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TESTING THE EXPORT-LED GROWTH AND GROWTH-DRIVEN EXPORT HYPOTHESES: THE CASE OF AZERBAIJAN

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ABSTRACT

This study empirically analyses the validity of the Export-Led Growth (ELG) and Growth-Driven Export (GDE) hypotheses, building two respective models in the case of Azerbaijan. The analysis is novel for Azerbaijan since it has yet to be investigated. We apply the Bounds Testing approach to cointegration based on the ARDL model constructed on the quarterly data covering 2001Q3–2018Q4. Further methods, including FMOLS, DOLS, and CCR, are also employed as robustness checks to draw plausible conclusions. The main finding regarding these two hypotheses attests to the existence of the bidirectional (feedback) cointegrating relationship between non-oil economic growth and non-oil real exports while simultaneously controlling for the other factors outlined in the paper. We, therefore, propose our own recommendations for policy-making purposes in line with the empirical findings obtained herein.

Keywords: Export-Led Growth, Growth-Driven Export, Cointegration, Bounds Test, Azerbaijan.

INTRODUCTION

The nexus between economic growth and exports have long been subject to profound discussions and heated debates amongst academicians, economic researchers, and policy-makers. Many scholars, including Bhagwati (1988), Helpman and Krugman (1985), Krueger (1980), and Ramos (2001), have developed theoretical and empirical explanations in an attempt to delineate this phenomenon in details. As far as the theoretical perspective is concerned, export expansion leads to augmentation in economic growth to attain economies of scale via efficiency in production and employment. This is the very definition of the *export-led growth* (ELG) hypothesis. From an empirical standpoint, unidirectional causality runs from exports to domestic output or GDP. On the other side of the spectrum, the *growth-driven export* (GDE) hypothesis posits that an increase in domestic output or GDP results in a surge in exports. Put differently, a rise in output paves the way for a decrease in labour and input costs, owing to economies of scale, which, consequently, may boost exports. Empirically speaking, unidirectional causality passes from GDP to exports. The existence of bidirectional causality (feedback) and neutral (inconclusive) relationships between these two economic variables should also be highlighted.

Having thoroughly analyzed the existing literature on this topic, it is realized that the overwhelming majority of papers have investigated the relationship between economic growth and exports. However, merely a few papers have studied the nexus between non-oil economic growth and non-oil exports. In our quantitative time-series analysis, we are particularly inquisitive about the latter, taking note of the significance of the diversification of the economy of Azerbaijan. The two consecutive devaluations of the national currency, the *Manat*, occurred in February and December of 2015, coerced the government to begin contemplating the development of the non-oil sector. Despite the fact that these events stemmed in the wake of oil-price shocks in 2014, the Central Bank of Azerbaijan (CBAR) insisted that their decision on devaluing the *Manat* would yield beneficial outcomes concerning economic diversification and export competitiveness. Meanwhile, several measures have been implemented by the government to stimulate non-oil exports of the country. To illustrate, "The Additional Measures on Encouraging the Export of Non-Oil Products" and further amendments by the Cabinet of Ministers signed respectively by the President and Prime Minister of Azerbaijan in 2016 and 2018 can be stated. Another such decree approved in 2016, namely, "The Establishment of the Unified Information Base of the Goods Produced in the Republic of Azerbaijan" mainly aimed to create the "Azexport" online portal financed by the state budget. Furthermore, the decree on "The Additional Measures on Supporting the Competitive Domestic Production in the Non-Oil Sector" issued in 2018 emphasised the importance of supporting the competitive production of the small- and medium-sized entrepreneurial entities. All these official decrees underline the fact that the augmentation of non-oil exports is of prime cruciality for the country [1].

Thus far, a handful of empirical studies have been implemented within the contexts of non-oil economic performance and non-oil exports in the case of Azerbaijan. Hasanov and Samadova (2010), Hasanov and Huseynov (2013), and Gurbanov *et al.* (2017) have analyzed, respectively, the impact of real exchange rate on non-oil exports, the effects of bank credits on non-oil economic growth, and management of oil revenues by making use of non-oil GDP and non-oil exports. As can be seen, the ELG and GDE hypotheses have yet to be tested which gives us the right to assert that our analysis is novel concerning Azerbaijan. Due to the reasons mentioned above, the focal point of our study is to investigate the nexus between non-oil economic growth and non-oil exports.

Hence, our paper will contribute to the existing literature pertinent to Azerbaijan, answering the questions of: (1) whether the cointegrating relationship exists between non-oil economic growth and non-oil exports, (2) what any other factor(s), undetermined yet, affect these two economic variables, (3) to what extent, our empirical findings are relevant, utilizing robustness check methods while also referring to the present literature, and (4) which policies should be carried out based off our empirical results.

The remainder of the paper is arranged as follows. The following section, Section 2, reviews the existing literature, touching upon the brief descriptions of similar analyses studied by far. In Section 3, we provide information on the data and models employed in our paper. Section 4 is denoted to discuss methodology, addressing the quantitative methods utilized in this empirical analysis. Section 5 presents and interprets the empirical results obtained herein. In Section 6, we further discuss those findings, comparing them to similar studies conducted before while at the same time accounting for the empirical investigations in the case of Azerbaijan. Lastly, in Section 6, we summarize the paper and suggest the relevant policy recommendations borne out by our findings.

1. LITERATURE REVIEW

The current literature is replete with a myriad of studies that have shed light upon this nexus. Considering the fact that these hypotheses have yet to be tested in the context of Azerbaijan, we proceed with briefly discussing the existent literature on various economies in accordance with the different empirical methodologies in this section. To test for the existence of cointegrating relationship, many studies have applied either Engle and Granger (1987) or Johansen (1988), along with Johansen and Juselius (1990) or all three methodologies. Some of them, on the other hand, have utilised the Bounds Test based on the Autoregressive Distributed Lag (ARDL) model for cointegration (Pesaran *et al.,* 2001). The superiority of its performance compared to that of other estimators will be succinctly addressed in Section 4. Subsequent to discovering the cointegrating relationship, the Granger Causality test (Granger, 1988) has been employed to determine the directions of causality between economic growth and exports in those analyses. For the sake of coherence, we have divided them up into four categories: *export-led growth (ELG), growth-driven export (GDE), bidirectional (feedback),* and *mixed/inconclusive.*

Initially, we commence with reviewing the investigations on the first category, namely, *export-led growth (ELG)*. The empirical studies conducted by Ozturk and Acaravci (2010), as well as Halicioglu (2007), lend support to the ELG hypothesis, suggesting that the unidirectional causality flows from exports to GDP and industrial production, both in the case of Turkey. Roshan (2007), as well as Siliverstovs and Herzer (2006), have also confirmed the validity of the ELG hypothesis for Iran and Chile, respectively. The former stresses the significance of oil exports, whereas they both put special emphasis on manufactured exports as a way to augment economic growth. Having discovered the positive impact of exports on output, Abual-Foul (2004) urges governmental support in relation to the export-oriented growth strategy in Jordan. The empirical analysis implemented by Ram (1987) in the case of developing countries based on both cross-sectional and time-series data also attests to the ELG hypothesis. The evidence from the industrialised countries indicates that exports Granger-cause productivity, deducing the validity of the ELG hypothesis (Marin, 1992). In the case of Canada, Awokuse (2003) argues that Granger causality runs from real exports to real GDP while also controlling for the additional variables missing in previous studies. By applying the ARDL bounds testing approach to cointegration, Keong *et al.* (2005) and Shahbaz *et al.* (2011) have approved the existence of causal flows from exports to GDP in Malaysia and Pakistan, respectively.

Secondly, we proceed to examine the investigations regarding the *growth-driven export (GDE)* category. Bahmani-Oskooee *et al.* (2005) have implemented an empirical analysis for the developing countries and found the cointegrating relationship on the GDE model, further recommending growth-oriented policies to stimulate exports. In a similar study, Çetintaş and Barişik (2008) have also confirmed the validity of the GDE hypothesis for the transition economies, stating that an increase in import demand is a determinant of, amongst others economic growth. In the case of Nigeria, Alimi and Muse (2012) have unearthed the unidirectional causal flow from output to exports. The empirical evidence from Greece suggests that output growth leads exports to soar (Panas and Vamvoukas, 2002). The main finding obtained by Shan and Sun (1998) reveals that manufacturing growth Granger-causes exports growth in Australia.

Next, we should review the studies in the topical literature with respect to the *bidirectional (feedback)* category. Bahmani-Oskooee and Alse (1993) have examined this nexus in the context of less-developed countries and reached a consensus that there exists bidirectional causality between real exports and real output in virtually all the economies estimated. Findings obtained by Dhawan and Biswal (1999) support the two-way causality for India; yet, they have also found the short-run behaviour of the causal flows from exports to GDP. By applying several quantitative procedures and robustness check tests, Sun and Shan (1998) have found strong support in favour of bidirectional causality between exports and real industrial output in China. Awokuse (2005) argues that the causal flow between exports and GDP growth is bidirectional, concluding that productivity growth is rather shaped by capital and foreign output within the Japanese economy. Having employed the bounds testing approach to cointegration in accordance with the ARDL model, Chen (2007) finds the mutual causal flow between real exports and real output in Taiwan.

Last but not least, the *mixed/inconclusive* category should be evaluated on which a fairly abundant number of investigations have been carried out. The case of the Middle East and North Africa (MENA) countries indicates the rejection of the ELG hypothesis (Abu-Qarn and Abu-Bader, 2004). Love and Chandra (2005), as well as Shirazi and Abdul Manap (2005), have discovered some beneficial results as regards the South Asian countries. Based on their empirical findings, one should highlight that for some countries, there exist cointegration relationships and causality in at least one direction, whereas inconclusiveness is the case for the other ones. The quantitative analysis conducted by Silaghi (2009) for the Central and Eastern European (CEE) countries have yielded the same results contingent upon the country profile and inclusion of some other variables. Dreger and Herzer (2012) have discovered the short-run bidirectional causality between exports and non-export GDP, while exports negatively affect non-export output in the long run in the less-developed countries. The evidence from Portugal suggests that exports and FDI stimulate growth in the long run; however, a bidirectional causality runs from FDI to growth in the short-run (Andraz and Rodrigues, 2010). Balaguer and Cantavella-Jordá (2001) have provided rather intriguing implications in the case of Spain. That is, during the economic liberalisation period, the ELG hypothesis is found to be valid, while as per the protectionist and autarkic period, no short- and long-run associations between exports and economic growth are detected. Concerning the OECD countries, Kónya (2004, 2006) has elicited mixed results, depending on the country. The empirical estimations obtained by Narayan *et al.* (2007) through utilising bounds tests for cointegration based on the ARDL model demonstrate that the ELG is valid for Fiji in the long run, whereas it is valid for Papua New Guinea only in the short run.

2. MEASURED VARIABLES AND DESCRIPTIVE ANALYSES

All the data employed herein are quarterly-based and cover the period 2001Q3–2018Q4, totaling overall to 70 observations. Note that making use of various price indices, we have deflated nominal data to obtain real data, the base year being the fourth quarter of 2000 (2000Q4=100).

Non-Oil Real GDP (*nogdp*), measured in a million *AZN*, demonstrates the sum of value added produced in the non-oil economy, which has been deflated by the Consumer Price Index (CPI). We have taken both of them from the monthly Statistical Bulletins (SB), compiled and issued by the Central Bank of Azerbaijan (CBAR), and converted them to a quarterly basis. Since the data on the Non-oil GDP Deflator for Azerbaijan are missing, we have rather used the CPI as a deflator.

Non-Oil Real Exports (*nox*) denotes quarterly-based non-oil exported goods in real terms measured in a million *AZN*, which has been deflated by the Producer Price Index (PPI). While the former has been elicited from both the SB and State Statistical Committee of Azerbaijan, the latter has been obtained from both the SB and International Financial Statistics (IFS) released by the International Monetary Fund (IMF) [2].

Real Capital Investments (*K*) represented quarterly-based capital expenditures in constant prices financed by both public and private sectors and directed mostly towards the long-term fixed assets. The data have been deflated by the CPI and taken from the SB. This variable has been selected as a proxy for *Capital (K)* employed in Solow's (1957) growth model.

Non-Oil Real Effective Exchange Rate (*noreer*), measured in percentage, designates the non-oil exchange rate, which has been retrieved from the SB. Having taken note of the fact that we utilise Non-Oil GDP and Non-Oil Exports in the models, we have decided to choose *NOREER* rather than *REER*. Furthermore, as far as Aziakpono (2004) is concerned, several factors such as human capital, state budget expenses, trade openness, export potential, and exchange rates can be controlled by *REER.*

Real Public Expenditures (*pex*) indicate state budget spending, measured in a million *AZN* and deflated by the CPI. This has been used as a control variable and obtained from the SB. Considering that fiscal policy has a significant impact on the Azerbaijani economy, confirmed by a large number of studies which we will address below, the inclusion of this control variable will yield more accurate results vis-à-vis the ELG and GDE hypotheses.

Aside from these variables, we include seasonal dummies to offset the effects of seasonality. The seasonal dummy variable of *SEAS*(1) is used for the ELG model, whereas *SEAS*(1) and *SEAS*(3) are added to the GDE model.

Figure 1 depicts the log profiles of the variables. Observing the graph, an increase in non-oil exports prior to 2005 and a plummet up until 2014 catch one's eyes. However, beginning from 2015, thenceforth, a significant rise can be seen. The plunge in non-oil exports between the period 2005–2014 coincides with the "Oil Boom" period, which yielded considerable oil windfalls while leading to de-industrialization in the economy (Suleymanov and Aliyev, 2015). On the other hand, a surge afterwards can be attributed to the devaluation of *the Manat*, which made it possible to increase non-oil exports due to lower prices.

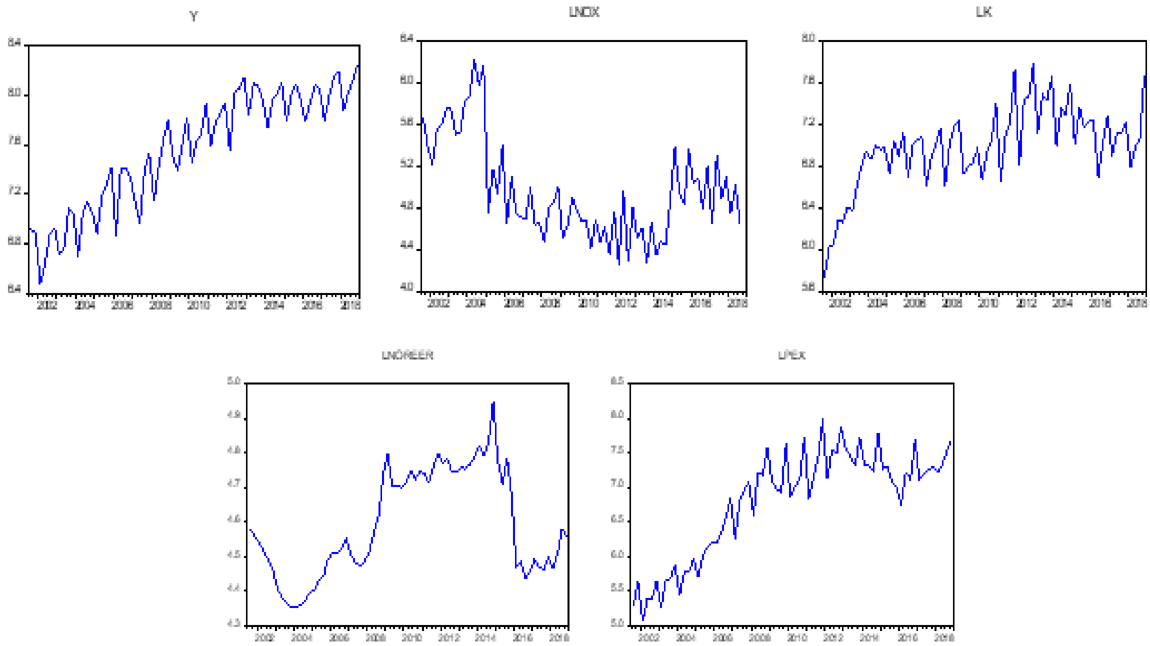

Figure 1: Graphs of the Logs of the Variables

Table 1: Descriptive Statistics of the Variables

Data period: 2001Q3–2018Q4; *n*=70				
Variable	**Mean**	**Maximum**	**Minimum**	**Standard Deviation**
nogdp	2124.76	3859.400	651.400	887.833
nox	163.000	508.000	70.000	94.570
K	1170.160	2409.800	309.600	434.634
noreer	100.130	140.700	77.700	15.513
pex	1147.498	2914.850	161.210	682.227

Source: Authors' own compilation

By the same token, one may intuitively contend that the appreciation of *the Manat* during the "Oil Boom" period during which oil prices were high and two consecutive devaluations in 2015 due to a sharp decline in oil prices might help explain the respective movements in the non-oil real effective exchange rate. However, Hasanov (2013) claims that this appreciation was rather brought about by the immense FDI inflows. In contrast, the implications that emerged from the oil-price shocks hold true in terms of a significant fall both in public expenditures and capital investments. One could maintain that this might have caused non-oil GDP to grow; yet, we once again see a decreasing trend and then level-off in the mentioned variable, taking the multiplier effect of oil dependency into account. Moreover, Table 1 below portrays the descriptive statistics of the variables.

3. THEORETICAL FRAMEWORK AND THE MODELS

In our empirical investigation, we estimate two different models to find the link between non-oil real GDP (Y) and non-oil real exports (nox). The first model is in line with the ELG hypothesis, while the second one is pertaining to the GDE hypothesis.

For testing the ELG hypothesis, we apply Solow's (1957) growth model, assuming that *Output* (Y) depends on the factors of production, namely, *Capital* (K) and *Labour* (L). In other words,

$$Y = f(K, L) \quad (1)$$

However, we modify equation (1) by excluding L and incorporating some other variables outlined above. The main reason behind the exclusion of L is that the data on labour concerning Azerbaijan is widely regarded as unreliable, which would have otherwise led to biased and inconsistent results. Therefore, the model becomes as it is now, which has been formulated as below in equation (2):

$$Y = f(nox, K, noreer, pex) \quad (2)$$

Note that Y stands for non-oil real GDP (*nogdp*), and these four regressors have been designated to be the determinants of non-oil economic growth.

The equation (3) below, on the other hand, signifies the model with respect to the GDE hypothesis, where nox is the regressand, and Y (*nogdp*) is a regressor:

$$nox = f(Y, K, noreer, pex) \quad (3)$$

Now, based on equations (2) and (3), we can derive the respective econometric models from being estimated. The base models for the long-run equation estimations are as follows for the ELG and GDE hypotheses, respectively, in equations (4) and (5):

$$\ln(Y)_t = \alpha_1 + \alpha_2 \ln(nox)_t + \alpha_3 \ln(K)_t + \alpha_4 \ln(noreer)_t + \alpha_5 \ln(pex)_t + u_t \quad (4)$$

$$\ln(nox)_t = \beta_1 + \beta_2 \ln(Y)_t + \beta_3 \ln(K)_t + \beta_4 \ln(noreer)_t + \beta_5 \ln(pex)_t + \varepsilon_t \quad (5)$$

where α_i and β_i, $i = 1, \dots, 5$, denote regression parameters. u_t and ε_t represent stochastic error terms, while t stands for time.

3.1. Empirical Methodology

The first step prior to employing the cointegration tests is to determine the order of integration via the Unit Root (UR) tests. In this sense, we apply three different unit root tests, which are the Augmented Dickey-Fuller (ADF) developed by Dickey and Fuller (1981), Phillips-Perron (PP) by Phillips and Perron (1988) alongside Phillips and Hansen (1990), and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) by Kwiatkowski *et al.* (1992) tests. The null hypotheses for the ADF and PP tests are both "no stationarity" (unit root), while that of the KPSS test is "(trend) stationarity."

As the following procedure, we employ the Bounds Testing approach to cointegration based on the Autoregressive Distributed Lag (ARDL) model. Developed by Pesaran *et al.* (2001), this method is favoured more compared to the alternative approaches, taking its advantages into consideration. Firstly, it is preferable to utilise it for small samples. Secondly, this can be applied via merely using OLS with all series containing $I(0)$ or $I(1)$ processes or a mutual cointegration of them. Another benefit derived from this method is that it is immune to the endogeneity problem. Lastly, it is possible to estimate short- and long-run coefficients at the same time.

To employ the corresponding procedure, the models are specified in equations (6) and (7) to be estimated as follows:

$$\begin{aligned} \Delta\ln(Y)_t &= \gamma_0 + \delta_1 \ln(Y)_{t-1} + \delta_2 \ln(nox)_{t-1} + \delta_3 \ln(K)_{t-1} + \delta_4 \ln(noreer)_{t-1} \\ &+ \delta_5 \ln(pex)_{t-1} + \sum_{i=1}^{\rho} \pi_i \Delta\ln(Y)_{t-i} + \sum_{j=1}^{\rho} \varpi_j \Delta\ln(nox)_{t-j} \\ &+ \sum_{m=1}^{\rho} \varphi_k \Delta\ln(K)_{t-m} + \sum_{n=1}^{\rho} \mu_n \Delta\ln(noreer)_{t-n} + \sum_{l=1}^{\rho} \theta_l \ln\Delta\ln(pex)_{t-l} \\ &+ \tau_1 seas(1) + \tau_2 seas(2) + \tau_3 seas(3) + u_t \end{aligned} \tag{6}$$

$$\begin{aligned} \Delta\ln(nox)_t &= \vartheta_0 + \sigma_1 \ln(nox)_{t-1} + \sigma_2 \ln(Y)_{t-1} + \sigma_3 \ln(K)_{t-1} + \sigma_4 \ln(noreer)_{t-1} \\ &+ \sigma_5 \ln(pex)_{t-1} + \sigma_6 \ln(noreer)_{t-1} \ln(pex)_{t-1} + \sum_{z=1}^{\epsilon} \upsilon_z \Delta\ln(nox)_{t-z} \\ &+ \sum_{p=1}^{\epsilon} \lambda_p \Delta\ln(Y)_{t-p} + \sum_{q=1}^{\epsilon} \phi_q \Delta\ln(K)_{t-q} + \sum_{f=1}^{\epsilon} \psi_f \Delta\ln(noreer)_{t-f} \\ &+ \sum_{h=1}^{\epsilon} \alpha_h \Delta\ln(pex)_{t-h} + \chi_1 seas(1) + \chi_2 seas(2) + \chi_3 seas(3) + \varepsilon_t \end{aligned} \tag{7}$$

Here, $\ln(Y)$ is the natural log of non-oil real GDP, $\ln(nox)$ shows the natural log of non-oil real exports, $\ln K$ illustrates the natural log of real capital investments, $\ln(noreer)$ indicates the natural log of the non-oil real effective exchange rate, and $\ln(pex)$ symbolizes real public expenditures. Moreover, we include the interaction term of $\ln(noreer) * \ln(pex)$ so as to both capture their interactive effects and avoid the problem of functional form misspecification. Furthermore, $SEAS$(1), $SEAS$(2) and $SEAS$(3) are seasonal dummy variables included accounting for the seasonality problem while the last quarter is left as the base group.

Afterwards, in the following stage, we have to apply the bounds tests via using the F-test to ensure whether cointegrating (long-run) relationships exist amongst the variables. The F-test tests the joint significance of the long-run coefficients, which are expressed as the one period lagged levels of the variables based on the equations (6) and (7). Hence, the null hypotheses of $H_0\colon \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$ and $H_0\colon \sigma_1 = \sigma_2 = \sigma_3 = \sigma_4 = \sigma_5 = \sigma_6 = 0$ are tested against the respective alternative hypotheses of $H_0\colon \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq 0$ and $H_0\colon \sigma_1 \neq \sigma_2 \neq \sigma_3 \neq \sigma_4 \neq \sigma_5 \neq \sigma_6 \neq 0$. The approximate critical values for the F-tests are elicited from Narayan (2005).

Subsequently, the Fully Modified Ordinary Least Squares Method (FMOLS) method is applied, which has been developed by Phillips and Hansen (1990). What makes this method advantageous is that it helps eradicate the sample bias while also correcting for endogeneity stemming from cointegrating relationships and serial correlation effects (Narayan and Narayan, 2004). Phillips and Hansen (1990) provide the comprehensive mathematical derivation of the model.

Additionally, we apply the Dynamic Ordinary Least Squares Method (DOLS) method constructed by Saikkonen (1992) as well as Stock and Watson (1993). The benefit offered by this model is that the estimation of long-run equilibria is corrected for the potential simultaneity bias amongst regressors (Narayan and Narayan, 2004).

The final method to be employed, developed by Park (1992), is the Canonical Cointegrating Regression (CCR) method, which allows OLS to yield asymptotically efficient estimators. Concerning the cointegration tests for CCR together with FMOLS and DOLS, we will utilize the Phillips-Ouliaris cointegration test (Phillips and Ouliaris, 1990).

Seasonal dummies are included in the equations while using FMOLS, DOLS and CCR as well.

4. RESULTS

4.1. Unit Root Tests Results

The very first results to be presented in accordance with the Methodology section (Section 4) pertain to the unit root tests results. As mentioned above, three different unit root tests have been employed, inclusive of the ADF, PP, and KPSS tests, whose results have been reported in Table 2.

Table 2: Unit Root Tests Results

	Variable	ADF				PP		KPSS	
		Level *I*(0)	k	First difference *I*(1)	k	Level *I*(0)	First difference *I*(1)	Level *I*(0)	First difference *I*(1)
Intercept	*Y*	-0.860	7	-5.595***	6	-1.835	-19.301***	1.080***	0.116
	nox	-2.258	2	-6.269***	2	-3.223**	-15.856***	0.520**	0.203
	K	-2.324	3	-13.177***	2	-4.823***	-23.860***	0.794***	0.099
	noreer	-1.971	3	-3.429**	2	-1.649	-7.977***	0.398*	0.111
	pex	-1.264	4	-4.810***	3	-4.123***	-24.412***	0.876***	0.090
Trend and *Intercept*	*Y*	-1.102	7	-5.601***	6	-7.188***	-18.782***	0.166**	0.082
	nox	-2.837	2	-6.231***	2	-3.743**	-15.854***	0.203**	0.170**
	K	-1.758	3	-13.344***	2	-6.455***	-24.226***	0.156**	0.099
	noreer	-2.025	3	-3.428*	2	-1.728	-7.928***	0.189**	0.095
	pex	-1.721	4	-4.773***	3	-5.686***	-24.034***	0.222***	0.092

Notes: ADF, PP, and KPSS denote the Augmented Dickey-Fuller, Phillips-Perron, and Kwiatkowski-Phillips-Schmidt-Shin tests, respectively. Maximum lag order is set to 10, and optimal lag order (k) is selected based on the Schwarz Information Criterion (SIC) in the ADF test; ***, **, and * indicate the rejection of the null hypotheses at 1%, 5%, and 10% levels of significance, respectively. The critical values for the ADF and PP tests are taken from MacKinnon (1996), whereas the ones for the KPSS test are obtained from Kwiatkowski-Phillips-Schmidt-Shin (1992). Estimation period: 2001Q3-2018Q4.

As Table 2 suggests, subject to the ADF tests, all the variables suffer the problem of a unit root (non-stationarity) at level, *I*(0), with intercept as well as trend and intercept. However, all of them become stationary at the first difference, meaning that they are integrated order of one, i.e., *I*(1) processes. The results obtained from the PP test demonstrate that practically all the variables are both *I*(0) and *I*(1) processes with intercept along with trend and intercept. Yet, more precisely, we conclude that non-oil real GDP (*Y*) is stationary only at the first difference, *I*(1), with intercept. Also, non-oil real effective exchange rate (*noreer*) becomes stationary at the first difference, *I*(1), with intercept as well as trend and intercept included. Finally, concerning the KPSS test, one can infer that all the variables are non-stationary at level, with intercept alongside trend and intercept. At first difference, KPSS finds all series to be stationary, I(1) in both cases – with the only intercept, and with trend and intercept. The exception is the variable of non-oil real exports (*nox*), which is is found to be non-stationary when a trend is included.

4.2. Cointegration Tests Results

As outlined in Section 4, we utilise four econometric techniques, including the ARDL approach to cointegration, FMOLS, DOLS, and CCR. The Bounds Tests to cointegration have been employed constructed on the ARDL model, whereas the Phillips-Ouliaris cointegration tests have been implemented on the FMOLS, DOLS, and CCR methods. Prior to elucidating the cointegration analysis, it should be noted that the results of the relevant tests confirm that residuals satisfy the Gauss-Markov assumptions.

Panel A in Table 3 reports the Phillips-Ouliaris cointegration tests results. The conclusion drawn from these tests is that variables both in the ELG and GDE models are cointegrated at 1% level of significance based on the FMOLS, DOLS, and CCR long-run equations.

On top of that, Panel B presents the Bounds Tests results built on the ARDL model. As far as the bound testing procedure is concerned, the null hypothesis of "no cointegration" is rejected, provided that the estimated *F*-statistic is higher than the upper bound. On the contrary, if the computed *F*-statistic is smaller than the lower bound, we fail to reject the null in favour of the alternative hypothesis. Note also that once the measured *F*-statistic is in between lower and upper bounds, it is labelled "inconclusiveness," concluding that it cannot be asserted whether or not the cointegrating relationship exists. Taking the estimated *F*-statistic values for both the ELG and GDE models into account, we can evidently see that they are higher than the upper bounds both at 95% and 99% critical bounds. Consequently, we deduce that cointegrating relationships exist amongst variables at all conventional levels of significance.

Now that we have found the existence of the cointegration (long-run relationships), we can move on to scrutinise the long-run estimations coupled with the relevant interpretations.

Panel A in Table 4 tabulates the long-run estimations of the variables in accordance with the ELG model. As can be seen, all the methods, except ARDL and DOLS, portray a significant long-run impact of non-oil real GDP over non-oil real exports ($p < 0.01$). ARDLS reveals no significant long-run impact ($p > 0.1$) while DOLS conclude with weak causality ($p < 0.1$). In this respect, holding other variables constant, on average, 1% increase in non-oil real exports is associated with an approximately 0.24-0.30% rise in non-oil real GDP. The relatively weak long-run causality from non-oil exports to non-oil GDP in a resource-rich country is plausible when the dependence on the oil sector and oil revenues dominating sharp fiscal expansions are considered (see Aliyev and Gasimov (2018) for the detailed discussion of fiscal policy implementation in Azerbaijan). Not surprisingly, the very strong positive long-run impact of public expenditures over non-oil economic growth is confirmed in our analysis which is consistent with a great number of studies (Hasanov, 2013a, 2013b; Dehning *et al*., 2016; Aliyev *et al*., 2016; Hasanov *et al*., 2016; Aliyev and Mikayilov, 2016; Aliyev and Nadirov, 2016; Hasanov *et al*., 2018; Mukhtarov *et al*., 2018; Abbasov and Aliyev, 2018; Hasanov *et al*., 2019; Aliyev, 2019).

Table 3: Results of the Cointegration Tests

Panel A: Phillips-Ouliaris Cointegration Test				
	The ELG Model $f(Y\|nox, K, noreer, pex)$		*The GDE Model* $f(nox\|Y, K, noreer, pex)$	
Method	*tau-statistic*	*z-statistic*	*tau-statistic*	*z-statistic*
FMOLS	-4.73748**	-32.9655 **	-6.969594***	-55.09592***
DOLS	-4.73748**	-32.9655 **	-6.969594***	-55.09592***
CCR	-4.73748**	-32.9655 **	-6.969594***	-55.09592***
Panel B: Bounds Test				
	95% critical bounds		**99% critical bounds**	
	$I(0)$	$I(1)$	$I(0)$	$I(1)$
$F_{ELG} = 5.4884$ $F_{GDE} = 7.6736$	2.56	3.49	3.29	4.37

Notes: The dependent variable of the ELG model is $\ln(Y)$, whereas that of the GDE model is $\ln(nox)$. Null hypotheses for both tests are: *variables are not cointegrated*; *** indicates the significance of the coefficients at 1% level of significance. Optimal lag length is selected based on the Schwarz Information Criterion, taking 4 lags as a maximum; p-values represent MacKinnon (1996) p-values for tau-statistic. The critical values for the Bounds Test are taken from Pesaran *et al.* (2001), taking restricted intercept and no trend upper and lower bounds for 4 regressors.

Regarding the long-run impact of real capital investments on non-oil real GDP, all employed methods conclude no significant impact ($p > 0.10$). In the meantime, results display no significant long-run effect of the non-oil real effective exchange rate over non-oil real GDP ($p > 0.10$).

Panel B depicts the long-run estimations of the variables built on the GDE model. The statistically significant coefficient of non-oil real GDP indicates that 1% increase in itself results in an approximately 0.64-0.69% rise in non-oil real exports. The result supports findings in Hasanova and Samadova (2011), who conclude that 1% increase in non-oil real GDP leads to 1.46% growth in non-oil real exports. Although the result confirms the validity of the GDE hypothesis, the smaller elasticity coefficient compared to Hasanova and Samadova (2011) indicates the diminishment of the association after 2009, which was accompanied by a sudden fiscal expansion mostly financed by oil revenues (Aliyev and Gasimov, 2018 Aliyev, 2019).

Table 4: Results of the long-run estimations

Panel A: *The ELG Model*				
Variable	**ARDL**	**FMOLS**	**DOLS**	**CCR**
$\ln(nox)_t$	0.2535	0.2844***	0.2402*	0.3013***
	(0.1854)	(0.1045)	(0.1308)	(0.1123)
$\ln(K)_t$	0.4138	0.0799	0.117	0.0654
	(0.2728)	(0.1345)	(0.1504)	(0.1394)
$\ln(noreer)_t$	-0.1853	-0.0832	-0.1265	-0.0925
	(0.4853)	(0.2688)	(0.2986)	(0.2655)
$\ln(pex)_t$	0.5711***	0.7004***	0.6663***	0.7154***
	(0.1509)	(0.084)	(0.0978)	(0.0913)
$@seas(1)$	-0.2447 ***	-0.1258	-0.254	-0.1296
	(0.0643)	(0.098)	(0.1689)	(0.1004)
$@seas(2)$	-0.0559	0.0791	0.0337	0.0793
	(0.0755)	(0.0825)	(0.0886)	(0.0829)
$@seas(3)$	0.0562	0.2817***	0.0699	0.2856
	(0.0723)	(0.0888)	(0.1071)	(0.0893)
C	0.687	1.0895	1.6749	1.0465
	(2.837)	(1.5848)	(1.880)	(1.6419)

Panel B: ***The GDE Model***				
$\ln(Y)_t$	0.6406** (0.2458)	0.6941*** (0.1922)	0.6528*** (0.24487)	0.6893*** (0.2139)
$\ln(K)_t$	-0.2176 (0.2613)	-0.4955*** (0.2041)	-0.4708* (0.2626)	-0.5365** (0.2279)
$\ln(noreer)_t$	-13.586 *** (4.7155)	-15.786*** (3.7137)	-18.280*** (5.014)	-16.847 *** (4.4559)
$\ln(pex)_t$	-8.7336*** (2.9278)	-9.9639 *** (2.3041)	-11.615*** (3.0681)	-10.585 *** (2.7354)
$\ln(noreer)_t * \ln(pex)_t$	1.8009*** (0.6565)	2.088*** (0.5169)	2.4604*** (0.6944)	2.2322*** (0.618)
$@seas(1)$	-0.4433*** (0.0929)	-0.4699*** (0.1011)	-0.3259 (0.2379)	-0.4716*** (0.1004)
$@seas(2)$	-0.1010 (0.087)	-0.1544 (0.0935)	-0.2098* (0.1210)	-0.1524 (0.0934)
$@seas(3)$	-0.4063*** (0.0886)	-0.3715*** (0.0965)	-0.3644*** (0.1206)	-0.3684*** (0.1001)
C	67.374 *** (21.732)	78.336 *** (17.117)	89.447 *** (23.229)	83.243 *** (20.598)

Statistics and Residuals Diagnostics tests results	
Panel A: The ELG Model	
ARDL	σ=0.01072; $R^2 = 0.951$; $\chi^2_{SC}(4)$= 1.8403 [0.1355]; $\chi^2_{ARCH}(4)$= 0.3438 [0.8473]; χ^2_{HETR} = 0.7355 [0.6881]; JB_N= 41.032 [0.0000]; F_{FF}= 0.00004 [0.9947]
FMOLS	σ=0.1809; $R^2 = 0.864$; JB_N=4.423 [0.1095]
DOLS	σ=0.1554; $R^2 = 0.907$; JB_N=4.224 [0.1210]
CCR	σ=0.1823; $R^2 = 0.863$; JB_N=4.266 [0.1185]
Panel B: The GDE Model	
ARDL	σ=0.2421; $R^2 = 0.772$; $\chi^2_{SC}(4)$= 0.3804 [0.8217]; $\chi^2_{ARCH}(4)$= 0.0834 [0.9872]; χ^2_{HETR} =1.1054 [0.3736]; JB_N=34.203 [0.0000]; F_{FF}=3.2739 [0.0757]
FMOLS	σ=0.2548; $R^2 = 0.743$; JB_N=25.616 [0.0000]
DOLS	σ=0.2429; $R^2 = 0.787$; JB_N=0.2406 [0.8866]
CCR	σ=0.2557; $R^2 = 0.742$; JB_N=24.605 [0.0000]

Notes: The dependent variable of the ELG model is $\ln(Y)_t$, while that of the GDE model is $\ln nox$; ***, **, and * indicate the significance of the coefficients at 1%, 5%, and 10% levels of significance, respectively. σ is standard error of regression; R^2 display goodness of fit. χ^2_{SC}, χ^2_{ARCH} and χ^2_{HETR} denote chi-squared statistics to test the null hypotheses of no serial correlation, no autoregressive conditioned heteroscedasticity, and no heteroscedasticity in the residuals; JB_N indicate statistics to test the null hypotheses of normal distribution; Standard errors are in ( ). Probabilities are in [ ]. Estimation period: 2001Q3-2018Q4.

Based on the statistically significant coefficient of real capital investments (*K*) in the FMOLS and CCR equations, we can infer that a 1% rise in capital investments is linked to nearly a 0.49-0.54% decrease in non-oil exports both in real terms. This finding is consistent with the one measured by Gurbanov *et al.* (2017). However, they maintain that the amount of this decline is 0.23%. We hold that this difference could be explained by the data period as well as the distinct methodologies applied. Furthermore, findings reveal the interaction effect of public expenditures over the relationship between non-oil real effective exchange rate and non-oil GDP growth in the country, and vice-versa. Overall, the effects of non-oil real effective exchange rate and total public expenditures on non-oil real exports are negative in Azerbaijan.

DISCUSSION AND CONCLUSION

The marginal positive impact of real capital investments on non-oil real GDP is an alarming finding which has also been emphasised by Gurbanov *et al.* (2017). In addition, our results reveal its reverse effect on non-oil exports in real terms. As outlined in Section 3, capital investments are directed mostly towards the long-term fixed assets, infrastructure, as well as light industry, albeit the negligible amount. These issues should be reconsidered by the government in that a new policy should be designed to stimulate non-oil economic growth while simultaneously casting no negative effect on non-oil exports.

As laid out above, the impact of non-oil real effective exchange rate on non-oil real GDP indicates no statistical significance. This finding can be justified on the ground that Azerbaijan has long followed the fixed exchange rate regime, and any major fluctuations have stemmed solely from devaluations of the *Manat* whose time frame has been too short of causing any crucial alterations. That being said, Hasanov and Huseynov (2013) conclude that 1% appreciation in *REER* leads to between 0.41% and 0.65% corresponding decrease in non-oil economic growth. On top of that, the effect of non-oil *REER* on non-oil real exports is negative. Hasanov and Samadova (2010) also find that 1% appreciation (depreciation) in *REER* results in 1.63% decrease (increase) in non-oil real exports.

As regards real public expenditures, the results illustrate that it positively affects the non-oil economic performance also approved by many other scholars. By contrast, its impact on non-oil real exports is negative. It is no secret that growing oil windfalls pave the way for massive government revenues and spending. In other words, this prodigious government spending "crowds out" the activities carried out by the non-oil export sector. This empirical finding is on a par with that of Hasanov and Huseynov (2009), who suggest that net foreign assets position stemmed from oil revenues and growing government expenditures, among other factors, are determinants of the exchange rate misalignment.

In this paper, we analysed the link between non-oil economic growth and non-oil exports in real terms, testing the Export-Led Growth (ELG) and Growth-Driven Export (GDE) hypotheses. Subjected to the cointegration tests and robustness checks, the main finding is that the bidirectional (feedback) cointegrating relationship exists between non-oil real GDP and non-oil real exports in Azerbaijan, which confirm the validity of both ELG and GDE hypotheses in the country investigated. Therefore, any attempt to improve the non-oil export sector may well strengthen the non-oil economic performance in Azerbaijan, and the opposite also holds true.

From the bidirectional (feedback) cointegrating relationships, it can be inferred that both export-oriented and growth-aiming policies should be reinforced. One potential strategy is to enhance the financial sector, especially the banking sector, since it is practically the sole institution where entrepreneurs and farmers possessing businesses in the non-oil sector can take out loans. Obtaining these loans with further concessions may, in turn, incentivise those entrepreneurs and farmers to initiate new projects such as establishing new entities producing export-oriented goods in both industrial and agricultural sectors (Ismayilov and Zeynalli, 2018; Hasanov and Huseynov, 2013).

Considering the negative impact of FDI inflows to the oil sector over non-oil exports (Hasanov, 2013), we recommend a different policy pathway. To elaborate, Azerbaijan needs to follow an investment-driven expansion path, suggested by Yu (1998), which will eventually stimulate non-oil exports, thereby leading to non-oil economic growth. This may include, but not be limited to, attracting FDI inflows to the non-oil export sector. Yet, it is also no secret that without any infrastructural enhancement in the non-oil export sector, it will not be possible to receive those inflows (Olayiwola and Okodua, 2013). Thus, it will behove the government to direct those capital investments for this cause rather than the abovementioned ones.

It should also be highlighted that, as we described before, an increase in government expenditures decreases or "crowds out" non-oil exports. In this respect, we propose that the government step back and leave more space for the private sector by means of eliminating existing barriers in the domestic market and easing or, preferably, reducing the burdensome regulations. In the long run, it will help diversify the economy of Azerbaijan, which has long been persistently dependent upon the oil sector. As a consequence, all these anticipated reforms will be beneficial for following the ELG and GDE related policies.

Notes

1. All these official decrees are in Azerbaijani and have been briefly translated into English in the paper by us. They can be reached via the following web addresses:

   (a) http://e-qanun.az/framework/32254;

   (b) http://e-qanun.az/framework/39289;

   (c) http://e-qanun.az/framework/33720;

   (d) http://e-qanun.az/framework/3646244;

   (e) http://e-qanun.az/framework/40086

2. The data on the International Financial Statistics (IFS) released by the IMF have been retrieved online via the following web address:

   https://data.imf.org/?sk=4C514D48-B6BA-49ED-8AB9-52B0C1A0179B

REFERENCES

Abbasov, J.A. and Aliyev, K. (2018). Testing Wagner's Law and Keynesian Hypothesis in Selected Post Soviet Countries. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 66*(5), 1227-1237.

Abual-Foul, B. (2004). Testing the Export-Led Growth Hypothesis: Evidence from Jordan. *Applied Economics Letters*, *11*(6), 393-396.

Abu-Qarn, A.S. and Abu-Bader, S. (2004). The Validity of the ELG Hypothesis in the MENA Region: Cointegration and Error Correction Model Analysis. *Applied Economics, 36*(15), 1685-1695.

Alimi, S.R. and Muse, B.O. (2012). Export-Led Growth or Growth-Driven Exports? Evidence from Nigeria. *MPRA Paper, 53468,* 1-12.

Aliyev, K., Dehning, B., and Nadirov, O. (2016). Modelling the Impact of Fiscal Policy on Non-Oil GDP in a Resource Rich Country: Evidence from Azerbaijan. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, 64*(6), 1869–1878.

Aliyev, K., and Gasimov, I. (2018). Fiscal policy implementation in Azerbaijan before, during and after the oil boom. *Contemporary Economics*, *12*(1), 81-93.

Aliyev, K. and Mikayilov, C. (2016). Does the Budget Expenditure Composition Matter for Long-Run Economic Growth in a Resource Rich Country? Evidence from Azerbaijan. *Academic Journal of Economic Studies, 2*(2), 147-168.

Aliyev, K. and Nadirov, O. (2016). How Fiscal Policy Affects Non-Oil Economic Performance in Azerbaijan?. *Academic Journal of Economic Studies, 2*(3), 11-30.

Aliyev, K. (2019). The Curse of Transfers? Modelling Fiscal Policy Effectiveness in Azerbaijan. *Economic and Social Development: Book of Proceedings,* 76-85.

Andraz, J.M. and Rodrigues, P.M. (2010). What Causes Economic Growth in Portugal: Exports or Inward FDI?. *Journal of Economic Studies, 37*(3), 267-287.

Awokuse, T.O. (2003). Is the Export-Led Growth Hypothesis Valid for Canada? *Canadian Journal of Economics*, *36*, 126-136.

Awokuse, T.O. (2005). Export-Led Growth and the Japanese Economy: Evidence from VAR and Directed Acyclic Graphs. *Applied Economics Letters, 12*(14), 849-858.

Aziakpono, M.J. (2004). Financial Development and Economic Growth in Southern Africa. Paper presented at the CSAE Conference 2004.

Bahmani-Oskooee, M. and Alse, J. (1993). Export Growth and Economic Growth: An Application of Cointegration and Error-Correction Modelling. *The Journal of Developing Areas*, *27*(4), 535-542.

Bahmani-Oskooee, M., Economidou, C., and Goswami, G.G. (2005). Export Led Growth Hypothesis Revisited: A Panel Cointegration Approach. *Scientific Journal of Administrative Development*, *3*, 40-55.

Balaguer, J. and Cantavella-Jordá, M. (2001). Examining the Export-Led Growth Hypothesis for Spain in the Last Century. *Applied Economics Letters*, *8*(10), 681-685.

Bhagwati, J.N. (1988). *Protectionism*. Cambridge, MA, MIT Press.

Chen, S.W. (2007). Exactly What Is the Link between Export and Growth in Taiwan? New Evidence from the Granger Causality Test. *Economics Bulletin, 6*(7), 1-10.

Çetintaş, H. and Barişik, S. (2008). Export, Import and Economic Growth: The Case of Transition Economies. *Transition Studies Review*, *15*, 636-649.

Dehning, B., Aliyev, K., and Nadirov, O. (2016). Modelling 'Productivity' of Budget Expenditure Items Before-and-After the oil Boom in a Resource Rich Country: Evidence from Azerbaijan. *International Journal of Economic Research, 13*(4), 1793-1806.

Dhawan, U. and Biswal, B. (1999). Re-examining Export-Led Growth Hypothesis: A Multivariate Cointegration Analysis for India. *Applied Economics, 31*(4), 525-530.

Dickey, D.A. and Fuller, W.A. (1981). Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econometrica: Journal of the Econometric Society*, 1057-1072.

Dreger, C. and Herzer, D. (2012). A Further Examination of the Export-Led Growth Hypothesis. *Empirical Economics, 45*(1), 39-60.

Engle, R.F. and Granger, C.W.J. (1987). Co-integration and Error Correction: Representation, Estimation and Testing. *Econometrica*, *55*, 251-276.

Granger, C.W. (1988). Some Recent Development in a Concept of Causality. *Journal of Econometrics, 39*(1-2), 199-211.

Gurbanov, S., Nugent, J., and Mikayilov, J. (2017). Management of Oil Revenues: Has That of Azerbaijan Been Prudent?. *Economies, 5*(2), 19.

Halicioglu, F. (2007). A Multivariate Causality Analysis of Export and Growth for Turkey. *MPRA Paper, 3565,* 1-10.

Hasanov, F. and Huseynov, F. (2009). Real Exchange Rate Misalignment in Azerbaijan. *Working paper.*

Hasanov, F. and Samadova, I. (2010). The Impact of Real Exchange Rate on Non-Oil Exports: The Case of Azerbaijan. *MPRA Paper, 29556,* 1-19.

Hasanov, F. and Huseynov, F. (2013). Bank Credits and Non-Oil Economic Growth: Evidence from Azerbaijan. *International Review of Economics & Finance, 27,* 597-610.

Hasanov, F. (2013a). The Role of the Fiscal Policy in the Development of the Non-Oil Sector in Azerbaijan. *Hazar Raporu, 4,* 162–173.

Hasanov, F. (2013b). Dutch Disease and the Azerbaijan Economy. *Communist and Post-Communist Studies, 46*, 463–480.

Hasanov, F., Mikayilov, C., Yusifov, S., and Aliyev, K. (2016). Impact of Fiscal Decentralization on Non-Oil Economic Growth in a Resource-Rich Economy. *Eurasian Journal of Business and Economics, 9*(17), 87-108.

Hasanov, F., Mammadov, F., and Al-Musehel, N. (2018). The Effects of Fiscal Policy on Non-Oil Economic Growth. *Economies, 6*(2), 27.

Hasanov, F., Mikayılov, C., Yusifov, S., Aliyev, K., and Talishinskaya, S. (2019). The Role of Social and Physical Infrastructure Spending in Development of Tradable and Non-Tradable Sectors in Azerbaijan. *Contemporary Economics, 13*(1), 79-98.

Helpman, E. and Krugman, P. (1985). *Market Structure and Foreign Trade.* MIT Press, Cambridge, MA.

Ismayilov, A. and Zeynalli, M. (2018). The Impact of Public Expenditure on Private Investment in Agriculture: Crowding in Or Crowding out? Evidence from Azerbaijan. *ASERC Journal of Socio-Economic Studies, 1*(1), 45-59.

Johansen, S. (1988). Statistical and Hypothesis Testing of Cointegrating Vectors. *Journal of Economic Dynamics and Control*, *12*, 231-54.

Johansen, S. and Juselius, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money. *Oxford Bulletin of Economics*, *52*, 169-210.

Keong, C.C., Yusop, Z., and Liew, V.K.S. (2005). Export-Led Growth Hypothesis in Malaysia: An Investigation Using Bounds Test. *Sunway Academic Journal, 2*, 13-22.

Kónya, L. (2004). Export-Led Growth, Growth-Driven Export, Both or None? Granger Causality Analysis on OECD Countries. Granger Causality Analysis on OECD Countries (August 17, 2008). *Applied Econometrics and International Development*, *4*(1).

Kónya, L. (2006). Exports and Growth: Granger Causality Analysis on OECD Countries with a Panel Data Approach. *Economic Modelling, 23*(6), 978-992.

Krueger, A. (1980). Trade Policy As an Input to Development. *American Economic Review, 70*(2), 120.

Kwiatkowski, D., Phillips, P.C., Schmidt, P., and Shin, Y. (1992). Testing the Null Hypothesis of Stationarity against the Alternative of a Unit Root: How Sure Are We That Economic Time Series Have a Unit Root?. *Journal of econometrics, 54*(1-3), 159-178.

Love, J. and Chandra, R. (2005). Testing Export-Led Growth in South Asia. *Journal of Economic Studies, 32*(2), 132-145.

MacKinnon, J.G. (1996). Numerical Distribution Functions for Unit Root and Cointegration Tests. *Journal of Applied Econometrics, 11*, 601–618.

Marin, D. (1992). Is the Export-Led Growth Hypothesis Valid for Industrialized Countries?. *Review of Economics & Statistics*, *74*(4), 678-688.

Mukhtarov, S., Gasimov, I., and Rustamov, U. (2018). Evaluation of Fiscal Policy Impact on Economic Growth: The Case of Azerbaijan. *ASERC Journal of Socio-Economic Studies, 1*(1), 82-90.

Narayan, S. and Narayan, P.K. 2004. Determinants of Demand for Fiji's Exports: An Empirical Investigation. *The Developing Economies, 42*(1), 95–112.

Narayan, P.K. (2005). The Saving and Investment Nexus for China: Evidence from Cointegration Tests. *Applied Economics, 37*(17), 1979-1990.

Narayan, P.K., Narayan, S., Chand Prasad, B., and Prasad, A. (2007). Export-Led Growth Hypothesis: Evidence from Papua New Guinea and Fiji. *Journal of Economic Studies, 34*(4), 341-351.

Olayiwola, K. and Okodua, H. (2013). Foreign Direct Investment, Non-Oil Exports, and Economic Growth in Nigeria: A Causality Analysis. *Asian Economic and Financial Review, 3*(11), 1479-1496.

Ozturk, I. and Acaravci, A. (2010). Testing the Export-Led Growth Hypothesis: Evidence from Turkey. *The Journal of Developing Areas*, *44*(1), 245-254.

Panas, E. and Vamvoukas, G. (2002). Further Evidence on the Export-Led Growth Hypothesis. *Applied Economics Letters*, *9*(11), 731-735.

Pesaran, M.H., Shin, Y., and Smith, R.J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. In: Hendry, D.F., Pesaran, M.H. (Eds.), Studies in Empirical Macroeconometrics (in honour of J D Sargan). *Journal of Applied Econometrics*, *16*, 289-326 (Special Issue).

Phillips, P.C. and Perron, P. (1988). Testing for a Unit Root in Time Series Regression. *Biometrika, 75*(2), 335-346.

Phillips, P.C. and Hansen, B.E. (1990). Statistical Inference in Instrumental Variables Regression with I (1) Processes. *The Review of Economic Studies, 57*(1), 99-125.

Phillips, P.C. and Ouliaris, S. (1990). Asymptotic Properties of Residual Based Tests for Cointegration. *Econometrica, 58*(1), 165-193.

Ram, R. (1987). Exports and Economic Growth in Developing Countries: Evidence from Time-Series and Cross-Section Data. *Economic Development and Cultural Change, 36*, 51-72.

Ramos, F.F.R. (2001). Exports, Imports, and Economic Growth in Portugal: Evidence from Causality and Cointegration Analysis. *Economic Modelling*, *18*(4), 613-623.

Roshan, S.A. (2007). Export Linkage to Economic Growth: Evidence from Iran. *International Journal of Development Issues*, *6*(1), 38-49.

Saikkonen, P. (1992). Estimation and Testing of Cointegrated Systems by an Autoregressive Approximation. *Econometric Theory, 8*, 1-27

Shahbaz, M., Azim, P., and Ahmad, K. (2011). Export-Led Growth Hypothesis in Pakistan: Further Evidence. *Asian Economic and Financial Review, 1*(3), 182-197.

Shan, J. and Sun, F. (1998). Export-Led Growth Hypothesis for Austrialia: An Empirical Re-investigation. *Applied Economics Letters*, *5*(7), 423-428.

Shan, J. and Sun, F. (1998). On the Export-led Growth Hypothesis: The Econometric Evidence from China. *Applied Economics, 30*(8), 1055-1065.

Shirazi, N.S. and Manap, T.A.A. (2005). Export-Led Growth Hypothesis: Further Econometric Evidence from South Asia. *The Developing Economies, 43*(4), 472-488.

Silaghi, M.I. (2009). Exports-Economic Growth Causality: Evidence from CEE Countries. *Romanian Journal of Economic Forecasting, 2*, 105-117.

Siliverstovs, B. and Herzer, D. (2006). Export-Led Growth Hypothesis: Evidence for Chile. *Applied Economics Letters*, *13*(5), 319-324.

Solow, R. (1957). Technical Change and the Aggregate Production Function. *Review of Economics and Statistics 39*, 312-320.

Stock, J.H. and Watson, M.W. (1993). A Simple Estimator of Cointegrating Vectors in Higher Order Integrated Systems. *Econometrica, 61*, 783-820.

Suleymanov, E. and Aliyev, K. (2015). Macroeconomic Analysis and Graphical Interpretation of Azerbaijan Economy in 1991-2012. *Expert Journal of Economics, 3*(1), 40-49.

Yu, Q. (1998). Capital Investment, International Trade and Economic Growth in China: Evidence in the 1980–1990s. *China Economic Review, 9*(1), 73-84.