications 2a, 2c and 2d. The results in general show that the case of developing oil-exporting countries is different as economic activities are significantly influenced by oil price.

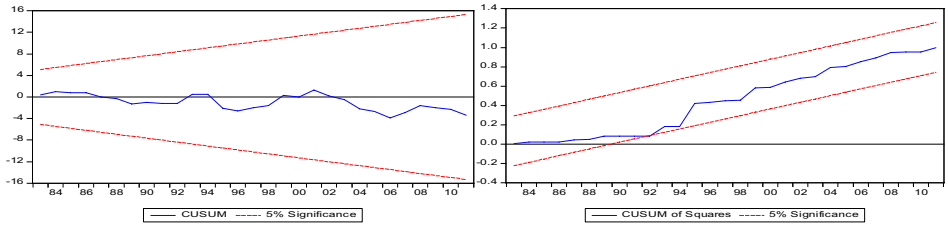


Figure 2. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 1a.

cogent economics & finance

Figure 3. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 1b.

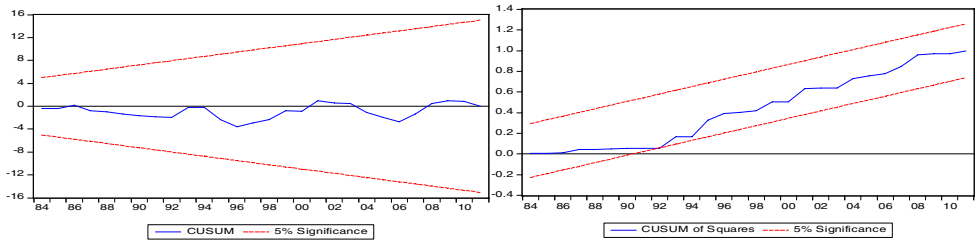


Figure 4. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 1c.

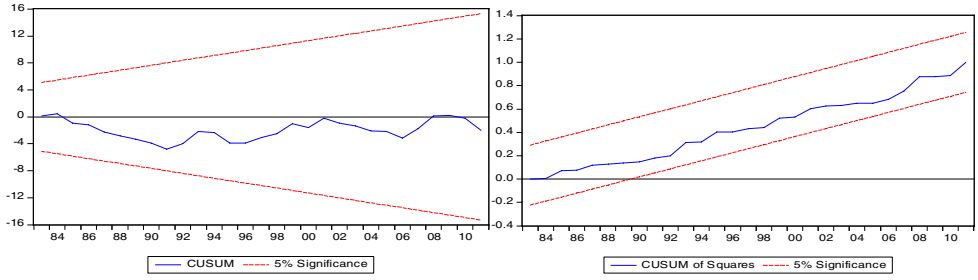


Figure 5. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 1d.

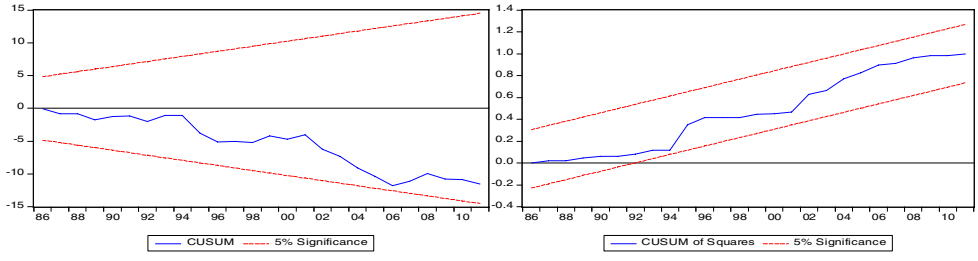


Figure 6. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 2a.

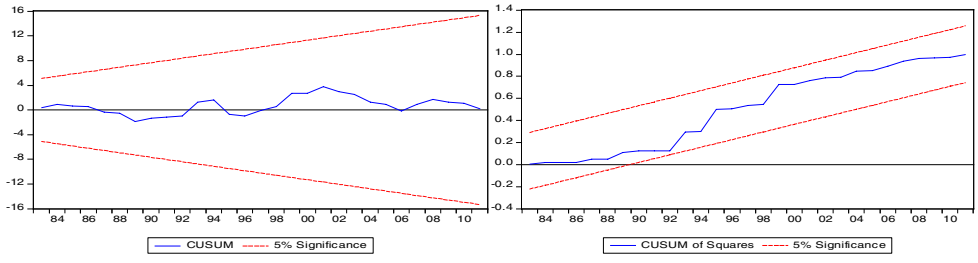


Figure 7. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 2b.

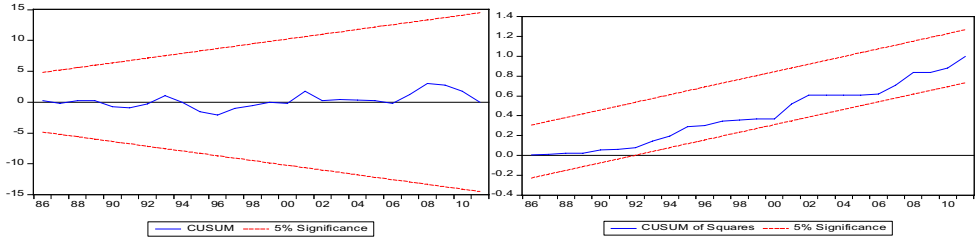


Figure 8. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 2c

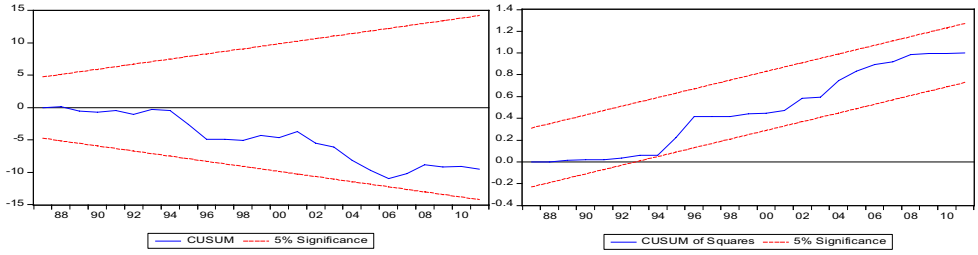
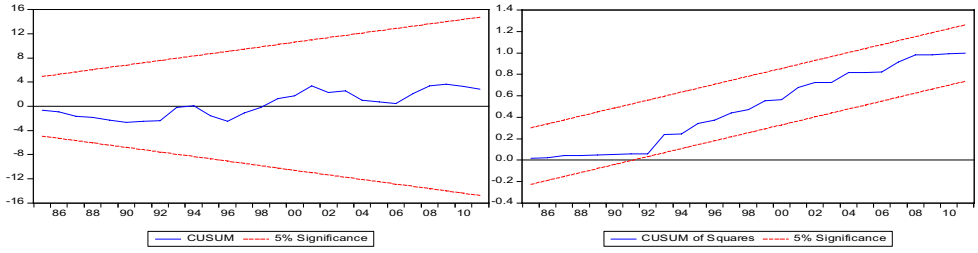


Figure 9. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 2d



3.5. Diagnostic and stability tests

From the diagnostic test results (see results in Table 7), there is no evidence of serial correlation and heteroscedasticity in each of the ARDL models specified. Figures 2–9 indicate the CUSUM and CUSUMSQ stability tests' results. The CUSUM and CUSUMSQ are within the critical boundaries for the 5% significance level (within the two straight lines). Thus, the CUSUM and CUSUMSQ tests indicate that the coefficients of the ARDL model in each of the specifications are stable.**Figure 2. Plot of CUSUM and CUSUMQ for coefficient stability of ECM Model 1a.**

4. Conclusion and policy implications

Controlling for the possible influence of macroeconomic performance and trade openness, this study examines the long run and short run relationship between crude oil price and financial intermediary development in Nigeria using the ARDL approach to cointegration analysis over the period 1975–2011. The results show that crude oil price is a key driver of financial intermediary development in Nigeria. A positive and significant long run relationship between financial intermediary development and crude oil price coexists with a negative short run relationship, highlighting the dual effects of crude oil price on economic activities in developing oil-exporting countries. In general, the results are in line with the predictions from relevant studies.

The positive significant long run effect of crude oil price on financial intermediary development in Nigeria confirms the high dependence of economic activities in developing oil-exporting countries on crude oil price. The results suggest that an increase in oil price will provide financial resources for economic activities and create demand for financial intermediary services in the Nigerian economy. However, with oil price significantly influenced by several economic and political factors in the international oil market (Alkhathlan, 2013), rather than domestic economic activities and development (Samargandi et al., 2014), a fall in crude oil price will impact negatively on the development of financial intermediation, making the long run development of financial intermediary development a function of crude oil price. Interestingly, the short run relationship suggests that crude oil price encourages short run economic conditions that adversely affect the degree to which economic activities generate incentives in the private sector and demand for credit in the economy. The negative relationship could be a result of some institutional factors resulting from windfall gains from increases in oil price. As explained by Beck (2011), institutional factors like rent-seeking will shift financial resources away from the financial sector resulting in weak financial intermediary system and the dominance of the public sector in resource allocation in the economy.

This study provides the first empirical assessment of the effects of crude oil price on financial intermediary development in a developing oil-exporting economy. From the results, the recent fall in crude oil prices in the international crude oil market holds some important policy implications for financial intermediary development in Nigeria and other developing oil-exporting countries. Controlling the high dependence of financial intermediary sector on crude oil price in Nigeria will reduce the systematic risk exposure of financial intermediaries and enhance efficiency in resource mobilization and allocation in the oil-dependent economy. To achieve this objective, a well-structured economic diversification policy is needed. There is also every need to enhance the various regulatory, supervisory, institutional and legal frameworks in the country to instil confidence in the economy, lessen the dominance of the public sector in resource allocation, due to the high dependence of the public sector on oil revenue, and strengthen the resource mobilization and allocation efficiency in the financial intermediary sector. Such strategy could help lessen the dependence of the Nigerian economy on crude oil and strengthen the development of financial intermediation.

Funding
The authors received no direct funding for this research.

Author details
Chinazaekpere Nwani[1]
E-mail: c.nwani@rgu.ac.uk
ORCID ID: http://orcid.org/0000-0003-4451-1833
Eugene Iheanacho[1,2]
E-mail: dreugeneiheanacho@gmail.com
Chijioke Okogbue[3]
E-mail: chijioke.okogbue@unn.edu.ng
[1] Department of Economics, Banking and Finance, Gregory University Uturu, P.M.B. 1012, Uturu, Abia, Nigeria.
[2] Department of Economics, Abia State University, P.M.B. 2000, Uturu, Abia, Nigeria.
[3] Department of Economics, University of Nigeria, Nsukka, Nigeria.

Citation information
Cite this article as: Oil price and the development of financial intermediation in developing oil-exporting countries: Evidence from Nigeria, Chinazaekpere Nwani, Eugene Iheanacho & Chijioke Okogbue, *Cogent Economics & Finance* (2016), 4: 1185237.

References

Alkhathlan, K. A. (2013). Contribution of oil in economic growth of Saudi Arabia. *Applied Economics Letters, 20*, 343–348. doi:10.1080/13504851.2012.703310

Almarzoqi, R., Naceur, M. S. B., & Kotak, A. (2015). *What matters for financial development and stability?* (IMF Working paper No. 15/173). Washington, DC: International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/wp/2015/wp15173.pdf

Ang, J. B., & McKibbin, W. J. (2007). Financial liberalization, financial sector development and growth: Evidence from Malaysia. *Journal of Development Economics, 84*, 215–233. doi:10.1016/j.jdeveco.2006.11.006

Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009). Financial development and openness: Evidence from panel data. *Journal of Development Economics, 89*, 285–296. doi:10.1016/j.jdeveco.2008.06.006

Barajas, A., Chami, R., & Yousefi, S. R. (2013). *The finance and growth nexus re-examined: Do all countries benefit equally?* (IMF Working paper No. 13/130). Washington, DC: International Monetary Fund. Retrieved from http://www.imf.org/external/pubs/ft/wp/2013/wp13130.pdf

Beck, T. (2011). *Finance and oil: Is there a resource curse in financial development* (Center Discussion Paper No. 2011-017). Tilburg University. Retrieved from https://pure.uvt.nl/portal/files/1316213/2011-017.pdf

Beck, T., Demirguc-Kunt, A., & Levine, R. (2000). A new database on the structure and development of the financial sector. *The World Bank Economic Review, 14*, 597–605. Retrieved from http://go.worldbank.org/X23UD9QUX0
http://dx.doi.org/10.1093/wber/14.3.597

Beck, T., Maimbo, S. M., Faye, I., & Triki, T. (2011). *Financing Africa: Through the crisis and beyond*. Washington, DC: The World Bank. doi:10.1596/978-0-8213-8797-9

Bekhet, H. A., & Matar, A. (2013). Co-integration and causality analysis between stock market prices and their determinates in Jordan. *Economic Modelling, 35*, 508–514. doi:10.1016/j.econmod.2013.07.012

Bittencourt, M. (2011). Inflation and financial development: Evidence from Brazil. *Economic Modelling, 28*, 91–99. doi:10.1016/j.econmod.2010.09.021

Boyd, J. H., Levine, R., & Smith, B. D. (2001). The impact of inflation on financial sector performance. *Journal of Monetary Economics, 47*, 221–248. doi:10.1016/S0304-3932(01)00049-6

Chuku, C. A. (2012). Linear and asymmetric impacts of oil price shocks in an oil-importing and -exporting economy: The case of Nigeria. *OPEC Energy Review, 36*, 413–443. doi:10.1111/j.1753-0237.2012.00220.x

Festić, M., Kavkler, A., & Repina, S. (2011). The macroeconomic sources of systemic risk in the banking sectors of five new EU member states. *Journal of Banking and Finance, 35*, 310–322. doi:10.1016/j.jbankfin.2010.08.007

Herwartz, H., & Walle, Y. M. (2014). Determinants of the link between financial and economic development: Evidence from a functional coefficient model. *Economic Modelling, 37*, 417–427. doi:10.1016/j.econmod.2013.11.029

Hou, Z., Keane, J., Kennan, J., & Willem te Velde, D. (2015). *The oil price shock of 2014: Drivers, impacts and policy implications* (ODI Working Paper No. 415). London: Overseas Development Institute.

Huang, Y. (2010). *Determinants of financial development*. Palgrave Macmillan. Retrieved from http://www.oapen.org/download?type=document&docid=392749
http://dx.doi.org/10.1057/9780230302495

Inder, B. (1993). Estimating long-run relationship in economics: A comparison of different approaches. *Journal of Econometrics, 57*, 53–68. doi:10.1016/0304-4076(93)90058-D

Iwayemi, A., & Fowowe, B. (2011). Oil and the macroeconomy: Empirical evidence from oil-exporting African countries. *OPEC Energy Review, 35*, 227–269. doi:10.1111/j.1753-0237.2011.00195.x

Jayaraman, T., & Choong, C. K. (2009). Growth and oil price: A study of causal relationships in small Pacific Island countries. *Energy Policy, 37*, 2182–2189. doi:10.1016/j.enpol.2009.01.025

Kim, D., Lin, S., & Suen, Y. (2010). Dynamic effects of trade openness on financial development. *Economic Modelling, 27*, 254–261. doi:10.1016/j.econmod.2009.09.005

Kurronen, S. (2015). Financial sector in resource-dependent

economies. *Emerging Markets Review, 23*, 208–229. doi:10.1016/j.ememar.2015.04.010

Lescaroux, F., & Mignon, V. (2008). On the influence of oil prices on economic activity and other macroeconomic and financial variables. *OPEC Energy Review, 32*, 343–380. doi:10.1111/j.1753-0237.2009.00157.x

Mehrara, M. (2008). The asymmetric relationship between oil revenues and economic activities: The case of oil-exporting countries. *Energy Policy, 36*, 1164–1168. doi:10.1016/j.enpol.2007.11.004

Mehrara, M., & Oskoui, K. N. (2007). The sources of macroeconomic fluctuations in oil exporting countries: A comparative study. *Economic Modelling, 24*, 365–379. doi:10.1016/j.econmod.2006.08.005.

Moshiri, S. (2015). Asymmetric effects of oil price shocks in oil-exporting countries: The role of institutions. *OPEC Energy Review, 39*, 222–246. doi:10.1111/opec.12050

Muhammad, Z., Suleiman, H., & Kouhy, R. (2012). Exploring oil price-exchange rate nexus for Nigeria. *OPEC Energy Review, 36*, 383–395. doi:10.1111/j.1753-0237.2012.00219.x

Naceur, S. B., Cherif, M., & Kandil, M. (2014). What drives the development of the MENA financial sector? *Borsa Istanbul Review, 14*, 212–223. doi:10.1016/j.bir.2014.09.002

Narayan, P. K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied Economics, 37*, 1979–1990. doi:10.1080/00036840500278103

Nili, M., & Rastad, M. (2007). Addressing the growth failure of the oil economies: The role of financial development. *The Quarterly Review of Economics and Finance, 46*, 726–740. doi:10.1016/j.qref.2006.08.007

Nwani, C., & Bassey Orie, J. (2016). Economic growth in oil-exporting countries: Do stock market and banking sector development matter? Evidence from Nigeria. *Cogent Economics & Finance, 4*, 1153872. doi:10.1080/23322039.2016.1153872

Omojolaibi, J. A. (2014). Crude oil price dynamics and transmission mechanism of the macroeconomic indicators in Nigeria. *OPEC Energy Review, 38*, 341–355. doi:10.1111/opec.12031

Omojolaibi, J. A., & Egwaikhide, F. O. (2014). Oil price volatility, fiscal policy and economic growth: A panel vector autoregressive (PVAR) analysis of some selected oil-exporting African countries. *OPEC Energy Review, 38*, 127–148. doi:10.1111/opec.12018

Ozturk, I., & Acaravci, A. (2011). Electricity consumption and real GDP causality nexus: Evidence from ARDL bounds testing approach for 11 MENA countries. *Applied Energy, 88*, 2885–2892. doi:10.1016/j.apenergy.2011.01.065

Pesaran, M., Shin, Y., & Smith, R. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*, 289–326. doi:10.1002/jae.616

Poghosyan, T., & Hesse, H. (2009). *Oil prices and bank profitability: Evidence from major oil-exporting countries in the Middle East and North Africa* (IMF Working paper No. 09/220). Washington, DC: International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/wp/2009/wp09220.pdf

Quixina, Y., & Almeida, A. (2014). *Financial development and economic growth in a natural resource based economy: Evidence from Angola* (FEP Working Papers No: 542). Porto: Faculty of Economics, University of Porto. Retrieved from http://www.fep.up.pt/investigacao/workingpapers/wp542.pdf

Rajan, R. G., & Zingales, L. (2003). The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics, 69*, 5–50. doi:10.1016/S0304-405X(03)00125-9

Rother, P. C. (1999). *Explaining the behaviour of financial intermediation: Evidence from transition economies* (IMF Working paper No. 99/36). Washington, DC: International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/wp/1999/wp9936.pdf

Rousseau, P. L., & Yilmazkuday, H. (2009). Inflation, financial development, and growth: A trilateral analysis. *Economic Systems, 33*, 310–324. doi:10.1016/j.ecosys.2009.06.002

Samargandi, N., Fidrmuc, J., & Ghosh, S. (2014). Financial development and economic growth in an oil-rich economy: The case of Saudi Arabia. *Economic Modelling, 43*, 267–278. doi:10.1016/j.econmod.2014.07.042