

The Role of Institutional Quality in Oil Price-Unemployment Nexus in African and Asian Oil-Exporting Countries

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Abstract

This study adopts panel OLS and panel ARDL to examine the role of institutional quality in institutional quality in oil price-unemployment nexus in African and Asian oil-exporting countries. The POLS results reveal that an increase in oil price does not reduce unemployment in African oil-exporting countries whereas it reduces unemployment in Asian oil-exporting countries. However, interaction of oil price with institutional quality variables such as democratic accountability and rule of law leads to reduction of unemployment in African oil-exporting countries while the interaction of control of corruption and government stability with oil price leads to a further reduction in unemployment in Asian oil-exporting countries. The panel ARDL results, however, show that an increase in oil price leads to a reduction in unemployment in African oil-exporting countries only in the short run while it leads to a reduction in unemployment in Asian oil-exporting countries only in the long run. The effect of the interaction of institutional quality with the oil price, even though slightly changes when PARDL is employed, it largely remains ditto when compared with POLS. Given our results, we conclude that each of the oil-exporting countries needs to strengthen some aspects of their institutional quality apparatuses to ensure that an increase in the oil price brings about the desirable effect on unemployment. Precisely, the fight against corruption and government instability must be given the utmost attention in African oil-exporting countries while the rule of law and democratic accountability must be prioritised in Asian oil-exporting countries.

Keywords: Oil Price, Unemployment, Institutional Quality, POLS, PARDL

JEL Classifications: C33; E24; L71; O17

Statements and Declarations

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Conflict of interest

There is no conflict of interest to express

1.0. Introduction and Motivation

This study examines the role of institutional quality in oil price-unemployment nexus in oil-exporting countries comprise of African and Asian countries. The motivation for this study emanates from the recent empirical findings documented from the studies that examined the effect of oil price shocks on unemployment in both oil-exporting and oil-importing countries (see Alkhateeb, et al. 2017; Bocklet and Baek, 2017; Cuestas and Gil-Alana, 2018; Cuestas and Ordóñez 2018; Karaki; 2018, Cheratian, Farzanegan and Goltabar, 2019; Kisswani and Kisswani, 2019; Ordóñez, Monfort and Cuestas, 2019; Kocaarslan, Soytaş and Soytaş, 2020; Nusair, 2020; Raifu, Aminu and Folawewo, 2020). All these studies, irrespective of whether it is conducted for oil-exporting or oil-importing countries, concluded that oil price shocks have a positive effect on unemployment. In other words, oil price shocks worsen the unemployment situation. For instance, Cuestas and Gil-Alana, (2018) concluded that an increase in oil prices has an adverse effect on unemployment in Central and Eastern European countries because they found a positive effect of an increase in oil prices on unemployment in the region. Similar findings were documented by Kocaarslan, et al., (2020) for the US and Nusair (2020) for the US and Canada, Ordóñez, Monfort and Cuestas (2019) for Spain. Surprisingly, the same results were found by Cheratian, et al., (2019) for oil-exporting countries of MENA and Raifu, Aminu and Folawewo (2020) for Nigeria. This looks puzzling considering the theoretical argument as regards the relationship between oil price and the economy in oil-exporting countries and oil-importing countries.

The theoretical argument suggests that an increase in oil prices should be a blessing to oil-exporting countries in the form of an increase in government revenue, increase in investment in infrastructural facilities, improvement in the economic outlook, provision of more decent jobs and reduction of poverty.¹ However, most of the time reverse seems to be the case. Given the findings from recent studies, some plausible explanations have been provided. One of the reasons attributed to the worsening unemployment situation in oil-exporting countries due to an increase in oil prices, as argued by Cheratian, et al., (2019), is the Dutch Disease problem characterising many resource-endowed countries, especially those countries from the developing countries. Dutch Disease, credited to Max Corden and Peter Neary, occurs when the booming sector leads to a decline in

¹ *This may not be true absolutely. For a theoretical explanation of the nexus between oil price and unemployment (see Carruth, Hooker and Oswald, 1998).*

other tradable sectors of the economy such as agricultural and manufacturing sectors. The shrinkage of the real sectors arises because the revenues realised from the sales of the products of the booming sector result in a significant increase in the values of the currencies of resource-endowed countries (Kojo, 2015). Such an increase in the exchange rate leads to the reallocation of labour away from non-booming sectors to the booming sector. In most cases, the booming sector may not have the capacity to absorb the labours from non-booming sectors. This usually leads to unemployment. Another channel is through the increase in the prices of non-booming sectors or non-tradable sectors results in high costs of production in those sectors and which in turn renders them uncompetitive in the international market. Consequently, the capacity to employ more workers would decline and unemployment would ensue (see Cheratian, et al. 2019; Ngandu, 2008).

Another strong explanation puts forward is the nature of the quality of institutions in most of the oil-exporting countries (Oechslin, 2010). In many oil-exporting countries, the quality of institutions is still at a low ebb. Corruption appears to be on the high side while rule of law, government accountability and socioeconomic conditions are not encouraging. The corruption Perception Index (CPI) released in 2019 shows that most oil-exporting (particularly from Africa and some parts of Asia) are characterised by a high level of corruption (Transparency International, 2019). For instance, Nigeria, the leading oil-producing and oil-exporting country in Africa ranked 146 out of 180 countries ranked in 2019, the same for Angola (146) which is the second-largest oil-producing in Africa. In Asia, Saudi Arabia, Kuwait, Iran, Iraq and Yemen ranked 51, 85, 146, 162 and 177 respectively. In such countries characterised by a high level of corruption, an increase in the prices of crude oil may not bring about any desirable outcomes because more revenues accrued to the governments may be diverted for personal gains or may not be used for the provision of infrastructural facilities that would lead to economic growth and employment. Moreover, political instability is more prominent or pervasive in most of the oil-exporting countries. In the course of trying to remain in power, the incumbent government usually engages in frivolous spending of oil-wealth on unproductive investment to win the elections or the incumbent may decide not to invest in critical infrastructure at all and use the oil wealth for personal gains if he perceives that he would not partake in the future return of the current public investment (Oechslin, 2010). Also, ethnic rivalry is common in many oil-exporting countries. The power struggle to control oil-wealth often degenerates into political upheaval with negative consequences on the economy and employment (Mohammed and Lenshie, 2017).

Given this, we focus on how institutional quality moderates the relationship between oil prices and unemployment in this study. As argued above, institutions play an indispensable role in the way the accrued benefits of the increase in the oil price of crude oil affects the economy and benefit the citizens. Given this, the objective is to investigate the role of institutional quality in oil price-unemployment nexus in African oil-exporting countries compared with Asian oil-exporting countries. This is our main empirical contribution to the existing studies as most existing studies only focus on oil price and unemployment nexus. To implement this objective, our primary estimation method is the panel autoregressive distributed lag method (PARDL). However, we begin with the use of panel OLS which accounts for individual country and time-specific effects as a baseline estimation technique as a baseline estimation method.

Given this introduction, section 2 focuses on methodology. Section 3 presents data sources and preliminary findings. The empirical findings are presented in section 4 while section 4 concludes with policy implications.

2.0. Methodology

The theoretical foundation which shows how a change in oil price affects unemployment is based on the model of efficiency wage developed by Caruth et al (1998). Caruth et al. (1998) argued that an increase in nonwage input price, considered as oil price, leads to a reduction in wages paid to workers. As a result of the nonzero profit condition in the product market, the workers must accept the lower wages for unemployment to rise. For a detailed derivation of this model and its extension see Bocklet and Baek, (2017) and Raifu, et al (2020). In this section, we present only the estimation technique models used for the analysis. Thus, to examine the role of institutional quality in oil price and unemployment nexus, our benchmark model is the pooled panel OLS. In the model, we account for individual country-specific effects and time (year) effects. The individual country-specific effect and time (year) effect are captured by dummy variables. The pooled panel OLS is specified as follows:

$$un_{it} = \alpha_0 + \alpha_1 roilp_{it} + \alpha_2 rgdpgr_{it} + \alpha_3 fdi_{it} + \alpha_4 cpi_{it} + \alpha_5 sse_{it} + \beta d_{ct} + \lambda d_{yt} + \varepsilon_{it} \quad (1)$$

Here un is the unemployment rate, $roilp$ is the real Brent oil price (real oil price is computed by dividing nominal Brent oil price measured in US dollar per barrel by US consumer price index), $rgdpgr$ is the real GDP growth rate, cpi stands for consumer price index, a proxy for the inflation

rate, fdi denotes foreign direct investment (% of GDP), sse is the secondary school enrolment d_c and d_y are the dummy variables that capture individual country-specific and time-specific respectively and ε is the error term assumed to be individual and identically distributed with zero mean and constant variance ($\varepsilon \sim IID(0, \delta^2)$). For oil-exporting countries, we expect that an increase in the crude oil price should have a reducing effect on unemployment. We expect this relationship because it is expected that an increase in oil price brings more revenues to the governments of oil-exporting countries. Such revenues could be invested in growth-induced infrastructural facilities which are expected to lead to a reduction in unemployment. Therefore, oil price and unemployment should be inversely related. We control for other variables and their inclusion in the model is based on their theoretical relationship with unemployment. For instance, real GDP growth rate and unemployment are expected to be negatively related according to Okun's law (Okun, 1962). Foreign direct investment is seen as one of the alternative ways to boost economic growth, investment and create jobs in developing countries. However, these gains from FDI depends on many factors, especially the structure of the economy of the country that houses FDI (Strat, Davidescu and Paul, 2015). In this study, we assume that FDI should have a negative effect on unemployment. It is expected that the relationship between unemployment and inflation should be negative according to the Phillips Curve Hypothesis (Phillips, 1958). Concerning secondary school enrolment and unemployment, we expect that the higher the level of education, the higher the likelihood of getting employment and thus secondary school enrolment should be negatively related to unemployment. All the variables are naturally logged.

The main objective of this study is to examine the role of institutions in the oil price and unemployment relationship. Thus, equation 2 is specified taking into consideration the mediating role of institutions in oil price-unemployment relations.

$$un_{it} = \alpha_0 + \alpha_1(roilp * inst)_{it} + \alpha_2rgdpgr_{it} + \alpha_3fdi_{it} + \alpha_4cpi_{it} + \alpha_5sse_{it} + \beta d_{ct} + \lambda d_{yt} + \varepsilon_{it} \quad (2)$$

Here all variables, except the interactive variables, remain as previously defined. $roilp * inst$ is the interaction of real oil price with the institutional variable. We consider five institutional variables in this study and they include control of corruption, bureaucratic quality, rule of law, democratic accountability and government stability. We also use Principal Component Analysis (PCA)

method to compute an institutional index from 5 institutional Variables. The institutional index serves as a proxy for the overall institutional quality variable.

We now specify the panel ARDL model. The method enables us to distinguish the effect of change in oil and its interaction with institutional variables on unemployment in the short-run and the long run. The panel Autoregressive Distributed Lag method was developed by Pesaran and Smith (1995) and Pesaran, Shin and Smith (1999). In order to use panel ARDL, the panel data must contain a relatively large (N) and large (T). The panel ARDL can be estimated in three ways, namely: Mean Group (MG), Dynamic Fixed Effect (DFF) and Pooled Mean Group (PMG). However, we are only using PMG in this study. PMG estimation assumes that the coefficients across the countries are ditto, in the long run, however, they are varied in the short run. Following the existing studies such as Magweva and Sibanda (2020) and Eregha and Mesagan (2020), the PMG framework is specified as follows:

$$un_{it} = \sum_{i=1}^p \gamma_{ij} un_{i,t-j} + \sum_{i=0}^q \phi_{ij} x_{i,t-j} + u_i + \varepsilon_{it} \quad (3)$$

$$i = 1, 2, \dots, N ; t = 1, 2, \dots, T$$

Here un_{it} remains as previously defined and x_{ij} ($k \times 1$) is the vector of explanatory variables (oil price, real GDP growth rate, FDI, CPI and secondary school enrolment), u_i are the fixed effects which could be country fixed effects or time fixed effects. The lag lengths in the model are presented by p and q for the dependent variable and independent variables respectively. The vector error correction model of the panel ARDL can be formalised as follows:

$$\Delta un_{it} = \rho_i (un_{i,t-1} - \theta_i' x_{i,t-1}) + \sum_{i=1}^{p-1} \gamma_{ij} un_{i,t-j} + \sum_{i=0}^{q-1} \phi_{ij} x_{i,t-j} + u_i + \varepsilon_{it} \quad (4)$$

In equation 4, ρ_i 's are the error correction parameters which symbolises the speed of adjustment towards the long-run equilibrium from the long-run disequilibrium. On a priori, it must be negative less than one and statistically significant for such dynamics to take place. θ_i 's are the long-run

parameters. Equations 3 and 4 capture the interactive effects of institutions and oil prices on unemployment.

The model that we estimate is represented as follows

$$\begin{aligned} \Delta un_{it} = & \beta_{0i} + \beta_{1i}un_{i,t-1} + \beta_{2i}roilp_{i,t-1} + \beta_{3i}rgdpgr_{i,t-1} + \beta_{4i}fdi_{i,t-1} + \beta_{5i}cpi_{i,t-1} + \beta_{6i}sse_{i,t-1} \\ & + \sum_{i=1}^{p1} \chi_{ij}\Delta un_{i,t-1} + \sum_{i=0}^{p2} \gamma_{ij}\Delta roilp_{i,t-1} + \sum_{i=0}^{p3} \eta_{ij}\Delta rgdpgr_{i,t-1} + \sum_{i=0}^{p4} \kappa_{ij}\Delta fdi_{i,t-1} + \sum_{i=0}^{p5} \nu_{ij}\Delta cpi_{i,t-1} + \\ & \sum_{i=0}^{p6} \pi_{ij}\Delta sse_{i,t-1} + u_i + \varepsilon_{it} \end{aligned} \quad (5)$$

$$i = 1, 2, \dots, N; t = 1, 2, \dots, T$$

The error correction model can be reparametrized as follows:

$$\begin{aligned} \Delta un_{it} = & \rho(un_{i,t-1} - \beta_{0i} - \beta'_{ni}x_{i,t-1}) + \sum_{i=1}^{p1} \chi_{ij}\Delta un_{i,t-1} + \sum_{i=0}^{p2} \gamma_{ij}\Delta roilp_{i,t-1} + \sum_{i=0}^{p3} \eta_{ij}\Delta rgdpgr_{i,t-1} + \sum_{i=0}^{p4} \kappa_{ij}\Delta fdi_{i,t-1} \\ & + \sum_{i=0}^{p5} \nu_{ij}\Delta cpi_{i,t-1} + \sum_{i=0}^{p6} \pi_{ij}\Delta sse_{i,t-1} + u_i + \varepsilon_{it} \end{aligned} \quad (6)$$

Where $\beta'_{ni}x_{i,t-1} = \beta_{2i}roilp_{i,t-1} + \beta_{3i}rgdpgr_{i,t-1} + \beta_{4i}fdi_{i,t-1} + \beta_{5i}cpi_{i,t-1} + \beta_{6i}sse_{i,t-1}$

While the panel ARDL captures the effects of changes in oil prices (oil price and institutions) and unemployment in the short-run and the long run, it does not, however, distinguish between a positive change effect from negative change effects in the short-run and the long-run.

3.0. Data Sources and Preliminary Findings

This study aims to examine the role of institutional quality in oil price-unemployment nexus in oil-exporting countries of Africa and Asia. The oil-exporting countries in Africa and Asia are selected based on the values of oil exported in 2018 (<http://www.worldstopexports.com/worldstop-oil-exports-country/>). Tables 1A and 1B in the appendix show the selected oil-exporting countries and their values of oil in each of the countries exported in 2018. We use unemployment data extracted from the World Development Indicators (ILO estimates). Oil price is obtained from the Federal Reserves of St Louis database. Institutional variables are sought from the International

Country Risk Guide (ICRG) of Political Risk Services Group. These variables include control of corruption, bureaucratic quality, rule of law, democratic accountability and government stability (see Table 1C for the definitions of the institutional variables). Other variables such as gross real domestic product growth rate (RGDPGR), consumer price index (CPI) and secondary school enrolment (SSE). GDPGR is used to proxy economic growth or national income. The data is annual data and it covers the period between 1991 and 2019. All variables are naturally logged except the GDPGR. The descriptive statistic of the variables is presented in Table 1 for African oil-exporting countries and Asian oil-exporting countries. As shown in the Table, the unemployment rate is high in African oil-exporting countries compared with Asian oil-exporting countries. In a specific term, the average unemployment rate in African oil-exporting countries stood at 10.58 while it stood at 4.54%. The unemployment rate ranges from 0.32% to 33.47% in oil-exporting countries of Africa while it ranges from 0.09% to 13.42%. Real oil prices average 0.52 dollars per barrel with minimum and maximum values of 0.17 dollars per barrel and 1.08 dollars per barrel during the period under consideration. The average economic growth in African oil-exporting countries and Asian oil-exporting countries stood at 4.07% and 5.16% respectively. This suggests that economic growth in Asian oil-exporting countries outpaces the economic growth in African oil-exporting countries. With regard to the institutional variables, the level of corruption in oil-exporting countries of African extraction is higher and alarming than the level of corruption in Asian oil-exporting countries. While the level of corruption in African oil-exporting countries stood, on average, at 2.24, that of Asian oil-exporting countries averaged 0.85 on the scale of 0 and 6.² The bureaucratic quality, democratic accountability, government stability and rule of law averaged 1.64, 3.26, 8.14, 3.08 and 0.71, 1.49, 2.22, 1.22 in African oil-exporting countries and Asian oil-exporting countries respectively. Figures 1 and 2 show the trend of unemployment in oil-exporting countries in Africa and Asia respectively. The figures show the diversity of unemployment figures in the oil-exporting countries of Asia and Africa. A cursory look at the figures shows that the unemployment rate is higher in African oil-exporting countries than Asian oil-exporting countries. Figure 3 shows the movement of oil prices in nominal and real-time over time. The real oil price is obtained by dividing the nominal oil price by the US consumer price index (CPI). It is evident that since declining in oil prices in the middle of 2014, the price of

² *The corruption value of zero means the highest level of corruption while the value of 6 denotes the lowest level of corruption*

crude oil has not returned to the price it was in the early months of 2014 when the crude oil price was above \$100 per barrel.

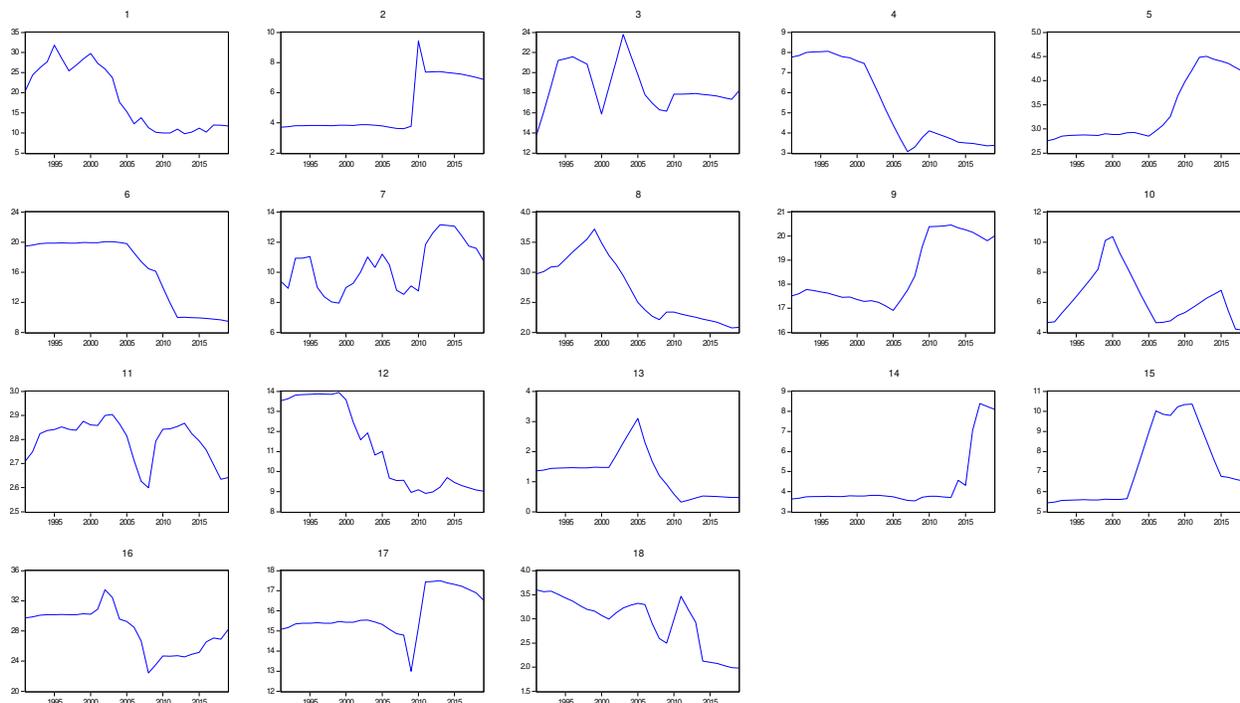
Table 1: Descriptive Statistic Results

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	S1.kew.	Kurt.
African Oil Exporting Countries									
unempl	522	10.578	7.786	0.317	33.473	0.487	30.229	0.785	2.803
rbrent	522	0.522	0.279	0.170	1.077	0.170	1.077	0.702	2.188
fdigdp	522	2.830	5.193	-9.128	50.636	-5.208	24.009	4.961	39.194
rgdpgr	522	4.066	3.778	-23.983	15.329	-7.137	13.666	-0.887	9.499
Cpi	522	89.111	67.518	0.000	617.350	0.030	349.819	2.954	18.273
Sse	522	47.979	26.000	5.283	109.444	5.397	102.360	0.229	2.093
burctq	522	1.638	0.646	0.000	4.000	0.000	3.000	0.505	3.591
Corr	522	2.240	0.864	0.000	5.000	0.500	5.000	0.411	3.598
demact	522	3.258	1.104	0.500	5.500	1.000	5.417	0.067	2.136
govstab	522	8.136	1.987	1.000	11.583	3.000	11.000	-0.485	2.840
reorder	522	3.075	1.145	0.000	6.000	1.000	6.000	0.626	2.475
Inst	522	0.000	1.000	-3.591	1.735	-2.584	1.441	-0.485	2.840
Asian Oil Exporting Countries									
unempl	522	4.538	3.595	0.091	13.520	0.200	13.307	0.903	2.866
rbrent	522	0.522	0.279	0.170	1.077	0.170	1.077	0.702	2.189
fdigdp	522	2.616	4.633	-37.155	43.912	-4.267	16.821	2.079	33.458
rgdpgr	522	5.157	7.629	-64.047	68.996	-13.127	32.592	0.593	32.046
Cpi	522	83.424	47.707	0.086	391.084	0.485	248.102	1.581	10.521
Sse	522	74.320	23.491	20.725	124.157	23.006	117.739	-0.387	2.249
burctq	522	1.955	0.715	0.000	3.500	0.000	3.375	-0.699	4.135
corr	522	2.277	0.846	0.000	4.500	0.000	4.000	0.209	3.117
demact	522	2.702	1.478	0.000	6.000	0.000	5.417	-0.089	2.060
govstab	522	8.251	2.215	0.000	12.000	0.000	11.500	-0.982	4.621
rulorder	522	3.699	1.223	0.000	6.000	0.000	6.000	-0.572	2.888
Inst	522	0.000	1.000	-2.693	2.629	-2.693	2.038	0.209	3.117

Source: Computed by the Authors

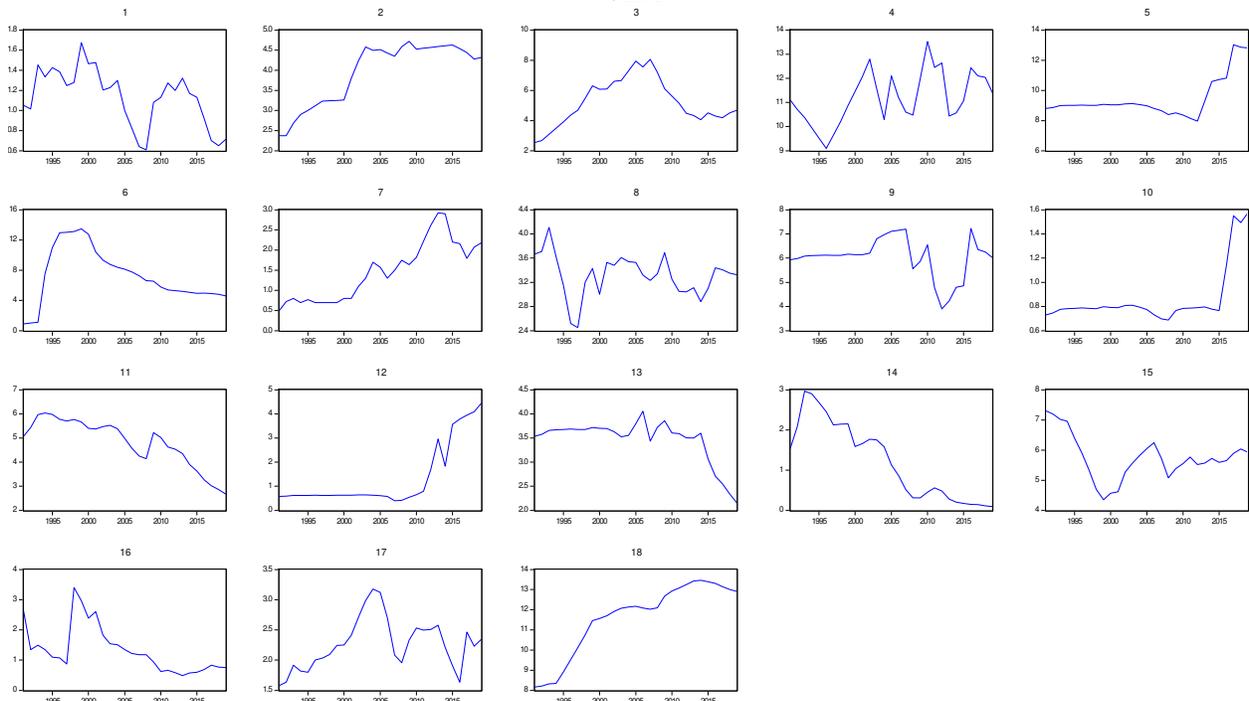
Note: unempl, rbrent, fdigdp, rgdpgr, cpi, sse, burctq, corr, demact, govstab, rulorder and inst are unemployment, real oil price (Brent), foreign direct investment (expressed in % of GDP), real GDP growth rate, consumer price index, secondary school enrolment (human capital), bureaucratic quality, control of corruption, democratic accountability, government stability, rule and order and institutional index respectively

Figure 1: Trend of Unemployment Rate in Oil-Exporting Countries in Africa



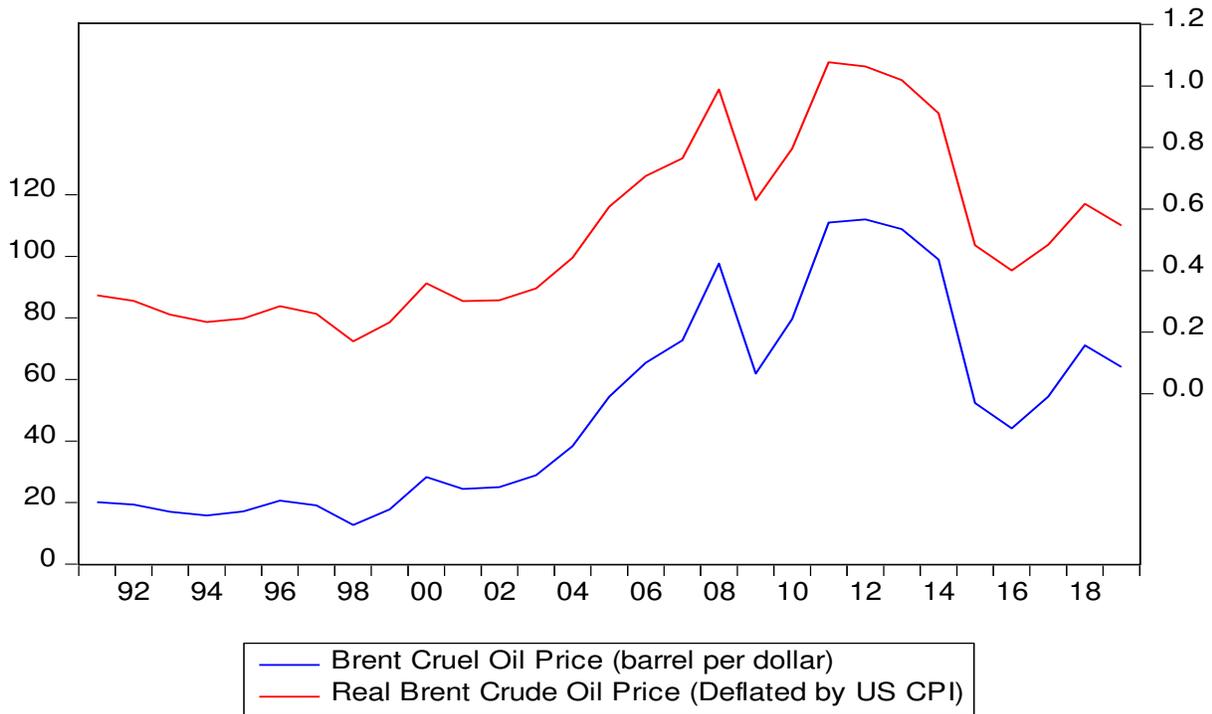
**Note: 1-Algeria, 2-Angola, 3-Botswana, 4-Cameroon, 5-Congo Democratic Rep., 6-Congo Republic, 7-Egypt
 8-Ethiopia, 9-Garbon, 10-Kenya, 11-Morocco, 12-Niger, 13-Niferia, 14-Senegal, 15-South Africa
 15-Sudab, 16-Tanzania, 17-Togo, 18-Tunisia**

Figure 2: Trend of Unemployment Rate in Oil-Exporting Countries in Asia



**Note: 1-Bahrain, 2-China, 3-Indonesia, 4-Iran, 5-Iran 6-Kazakhstan, 7-Kuwait, 8-Malaysia, 9-Mangolia
10-Myanmar, 11--Oman, 12-Pakistan, 13-Philippines, 14-Qatar, 15-Saudi Arabia, 16-Thailand,
17-United Arab Emirates, 18-Yemen**

Figure 3: Trend of Nominal and Real Crude Oil Price (Brent)



— Brent Cruel Oil Price (barrel per dollar)
— Real Brent Crude Oil Price (Deflated by US CPI)

3.1. Pairwise Correlation Results

Table 2 reports the results of pairwise correlation analysis between regressand and regressors. The correlation analysis is usually carried out to determine the strength of the association and the likelihood of multicollinearity among the variables of interest. As shown in the Table, it is evidence that there is a negative relationship between oil price and the unemployment rate in oil-exporting countries from both continents. However, the relationship between oil price and unemployment is very low and it is only statistically significant in African oil-exporting countries. We also find that RGDPGR has a negative and significant correlation with unemployment. Similarly, FDI also has a negative relationship with unemployment which is only significant in African oil-exporting countries. SSE is, however, positively associated with unemployment in the oil-exporting countries from both continents. The correlation between CPI and unemployment in African oil-exporting countries is positive and statistically significant where it is negative and insignificant in Asian oil-exporting countries. Among the regressors, the correlation is very with diver level of significance, suggesting that there is no multicollinearity.

Table 2: Pairwise Correlation Analysis Results

African Oil-Exporting Countries						
Variables	lunempl	lrbrent	rgdpgr	fdigdp	Lcpi	lsse
lunempl	1					
lrbrent	-0.083*	1				
rgdpgr	-0.205***	0.217***	1			
fdigdp	-0.081*	0.139***	0.037	1		
lcpi	0.091**	0.323***	0.164***	-0.064	1	
lsse	0.656***	0.310***	-0.03	-0.04	0.320***	1
Asian Oil-Exporting Countries						
lunempl	1					
lrbrent	-0.023	1				
rgdpgr	-0.143*	0.036	1			
fdigdp	-0.019	0.136*	0.134*	1		
lcpi	-0.039	0.471*	0.074	0.065	1	
lsse	0.04	0.273*	-0.086*	0.179*	0.401*	1

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Computed by the authors

Note: *l* preceding the variables implies that the variables are naturally logged

3.2. Unit Root Tests

In this section, the results of unit root tests are presented. We perform the unit root test to determine the stationary properties of our variables to avoid any sort of spurious regression. Specifically, we perform Maddala and Wu (1991) (hereafter MW) unit root test (a Fisher-type unit root test) and Pesaran (2007) unit root test. While MW (1999) is a first generational unit root test, Pesaran (2007) is a second generational unit root test. WU unit root test assumes cross-sectional independence among the countries. However, this assumption is likely to break down in the presence of cross-sectional dependence among the countries. Hence, Pesaran (2007) developed another unit root test that accounts for cross-sectional dependence among the countries. Even when the MW unit root test assumes that heterogeneity could exist but it can only exist in the sub-groups, Pesaran unit root test, on the other hand, assumes heterogeneity throughout the countries in the panel and the heterogeneity is driven by a common factor (see Kappler, 2007). The results of the unit root tests are presented in Table 3. As shown by MW unit test results for the panel of exporting countries in the two continents only RGDPGR and FDI are only stationary at levels. Other variables such as unemployment rate, real oil price, CPI and SSE are not. However, they become stationary after first difference. In the case of Pesaran cross-sectional dependence unit root test, we find that some variables such as unemployment (with one lag), RGDPGR, FDI and SSE (with one lag), are all stationary at a level while the rest of the variables are stationary after first difference. This means that we have a mixture of order 0 and order 1 which is a good condition for using panel ARDL.

3.3. Panel Cointegration Results

Here, we present the results of the panel cointegration test based on Pedroni's approach to cointegration in the panel structure. Pedroni's cointegration test is a residual-based cointegration test with the null hypothesis of no cointegration. This is tested against the alternative hypothesis that postulates that individual series in the panel are cointegrated. When the variables are cointegrated, it means that there is a long-run relationship among them. Table 4 presents the results of Pedron's cointegration test. From Table 4, the evidence shows that there is a long-run relationship among the variables because the evidence of cointegration exists in the models.

Table 3: Unit Root Test Results

African Oil-Exporting Countries						Asian Oil-Exporting Countries			
Maddala and Wu (1999) Unit Root Test									
Variable	Lag Length	Level		First Difference		Level		First Difference	
		Without trend	With trend	Without Trend	With trend	Without trend	With trend	Without Trend	With trend
unempl	0	18.441	19.406	212.322***	152.863***	40.216	30.986	304.437***	268.540***
unempl	1	45.497	55.675**	140.988***	89.748***	50.279	49.777**	201.534***	177.712***
rbrent	0	21.770	8.697	336.425***	251.989***	21.757	8.675	335.704***	251.348***
rbrent	1	26.026	12.477	225.445***	161.360***	26.054	12.505	225.807***	161.672***
rgdpgr	0	292.767***	270.752***	952.730***	701.288***	261.029***	212.133***	795.695***	667.291***
rgdpgr	1	149.803***	123.513***	535.699***	462.083***	157.764***	126.930***	441.449***	362.480***
fdigdp	0	151.221***	158.127***	839.924***	705.903***	101.494***	84.469***	547.792***	460.075***
fdigdp	1	71.833***	61.111***	363.454***	297.442***	83.838***	80.034***	328.250***	259.664***
cpi	0	15.210	16.003	132.801***	139.040***	5.418	15.590	159.251***	135.727***
cpi	1	18.177	41.123	98.197***	126.833***	5.110	37.624	88.003***	69.266***
sse	0	28.063	13.542	281.248***	249.904***	68.777***	39.163	248.313***	203.997***
sse	1	35.022	23.653	130.802***	111.627***	41.955	57.582***	145.579***	102.274***
Pesaran (2007) Panel Unit Root test (CIPS)									
unempl	0	0.741	2.883	-7.646***	-5.542***	1.849	2.021	-10.979***	-10.191***
unempl	1	-2.569***	-0.912	-5.115***	-2.750***	1.430	0.336	-6.113***	-6.298***
rbrent	0	19.070	18.294	19.070	18.294	19.070	18.294	19.070	18.294
rbrent	1	19.070	18.294	19.070	18.294	19.070	18.294	19.070	18.294
rgdpgr	0	-9.808***	-10.258***	-18.883***	-17.834***	-9.203***	-7.527***	-17.875***	-16.711***
rgdpgr	1	-5.767***	-6.482***	-14.327***	-12.736***	-6.120***	-4.883***	-12.805***	-11.094***
fdigdp	0	-6.269***	-4.522***	-16.368***	-14.964***	-3.108***	-2.329**	-15.108***	-13.758***
fdigdp	1	-3.037***	-1.095	-11.035***	-9.195***	-2.120**	-1.662**	-10.315***	-8.633***
cpi	0	6.003	4.473	-6.449***	-6.788***	1.022	2.609	-5.564***	-3.536***
cpi	1	2.444	0.835	-4.126***	-5.321***	-2.053**	-2.348***	-4.635***	-2.736***
sse	0	0.321	2.173	-9.660***	-8.869***	-0.926	1.917	-8.953***	-7.781***
sse	1	-1.698**	0.302	-5.269***	-4.263***	-2.540***	0.526	-5.055***	-3.282***

Null for MW and CIPS tests: series is I(1).

MW test assumes cross-section independence.

CIPS test assumes cross-section dependence is in form of a single unobserved common factor.

-multipurt- uses Scott Merryman's -xtfisher- and

Piotr Lewandowski's -pescadf-.

**** p<0.01, ** p<0.05, * p<0.1*

Source: Computed by the authors

Table 4: Pedroni Cointegration Test Results

	<i>rbrent</i>	<i>corr*rbrent</i>	<i>burctq*rbrent</i>	<i>demact*rbrent</i>	<i>govstab*rbrent</i>	<i>rulorder*rbrent</i>	<i>inst*rbrent</i>
African Oil Exporting Countries							
v-stat	-1.841**	0.413	-0.947	-0.787	-1.385*	-1.565*	-1.457**
rho-stat	4.369***	3.338***	3.321***	3.437***	3.978***	3.983***	4.027***
t-stat	3.245***	0.680	0.753	1.156*	2.549**	2.399**	2.653**
Adf-stat	3.695***	1.296	1.625*	2.379***	3.172***	3.160***	3.186***
rho-stat	5.713***	4.408***	4.493***	4.643***	5.298***	5.311***	5.333***
t-stat	4.152***	0.607	1.131	1.626*	3.423***	3.113***	3.507***
Adf-stat	3.171***	1.752*	0.848	1.908**	2.049**	3.710***	2.060**
Asian Oil Exporting Countries							
v-stat	-1.743*	-1.021	-1.59*	-1.814**	-1.527*	-1.688*	-0.918
rho-stat	3.981***	3.494***	4.094***	3.950***	3.994***	3.900***	3.105***
t-stat	2.656**	1.232	2.562**	1.753*	2.334**	2.457**	0.588
Adf-stat	1.907**	0.495	1.774*	-0.042	2.107**	2.492**	0.319
rho-stat	5.527***	4.879***	5.449***	5.559***	5.458***	5.546***	4.640***
t-stat	3.823***	1.573*	3.041***	2.427**	3.063***	3.891***	1.486*
Adf-stat	2.317**	0.782	2.090**	0.003	2.886***	3.453***	0.641

uthors

Note 1: All test statistics are distributed $N(0,1)$, under a null of no cointegration, and diverge to negative infinity (save for panel v)

*Note 2: *corr*rbrent*, *burctq*rbrent*, *demact*rbrent*, *govstab*rbrent*, *rulorder*rbrent* and *inst*rbrent* are the interactions of real oil price with control of corruptions, bureaucratic quality, democratic accountability, government stability, rule and order and institutional index respectively*

4.0 Empirical Findings

4.1. Pooled OLS Results

To implement our objective, we adopt two estimation approaches. As a benchmark, we estimate a pooled OLS that accounts for individual country-specific effect and year specific effect. In this case, we generate dummy variables to capture country-specific effect and year specific effect. Having done that, we then examine how a change in oil price and its interaction with institutional quality variables (control of corruption, bureaucratic quality, democratic accountability, government stability, rule of law and institutional quality index), affect unemployment. In the second level of analysis, we distinguish the effect of change in oil price and its interaction with institutional variables on unemployment in the short-run from that of the long run. We do this because it is believed that the effect of oil change in oil price on macroeconomic fundamentals including unemployment in the short-run might be different in the long run. Some authors have argued that the impact of oil prices on the economy dies out over time. Thus, changes in oil prices may not have any significant effect on the economy in the long run (Blanchard and Gali, 2007). In

this case, we employ a Panel Autoregressive Distributed Lag (PARDL) estimation method proposed by Pesaran and Smith (1995) and Pesaran, Shin and Smith (1999). Specifically, we use the Pooled Mean Group version of PARDL.

We begin by presenting the results of models 1 and 2. It is the results of the estimates of the Pooled OLS. In Model 1, we explore the effect of a change in oil price on unemployment in Africa and Asian oil-exporting countries. In Model 2, the interactive effect of oil price and institutional quality variables on unemployment is examined. The results are presented in Table 5. For African oil-exporting countries, an increase in oil price leads to a reduction in unemployment with the magnitude of the reduction in unemployment stands at 0.067%. Unfortunately, this effect is not statistically significant. This connotes that an increasing oil price which brings more revenue to the governments of African oil-exporting countries tends not to lead to a reduction in unemployment. When corruption, democratic accountability and government stability are interacted with the oil price, the coefficients of the relationship between oil price and unemployment are negative but not statistically significant. This suggests that the interaction corruption and democratic accountability with oil price tend to aggravate unemployment problem in African oil-exporting countries. Contrary, we discover that the interaction of bureaucratic quality and rule of law with oil price leads to the reduction in unemployment. The effect is statistically significant. To be more precise, the coefficients of the interaction of bureaucratic quality and rule of law with oil price stood at 0.279% and 0.139% respectively. This could suggest that effective governance and rule of law could help in reaping the reward of an increase in oil price in African oil-exporting countries. It could also imply that, in some African oil-exporting countries, there has been an improvement in the bureaucratic process (effectiveness in discharging government duties) and enforcement of the rule of law which is shaping the way government business is conducted, that in turn, is having positive feedback to the economy and by extension employment. Overall, the interaction of institutional index (computed from the other five institutional variables) and oil price have a negative impact on unemployment, the effect is negligible for it is not statistically significant.

In the case of Asian oil-exporting countries, we find that change in oil price has a significant negative effect on unemployment with a magnitude of effect that stood at 0.169%. The effect is statistically significant suggesting that an increase in oil price reduces unemployment in Asian oil-

exporting countries. This is in contrast to the results obtained for the African oil-exporting countries in which the negative effect of the increase in oil price on unemployment is insignificant. This could be as a result of differences in the management of oil proceeds in oil-exporting countries in the two regions. This result is boosted when we interact corruption with the oil price. We find that the interaction of corruption with oil price leads further to the reduction in unemployment with the magnitude of reduction stood at 0.219%. A similar trend is observed in the case of the interaction of government stability with the oil price. It is found that the interaction of government stability with oil price leads to the reduction in unemployment by 0.392% in Asian oil-exporting countries. These results are not surprising because many Asian countries including oil-exporting countries have a zero tolerance for corruption. Hence, this helps them to judiciously use the accrued oil revenue from the increase in oil price for the betterment of their economy and the welfare of their citizens. Also, the government is relatively stable in the Asian oil-exporting countries to many African oil-exporting countries. Most of these Asian oil-exporting countries practise either a monarchical system of government or communist form of government which is rarely challenged and as well organised in the time of transition from one government to the other. This is unlike the case of many African countries, even though they practise a democratic system of government, elections are always characterised by violence and loss of properties and lives. Despite these advantages over the African oil-exporting countries, we also find that interaction of bureaucratic quality, democratic accountability, rule of law and institutional index worsen unemployment situation. Specifically, the interaction of oil price with bureaucratic quality, democratic accountability, rule of law and institutional index leads to an increase in unemployment by 0.043%, 0.099%, 0.288% and 0.057% respectively. However, out of these estimated coefficients, only the coefficients of democratic accountability and rule of law are statistically significant, suggesting that lack of democratic accountability and rule of law can worsen the wellbeing of citizens of oil-exporting countries from the Asian region. This is not surprising because, as previously argued, most of the oil-exporting countries from Asia do not practise a democratic form of government, hence, the lack of democratic accountability and rule of law. The absence of democratic accountability and rule of law has the potential to thwart the efforts of governments in those countries to curb corruption to foster discipline and to ensure some level of accountability in the discharge of public services. The lack of rule of law, in particular, is potential enough to undermine citizen's rights and welfare which could, in turn, affect their employability

and productivity. This is shown in the positive interactive effect of oil price and overall institutional quality on unemployment, even though the positive effect on unemployment is not statistically significant.

Table 5: Effect of Oil Price and its Interactions with the Institutional Variables on Unemployment

	African Oil Exporting Countries							Asian Oil Exporting Countries						
	lunempl	lunempl	lunempl	lunempl	lunempl	lunempl	lunempl	lunempl	Lunempl	lunempl	Lunempl	lunempl	lunempl	lunempl
oilprice	-0.067 (0.046)							-0.169** (0.080)						
lcrbrent		-0.001 (0.044)							-0.219*** (0.075)					
lbrbrent			-0.279*** (0.051)							0.043 (0.086)				
ldrbrent				-0.039 (0.039)							0.099** (0.049)			
lgrbrent					-0.070 (0.057)							-0.392*** (0.103)		
lrrbrent						-0.138** (0.060)							0.288** (0.125)	
linstrbrent							-0.050 (0.044)							0.057 (0.078)
rgdpgr	-0.015*** (0.003)	-0.015*** (0.003)	-0.015*** (0.003)	-0.015*** (0.003)	-0.014*** (0.003)	-0.015*** (0.003)	-0.014*** (0.003)	-0.006** (0.003)	-0.006** (0.003)	-0.010*** (0.003)	-0.006** (0.003)	-0.004 (0.003)	-0.005** (0.003)	-0.006** (0.003)
fdigdp	-0.015*** (0.002)	-0.015*** (0.002)	-0.015*** (0.002)	-0.015*** (0.002)	-0.015*** (0.002)	-0.014*** (0.002)	-0.015*** (0.002)	0.001 (0.005)	-0.001 (0.005)	-0.001 (0.005)	-0.002 (0.005)	-0.000 (0.005)	-0.003 (0.005)	0.001 (0.005)
lcp	0.042*** (0.007)	0.042*** (0.008)	0.046*** (0.007)	0.043*** (0.007)	0.043*** (0.007)	0.048*** (0.008)	0.043*** (0.007)	0.194*** (0.031)	0.097*** (0.034)	0.165*** (0.040)	0.105*** (0.035)	0.133*** (0.033)	0.116*** (0.033)	0.202*** (0.033)
lsse	-0.121** (0.049)	-0.116** (0.050)	-0.084* (0.049)	-0.123** (0.049)	-0.123** (0.049)	-0.117** (0.049)	-0.123** (0.049)	0.239 (0.158)	0.377** (0.154)	0.324** (0.163)	0.308* (0.161)	0.400*** (0.153)	0.422*** (0.157)	0.250 (0.159)
Cons	3.698*** (0.244)	0.288** (0.139)	-0.203 (0.159)	3.726*** (0.246)	3.811*** (0.268)	1.328*** (0.133)	3.732*** (0.245)	-0.127 (0.768)	-1.656*** (0.571)	-0.359 (0.785)	-0.060 (0.777)	-1.357** (0.575)	-2.381*** (0.621)	-0.364 (0.801)
Obs.	522	519	516	522	522	521	522	522	514	498	486	514	514	522
R-squared	0.936	0.935	0.940	0.936	0.936	0.937	0.936	0.833	0.846	0.841	0.837	0.848	0.845	0.833
country dum.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
year dum.	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard errors are in parenthesis, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note: lrbrent, lcrbrent, lbrbrent, ldrbrent, lgrbrent, lrrbrent and linstrbrent are real oil price, interactions of real oil price with control of corruption, bureaucratic quality, democratic accountability, government stability, rule of law and institutional index respectively. The variables are naturally logged. rgdpgr, fdigdp, lcp and lsse are real GDP growth rate, foreign direct investment, consumer price index and secondary school enrolment respectively.

4.2. Panel ARDL Results

In this section, we distinguish the effect of change in oil price and its interaction with institutional variables on unemployment in the short-run from the long run using a panel ARDL estimation method. The results are reported in Table 6. However, before interpreting the main results, we would first examine the results of the error correction model which shows convergence towards the long-run equilibrium from the short-run disequilibrium within the economic system. For this to occur, that is, the convergence towards the long-run equilibrium, the coefficients of error correction term must be negative, less than one and statistically significant on a priori ground. As observed in the Table, it is evident that all these criteria are met in almost all the models, especially for Asian oil-exporting countries except in some models such as the models where the oil price is interacted with bureaucratic quality and overall institutional quality variable. Even though the estimated coefficients of the error correction model in these models are negative and less than 1 they, however, are not statistically significant. A similar trend is observed for African oil-exporting countries in the models where the oil price is interacted with democratic accountability, government stability and overall institutional quality variable.

In the main results, we find that change in oil price reduces unemployment in the short-run whereas it worsens unemployment in the long run in oil-exporting countries of Africa. In other words, an increase in oil price has a negative and significant effect on unemployment in the short run. The long-run results here corroborate with the POLS results. We observe the same pattern of effects when we interact institutional variables with the oil price. Specifically, the interaction of oil price with corruption, bureaucratic quality, democratic accountability, government stability, rule of law and overall institutional index results in a reduction in unemployment in the short-run by 0.029%, 0.025%, 0.026%, 0.028%, 0.026% and 0.027% respectively in oil-exporting countries of Africa. Among these, the estimates of the coefficients of the interaction of oil price with government stability and overall institutional quality are not statistically significant. Conversely, the interaction of oil price with corruption, bureaucratic quality, democratic accountability, government stability, rule of law and overall institutional quality worsen unemployment in the long run. Albeit, the estimated coefficients of the interaction of oil price with government stability and overall institution quality variable are not statistically significant. This implies a low level of institutional quality is detrimental to unemployment reduction in the long run in oil-exporting countries of

Africa. This could also suggest that most anti-corruption crusade, rule of law, government accountability in most African countries are ephemeral and have no meaningful impact on the economies and welfare of the citizens in the long run.

In the case of Asian oil-exporting countries, we find that change in oil price exerts insignificant negative influences on unemployment in the short-run in all the models. With the existence of institutional quality, the impact of change in oil price remains insignificant. However, in the long run, it is found that an increase in oil price reduces unemployment by 0.384%. The interaction of oil price with corruption further leads to the reduction in unemployment by 0.471%. This suggests the effective control of the corruption in Asian oil-exporting countries tends to enable the government to invest judiciously the revenue realised from the increase in the price of crude oil which in turn is reflected in their economies, especially reduction in unemployment in the region. Surprisingly, the interactive effect of rule of law, with the oil price, here, yield a negative significant effect on unemployment in the long run. When we interact oil price with the rule of law, unemployment reduces by 0.334%. The same pattern of effect is observed when we interact overall institutional variable with oil price on unemployment. As shown in the Table, unemployment reduces by 1.094% when the oil price is interacted with the overall institutional variable. This suggests institutions play an indispensable role in whether or not an increase in oil price that brings more revenue to the government of oil-exporting countries would lead to a decrease in unemployment, especially the oil-exporting countries of Asian extraction. However, the interaction of oil price with some institutional variables such as bureaucratic quality, democratic accountability and government stability worsens unemployment and their effects are positive on unemployment. Among the negative effects, the effects of the interaction of oil price with democratic accountability and government stability are statistically significant. The findings have far-reaching policy implications for Asian oil-exporting countries in that some institutional apparatus need to be strengthened to guarantee the wellbeing of their citizens.

Table 6: Panel ARDL Results of the Effects of Oil Price and Its Interaction with Institutional Variables on Unemployment

	African Oil Exporting Countries							Asian Oil Exporting Countries						
	lunempl	Lunempl	lunempl	lunempl	lunempl	lunempl	Lunempl	lunempl	lunempl	lunempl	lunempl	lunempl	lunempl	
LONG-RUN ANALYSIS														
lrbrent	0.127*** (0.034)							-0.384*** (0.088)						
lcrbrent		0.200*** (0.073)							-0.417*** (0.085)					
lbrbrent			0.175** (0.076)							0.003 (0.043)				
ldrbrent				0.403*** (0.108)							0.046** (0.020)			
lgrbrent					0.077 (0.103)							0.102*** (0.026)		
lrrbrent						0.096*** (0.033)							-0.334*** (0.076)	
linstrbrent							0.056 (0.105)							-1.096*** (0.211)
rgdpgr	-0.041*** (0.008)	-0.128*** (0.035)	-0.137*** (0.036)	-0.062*** (0.019)	-0.154*** (0.041)	-0.029*** (0.005)	-0.157*** (0.042)	-0.068*** (0.015)	-0.090*** (0.017)	-0.077*** (0.007)	0.000 (0.003)	-0.001 (0.003)	-0.065*** (0.014)	-0.109*** (0.025)
fdigdp	-0.032*** (0.007)	-0.013 (0.021)	0.003 (0.019)	-0.031*** (0.010)	0.018 (0.024)	-0.046*** (0.008)	0.022 (0.025)	-0.009 (0.009)	-0.004 (0.008)	-0.008 (0.007)	-0.020*** (0.004)	-0.025*** (0.004)	-0.005 (0.008)	0.166*** (0.034)
lcpi	0.072*** (0.021)	-0.090 (0.063)	-0.156** (0.079)	-0.052 (0.060)	-0.108 (0.089)	0.044* (0.024)	-0.100 (0.091)	0.120 (0.078)	0.219*** (0.085)	-1.279*** (0.120)	0.030 (0.019)	0.003 (0.022)	0.127 (0.080)	-0.229 (0.140)
lsse	-0.436*** (0.089)	0.875*** (0.293)	0.930*** (0.322)	0.822*** (0.286)	1.006*** (0.353)	-0.429*** (0.068)	1.035*** (0.360)	0.436 (0.307)	-0.059 (0.325)	2.921*** (0.429)	-0.338*** (0.128)	-0.210 (0.146)	0.384 (0.296)	0.097 (0.370)
SHORT-RUN ANALYSIS														
ect(-1)	-0.131*** (0.036)	-0.034* (0.020)	-0.035* (0.020)	-0.028 (0.024)	-0.033 (0.021)	-0.142*** (0.038)	-0.032 (0.021)	-0.080*** (0.031)	-0.074** (0.030)	-0.046 (0.031)	-0.127*** (0.041)	-0.114*** (0.038)	-0.082** (0.033)	-0.034 (0.024)
d.lrbrent	-0.023* (0.013)													
d.lcrbrent		-0.029* (0.016)							-0.013 (0.033)					
d.lbrbrent			-0.025* (0.013)							-0.036 (0.035)				
d.ldrbrent				-0.026** (0.013)							-0.031 (0.038)			
d.lgrbrent					-0.028 (0.017)							-0.022 (0.023)		
d.lrrbrent						-0.026** (0.013)							-0.000 (0.031)	
d.linstrbrent							-0.027 (0.017)							-0.035 (0.098)
d.rgdpgr	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)	-0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.003** (0.001)	0.003* (0.002)	0.003 (0.002)	0.000 (0.002)	0.001 (0.002)	0.003* (0.001)	0.002** (0.001)
d.fdigdp	-0.003 (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.005 (0.005)	-0.006 (0.005)	-0.002 (0.005)	-0.007 (0.005)	-0.007 (0.008)	-0.009 (0.007)	-0.006 (0.007)	-0.007 (0.010)	-0.003 (0.009)	-0.008 (0.008)	-0.011 (0.010)
d.lcpi	0.159** (0.063)	0.199*** (0.066)	0.217*** (0.073)	0.196*** (0.075)	0.237*** (0.079)	0.186*** (0.058)	0.238*** (0.079)	0.042 (0.488)	-0.005 (0.510)	0.133 (0.586)	-0.272 (0.514)	-0.302 (0.357)	0.041 (0.522)	-0.458 (0.352)
d.lsse	0.007 (0.097)	-0.018 (0.085)	-0.024 (0.087)	-0.029 (0.091)	-0.028 (0.086)	-0.007 (0.092)	-0.028 (0.086)	0.308* (0.162)	0.392** (0.171)	-1.988 (2.178)	0.358** (0.141)	0.322*** (0.118)	0.343** (0.173)	0.353*** (0.137)
cons	0.490*** (0.161)	-0.031*** (0.011)	-0.033*** (0.011)	-0.031** (0.016)	-0.053** (0.021)	0.519*** (0.173)	-0.055** (0.023)	-0.123* (0.069)	0.038 (0.031)	-0.302 (0.189)	0.379*** (0.136)	0.280*** (0.102)	-0.077 (0.052)	0.081 (0.053)
obs.	504	500	497	504	504	502	504	504	496	478	462	496	496	504

Standard errors are in parenthesis, *** p<0.01, ** p<0.05, * p<0.1. Note: lrbrent, lcrbrent, lbrbrent, ldrbrent, lgrbrent, lrrbrent and linstrbrent are real oil price, interactions of real oil price with control of corruption, bureaucratic quality, democratic accountability, government stability, rule of law and institutional index respectively. The variables are naturally logged. rgdpgr, fdigdp, lcpi and lsse are real GDP growth rate, foreign direct investment, consumer price index and secondary school enrolment respectively.

5.0. Conclusion and Policy Implications

This study examined the role of institutions in the oil price-unemployment nexus in the oil-exporting countries of Africa and Asia. To get a holistic view of how institutional quality affects the relationship between oil price and unemployment, two estimation methods are used and they include Pooled OLS and Panel ARDL. Series of preliminary tests such correlation analysis, unit root tests and cointegration test.

The empirical results are diverse and distinguished clearly how institutional quality variables affect the relationship between oil price and unemployment in oil-exporting countries of Africa and Asia. From the pooled OLS results, it is found that a change in oil price though could lead to a reduction in unemployment, such a reduction in unemployment is immaterial in oil-exporting countries of Africa. The results remain unchanged when we interact oil price with control of corruption, democratic accountability, government stability and aggregate institutional index as the negative interactive effects are largely not statistically significant. However, when the oil price is interacted with bureaucratic quality and rule of law, there is a significant reduction in unemployment. The results we attribute to a significant improvement in the ways government officials are discharging their duties and the presence of democratic governments in many African countries. In the case of oil-exporting countries of Asia, change in oil price has an instant negative and significant influence on unemployment, suggesting that an increase in oil price reduces unemployment in oil-exporting countries of Asia. Unemployment reduces further when the oil price is interacted with control of corruption and government stability. The results are plausible in the context of the aggressive way of controlling corruption by the governments of Asian countries. However, the interaction of oil price and democratic accountability and rule of law worsens unemployment situation in oil-exporting countries of Asia. These findings are attributed to the lack of a democratic system or rule of law in most of the Asian oil-exporting countries.

The results from the panel ARDL show that the reducing effects of change in oil and interactions with the institutional variable on unemployment are a short-run phenomenon in African oil-exporting. In the long run, oil price and its interaction with institutional variables worsen unemployment. Conversely, even though unemployment is negatively affected by a change in oil price and its interactions with institutional variables, such effects are not statistically significant in the short run. However, change in oil price and its interactions with many institutional variables

reduce unemployment in the long run. This suggests a reducing effect of change in oil price and its interaction with institutional variables are a long-run phenomenon in Asian oil-exporting countries.

The policy implications of our findings are straight forwards. Different intuitional apparatuses play an important role in how the oil price affects unemployment, while the rule of law and democratic accountability prove indispensable to a reduction in unemployment as a result of a change in oil price in African oil-exporting countries, the control of corruption and government stability is germane to whether a change in oil price would reduce unemployment in Asian oil-exporting countries. Overall, the quality of institutions in African oil-exporting countries will worsen the reducing effect of oil increase oil price on unemployment while the quality of institutions in Asian oil-exporting countries will further enhance the reducing effect of an increase in oil prices. Hence, fight against corrupt activities and ensure government accountability must be the utmost priority of governments in African oil-exporting countries if the benefits of an increase in oil prices are going to be welfare-enhancing. In the case of Asian oil-exporting countries, a democratic system that embraces the rule of law and democratic accountability must be vigorously pursued if the benefits of an increase in oil price bring more revenue to the governments of oil-exporting countries in Asia are going beneficiary to their citizens.

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Appendix 1

Table 1A: Oil-Exporting Countries in Africa

S/N	Rank	Exporter	Crude-Oil Export (\$)	% Total World
1	9	Nigeria	\$43,559,567,000	3.8
2	11	Angola	\$36,539,448,000	3.2
3	20	Algeria	\$17,607,908,000	1.6
4	27	Ghana	\$5,194,952,000	0.5
5	31	Gabon	\$4,038,464,000	0.4
6	34	Egypt	\$2,146,790,000	0.2
7	35	Cameroon	\$1,694,897,000	0.1
8	41	Sudan	\$1,079,769,000	0.1
9	50	Tunisia	\$671,738,000	0.06

10	51	Democratic Rep. Congo	\$441,897,000	0.04
11	73	Senegal	\$25,096,000	0.002
12	83	Tanzania	\$3,847,000	0.0003
13	94	South Africa	\$189,000	0.00002
14	104	Botswana	\$10,000	0.000001
15	105	Kenya	\$7,000	0.000001
16	111	Ethiopia	\$1,000	0.0000001
17	112	Niger	\$1,000	0.0000001
18	113	Morocco	\$1,000	0.0000001

Note: Compiled by the Author

Source: <http://www.worldstopexports.com/worlds-top-oil-exports-country/>

Table 1B: Oil-Exporting Countries in Asia

S/N	Rank	Exporter	Crude-Oil Export (\$)	% Total World
1	1	Saudi Arabia	\$182,500,000,000	16.1
2	3	Iraq	\$91,718,674,000	8.1
3	5	United Arab Emirates	\$58,417,410,000	5.2
4	6	Kuwait	\$51,727,068,000	4.6
5	7	Iran	\$50,823,249,000	4.5
6	10	Kazakhstan	\$37,796,202,000	3.3
7	18	Oman	\$22,465,542,000	2.0
8	19	Qatar	\$21,008,057,000	1.9
9	23	Malaysia	\$9,433,968,000	0.8
10	28	Indonesia	\$5,120,474,000	0.5
11	29	Bahrain	\$4,329,785,000	0.4
12	39	China	\$1,270,422,000	0.1
13	43	Yemen	\$969,267,000	0.1
14	44	Thailand	\$817,777,000	0.1
15	52	Mongolia	\$391,988,000	0.03
16	55	Pakistan	\$262,067,000	0.02
17	57	Philippines	\$202,677,000	0.02
18	68	Myanmar (Burma)	\$59,495,000	0.01

Note: Compiled by the Author

Source: <http://www.worldstopexports.com/worlds-top-oil-exports-country/>

Table 1C: Institutional Variables, Definition and Range

s/n	Institutional Variable	Definition
1	Corruption	Corruption is an evaluation of the level of corruption with a political system. it ranges from 0 to 6, with 0 corresponds to the highest level of corruption and 6 the lowest level of corruption
2	Bureaucratic quality	Bureaucratic quality is an assessment of the strength and quality of institutions within a political system. It entails the ability and expertise to govern without due pressure or without any drastic mean of changing policy or interruption of government services. It ranges from 0 and 4 with 0 symbolises a very low level of bureaucratic quality and 4 a high level of bureaucratic quality
3	Democratic Accountability	Democratic accountability measures how the government is responsible to its citizens. When the government is not responsible, it would be peacefully removed from office through elections in a democratic country or forcefully removed from office through non-democratic mean. It ranges from 0 to 6 with 0 is the least risk while 8 is the most risk
4	Government stability	Government stability entails the appraisal of the ability of the government to carry out its declared programmes and stay in office. It consists of three subcomponents which include government, legislative strength and popular support. Each of these subcomponents is assigned 4 points, totalling 12 points A score of 4 points implies a very low risk and a score of 0 point denotes a very high risk.
5	Law and order	It is the same thing as rule of law. It measures the strength and impartiality of the legal system and adherence or observance of the law. It ranges from 0 and 6 with zero means a low level of law and order while 6 means a high level of law and order.
6	Institution index	It is an index computed from the five institutional variables used in this study. It is used to measure the overall institutional quality of a country. It is computed using principal component analysis.

Source: The Political Risk Services Group – International Country Risk Guide Methodology

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