

Article

Effects of Agricultural, Manufacturing, and Mineral Exports on Angola's Economic Growth

Titus Isaiah Zayone ¹, Shida Rastegari Henneberry ^{2,*} and Riza Radmehr ³ ¹ Chamber of Commerce and Industry Angola Zambia, Luanda 00000, Angola; tituszayone@gmail.com² Department of Agricultural Economics & Master of Int'l Agriculture, Oklahoma State University Stillwater, Stillwater, OK 74078, USA³ Department of Agricultural Economics, Ferdowsi University of Mashhad, Mashhad 9177948974, Iran; radmehr.re67@gmail.com

* Correspondence: srh@okstate.edu

Received: 19 February 2020; Accepted: 16 March 2020; Published: 21 March 2020



Abstract: This study investigates the effects of Angola's agricultural, manufacturing, and mineral exports on the country's economic growth using data from 1980 to 2017. An Autoregressive Distributed Lag (ARDL) model is employed to estimate the effect of sectoral exports on economic growth. The estimation results show that while exports from all three sectors (manufacturing, mineral, and non-mineral) have driven Angola's economic growth in the long-run; only non-manufacturing (agricultural and mineral) exports have led its growth in the short-run. Moreover, growth in non-export GDP was driven by mineral exports in the long-run and agricultural exports in the short-run. Considering the statistically significant and positive impact of mineral exports on the Angolan GDP as well as on its non-export GDP, this study points to a lack of evidence supporting the Dutch disease phenomenon in Angola.

Keywords: Export-led growth; Dutch disease; ARDL; economic growth; Angola

1. Introduction

The relationship between exports and economic growth has long been discussed in economic development literature [1–5]. When exports have a positive impact on economic growth, the exporting country is said to experience an export-led growth. Published literature indicates that export-led growth is associated with enhanced factor productivity. More specifically, exports stimulate productivity by expanding a country's market base, through learning by exporting and the diffusion of technology into the exporting country [6,7]. Moreover, exports are a major source of foreign exchange required to finance intermediate and capital imports. These are important inputs in production that increase factor productivity [8]. Exporting also might force the nations to identify their areas of comparative advantage and re-channel their output from less productive sectors to higher productive export sectors [9]. It is important to note that the extent to which exports impact the economy may vary with the type of commodities exported [10–12].

According to the Heckscher–Ohlin model of international trade, a country will benefit by specializing in the production and exportation of those commodities that intensively use the factors of production that the country is abundant in [13]. According to this theory, labor and natural resource-abundant African countries should export labor- and natural resource-intensive primary commodities and import capital-intensive products [14]. Empirical support can be drawn from Beny and Cook [15] who found a positive correlation between natural resources and the economic growth of African countries during the period 1995–2005. Following their comparative advantage, Sub-Saharan

Africa's exports are concentrated in primary commodities because of the abundance of unskilled labor and natural resources [14,16,17].

However, in the case of Sub-Sahara Africa and contrary to the findings for other developing regions, the export-led growth strategies have not resulted in a substantial rise in incomes. More specifically, it is shown that the concentration of Africa's exports on primary commodities has been associated with negative terms of trade [18]. On the other hand, the potential for Sub-Sahara African countries (SSA) to gain from exporting exist when they develop an export-oriented manufacturing sector [19]. A study of manufacturing exporting firms in selected SSA countries shows that exporting firms became more productive, operated at a larger scale, and paid higher wages after they entered the export market as compared to non-exporting firms [20]. For the majority of the African countries that export their natural resources, economic growth may be unsustainable due to what is known as the Dutch disease. The Dutch disease is an economic term that was introduced by Corden and Neary [21], and posits a boom in natural resources may lead to a decline in the manufacturing sector through the overshooting of a country's real exchange rate. As a result, the nation's non-natural resource exports become more expensive as compared with other countries, and imports become less expensive; making non-natural sectors less competitive [22]. A rise in natural resource rent can also devastate the political system, which in turn may lead to mismanagement of the natural resources [23,24]. Some findings in recent literature have supported the Dutch disease effects on economic growth [25–27].

Angola is one of the largest exporters of primary commodities in SSA. If affected by the Dutch disease, the economic situation of Angola can mirror that of a resource-curse-country, where natural resource abundance is associated with deteriorated standards of living [28,29]. However, other scholars note that although the Dutch disease has been prevalent in oil-intensive countries, Angola can be an exception because of the positive correlation between oil export intensity and the growth of Angola's non-oil sectors [29].

As shown in Table 1, Angola's merchandise exports between 1980 and 2017 demonstrate that non-mineral exports, which are composed of agricultural and manufacturing exports, account for a very small share of GDP. Due to the volatility of petroleum prices on the international market, the government of Angola has embarked on economic diversification policies aimed at promoting non-petroleum exports since the end of the civil war in 2002. These policies are aimed at reducing economic dependency on petroleum [30]. In order to determine appropriate economic diversification policies that are effective in achieving sustainable economic growth in Angola, it is necessary to have a proper understanding of the relationships between macroeconomic variables and economic growth in this rich-petroleum-abundant country. However, surprisingly there are only a few published articles that have examined the effect of exports by sector on the Angolan economy. In order to fill this scientific gap, the current article is aimed at determining the effects of exports of different sectors on the economic growth of Angola. More specifically, this study focuses on the impacts of agricultural, manufacturing, and mineral exports of Angola on its economic growth. Additionally, the second objective of this study is to investigate whether the Dutch disease phenomenon applies to the Angolan economy. This is the first study that measures the impact of Angola's exports by each sector on its economic growth. The need to understand the effect of non-mineral exports (agricultural and manufacturing), along with the impact of mineral exports, on economic growth is a timely issue as Angola is in the process of implementation of its economic diversification policies.

Table 1. Percentage share of mineral, manufacturing, agricultural, and non-mineral exports in GDP, Angola, 1980–2017.

Export items	1980–2017
1. Commodity Exports Total	47.81
1.1. Mineral Exports	46.35
1.2. Non-Mineral Exports	1.46
1.2.1. Manufacturing Exports	0.99
1.2.2. Agricultural Exports	0.47

Source: Calculated by the authors based on data from the World Trade Organization (2019) and World Development Indicators databases of the World Bank (2019). Although the impact of exports by sector on the economic growth of various individual countries has been the focus of several published studies [31–35], none have focused on Angola. The exceptions are the two studies by Tekin [36] and Karamelikli, Akalin, and Arslan [26]. These studies analyze the relationship between exports and economic growth and include Angola; however, they use panel data. This type of analysis which employs the panel data approach does not necessarily focus on any specific country; but uses the cumulative data from all the included countries to conduct the analysis. More specifically, according to Uk Polo [37], panel analysis assumes that economic conditions across the countries under consideration are homogenous, which may conceal individual countries' realities. Our article uniquely contributes to the existing literature as it is the first study that econometrically measures the impact of Angola's exports by each sector (mineral, agricultural, and manufacturing) on its economic growth as measured by its GDP growth as well as on the growth of its non-export GDP (NXGDP). This study is expected to provide information that could be used by policymakers to help them select policies that can be effective in promoting Angola's economic growth and economic development. An additional contribution of this study relates to its timeliness, considering the current Angolan government economic diversification plan that emphasizes the promotion of investment and exports of non-petroleum sectors.

The rest of the paper is organized as follows: in the following section, methods and materials are presented. Procedures and empirical data sources are discussed next, followed by the presentation of results and conclusions.

2. Model, Data and Methodology

2.1. Model and Data

In this study, a model that is driven from the work of Shafiullah, Selvanathan, and Naranpanawa [33] is used to explain the relationship between exports and economic growth. The model is modified to include only the variables of interest in this paper, and it can be expressed as

$$\ln GDP_t = \alpha_0 + \alpha_1 \ln AG_t + \alpha_2 \ln MA_t + \alpha_3 \ln MI_t + \varepsilon_t \quad (1)$$

where the variables GDP_t , AG_t , MA_t , and MI_t represent the gross domestic product, agricultural exports, manufacturing exports, and mineral exports at time t , and ε_t is the error term. During the model selection, agricultural exports were proved to have statistically insignificant effects on GDP in Model A because their percentage shares in Angola's GDP are very small, about 0.47% and 0.99%, respectively. Therefore, a "non-mineral exports" variable denoted by NMI calculated as a sum of agricultural and manufacturing exports are also used to substitute for agricultural and manufacturing exports variables to form Equation (2) (Model B).

$$\ln GDP_t = \alpha_0 + \alpha_1 \ln MI_t + \alpha_2 \ln NMI_t + \varepsilon_t \quad (2)$$

Equations (3) (Model C) and (4) (Model D) are developed from Models A and B by substituting GDP with non-export GDP (NXGDP) denoted as GDP1. NXGDP is calculated by subtracting exports

from GDP (GDP—total merchandise exports). Exports are subtracted from GDP because Angola's merchandise exports are a major component of GDP in the national income accounting identity for Angola, they account for 47.81%. According to Dreger and Herzer [38], the NXGDP variable is useful in avoiding a bias of considering a mere change in the export volume for the effects of exports on GDP growth.

$$\ln GDP1_t = \alpha_0 + \alpha_1 \ln AG_t + \alpha_2 \ln MA_t + \alpha_3 \ln MI_t + \varepsilon_t \quad (3)$$

$$\ln GDP1_t = \alpha_0 + \alpha_1 \ln MI_t + \alpha_2 \ln NMI_t + \varepsilon_t \quad (4)$$

The time series data on annual changes in total GDP, as well as mineral, manufacturing, and agricultural exports between 1980 and 2017 are used. The GDP data are obtained from the World Development Indicators (WDI) database of the World Bank and exports data from the World Trade Organization (WTO) database [39]. Agricultural (primary exports), mineral (i.e., primary fuels and mining products) and manufacturing export data are classified according to the Standardized International Trade Classification (SITC) revision three. Missing data on manufacturing exports are linearly interpolated and supplemented with data from the World Development Indicators database. All of the time series value data are in United States Dollars at current prices (nominal values).

2.2. Methodology

2.2.1. Unit Root Test with Structural Breaks

Each variable in the model is first tested using the Augmented Dickey–Fuller (ADF) unit root test to determine the order of integration of the variables. The ADF regression tests for the existence of unit root of y_t (see Equation (5)) at time t for all model variables [40,41].

$$\Delta y_t = \delta_0 + \delta_1 t + \delta_2 y_{t-1} + \sum_{i=1}^n \beta_i \Delta y_{t-i} + \varepsilon_t \quad (5)$$

The Δy_{t-1} denotes the first difference of the variable at n lags. δ_0 , δ_1 , δ_2 are the coefficients to be estimated. The null hypothesis for unit root is $H_0 : \delta_2 = 0$, and an alternative hypothesis is $H_0 : \delta_2 \neq 0$. To account for the possibility of structural breaks, the Zivot and Andrews unit root test which allows for a change in the intercept is also conducted [42].

$$\Delta y_t = k + \alpha y_{t-1} + \beta t + \theta_1 DU_t + \sum_{i=1}^n d_i \Delta y_{t-i} + \varepsilon_t \quad (6)$$

where Δ is a first difference operator, ε_t is the error term assumed to be white noise, Δy_{t-i} allows for serial correlation, and DU_t is a dummy variable for a mean shift at time TB. $DU_t = 1$ if $t > TB$ or 0 otherwise. The null hypothesis is that y_t is an integrated process without a structural break, and an alternative hypothesis is that y_t is trend stationary with a structural break at an unknown time.

2.2.2. ARDL, Bounds Testing Approach

After determining the order of integration of the variables, an Autoregressive Distributed Lag (ARDL) model bounds test for co-integration developed by Pesaran et al. [43] is conducted. The ARDL model is preferred to other co-integration techniques in this study because of the small sample used, and the variables can be integrated with levels—order I (0), in first difference, order I (1) or both [43]. In addition, the error correction model (ECM) is obtained from this technique. ECM is considered as a powerful tool to directly calculate the speed return to equilibrium of a dependent variable after changing other variables. Another advantage of ARDL is that endogeneity can be a serious problem because there is no correlation between the residuals in this sort of the model [44]. From Equations (1),

(2), (3), and (4), a specification of the ARDL model of vector error correlation model (VECM) can be expressed as:

$$\begin{aligned}\Delta \ln GDP_t = & \alpha + \beta_1 \ln GDP_{t-1} + \beta_2 \ln AG_{t-1} + \beta_3 \ln MA_{t-1} + \beta_4 \ln MI_{t-1} \\ & + \beta_5 D_t + \sum_{i=1}^n \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=1}^n \gamma_j \Delta \ln AG_{t-j} G_{t-j} \\ & + \sum_{k=1}^n \gamma_k \Delta \ln MA_{t-k} + \sum_{l=1}^n \gamma_l \Delta \ln MI_{t-l} + u_t\end{aligned}\quad (7)$$

$$\begin{aligned}\Delta \ln GDP_t = & \alpha + \beta_1 \ln GDP_{t-1} + \beta_2 \ln MI_{t-1} + \beta_3 \ln NMI_{t-1} + \beta_5 D_t \\ & + \sum_{i=1}^n \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=1}^n \gamma_j \Delta \ln MI_{t-j} G_{t-j} \\ & + \sum_{k=1}^n \gamma_k \Delta \ln NMI_{t-k} + u_t\end{aligned}\quad (8)$$

$$\begin{aligned}\Delta \ln GDP1_t = & \alpha + \beta_1 \ln GDP_{t-1} + \beta_2 \ln AG_{t-1} + \beta_3 \ln MA_{t-1} + \beta_4 \ln MI_{t-1} \\ & + \beta_5 D_t + \sum_{i=1}^n \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=1}^n \gamma_j \Delta \ln AG_{t-j} G_{t-j} \\ & + \sum_{k=1}^n \gamma_k \Delta \ln MA_{t-k} + \sum_{l=1}^n \gamma_l \Delta \ln MI_{t-l} + u_t\end{aligned}\quad (9)$$

$$\begin{aligned}\Delta \ln GDP1_t = & \alpha + \beta_1 \ln GDP_{t-1} + \beta_2 \ln MI_{t-1} + \beta_3 \ln NMI_{t-1} + \beta_5 D_t \\ & + \sum_{i=1}^n \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=1}^n \gamma_j \Delta \ln AMI_{t-j} + \sum_{k=1}^n \gamma_k \Delta \ln NMI_{t-k} \\ & + u_t\end{aligned}\quad (10)$$

where α denotes the intercept, D_t denotes a dummy variable to account for the structural break, and u_t denotes the error term assumed to be white noise. The joint significance of the lagged level coefficients is tested using the Wald test's F-statistic. The lag order is selected using the Akaike information criterion (AIC) because the criteria can be appropriate for small samples [45]. The null hypothesis of no cointegration among the variables i.e., $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$, can be rejected when the F-statistic is greater than upper bounds critical values. If the F-statistic is less than the lower bounds critical values then the null hypothesis cannot be rejected, instead of an alternative hypothesis of cointegration between variables i.e., $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$ can be rejected. If the calculated F-statistic lies between the critical bounds, then the regression results will be inconclusive [43]. In the next step, the long-run coefficients are obtained by estimating the following long-run ARDL models specifications, after confirming that the variables are co-integrated [46,47].

$$\begin{aligned}\ln GDP_t = & \theta + \sum_{i=1}^n \vartheta_i \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \ln AG_{t-i} + \sum_{i=1}^n \delta_{2i} \ln MA_{t-i} \\ & + \sum_{i=1}^n \delta_{3i} \ln MI_{t-i} + D_t + u_t\end{aligned}\quad (11)$$

$$\ln GDP_t = \theta + \sum_{i=1}^n \vartheta_i \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \ln MI_{t-i} + \sum_{i=1}^n \delta_{2i} \ln NMI_{t-i} + D_t + u_t\quad (12)$$

$$\begin{aligned}\ln GDP1_t = & \theta + \sum_{i=1}^n \vartheta_i \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \ln AG_{t-i} + \sum_{i=1}^n \delta_{2i} \ln MA_{t-i} \\ & + \sum_{i=1}^n \delta_{3i} \ln MI_{t-i} + D_t + u_t\end{aligned}\quad (13)$$

$$\ln GDP1_t = \theta + \sum_{i=1}^n \vartheta_i \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \ln MI_{t-i} + \sum_{i=1}^n \delta_{2i} \ln NMI_{t-i} + D_t + u_t\quad (14)$$

In addition, in the current study, the error correlation model (ECM) is employed to estimate the short-run coefficients for four models that are indicated in the following equations:

$$\Delta \ln GDP_t = \theta + \sum_{i=1}^n \vartheta_i \Delta \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \Delta \ln AG_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta \ln MA_{t-i} + \sum_{i=1}^n \delta_{3i} \Delta \ln MI_{t-i} + ECT_{t-1} + u_t \quad (15)$$

$$\Delta \ln GDP_t = \theta + \sum_{i=1}^n \vartheta_i \Delta \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \Delta \ln MI_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta \ln NMI_{t-i} + ECT_{t-1} + u_t \quad (16)$$

$$\Delta \ln GDP1_t = \theta + \sum_{i=1}^n \vartheta_i \Delta \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \Delta \ln AG_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta \ln MA_{t-i} + \sum_{i=1}^n \delta_{3i} \Delta \ln MI_{t-i} + ECT_{t-1} + u_t \quad (17)$$

$$\Delta \ln GDP1_t = \theta + \sum_{i=1}^n \vartheta_i \Delta \ln GDP_{t-i} + \sum_{i=1}^n \delta_{1i} \Delta \ln MI_{t-i} + \sum_{i=1}^n \delta_{2i} \Delta \ln NMI_{t-i} + ECT_{t-1} + u_t \quad (18)$$

The coefficient of the $ECT_{(t-1)}$ is expected to be negative and statistically significant, and shows the speed of adjustment of GDP to return to long-run equilibrium after a shock. Finally, in order to investigate the stability of the estimated long-run and short-run coefficients, the cumulative sum of recursive residuals (CUSUM), CUSUM of square (CUSUMSQ) tests are used.

3. Results and Discussion

3.1. Statistical Summaries

The statistical summaries in Table 2 show that all the series are normally distributed, have constant variance and zero mean based on the Jarque-Bera statistics at a 5% level of significance. The Jarque-Bera test ensures that the series meet the assumptions of normality, homoscedasticity, and serial independence of regression residuals [48].

Table 2. Descriptive statistics and correlation of variables (in natural logarithms).

Variable	LnGDP	LnGDP1	LnAG	LnMA	LnMI	LnNMI
Mean	23.635	22.876	17.563	18.581	22.793	19.056
Std. Dev.	1.229	1.308	0.563	1.609	1.353	1.217
Min	22.214	20.719	16.041	14.686	20.942	16.270
Max	25.705	25.195	18.933	20.788	24.964	20.819
Skewness	0.582	0.407	−0.557	−0.505	0.369	−0.397
Kurtosis	1.642	2.072	4.157	2.464	1.624	2.379
Jarque-Bera	5.060 * (0.079)	2.414 (0.299)	4.085 (0.130)	2.068 (0.356)	3.859 (0.145)	1.607 (0.448)

Note: * represents statistical significance at the 10%, level. Standard errors are presented in parenthesis.

From Table 3, the Pearson correlation coefficient shows a strong correlation between manufacturing, mineral, and non-mineral exports on economic growth variables ($LnGDP$ and $LnGDP1$). Furthermore, agricultural exports are shown to have a weak correlation with economic growth variables. Figure 1 presents the trend of the exogenous and endogenous variables used in this study, from 1980 to 2017. Based on the trends in Figure 1, both economic growth and export growth were greater in the post-civil war period (after 2002), with the exception of agricultural exports.

Table 3. Correlation between variables (in natural logarithms).

Variable	LnGDP	LnGDP1	LnAG	LnMA	LnMI	LnNMI
LnGDP	1.000	-	-	-	-	-
LnGDP1	0.945	1.000	-	-	-	-
LnAG	0.026	0.067	1.000	-	-	-
LnMA	0.750	0.722	0.522	1.000	-	-
LnMI	0.954	0.811	−0.049	0.682	1.000	-
LnNMI	0.756	0.726	0.534	0.996	0.692	1.000

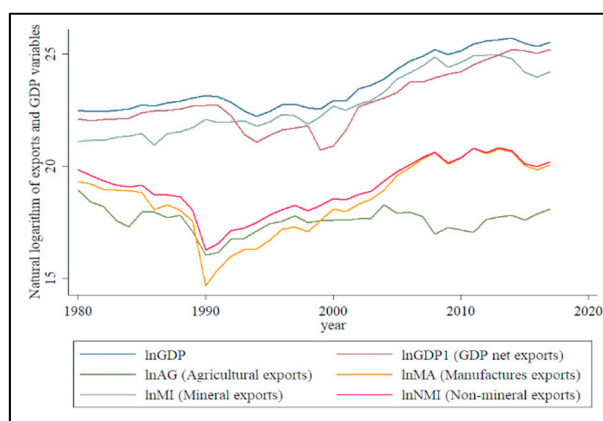
**Figure 1.** Trend diagram of the variables.

Table 4 shows the results of the unit root test. All variables were found to be stationary based on the Augmented Dickey–Fuller unit root test and the Zivot and Andrews’s unit root test after their first difference transformation. Most of the structural breaks identified in the variables lie within Angola’s civil war period. The breaks in the LnGDP1 variable in 1992 and GDP in 2002 can be associated with the revamp of the civil war, after Angola’s first elections results were rejected in 1992, and also the end of the war after the death of the opposition leader in 2002.

Table 4. Augmented Dickey–Fuller and Zivot and Andrews unit root test results (data 1980–2017).

Var.	Augmented Dickey–Fuller		Zivot and Andrews			
	Levels	1st. Difference	Levels	1st. Difference		
	t.stat	t.stat	t-stat	T	t-stat	T
LnGDP	−1.729 (2)	−3.200 ** (1)	−3.265 (1)	2002	−5.445 *** (0)	2000
LnGDP1	−0.192 (2)	−3.972 *** (1)	−4.042 (1)	1992	−6.562 *** (2)	2000
LnAG	−2.894 (1)	−5.396 *** (0)	−3.991 (1)	1989	−6.005 *** (0)	1991
LnMI	−1.793 (1)	−5.659 *** (0)	−3.054 (0)	2004	−6.750 *** (0)	2009
LnMA	−2.050 (1)	−5.535 *** (0)	−3.027 (0)	1989	−7.180 *** (0)	1992
LnNMI	−2.094 (2)	−4.672 *** (0)	−3.736 (1)	1989	−6.227 *** (0)	1991

Note: *, **, *** represent statistical significance at the 10%, 5%, and 1% levels. Lags in () are based on AIC. T denotes the breakpoint in the intercept.

3.2. ARDL Bounds Test for Co-integration

Based on the co-integration results in Table 5, the long-run relationship between the variables exists because the calculated F-statistics in all the models is greater than upper critical bounds at 5% (in Models A and B) and 10% (in Models C and D) levels of significance, respectively.

Table 5. Autoregressive Distributed Lag (ARDL) bounds test for co-integration (case 3) results.

Model (Lag Order)	Break	F-stat	Diagnostics	
			R ²	Adj-R ²
A) ln GDP, ln MI, ln MA, ln AG (1,2,2,2)	2002	5.270 *	0.830	0.750
B) ln GDP, ln MI, ln NMI (2,1,2)	2002	4.557 *	0.782	0.717
C) ln GDP1, ln MI, ln MI, ln AG (2,1,1,1)	1992	5.723 **	0.538	0.378
C) ln GDP1, ln MI, ln NMI (2,1,1)	1992	6.034 **	0.471	0.339
Narayan [47] Critical Values	-	-	-	-
Significance	Lower bound I(0)	Upper bound I(1)		
5%	4.183	I(1) 5.333		
10%	3.393	I(1) 4.410		

Notes: *, ** represent statistical significance at the 10%, 5%, and 1% levels. Lag order is selected using the AIC at a maximum lag of 2 due to a small sample.

3.3. Long-run and Short-run Elasticities

The long-run, as well as the short-run elasticities in Tables 6 and 7, show that a 1% increase in manufacturing exports increases long-run economic growth (ln GDP) by 0.26%. Additionally, in the short-run, a 1% increase in one lag of manufacturing exports decreases NXGDP growth by −0.10%. By theory, manufacturing exports are technology-intensive, and they are more likely to create positive effects on the economy [49]. However, the negative effects of manufacturing exports on NXGDP growth may satisfy the assumption that the contribution of exports to economic growth may reflect a mere increase in the volume of exports [38]. Thus, it can be concluded that, when exports are subtracted from GDP, the growth effects may be small, or in this case negative. It is important to note also that recent growth in the manufacturing industry was driven, to a larger extent, by domestic demand for reconstruction and industrialization, rather than for exports [50].

Table 6. Long-run elasticities of economic growth between 1980–2017 (ARDL).

Variable	Model A	Model B	Model C	Model D
LnAG	0.171 (0.303)	—	0.858 (0.549)	—
LnMA	0.255 ** (0.116)	—	−0.189 (0.266)	—
LnMI	0.553 *** (0.075)	0.488 *** (0.168)	1.510 *** (0.359)	1.078 *** (0.257)
LnNMI	—	0.345 ** (0.129)	—	0.228 (0.224)
D2002	0.169* (0.096)	0.185 * (0.098)	—	—
D1992	—	—	−0.779 *** (0.271)	−0.531 ** (0.236)
Constant	1.775 (0.661)	1.328 (0.874)	−7.877 * (4.238)	−1.633 (1.140)

Note: *, **, *** represent statistical significance at the 10%, 5%, and 1% levels. Standard errors are presented in parenthesis. D2002 and D1992 represent structural break dummy in 2002 and 1992.

Table 7. Short-run elasticities of economic growth between 1980–2017 (ARDL).

Variable	Model A	Model B	Model C	Model D
LnAG	0.092 (0.069)	—	0.331 * (0.189)	—
LnAG _{t−1}	0.112 * (0.065)	—	—	—
LnMA	−0.044 (0.042)	—	−0.088 (0.109)	—
LnMA _{t−1}	−0.142 *** (0.044)	—	—	—
LnMI	0.529 *** (0.080)	0.468 *** (0.078)	0.219 (0.194)	0.091 (0.185)
LnMI _{t−1}	0.167 ** (0.075)	—	—	—
LnNMI	—	0.019 (0.057)	—	0.063 (0.146)
LnNMI _{t−1}	—	−0.103 * (0.057)	—	—
ECT _(t−1)	−0.248 *** (0.075)	−0.231 *** (0.076)	−0.368 *** (0.087)	−0.342 *** (0.088)

Note: *, **, *** represent statistical significance at the 10%, 5%, and 1% levels. Standard errors are presented in parenthesis.

The results of this study show that a 1% increase in mineral exports leads to a 0.55% increase in economic growth and a 1.51% increase in NXGDP growth. In the short run, a 1% increase in mineral export and one lag of mineral exports enhance GDP growth by 0.53%, and NXGDP growth by 0.17%, respectively. Regarding mineral exports and consistent with previous studies [17], the results of this study suggest that mineral exports are important drivers of growth in Angola's non-export sectors. From the findings of this study, it can be concluded that Angola can be an exception to the natural resource curse phenomenon.

The results of this study show no significant impacts from agricultural exports on economic growth in the long run. However, in the short-run, the results of this study show that a 1% increase in agricultural exports and a 1% increase in the first lag of agricultural exports, leads in the short-run to an increase of 0.33% and 0.11%, respectively, in NXGDP growth and GDP growth in general. Insignificant effects of agricultural exports may be attributed to agriculture having a small share in GDP between 1980 and 2017 (see Table 1), and the inability to expand agricultural land due to the presence of land mines planted during the civil war period. In addition, the agricultural sector attracted a small share of foreign direct investment, accounting for 2% of non-oil foreign direct investment inflows, relative to other non-petroleum sectors between 2003 and 2013 [51]. However, this study shows that agricultural exports are important drivers of the short-run growth in NXGDP. By theory, primary exports including agricultural commodities may positively influence economic growth by expanding the use of available resources such as land [49].

After combining agriculture and manufacturing exports into the non-mineral variable, long run results show that a 1% increase in non-mineral exports enhances economic growth by 0.35%. In the short run, a 1% increase in one lag of non-mineral exports decreases NXGDP growth by −0.14%. The coefficient of a break dummy in 2002 was positive and significant, suggesting that the end of Angola's civil war in 2002 may have created an enabling environment for economic activities to flourish. However, the negative coefficient of the 1992 break dummy can be associated with the adverse effects of the civil war. The coefficients of the error correction term (ECT) in the four models are negative and statistically significant, showing the speed of adjustment of economic growth to its long-run equilibrium after a shock. Overall, the results in the present study support previous findings by Klein [17] and Solarin et al. [52].

3.4. Robustness Analysis

The fully modified ordinary least square (FMOLS) and canonical co-integration regression (CCR) are employed in this study to investigate the robustness of the long-run coefficients estimated by ARDL. These estimators from FMOLS and CCR (presented in Tables 8 and 9) do not suffer from econometric problems, such as small sample size, serial correlation, and endogeneity [53,54]. According to the results shown in Tables 8 and 9, the findings from the two econometric techniques are similar to the ARDL results in terms of sign and significance levels. Hence, it can be concluded that the ARDL results are robust.

Table 8. Long-term coefficients based on canonical co-integration regression (CCR).

Variables	Model A	Model B	Model C	Model D
LnAG	0.088 (0.201)	—	0.704 *** (0.255)	—
LnMA	0.047 (0.072)	—	−0.190 (0.132)	—
LnMI	0.669 *** (0.137)	0.631 *** (0.120)	1.500 *** (0.198)	1.154 *** (0.152)
LnNMI	—	0.076 * (0.043)	—	0.098 (0.129)
D2002	0.649 * (0.341)	0.789 ** (0.362)	—	—
D1992	—	—	−2.050 *** (0.332)	−1.541 *** (0.570)
Constant	5.774 (4.953)	7.756 *** (2.912)	−18.625 *** (6.231)	−4.181 * (2.104)

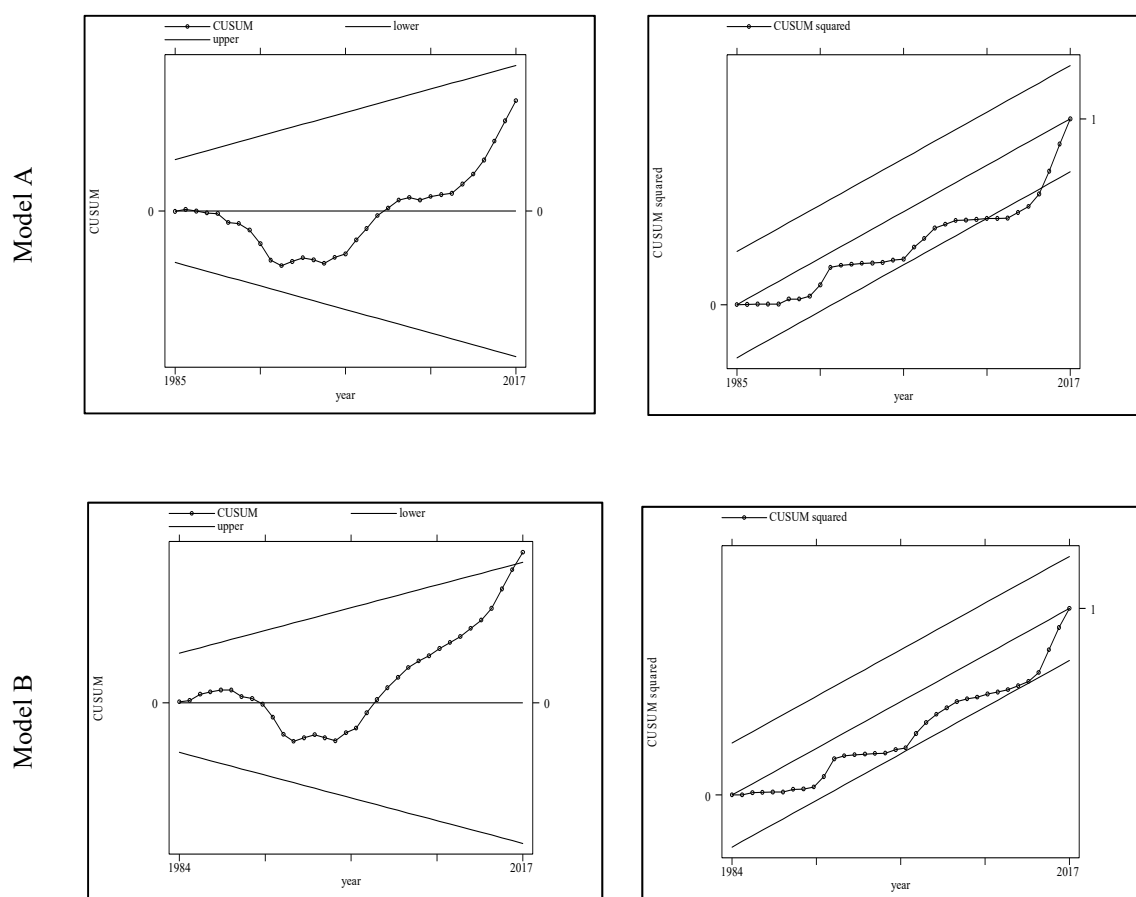
Note: *, **, *** represent statistical significance at the 10%, 5%, and 1% levels. Standard errors are presented in parenthesis. D2002 and D1992 represent structural break dummy in 2002 and 1992.

Table 9. Long-term coefficients based on fully modified ordinary least square (FMOLS).

Variables	Model A	Model B	Model C	Model D
LnAG	0.011 (0.194)	—	0.702 ** (0.312)	—
LnMA	0.251 *** (0.087)	—	−0.181 (0.157)	—
LnMI	0.525 *** (0.141)	0.562 *** (0.124)	1.481 *** (0.209)	1.156 *** (0.152)
LnNMI	—	0.178 ** (0.090)	—	0.097 (0.128)
D2002	0.635 * (0.351)	0.878 ** (0.352)	—	—
D1992	—	—	−2.080 *** (0.358)	−1.544 *** (0.314)
Constant	6.626 (4.860)	7.166 ** (2.963)	−18.296 *** (4.238)	−4.209 * (1.832)

Note: *, **, *** represent statistical significance at the 10%, 5%, and 1% levels. Standard errors are presented in parenthesis. D2002 and D1992 represent structural break dummy in 2002 and 1992.

In addition, in order to check the stability of the long- as well as short-term results, we perform the cumulative sum of recursive residuals (CUSUM), CUSUM of squared test [55]. The findings are presented in Figure 2. Based on the results of the two tests, it can be concluded that the estimated ARDL coefficients in the four models are stable. This is because the CUSUM and CUSUM of squared test lines for all models lie between the bounded lines. As a result of the stability of the models, it can be concluded that the model coefficients from this study might be used for policymaking decisions.

**Figure 2.** Cont.

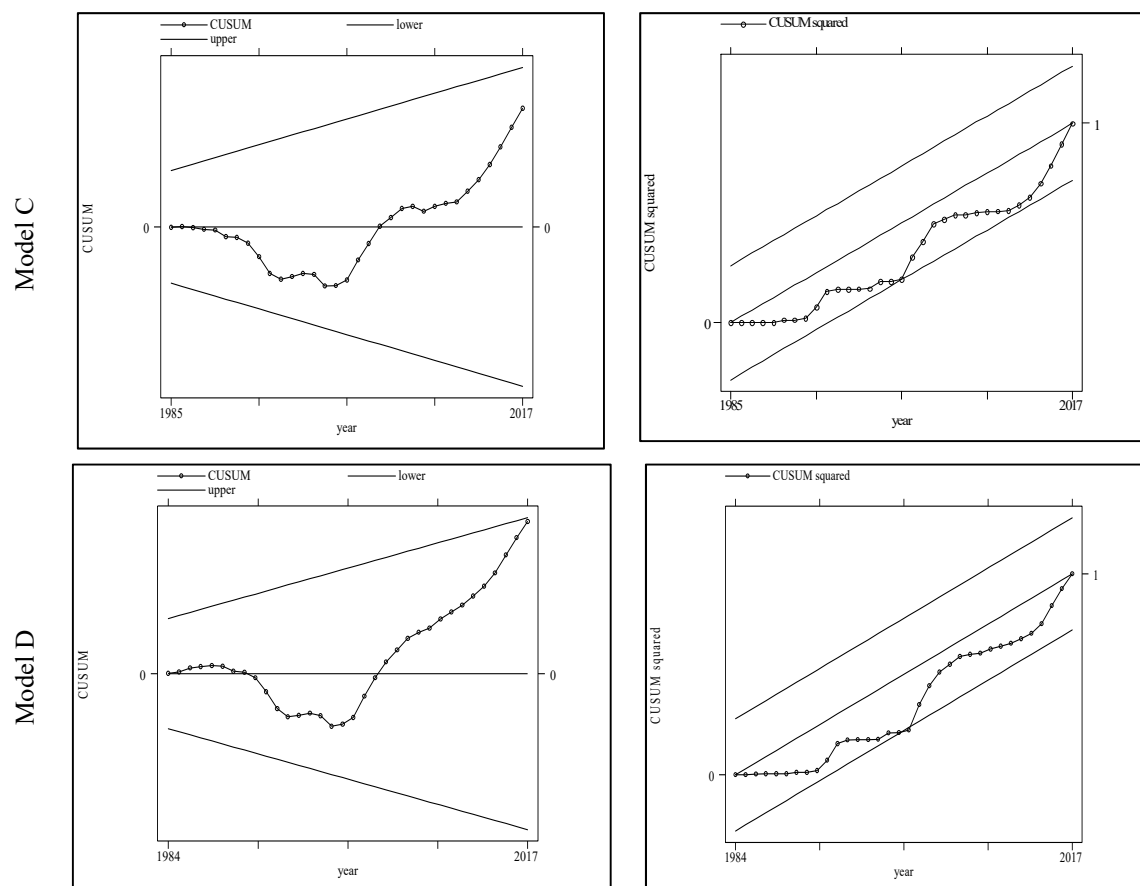


Figure 2. Plots of cumulative sum of recursive residuals (CUSUM) and CUSUM squared for the four models. Note: Upper and lower limits at 95% confidence interval.

3.5. Variance Decomposition

The results of the variance decomposition are presented in Table 10. The variance decomposition provides useful information regarding the proportion of the forecast error variance of economic growth ($\ln GDP$ and $\ln GDP1$) that can be explained by other variables [56,57]. In Model A, 76.7% of the variability in GDP is explained by itself. The share of $\ln AG$, $\ln MI$, and $\ln MA$ is 6.09%, 10.63%, and 6.55%, respectively. In Model B, the share of GDP due to its own volatility is 79.93%. $\ln MI$ explains GDP about 7.82% and $\ln NMI$ contribution is 12.85%. The results of Model C show that in the short term (period 1–5) non-export GDP explains almost 57% of itself, while $\ln MI$ explains 24.7% of the variation in non-export GDP, $\ln MA$ contribution is 17.13%, and $\ln AG$ is negligible. In the long term, non-export GDP contribution decreases significantly (2.86%), and most shares in the explanation of non-export GDP shocks belong to the $\ln MI$ (57.31%) and $\ln MA$ (34.74%). Based on the results of model D in the short run, the share of non-export GDP explains itself around 50.57%, the $\ln MI$ contribution is 45.64%, while the $\ln NMI$ contribution is insignificant (3.60%). In the long-run, the $\ln NMI$ has the most share (60.53%) in explaining the total variation of non-export GDP. However, the non-export GDP contribution decreases considerably (from 50.75% to 15.18%). Similarly, the share of $\ln MI$ declines from 45.64% to 24.27%. In other words, the $\ln NMI$ has a remarkable share in the long-term.

Table 10. Variance decomposition.

Period	Model A			
	lnGDP	lnAG	lnMI	lnMA
1	100.000	0.000	0.00	0.00
5	87.444	4.410	4.940	3.204
10	77.851	6.122	9.757	6.268
15	76.968	6.062	10.677	6.291
20	76.708	6.091	10.639	6.559

Period	Model B		
	lnGDP	lnMI	lnNMI
1	100.00	0.00	0.00
5	91.087	3.292	5.620
10	80.828	6.485	12.686
15	79.560	7.737	12.702
20	79.313	7.830	12.856

Period	Model C			
	LnGDP1	lnAG	lnMI	lnMA
1	100.00	0.000	0.000	0.000
5	57.147	1.017	24.701	17.134
10	22.184	1.540	24.271	52.003
15	4.905	4.029	47.585	43.479
20	2.866	5.073	57.310	34.749

Period	Model D		
	LnGDP1	lnMI	lnNMI
1	100.000	0.000	0.000
5	50.755	45.640	3.603
10	33.553	41.121	25.325
15	22.736	27.270	49.993
20	15.187	24.272	60.539

3.6. Impulse Response Function

Although the ARDL models are presented as a reliable approach to investigate the co-integration between variables, these models do not provide useful information regarding the dynamic response of one variable to unit shocks in another variable [58–61]. To overcome this limitation, we employ the impulse response function (IRF). The impulse response of lnGDP and lnGDP1 to lnAG, lnMI, lnMA, and lnNMI in the four models are presented in Figure 3.

In Model A, the response of lnGDP to lnAG and lnMI shocks indicates that it starts from zero and then increases initially and it tends to the property of stationarity in the long-run. Further, a positive one standard deviation shock within lnMA leads to a decrease in lnGDP in the short-run (period 1–3), and then it turns to positive the mid-term (period 3–7), and finally, it almost dies out in the long-run. In Model B, the response of lnGDP is positive due to one standard deviation shock in lnMI and remains positive in the long-run. Moreover, a positive one standard deviation shock within lnMA has an insignificant impact on lnGDP in the short-run, but in the mid-term (period 2–6), it turns to positive and almost dies off in the long-term. In the Model C, the response of lnGDP1 to lnMA is positive in different period. The response of lnGDP1 to lnMI shocks is positive in the short and mid-term (period 1–7), and then it turns to negative in the long-run. The response of lnGDP1 to one standard deviation shock in lnAG is insignificant. In Model D, the response of lnGDP1 to lnMI shocks shows that it starts from zero and then increases by the mid-term (period 1–4), and it almost dies off in the long-term. The response of lnGDP1 is positive due to one standard deviation shock in lnNM both short and long term.

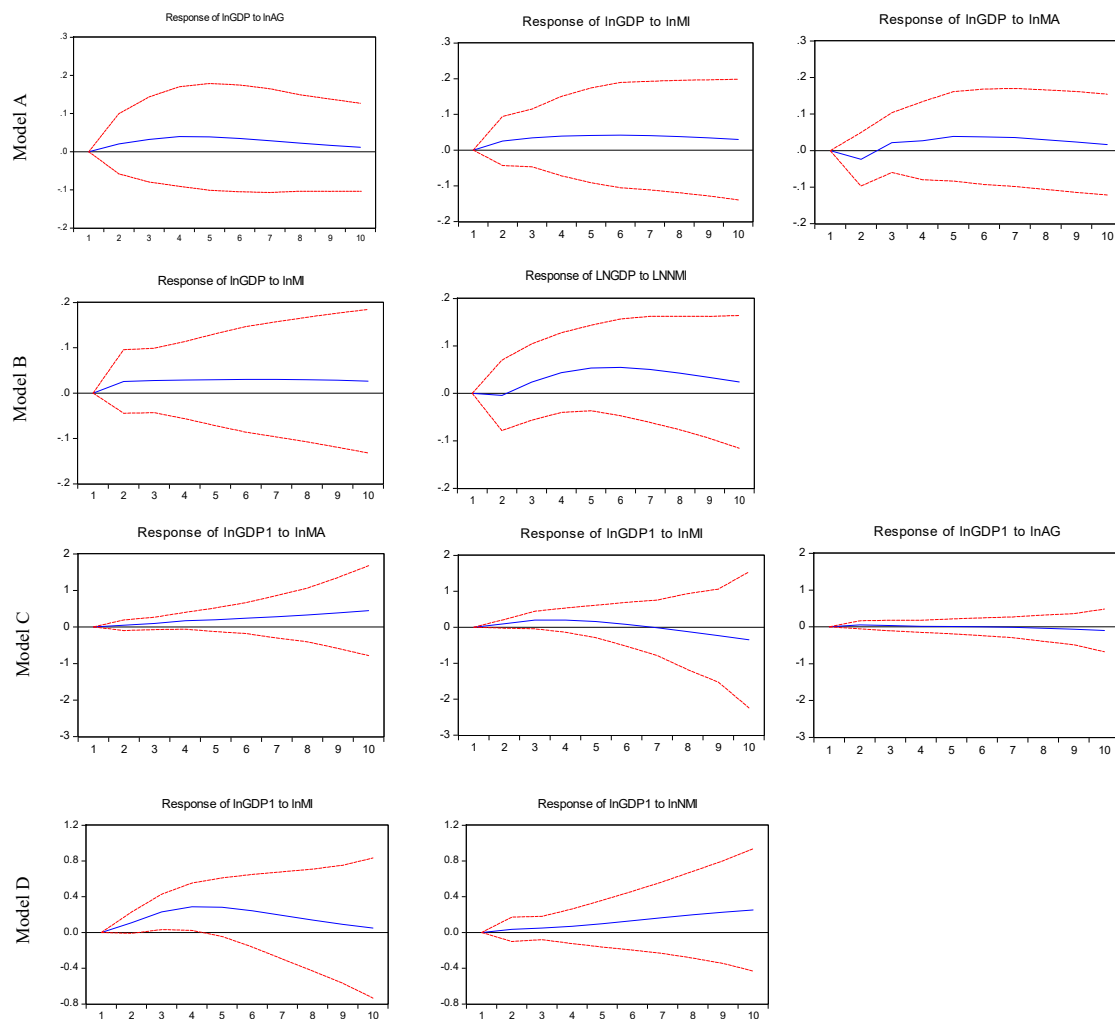


Figure 3. Impulse response function (IRF).

4. Conclusions

The objective of this study is to determine the effects of agricultural, manufacturing, and mineral exports on economic growth in Angola and to test the Dutch disease hypothesis for Angola. The export-led growth hypothesis was used to explain why increasing Angola's merchandise exports by sector may have varying effects on the country's economic growth. An autoregressive distributed lag model is estimated to determine the long- as well as short-run effects of the export variables on GDP and non-export GDP (NXGDP), both used as proxies for economic growth.

The results of this study suggest that Angola's economic growth has largely depended on mineral exports. In addition, to some extent, manufacturing exports are important drivers of economic growth, when total exports are included in Angola's GDP. Similarly, agricultural exports have greater impacts on non-export GDP growth in the short-run. Moreover, a combination of agricultural exports and manufacturing exports affect Angola's economic growth positively when exports are included in GDP, and negatively when exports are subtracted from GDP. Furthermore, based on the results of ARDL, it can be concluded that Dutch disease is not confirmed in Angola during the period of the study. This conclusion is drawn from the results that mineral exports are shown as having a positive impact on Angola's economic growth. This finding is in line with Klein [17]. These results might imply that Angola is an exception to the phenomenon of resource curse because mineral exports are found to be a major driver of economic growth [16,27]. The positive impact of oil revenues on the growth of other economic sectors; in terms of infrastructure, legislation, and policy, may be attributed to many reasons. For example, the proceeds from oil exports have provided adequate financial resources to

improve transport infrastructure to the extent that there has been a significant increase in the repair, reconstruction, and construction of roads as a means of enhancing national cohesion. In the area of energy investment, generation capacity has been increased from 830 MW in 2002 to 2230 MW in 2014 [62]. In terms of the policy, Angola has set a long-term strategy to diminish the import that it has provided a golden opportunity to promote non-oil exports, specifically agricultural exports. This has been done through an import tariff escalation policy. For instance, the tariff on imported agricultural products was increased to 50 percent [63].

There are several resource-rich countries that have been able to escape the resource curse. Norway and Botswana would be prime examples of this situation, where appropriate institutions and policies have played a critical role in diversifying the economy [64,65]. An interesting example of this is the United Arab Emirates (UAE), where a considerable amount from oil revenues have been invested in infrastructures such as airports and roads. The government has made a significant step towards non-dependence on oil revenues, through programs such as the development of tourism, construction, and industry sectors.

According to the results of this study, despite that the non-oil export sector has a positive contribution to economic growth, it is shown that it has a weaker impact on economic growth than the oil exports. The reason for this could be that while Angola has made considerable progress in infrastructure reconstruction and adopting the supporting policies, the gaps remain specifically in the term of the availability of electric power; low levels of skilled labor and the education and productivity of workers; access to adequate credit; and inadequate rural road network. Hence, adopting infrastructure-building policies, such as those aimed at improving the business environment in order to attract more foreign investment in the non-mineral sectors, continuation of infrastructure investments, transfer of technology to those economic sectors that have comparative advantage (such as agriculture); can all play a significant role in economic sustainability and in reducing dependency on oil revenues.

Author Contributions: Conceptualization, T.I.Z. and S.R.H.; methodology, T.I.Z., S.R.H., and R.R.; software, T.I.Z. and R.R.; validation, T.I.Z., S.R.H., and R.R.; formal analysis, T.I.Z. and R.R.; investigation, T.I.Z.; resources, T.I.Z.; data curation, T.I.Z. and R.R.; writing—original draft preparation, T.I.Z. and R.R.; writing—review and editing, T.I.Z., S.R.H., and R.R.; supervision, S.R.H. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. Awokuse, T.O. Exports, economic growth and causality in Korea. *Appl. Econ. Lett.* **2005**, *12*, 693–696. [\[CrossRef\]](#)
2. Kónya, L. Exports and growth: Granger causality analysis on OECD countries with a panel data approach. *Econ. Model.* **2006**, *23*, 978–992. [\[CrossRef\]](#)
3. Awokuse, T.O. Causality between exports, imports, and economic growth: Evidence from transition economies. *Econ. Lett.* **2007**, *94*, 389–395. [\[CrossRef\]](#)
4. Tekin, R.B. Economic growth, exports and foreign direct investment in Least Developed Countries: A panel Granger causality analysis. *Econ. Model.* **2012**, *29*, 868–878. [\[CrossRef\]](#)
5. Sunde, T. Foreign direct investment, exports and economic growth: ADRL and causality analysis for South Africa. *Res. Int. Bus. Financ.* **2017**, *41*, 434–444. [\[CrossRef\]](#)
6. Bigsten, A.; Gebreeyesus, M. Firm productivity and exports: Evidence from Ethiopian manufacturing. *J. Dev. Stud.* **2009**, *45*, 1594–1614. [\[CrossRef\]](#)
7. Fernandes, A.M.; Isgut, A.E. *Learning-by-Doing, Learning-by-Exporting, and Productivity: Evidence from Colombia*; The World Bank: Washington, DC, USA, 2005.
8. Foster-McGregor, N.; Isaksson, A.; Kaulich, F. Importing, productivity and absorptive capacity in Sub-Saharan African manufacturing and services firms. *Open Econ. Rev.* **2016**, *27*, 87–117. [\[CrossRef\]](#)

9. Naudé, W.; Bosker, M.; Matthee, M. Export specialisation and local economic growth. *World Econ.* **2010**, *33*, 552–572. [\[CrossRef\]](#)
10. Feder, G. On exports and economic growth. *J. Dev. Econ.* **1983**, *12*, 59–73. [\[CrossRef\]](#)
11. Wörz, J. Skill intensity in foreign trade and economic growth. *Empirica* **2005**, *32*, 117–144. [\[CrossRef\]](#)
12. Bbaale, E.; Mutenyo, J. Export composition and economic growth in Sub-Saharan Africa: A panel analysis. *Consilience* **2011**, *6*, 1–19.
13. Jones, R.W. Heckscher-Ohlin trade flows: A re-appraisal. *Trade Dev. Rev.* **2008**, *1*, 1.
14. Wood, A.; Mayer, J. Africa's export structure in a comparative perspective. *Cambridge J. Econ.* **2001**, *25*, 369–394. [\[CrossRef\]](#)
15. Beny, L.N.; Cook, L.D. Metals or management? Explaining Africa's recent economic growth performance. *Am. Econ. Rev.* **2009**, *99*, 268–274. [\[CrossRef\]](#)
16. Deaton, A. Commodity prices and growth in Africa. *J. Econ. Perspect.* **1999**, *13*, 23–40. [\[CrossRef\]](#)
17. Klein, N. *The Linkage between the Oil and Non-Oil Sectors: A Panel VAR Approach*; International Monetary Fund: Washington, DC, USA, 2010.
18. Harvey, D.I.; Kellard, N.M.; Madsen, J.B.; Wohar, M.E. The Prebisch-Singer hypothesis: Four centuries of evidence. *Rev. Econ. Stat.* **2010**, *92*, 367–377. [\[CrossRef\]](#)
19. Bigsten, A.; Collier, P.; Dercon, S.; Fafchamps, M.; Gauthier, B.; Willem Gunning, J.; Oduro, A.; Oostendorp, R.; Pattillo, C.; Söderbom, M. Do African manufacturing firms learn from exporting? *J. Dev. Stud.* **2004**, *40*, 115–141. [\[CrossRef\]](#)
20. Van Biesebroeck, J. Exporting raises productivity in sub-Saharan African manufacturing firms. *J. Int. Econ.* **2005**, *67*, 373–391. [\[CrossRef\]](#)
21. Corden, W.M.; Neary, J.P. Booming sector and de-industrialisation in a small open economy. *Econ. J.* **1982**, *92*, 825–848. [\[CrossRef\]](#)
22. Palatnik, R.R.; Tavor, T.; Voldman, L. The Symptoms of Illness: Does Israel Suffer from “Dutch Disease”? *Energies* **2019**, *12*, 2752. [\[CrossRef\]](#)
23. Collier, P. Is aid oil? An analysis of whether Africa can absorb more aid. *World Dev.* **2006**, *34*, 1482–1497. [\[CrossRef\]](#)
24. Collier, P. The political economy of natural resources. *Soc. Res.* **2010**, *77*, 1105–1132.
25. Apergis, N.; El-Montasser, G.; Sekyere, E.; Ajmi, A.N.; Gupta, R. Dutch disease effect of oil rents on agriculture value added in Middle East and North African (MENA) countries. *Energy Econ.* **2014**, *45*, 485–490. [\[CrossRef\]](#)
26. Karamelikli, H.; Akalin, G.; Arslan, U. Oil exports and non-oil exports: Dutch disease effects in the Organization of Petroleum Exporting Countries (OPEC). *J. Econ. Stud.* **2017**, *44*, 540–551. [\[CrossRef\]](#)
27. Collier, P.; Willem Gunning, J. Asset policies during an oil windfall: Some simple analytics. *World Econ.* **2005**, *28*, 1401–1415. [\[CrossRef\]](#)
28. Hammond, J.L. The resource curse and oil revenues in Angola and Venezuela. *Sci. Soc.* **2011**, *75*, 348–378. [\[CrossRef\]](#)
29. García-Rodríguez, J.L.; García-Rodríguez, F.J.; Castilla-Gutiérrez, C.; Major, S.A. Oil, power, and poverty in Angola. *Afr. Stud. Rev.* **2015**, *58*, 159–176. [\[CrossRef\]](#)
30. Assembly, N. *Private Investment Law*; No.10/18; Diário da República: Luanda, Angola, 2018.
31. Henneberry, S.R.; Khan, M.E. An analysis of the linkage between agricultural exports and economic growth in Pakistan. *J. Int. Food Agribus. Mark.* **2000**, *10*, 13–29. [\[CrossRef\]](#)
32. Essaied, H.M. Export-led growth in Tunisia: A wavelet filtering based analysis. *Bus. Econ. Horiz.* **2013**, *9*, 12–27. [\[CrossRef\]](#)
33. Shafiullah, M.; Selvanathan, S.; Naranpanawa, A. The role of export composition in export-led growth in Australia and its regions. *Econ. Anal. Policy* **2017**, *53*, 62–76. [\[CrossRef\]](#)
34. Kalaitzi, A.S.; Cleeve, E. Export-led growth in the UAE: Multivariate causality between primary exports, manufactured exports and economic growth. *Eurasian Bus. Rev.* **2018**, *8*, 341–365. [\[CrossRef\]](#)
35. Henneberry, S.R.; Khan, M.E.; Piewthongngam, K. An analysis of industrial-agricultural interactions: A case study in Pakistan. *Agric. Econ.* **2000**, *22*, 17–27.
36. Tekin, R.B. Development aid, openness to trade and economic growth in least developed countries: Bootstrap panel Granger causality analysis. *Procedia Soc. Behav. Sci.* **2012**, *62*, 716–721. [\[CrossRef\]](#)
37. Uk Polo, V. Export composition and growth of selected low-income African countries: Evidence from time-series data. *Appl. Econ.* **1994**, *26*, 445–449. [\[CrossRef\]](#)

38. Dreger, C.; Herzer, D. A further examination of the export-led growth hypothesis. *Empir. Econ.* **2013**, *45*, 39–60. [CrossRef]
39. World Trade Organization. Time Series on International Trade. Available online: <http://stat.wto.org/StatisticalProgram/WSDStatProgramHome.aspx?Language=E> (accessed on 13 February 2019).
40. Dickey, D.A.; Fuller, W.A. Distribution of the estimators for autoregressive time series with a unit root. *J. Am. Stat. Assoc.* **1979**, *74*, 427–431.
41. Cunado, J.; De Gracia, F.P. Real convergence in Africa in the second-half of the 20th century. *J. Econ. Bus.* **2006**, *58*, 153–167. [CrossRef]
42. Zivot, E.; Andrews, D.W.K. Further evidence on the great crash, the oil-price shock, and the unit-root hypothesis. *J. Bus. Econ. Stat.* **2002**, *20*, 25–44. [CrossRef]
43. Pesaran, M.H.; Shin, Y.; Smith, R.J. Bounds testing approaches to the analysis of level relationships. *J. Appl. Econom.* **2001**, *16*, 289–326. [CrossRef]
44. Jalil, A.; Mahmud, S.F. Environment Kuznets curve for CO₂ emissions: A cointegration analysis for China. *Energy Policy* **2009**, *37*, 5167–5172. [CrossRef]
45. Liew, V.K.-S. Which lag length selection criteria should we employ? *Econ. Bull.* **2004**, *3*, 1–9.
46. Hye, Q.M.A.; Wizarat, S.; Lau, W.-Y. Trade-led growth hypothesis: An empirical analysis of South Asian countries. *Econ. Model.* **2013**, *35*, 654–660. [CrossRef]
47. Narayan, P.K. The saving and investment nexus for China: Evidence from cointegration tests. *Appl. Econ.* **2005**, *37*, 1979–1990. [CrossRef]
48. Jarque, C.M.; Bera, A.K. Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Econ. Lett.* **1980**, *6*, 255–259. [CrossRef]
49. Sheridan, B.J. Manufacturing exports and growth: When is a developing country ready to transition from primary exports to manufacturing exports? *J. Macroecon.* **2014**, *42*, 1–13. [CrossRef]
50. Wolf, C. Industrialization in times of China: Domestic-market formation in Angola. *Afr. Aff.* **2017**, *116*, 435–461. [CrossRef]
51. Wanda, F. Understanding Post-War Foreign Direct Investment in Angola: South–South Led or the West Still Rules? *J. S. Afr. Stud.* **2017**, *43*, 1069–1085. [CrossRef]
52. Solarin, S.A.; Shahbaz, M.; Shahzad, S.J.H. Revisiting the electricity consumption-economic growth nexus in Angola: The role of exports, imports and urbanization. *Int. J. Energy Econ. Policy* **2016**, *6*, 501–512.
53. Phillips, P.C.; Hansen, B.E. Statistical inference in instrumental variables regression with I (1) processes. *Rev. Econ. Stud.* **1990**, *57*, 99–125. [CrossRef]
54. Stock, J.H.; Watson, M.W. A simple estimator of cointegrating vectors in higher order integrated systems. *Econom. J. Econom. Soc.* **1993**, *61*, 783–820. [CrossRef]
55. Brown, R.L.; Durbin, J.; Evans, J.M. Techniques for testing the constancy of regression relationships over time. *J. R. Stat. Soc. Ser. B* **1975**, *37*, 149–163. [CrossRef]
56. Radmehr, R.; Henneberry, S.R. *The Impact of Prices of Oil, Currency, and Capital on Food Prices: An Empirical Evidence from the Panel VAR Analysis*; The Southern Agricultural Economics Association (SAEA) Annual Meeting; Birmingham, AL, USA, 2019.
57. Payne, J.E. Inflationary dynamics of a transition economy: The Croatian experience. *J. Policy Model.* **2002**, *24*, 219–230. [CrossRef]
58. Lütkepohl, H. *Introduction to Multiple Time Series Analysis*; Springer Science & Business Media: Berlin, Germany, 2013.
59. Kohansal, M.R. Hezareh, The impacts of oil price shocks, exchange rate on food prices in urban areas of Iran. *J. Agric. Econ. Res.* **2017**, *8*, 171–190.
60. Antonakakis, N.; Cunado, J.; Filis, G.; De Gracia, F.P. Oil dependence, quality of political institutions and economic growth: A panel VAR approach. *Resour. Policy* **2017**, *53*, 147–163. [CrossRef]
61. Hezareh, R.; Shnoushi, N.; Mohammadi, H.; Saghaian, S.M. Analysing the role of economic variables on food prices in the selected oil exporting and importing countries. *Agric. Econ.* **2015**, *9*, 75–96.
62. Kirk Jensen, S. *Angola's Infrastructure Ambitions Through Booms and Busts: Policy, Governance and Reform*; Chatham House: London, UK, 2018; pp. 1–40.
63. Golub, S.; Prasad, V. *Promoting Economic Diversification and International Competitiveness in Angola*; Swarthmore College: Swarthmore, PA, USA, 2016.

64. Harvey, C. Botswana: Is the economic miracle over? *J. Afr. Econ.* **1992**, *1*, 335–368. [[CrossRef](#)]
65. Elwerfelli, A.; Benhin, J. Oil a blessing or curse: A comparative assessment of Nigeria, Norway and the United Arab Emirates. *Sci. Res.* **2018**, *8*, 5. [[CrossRef](#)]



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).