

COULD OIL SECTOR REVENUE DISPLACE MANUFACTURES EXPORT? EVIDENCE FROM SELECTED OIL-RICH AFRICAN COUNTRIES



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ABSTRACT

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This study investigated if revenue from the oil sector displaced the export of manufactures in oil-rich African countries over the period from 2000 to 2020. Using the panel ARDL model, findings indicate that in the short run, oil rents had an insignificant positive impact on the export of manufactures for all countries sampled. However, in the long run, the impact was positive. The short run results for the individual countries revealed that oil rents improved the export of manufactures for Nigeria and Ghana, while the impact for Libya, Algeria and Gabon was adverse. The study therefore concludes that the displacement of the export of manufactures by the proceeds from oil occurred at country-specific levels in the selected oil-rich African countries. Consequently, the study suggests that rents from oil in these countries should be used to develop facilities that encourage the development of the manufacturing sector.

Contribution/Originality: This study contributes to the literature by looking beyond the contribution of oil proceeds to GDP and investigating if revenue from the oil sector could crowd-out the export of manufactures in oil-rich African countries. We affirm the originality of the paper.

1. BACKGROUND TO THE STUDY

The conventional notion is that countries that are endowed with an abundance of natural resources are expected to experience growth in their real gross domestic product (GDP) because of the huge revenues accruable from the sale of these resources. However, paradoxically, the long-run results often show that these countries instead experience declining growth, while countries less endowed with natural resources experience impressive growth (Auty & Warhurst, 1993; Sachs & Warner, 1995). This phenomenon, commonly referred to as the resource curse, is mostly typical in African oil-rich countries, where several years of oil revenue has not translated into tangible growth. Appropriate policy formulation to diversify their economies away from the oil sector has always been a herculean task as oil revenues are wasted on frivolous ventures. As the performance of the budget is benchmarked on the international price of oil, which experiences frequent shocks, these countries often find it difficult financing their budget each fiscal year when oil price declines.

The displacement of the manufacturing sector by the oil sector is perhaps one of the major aspects of a resource curse paradox. With huge revenues flowing from the sale of oil, experience shows that African countries rich in oil deposits are often reluctant to diversify into the manufacturing sector. By relying heavily on the export of this key natural resource, [Sachs and Warner \(1995\)](#) noted that a rise in the price of such resource could lead to the diversion of resources meant for the manufacturing sector into the “non-traded goods sector”. Lack of development of the manufacturing sector in these countries implies that there are limited ranges of manufactured products to export, which end up worsening the trade terms of these countries. Too much reliance on the export of unprocessed natural resources in relation to the export of manufactures distorts growth projections because the volatility which is usually associated with the export prices of natural resources affects revenue projections of the countries involved ([Bellemare, Barrett, & Just, 2013](#)). In this study, we focus on the link between oil rents and the export of manufactures in selected oil-rich African countries. Africa was chosen because, first, the continent is host to many oil-producing countries, and second, unlike other major oil-producing countries, such as Norway, Russia and countries in the Middle East, African oil-rich countries lag behind in most indicators of development despite huge oil revenues accruing over the years. Other studies have focused on the impact of oil revenue on GDP; however, this paper addresses the issue of the nexus between rents from oil and the export of manufactures to ascertain if oil revenue could crowdout the manufacturing sector in these countries as a group and individually. Results from the study will shed light on the resource curse/benefit hypotheses, which are issues of debate among scholars.

1.1. Some Stylized Facts

In this study, seven top oil-producing countries were featured, namely Nigeria, Libya, Algeria, Egypt, the Democratic Republic of the Congo (DRC), Ghana and Gabon. According to information posted by [Goodrich \(2022\)](#), Nigeria ranked first in crude oil production with a production capacity of 1.36 million barrels per day (bpd). Next to Nigeria is Libya with a capacity of 1.17 million bpd, followed by Algeria with a capacity of 874,000 bpd. Egypt has a capacity of 560,000 bpd, the Democratic Republic of the Congo has a capacity of 271,000 bpd, Ghana has a capacity of 189,000 bpd and Gabon has a capacity of 160,000 bpd.

Table 1. GDP at constant 2015 US dollars for the selected oil-rich African countries, apart from Nigeria and the Democratic Republic of the Congo, whose GDP was measured at constant 2010 US dollars.

Year	NIGGDP	LYBGDP	ALGGDP	EGPGDP	DRCGDP	GHAGDP	GABGDP
2000	11.2	10.5	10.9	11.3	10.1	10.3	9.9
2001	11.3	10.5	10.9	11.3	10.1	10.3	9.99
2002	11.4	10.5	11.0	11.3	10.1	10.3	9.99
2003	11.4	10.6	11.1	11.3	10.2	10.4	10.0
2004	11.4	10.6	11.1	11.3	10.2	10.4	10.0
2005	11.4	10.7	11.1	11.3	10.2	10.4	10.0
2006	11.4	10.7	11.1	11.4	10.2	10.4	10.0
2007	11.5	10.7	11.1	11.4	10.3	10.5	10.0
2008	11.4	10.7	11.1	11.4	10.3	10.5	10.0
2009	11.5	10.7	11.1	11.4	10.3	10.5	10.0
2010	11.6	10.7	11.1	11.5	10.3	10.5	10.0
2011	11.6	10.3	11.2	11.5	10.4	10.6	10.0
2012	11.6	10.7	11.2	11.5	10.4	10.6	10.0
2013	11.6	10.6	11.2	11.5	10.4	10.8	10.1
2014	11.7	10.5	11.2	11.5	10.5	10.7	10.1
2015	11.7	10.4	11.2	11.5	10.5	10.7	10.2
2016	11.7	10.4	11.2	11.5	10.5	10.7	10.2
2017	11.7	10.5	11.2	11.6	10.5	10.7	10.2
2018	11.7	10.6	11.2	11.6	10.5	10.8	10.2
2019	11.7	10.6	11.2	11.6	10.6	10.8	10.2
2020	11.7	10.4	11.2	11.6	10.6	10.8	10.2

Note: NB: GDP is in billions of US dollars and it is in log form. NIG = Nigeria, LYB = Libya, ALG = Algeria, EGP = Egypt, DRC = Democratic Republic of the Congo, GHA = Ghana, and GAB = Gabon.

Table 1 shows the trend of GDP for the seven oil-rich African countries sampled in the study. Evidence shows that, prior to 2002, Egypt had the highest GDP among the countries within the sample period. However, beginning

from 2002 and all through the sample period, Nigeria’s GDP was highest among the group. Around 2014, Nigeria’s GDP was rebased by including the contribution of some sectors that were hitherto exempted from the GDP calculation, and as such, the country’s GDP was rated the highest in Africa. After Egypt, Algeria takes third position, while the countries with the least GDP are Gabon and DRC. The trend for Libya shows that its GDP plummeted from 2011, and this coincided with the period of the political crises in the country that led to the ousting of the Libyan leader. It can also be seen from the trend that Nigeria, Libya, Algeria and Gabon experienced drops in GDP in 2020, which was the year when the COVID-19 lockdowns started across different economies.

In terms of the contribution of oil rents to the GDP of the countries sampled, evidence in Figure 1 shows that throughout the whole sample period, Libya had the highest oil rents as a percentage of GDP. With a relatively low population, the per capita income of the country is among the highest in Africa. Gabon is had the second highest oil rents after Libya, followed by Algeria, while Ghana had the lowest oil rents within the sample period. Ghana’s trend of oil rents was flat in all the periods except in 2012 when it rose slightly. There are certain peculiarities in the trend of oil rents in Figure 1. One of the peculiarities is that the countries with the highest GDP are among the countries with lower oil rents, notably Nigeria and Egypt. A plausible reason for this could be because sources other than rents from oil equally contribute to their GDP. Another peculiarity is the shape of the trend, which is similar in each of the countries. For instance, after experiencing a rising trend prior to 2008, the trend for all the countries experienced a decline from 2008 as major economies were affected by the global financial recession that affected the international price of oil within that period. This phenomenon lingered till 2009 when the trend for all the countries approached a trough. In 2012, evidence shows that the trend for all the countries reached a peak, and this was the year when oil price was high, owing to concern regarding a possible international disruption in supply. In 2019, the trend for all the countries also shows a sharp decline, and this was the COVID-19 period when global oil price suffered a huge decline.

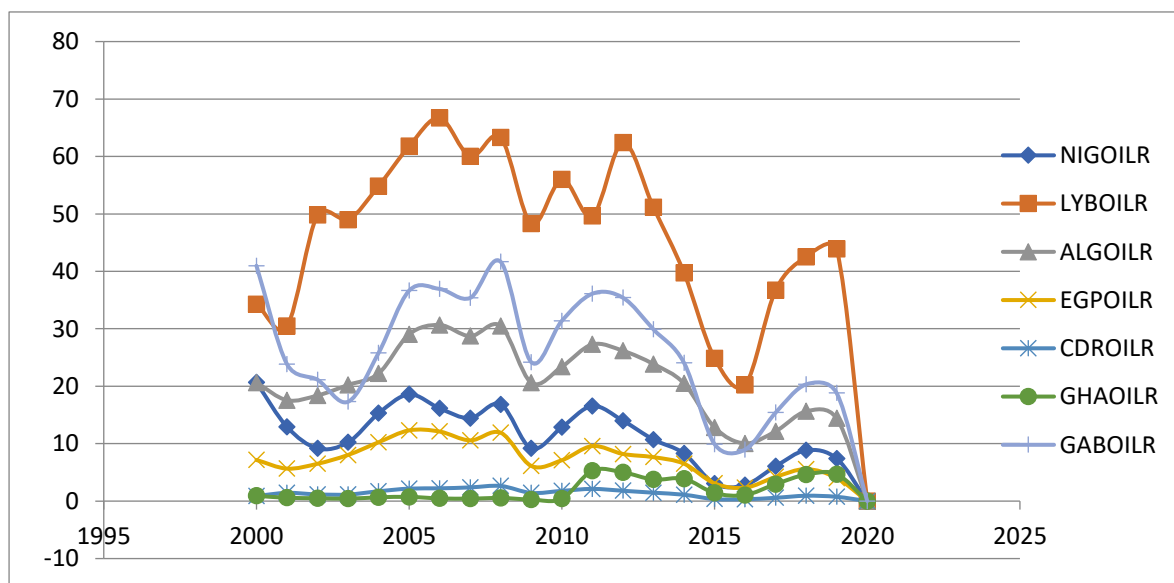


Figure 1. Trend of oil rent for each of the countries.

Note: OILR = oil rents measured as a percentage of GDP.

2. THEORETICAL BACKGROUND

Over the years, the question of whether the abundance of natural resources is a blessing or a curse has occupied the minds of scholars. The abundance of natural resources is expected to encourage the growth of an economy since they generate revenue. However, some theoretical views have been raised concerning the existence of the resource curse in natural resource-rich countries. *Auty and Warhurst (1993)* introduced the term “resource curse” to explain the paradox that exists in natural resource-rich countries. Scholars noted that, in the long run, countries rich in

natural resources experience declining growth compared to countries with scarce natural resources. The resource curse phenomenon has been explained in diverse ways by different scholars. As observed by [Sachs and Warner \(1995\)](#), the tradable manufacturing sector is displaced by a high dependence on natural resources. The authors contended that three sectors exist in the economy, notably a non-traded sector, a tradable resource sector and a tradable non-resource manufacturing sector. The summary of their viewpoint is that since only the manufacturing sector can be improved technologically through labor augmentation, the more revenue a country receives from its natural resources, the higher the domestic demand for non-traded goods. As long as the non-traded sector goods cannot be imported, the rise in their prices will encourage the channeling of labor and capital into the sector thereby reducing the amount of labor and capital that go into the manufacturing sector.

In another direction, some scholars, such as [Alsharif, Bhattacharyya, and Intartaglia \(2017\)](#) and [Bahar and Santos \(2018\)](#), have noted that the inability of a country to diversify its economy could be another possible transmission mechanism for the resource curse. The explanation is that a growing mineral sector usually results in a declining export diversification via the Dutch Disease effects. The Dutch Disease hypothesis originated from the experience of the Dutch that amassed a huge wealth after it discovered natural gas but failed to use the revenue productively. The outcomes of the Dutch Disease, among others include rising inflation and real exchange rate appreciation. With these outcomes, [Van der Ploeg and Poelhekke \(2009\)](#) observed that export concentration aggravates the prospects for growth of mineral-dependent economies by further worsening their vulnerability to exogenous shocks in prices, thus resulting in declining growth. Institutional quality has equally been noted to be another reason for the resource curse. As noted by [Mehlum, Moene, and Torvik \(2006\)](#), whether an abundance of natural resources can result in a curse or a blessing is partly dependent on the quality of institution in existence. Effective institutional arrangements will guarantee equitable distribution of the proceeds from natural resources, which will go a long way toward enhancing growth. Fluctuations in commodity prices are yet another identified channel for the resource curse. As noted by some scholars, such as [Bellemare et al. \(2013\)](#), fluctuations in commodity prices lead to uncertainty in the economy, distort the provisions in the budget, and frustrate the achievement of set objectives, thus slowing the growth of the economy.

2.1. Empirical Literature

The contribution of oil revenues to oil-producing countries has sparked research interests at both country-specific and cross-country bases with diverse results. In a panel study involving 11 Organization of Petroleum Exporting Countries (OPEC), [Olanipekun, Saint, Olawumi, Bekun, and Adewale \(2017\)](#) found that an increase in oil price resulted in an increase in external reserves of the countries sampled. This result found support in [Aimer \(2018\)](#), who observed that oil rent positively impacted the economy of nine selected oil-exporting countries. A positive effect of oil revenue is further supported by [Kakanov, Blöchliger, and Demmou \(2018\)](#), who revealed that, for 24 oil-exporting countries, a rise in oil prices encouraged growth, while growth declined when oil prices fell.

To further support the benefit accruing from oil export, [Taghizadeh-Hesary, Yoshino, Rasoulinezhad, and Chang \(2019\)](#), in a cross-country study comprising 21 countries, indicated that oil-exporting countries benefited from oil price increases. In another cross-country study involving Gulf Cooperation Council Countries, [Alkhateeb and Mahmood \(2020\)](#) found that while a rise in oil price improved the economy of some countries, the impact on others were adverse. With respect to institutional factors, [Musikavanhu, Tlhalefang, Ntsosa, and Bakwena \(2021\)](#) in a study involving Africa's net oil-exporting countries, observed that, irrespective of the direction of oil price change, the nature of institutional quality determines how the oil price change will impact on the economy. However, in a study on Congo, [Mbingui, Owonda, and Diakabana \(2021\)](#) used the vector error correction model (VECM) to show that, by depending on oil rent, the economic development of the country is adversely affected. [Kriskumar, Naseem, and Azman-Saini \(2022\)](#) used the non-linear ARDL model to prove that both an increase and a decrease in the price of oil enhanced the economic growth of Malaysia. In another country-specific study on Sudan, [Ali, Murshed, and](#)

Papyrakis (2022) used a VAR model to show that oil rents adversely affected export diversification in the country. For Pakistan, Liaqat, Ashraf, Nisar, and Khursheed (2022) observed that oil price inflation did not contribute significantly to the economic growth of the country in both the long and short runs. However, in terms of sustainable development, Ologunde, Kapingura, and Sibanda (2022) used the panel ARDL model to reveal that oil revenue did not contribute to sustainable development in ten selected crude oil-producing African countries.

3. METHODOLOGY

This study employed the panel autoregressive distributed lag (ARDL) model to investigate the impact of oil rents on the export of manufactures in selected oil-rich African countries. The fact that the ARDL model can be employed irrespective of whether the series are integrated of order one $I(1)$, zero $I(0)$, or an admixture of $I(1)$ and $I(0)$ is among the reasons for choosing the model. The panel unit root tests, such as the augmented Dickey and Fuller (1981), Im, Pesaran, and Shin (2003); Perron (1988) and Levin, Lin, and Chu (2002) tests, were used to investigate the existence of unit root in the series. After ascertaining the unit root, the existence of a cointegrating relationship among the variables was investigated using both the Kao residual panel cointegration and the Johansen-Fisher panel cointegration tests. The long-run and short-run impacts of oil rent and other explanatory variables on the export of manufactures were then investigated after identifying the cointegrating relationship.

3.1. Model Specification

With respect to the theoretical views that link natural resource revenue to the performance of the manufacturing sector, the functional relationship between the export of manufactures and oil rents is specified in the equation below as follows:

$$EXPTMF_t = f(OIIR_t, TOPEN_t, EXCHR_t, REGQ_r, INFLR_t, GFCF_r) \quad (1)$$

Equation 1 is represented in a panel ARDL form as follows:

$$\begin{aligned} \Delta EXPTMF_{it} = & \psi_0 + \sum_{i=1}^p \psi_1 \Delta EXPTMF_{it-i} + \sum_{t=0}^p \psi_2 \Delta OILR_{it-1} + \sum_{t=0}^p \psi_3 \Delta TOPEN_{it-i} + \sum_{t=0}^p \psi_4 \Delta EXCHR_{it-i} \\ & + \sum_{t=0}^p \psi_5 \Delta REGQ_{it-i} + \sum_{t=0}^p \psi_6 \Delta INFLR_{it-i} + \sum_{t=0}^p \psi_7 \Delta GFCF_{it-i} + \psi_8 EXPTMF_{it-1} + \psi_9 OILR_{it-1} + \\ & \psi_{10} TOPEN_{it-1} + \psi_{11} EXCHR_{it-1} + \psi_{12} REGQ_{it-1} + \psi_{13} INFLR_{it-1} + \psi_{14} GFCF_{it-1} + \varepsilon_{it} \end{aligned} \quad (2)$$

Where $EXPTMF$ = export of manufactures, $OILR$ = oil rents, $TOPEN$ = trade openness, $EXCHR$ = exchange rate, $REGQ$ = regulatory quality, $INFLR$ = inflation rate, $GFCF$ = gross fixed capital formation and ε = the error term.

$\psi_1, \psi_2, \psi_3, \psi_4, \psi_5, \psi_6$ and ψ_7 are the coefficients of the short-run parameters, while $\psi_8, \psi_9, \psi_{10}, \psi_{11}, \psi_{12}, \psi_{13}$ and ψ_{14} are the coefficients of the long-run parameters.

The decision concerning the existence of cointegration is guided by the following hypotheses:

$$\psi_8 = \psi_9 = \psi_{10} = \psi_{11} = \psi_{12} = \psi_{13} = \psi_{14} = 0 \text{ (existence of cointegration).}$$

$$\psi_8 \neq \psi_9 \neq \psi_{10} \neq \psi_{11} \neq \psi_{12} \neq \psi_{13} \neq \psi_{14} \neq 0 \text{ (absence of cointegration).}$$

As the series proved to be cointegrated, the study estimated the panel error correction model (PECM). The following is the PECM specification:

$$\begin{aligned} \Delta EXPTMF_{it} = & \psi_0 + \sum_{i=1}^p \psi_1 \Delta EXPTMF_{it-i} + \sum_{i=0}^p \psi_2 \Delta OILR_{it-i} + \sum_{i=0}^p \psi_3 \Delta TOPEN_{it-i} + \sum_{i=0}^p \psi_4 \Delta EXCHR_{it-i} \\ & + \sum_{i=0}^p \psi_5 \Delta REGQ_{it-i} + \sum_{i=0}^p \psi_6 \Delta INFLR_{it-i} + \sum_{i=0}^p \psi_7 \Delta GFCF_{it-i} + \mathcal{G} PECM_{it} + \ell_{it} \end{aligned} \quad (3)$$

Where \mathcal{G} is the coefficient of the panel error correction model.

3.2. Data and Variables

The sample period for this study covers the years from 2000 to 2020. All the data were sourced from the World Development Indicators database, except the data on regulatory quality, which was sourced from the Worldwide Governance Indicators. The export of manufactures is measured as a percentage of merchandise exports, oil rents is measured as a percentage of GDP, and trade openness is measured as the ratio of the sum of exports and imports to GDP. GDP, exports and imports used in calculating trade openness are measured in constant 2015 US dollars for all countries, except for Nigeria and the Democratic Republic of the Congo, whose GDP, exports and imports were measured in constant 2010 US dollars. The exchange rate for each country is proxied by the official exchange rate in local currency unit per US dollars, inflation is proxied by the consumer prices measured in annual percentage, and the gross fixed capital formation is measured as a percentage of GDP. A major limitation encountered in the study is that there are missing data in some of the variables; however, this constraint did not affect the outcome.

4. RESULTS AND DISCUSSION OF FINDINGS

The results of the descriptive statistics in Table 2 indicate that exchange rate has the highest mean value of 243.7 with a standard deviation of 359.7; however, the variable with the lowest mean value is regulatory quality with the mean value of -0.81 and a standard deviation of 0.57. It was also found that the variable that exhibited the highest volatility is exchange rate as its range is the highest. The findings equally show that the mean and median of most of the variables are very close, which indicates low volatility of the variables, thus revealing that they are symmetric.

Table 2. Results of descriptive statistics.

Statistics	XPTMF	OILRENT	EXCHR	GFCF	INFLR	REGQ	TOPEN
Mean	9.60	15.64	243.7	20.22	13.82	-0.81	0.66
Median	2.47	9.99	77.5	20.79	5.66	-0.80	0.63
Maximum	53.54	66.71	1851.1	43.07	513.9	0.13	4.49
Minimum	0.00	0.00	0.00	0.00	-2.19	-2.35	-0.35
Std. Dev.	15.02	16.60	359.7	9.59	52.14	0.57	0.49
Skewness	1.68	1.28	2.10	-0.16	8.36	-0.48	3.79
Kurtosis	4.43	3.88	7.93	3.25	74.33	3.08	29.74
Jarque-Bera	79.16	43.23	248.67	0.99	31762.91	5.44	4569.8
Probability	0.00	0.00	0.00	0.60	0.00	0.07	0.00
Sum	1363.8	2220.9	34611.7	2871.6	1963.4	-115.03	94.01
Sum Sq. Dev.	31830.02	38898.92	18250241	12935.56	383254.6	46.35	33.28
Observations	142	142	142	142	142	142	142

The tests for unit root were evaluated at both the 5% and 10% levels of significance. The results in Table 3 show that, at level, both inflation rate and regulatory quality achieved stationarity under all the tests, i.e., they are I(0). However, as indicated in Table 4, after differencing the series, they all achieved stationarity with the exception of regulatory quality, which did not exhibit stationarity under LLC. That is to say that the series becomes I(1) after first differencing.

Table 3. Unit root results at level.

Variable	LLC	IPS	ADFFisher	PPFisher
EXPTMF	-0.42(0.34)	-1.05(0.14)	18.80(0.17)	14.39(0.42)
OIRL	2.08(0.98)	0.99(0.84)	7.93(0.89)	8.53(0.86)
GFCF	-0.59(0.28)	-0.461(0.32)	13.07(0.52)	11.79(0.62)
EXCHR	3.08(0.99)	2.96(0.99)	12.03(0.60)	5.61(0.97)
INFLR	-42.69(0.00)*	-18.78(0.00)*	301.3(0.00)*	314.47(0.00)*
REGQ	-4.446(0.00)*	-3.67(0.00)*	43.39(0.00)*	25.14(0.03)*
TOPEN	-0.40(0.34)	-0.51(0.30)	20.61(0.11)	12.85(0.54)

Note: * represents rejection of the null hypothesis of no unit root at the 5% level of significance.

Table 4. Unit root results at first difference.

Variable	LLC	IPS	ADFFisher	PPFisher
EXPTMF	-7.6(0.00)*	-5.54(0.00)*	54.91(0.00)*	86.03(0.00)*
OIRL	-1.42(0.07)**	-3.97(0.00)*	40.98(0.00)*	50.63(0.00)*
GFCF	-5.59(0.00)*	-4.91(0.00)*	51.17(0.00)*	76.46(0.00)*
EXCHR	-3.37(0.00)*	-2.4(0.00)*	28.39(0.01)*	36.03(0.00)*
INFLR	-35.9(0.00)*	-19.58(0.00)*	333.08(0.00)*	393.66(0.00)*
REGQ	0.55(0.70)	-6.79(0.00)*	69.36(0.00)*	275.2(0.00)*
TOPEN	-4.52(0.00)*	-3.95(0.00)*	41.10(0.00)*	61.73(0.00)*

Note: * and ** represent rejection of the null hypothesis of no unit root at the 5% and 10% levels of significance, respectively.

The unit root test results have so far revealed that the series showed an admixture of $I(0)$ and $I(1)$, thus supporting the choice of an ARDL model. However, before proceeding to estimate the ARDL model, the study first investigated the cointegrating relationship among the variables. As indicated in Table 5, the Kao cointegration test reveals that at the 5% level of significance, the study cannot accept the null hypothesis of no cointegration since the p-value of the residual is less than 5%. In Table 6, the results of the JohansenFisher test corroborated the Kao test as the p-values of both the trace and eigenvalue tests are less than 5%, respectively.

Table 5. Kao cointegration test.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID (-1)	-0.36	0.072	-4.95	0.00

Table 6. Johansen–Fisher panel cointegration test.

Unrestricted cointegration rank test (Trace and maximum eigenvalue)				
Hypothesized	Fisher Stat.*		Fisher Stat.*	
No. of CE(s)	(from trace test)	Prob.	(from max-eigen test)	Prob.
None	5.545	0.69	5.545	0.69
At most 1	1.386	0.99	56.65	0.00
At most 2	73.68	0.00	73.68	0.00
At most 3	144.5	0.00	98.79	0.00
At most 4	65.66	0.00	41.44	0.00
At most 5	36.13	0.00	27.36	0.00
At most 6	23.68	0.00	23.68	0.00

Note: * indicates rejection of the null hypothesis of no cointegration at the 5% level of significance.

The short-run results of the study shown in Table 7 reveal that oil rents had a positive impact on the export of manufactures, but the result was not significant. By implication, rents from oil in oil-rich African countries did not significantly improve the export of manufactures in the short run. The findings also revealed that exchange rate exerted a negative impact on the export of manufactures in the short run, even though the result is not significant. Regulatory quality and trade openness were also found to influence the export of manufactures negatively; however, the results are not significant. The findings also revealed that gross fixed capital formation adversely impacted the export of manufactures in the short run. A one-unit increase in the gross fixed capital formation led to a decline in the export of manufactures by 0.38%. This result is curious as it is expected that gross fixed capital formation

should improve the export of manufactures. A possible reason for such an outcome could be that in the short run, the countries sampled in the study did not utilize their fixed capital effectively in the production of products meant for export. As shown in the appendices, with the exception of Nigeria and Libya, the contribution of the gross fixed capital formation to the export of manufactures was negative for other countries. The coefficient of the panel error correction model is negative and significant, which supports the result of the cointegrating relationship among the variables. The implication of the PECM result is that equilibrium adjusts after a deviation at a speed of 46%.

Table 7. Short run ARDL model results (1, 1, 1, 1, 1, 1).

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(OILRENT)	0.84	0.87	0.96	0.34
D(EXCHR)	-0.64	0.87	-0.73	0.47
D(GFCF)	-0.38	0.16	-2.33	0.02*
D(INFLR)	0.13	0.09	1.43	0.16
D(REGQ)	-0.86	3.13	-0.27	0.78
D(TOPEN)	3.60	7.54	0.48	0.63
C	-0.38	1.90	-0.20	0.84
ECM (-1)	-0.46	0.20	-2.20	0.03*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

The long-run results in Table 8 indicate that oil rents positively impacted the export of manufactures in the oil-rich African countries. A rise in oil rents by one unit raises the export of manufactures by 0.19%. The implication of this result is that oil rents did not displace the export of manufactures in the oil-rich African countries, thus revealing that, as a group, proceeds from the oil sector were utilized in the production of products meant for export. This could be in the form of provision of infrastructural facilities necessary for the performance of the manufacturing sector. This presupposes that as oil rents spur growth in the oil-rich African countries, the growth transmits to the real sector of the economy. The findings equally revealed that exchange rate had a significant and negative impact on the export of manufactures. A one-unit rise in exchange rate reduces the export of manufactures by 0.05%. The countries included in this study are developing countries that rely heavily on the import of inputs needed in the manufacture of commodities. A rising exchange rate, therefore, means that the foreign prices of inputs are high, thus leading to increased production costs. The long-run result of gross fixed capital formation is a departure from the short-run result and is in line with the a priori expectation. In the long run, the rise in gross fixed capital formation by one unit led to an improvement in the export of manufactures by 0.77%. The negative impact of inflation on productivity is revealed in the study as it shows that, in the long run, a unit rise in inflation rate resulted in a fall in the export of manufactures by 0.30%.

Table 8. Long run ARDL model results (1, 1, 1, 1, 1, 1).

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
OILRENT	0.19	0.10	1.87	0.06**
EXCHR	-0.05	0.02	-3.04	0.00*
GFCF	0.77	0.08	10.29	0.00*
INFLR	-0.30	0.04	-7.21	0.00*
REGQ	8.93	1.82	4.90	0.00*
TOPEN	1.85	0.87	2.09	0.04*

Note: * and ** indicate rejection of the null hypothesis at the 5% and 10% levels of significance, respectively.

Rising inflation leads to an increase in the cost of production, which adversely impacts the manufacturing sector. In the long run, the findings also revealed that an improvement in regulatory quality improved the export of manufactures. If regulatory quality improves by one unit, the export of manufactures will improve by 8.93%. Trade openness was also found to positively impact the export of manufactures. If trade is opened by one unit, the export

of manufactures rises by 1.85%. The result indicates that by liberalizing trade in oil-rich African countries, the market for the export of manufactures is widened. On an individual country basis, the findings in [Appendices 1-7](#) showed diverse results among the countries. The short run results for Nigeria in [Appendix 1](#) showed that oil rents had a positive impact on the export of manufactures. The manufacturing sector in Nigeria is not well developed, however in a relative sense, it performs averagely in Africa. Findings also showed that exchange rate, gross fixed capital formation and inflation rate impacted positively on the export of manufactures in Nigeria. The result for exchange rate implies that manufacturers take advantage of a rise in exchange rate to export more. On the other hand, we contend that the positive impact of inflation rate on the export of manufactures is because of the ability of the exporters to pass the rising prices to the consumers of the importing countries, especially consumers within the African region. However, regulatory quality and trade openness were found to exert negative but non-significant influence on the export of manufactures. The short run results for Libya in [Appendix 2](#) indicated that oil rents adversely affected the export of manufactures. One unit increase in oil rent led to a fall in the export of manufactures by 0.05%. This reveals that despite the fact that the Libyan economy is propelled by the oil sector, it has not translated into improving the export of manufactures. Finding also shows that inflation rate, trade openness and exchange rate impacted on the export of manufactures positively.

The result for Algeria in [Appendix 3](#) revealed that oil rents had an adverse effect on the export of manufactures. If oil rents improved by one unit, the export of manufactures improved by 0.20%. Just like Libya, revenues accruing from the oil sector displaced the export of manufactures in Algeria. This is despite the fact that these two countries accumulated large oil rents in relation to other countries sampled within the study period. Findings for Algeria also indicated that while gross fixed capital formation impacted negatively on the export of manufactures, exchange rate improved it. In [Appendix 4](#), it is also found that oil rents impacted negatively on the export of manufactures for Egypt, even though the result is not significant. However, the impact of inflation rate on the export of manufactures was positive for the country. As shown in [Appendix 5](#), the results for DRC indicated that oil rents did not significantly impact on the export of manufactures. However, while inflation rate and gross fixed capital formation adversely affected the export of manufactures, exchange rate affected it positively. For Ghana, findings in [Appendix 6](#) show that oil rents impacted positively on the export of manufacture. While inflation rate and gross fixed capital formation adversely impacted on the export of manufactures, inflation rate impacted on it positively. However, for Gabon as shown in [Appendix 7](#), findings show that oil rents impacted on the export of manufactures adversely, just like inflation rate, gross fixed capital formation and exchange rate.

5. CONCLUSIONS

The debate on whether revenues from natural resources could result in the resource curse has attracted the attention of scholars and policy makers over the years. With respect to revenues from oil, while some empirical studies have found a positive effect of oil revenues on the growth of the economy, others have concluded that revenues from oil adversely affect the economy of some countries. In this study, we set out to contribute to the debate by focusing on the impact of oil rents on the export of manufactures in selected oil-rich African countries. A major theoretical background that supports this topic is the view of [Sachs and Warner \(1995\)](#), that in natural resource rich countries, revenues accrued from natural resources could displace the manufacturing sector. Findings of the study revealed that in the short run, oil rents had an insignificant positive impact on the export of manufactures for all countries sampled. In the long run, however, oil rents significantly positively impacted the export of manufactures. The short-run results for the individual countries revealed that oil rents improved the export of manufactures for Nigeria and Ghana, while the impact for Libya, Algeria and Gabon were adverse. What is glaring in the findings is that countries such as Libya, Algeria and Gabon that had high oil rents as a ratio of their GDP could not improve their export of manufactures within the study period. Equally glaring is that opening up trade on an individual country basis did not favor any of the countries, just as weak regulatory quality was a

common feature in all the countries with the exception of Libya. On grounds of these findings, the study suggests that oil-rich African countries should improve their institutional quality and also embrace diversification in the manufacturing sector. This requires using the proceeds from the oil sector to develop critical infrastructure necessary for manufacturing. In a similar vein, the fact that trade openness positively impacted the export of manufactures for the countries as a bloc while showing no significant impact for the individual countries, indicates that it will be better for these countries to trade more among themselves and other developing countries in the long run.

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Appendix 1. Short run ARDL results for Nigeria.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
D(OILRENT)	0.55	0.07	8.24	0.00*
D(EXCHR)	0.02	0.00	4.79	0.01*
D(GFCF)	0.09	0.06	1.63	0.20
D(INFLR)	0.10	0.03	3.00	0.05*
D(REGQ)	-9.06	4.41	-2.05	0.13
D(TOPEN)	-0.30	0.81	-0.38	0.73
C	-7.37	13.67	-0.54	0.63
ECM(-1)	-1.12	0.09	-11.76	0.00*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

Appendix 2. Short run ARDL results for Libya.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(OILRENT)	-0.05	0.0004	-126.9	0.00*
D(EXCHR)	1.99	0.74	2.711	0.07**
D(GFCF)	0.05	0.0007	67.99	0.00*
D(INFLR)	-0.04	0.001	-33.79	0.00*
D(REGQ)	6.27	2.57	2.44	0.09**
D(TOPEN)	1.21	1.31	0.92	0.42
C	1.26	1.11	1.13	0.34
ECM(-1)	0.04	0.002	26.26	0.00*

Note: * and ** indicate rejection of the null hypothesis at the 5% level of significance.

Appendix 3. Short run ARDL results for Algeria.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(OILRENT)	-0.20	0.004	-54.38	0.00*
D(EXCHR)	0.01	0.001	13.46	0.00*
D(GFCF)	-0.33	0.011	-29.61	0.00*
D(INFLR)	-0.009	0.004	-2.31	0.10
D(REGQ)	-0.59	0.39	-1.49	0.23
D(TOPEN)	25.26	90.20	0.28	0.79
C	-2.91	1.84	-1.58	0.21
ECM(-1)	-0.26	0.009	-28.39	0.00*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

Appendix 4. Short run ARDL results for Egypt.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
D(OILRENT)	-0.61	0.37	-1.64	0.19
D(EXCHR)	-1.13	1.25	-0.89	0.43
D(GFCF)	-0.77	0.36	-2.11	0.13
D(INFLR)	0.43	0.04	10.11	0.00*
D(REGQ)	-11.19	29.81	-0.38	0.73
D(TOPEN)	31.27	1029.4	0.03	0.98
C	0.46	7.76	0.06	0.96
ECM(-1)	-0.23	0.02	-10.98	0.00*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

Appendix 5. Short run ARDL results for DRC.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
D(OILRENT)	6.01	15.69	0.382	0.73
D(EXCHR)	0.06	0.00	195.80	0.00*
D(GFCF)	-0.59	0.11	-5.55	0.01*
D(INFLR)	-0.05	0.00	-49.58	0.00*
D(REGQ)	9.75	49.69	0.19	0.86
D(TOPEN)	-28.14	853.59	-0.03	0.98
C	-2.29	17.83	-0.13	0.90
ECM(-1)	-0.36	0.009	-35.41	0.00*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

Appendix 6. Short run ARDL results for Ghana.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
D(OILRENT)	0.23	0.04	5.73	0.01*
D(EXCHR)	-5.41	2.82	-1.92	0.15
D(GFCF)	-1.03	0.03	-37.92	0.00*
D(INFLR)	0.53	0.00	56.03	0.00*
D(REGQ)	5.48	12.22	0.45	0.68
D(TOPEN)	3.47	11.54	0.30	0.78
C	9.09	8.05	1.13	0.34
ECM(-1)	-1.35	0.02	-76.18	0.00*

Note: * indicates rejection of the null hypothesis at the 5% level of significance.

Appendix 7. Short run ARDL results for Gabon.

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
D(OILRENT)	-0.08	0.00	-58.43	0.00*
D(EXCHR)	-0.00	4.10	-233.9	0.00*
D(GFCF)	-0.08	0.00	-8.21	0.00*
D(INFLR)	-0.03	0.00	-3.54	0.04*
D(REGQ)	-6.68	3.36	-1.99	0.14
D(TOPEN)	-7.57	42.73	-0.18	0.87
C	-0.93	0.66	-1.41	0.25
ECM(-1)	0.04	0.00	21.72	0.00*

Note: * indicates the rejection of the null hypothesis at the 5% level of significance.

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