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Myanmar and Korea have many similarities and are complementary relationship. Therefore, we believe that research exchange will expand mutual understanding between Myanmar and Korea, and will be the cornerstone for mutual development.

KOMYRA and YUE have co-published The Myanmar Journal since August 2014. So far, many scholars have published numerous papers through the journal, and We are sure that this journal has helped many people understand Myanmar and Korea more clearly and closely.

The Myanmar Journal covers various issues in Myanmar and Korea. It covers various topics that can promote bilateral development and mutual understanding, not limited to specific topics such as economy, industry, society, education, welfare, culture, energy, engineering, healthcare, and agriculture.

We hope that this journal will continue to promote understanding of the current status and potential capabilities of Myanmar and South Korea and promote in-depth international exchange and cooperation.

We would like to express our deepest gratitude to the editorial board and YUE and KOMYRA for their valuable support in The Myanmar Journal publication.

August 30, 2021

Youngjun Choi *yj choi*

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This journal aims to promote the mutual cooperation and development of Myanmar and Korea through intensive researches in the entire field of society, economy, culture, and industry.

It will cover all general academic and industrial issues, and share ideas, problems and solution for development of Myanmar.

Articles for publication will be on-line released twice a year at the end of February and August every year on the Myanmar Journal webpage (http://www.komyra.com/bbs/board.php?bo_table=articles).

THE CAUSAL RELATIONSHIP BETWEEN EXPORTS AND ECONOMICS GROWTH IN MYANMAR

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ABSTRACT : This paper analyses the causal relationship between economic growth and exports in Myanmar. The study covers the periods between 1971 and 2019, gathered from World Bank and Internet Websites. The analysis is done using unit root (ADF) test, co-integration (Engle and Granger), and Error Correction Model (ECM) and Granger causality test. The result of the study shows that all variables are stationary at first differences-I (1). The study found that there is a long run equilibrium relationship between exports and economic growth as well as fluctuation in the short runs of Myanmar. On the other hand, the causality relationships find that there is a unidirectional causal relationship between exports and economic growth of Myanmar.

Key words : *Stationary, Co-integration, Error Correlation, Causality*

I. Introduction

The purpose of this paper is to investigate the relationship between exports and economic growth (GDP) in Myanmar. The relationship between export growth and economic growth has been a popular subject of debate among development

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economists. GDP is one of the most widely used measures of an economy's output or production. It is defined as the total value of goods and services produced within a country's borders in a specific time-period monthly, quarterly or annually. Exports bring money into the country which increase the exporting nation's GDP. Exports are the component of aggregate demand (AD). Rising exports will help to increase AD and cause higher economic growth. Given that exports constitute a significant and growing share of GDP for most developing economies-an increased dependent on exports results in significant fluctuations in export earnings. Furthermore, export revenue volatility is strongly linked to growth volatility, so significant fluctuations in export earnings result in fluctuations in economic growth.

The link between exports growth and economic growth has been an important area of study in recent year, especially for developing countries. The key component of the development path has made civilization an increasing important contribution to economic growth in most countries. Exports and imports are important for the development and growth of national economics because not all countries have the resources and skills required to produce certain goods and services. If imports are greater than exports, then country has to spend more to imports goods and services. Country may run in deficit and make debt. Thus, it negatively affects country's growth. Imports are a reduction and exports are an addition to GDP.

Exports of goods and services represent one of the most important sources of foreign exchange income that ease the pressure on the balance of payments and create employment opportunities. Every government has the international trade policy at the national level to direct its external trade for benefit the economic growth of nation. Exports are one component of international trade. When the country exports more than it imports, it has a trade surplus. When it imports more than it exports, it has a trade deficit. Exporting can increase the profits of medium and large businesses in countries.

In open economies, export growth can expand countries' limited domestic markets, and contribute to the economics of scale necessary for industrial developments. Export growth integrates domestic economy with regional or global economies thereby expanding the dimension of competition to the international markets. Competition promotes resource allocation in developing countries as they transform from productive farming sector to relatively more productive manufacturing sector. The factor productivities are improved through export growth.

Exports indicate a higher demand for domestic goods in a foreign country. Exporting goods and services will generate income for the domestic economy. Income earned through exports should be added to GDP. The GDP is a single best indicator of economic growth. Exports are generally perceived as a motivating factor for economic growth. Economic growth is one of the most primary and crucial aims

of developing countries. Thus, it is necessary to examine that the export growth is influencing on the economic growth. Thus the causal relationship between exports and economic growth in Myanmar was studied in this paper.

II. REVIEW OF LITERATURE

Gbaiye et al (2010) studied the existence of long run relationship between agricultural exports and economic growth by using time series data from 1980 to 2010. The study made use of unit root test and Johansen maximum likelihood test of co-integration and discovered that, the long run equilibrium relationship exists between agricultural exports and economic growth and the relationship is elastic in natural meaning that a unit increase in agricultural exports would bring a more than proportionate increase in the Real Gross Domestic Product in Nigeral Ekiran et al. (2014) also examined the relationship between agricultural export and economics by using a multivariate Johansen co-integration analysis for the period covering 1980 to 2012 and found that, agricultural exports are long run determinants of economic expansion.

Shihab et al. (2014) investigated the causal relationship between economic growth and export in Jordan was done by using the Granger methodology in order to determine the direction of the relationship between the two variables during the period 2000-2012. The study found that there is a causal relationship going from the economic growth to Export, and not vice versa. Based on the outcome of causality tests, the changes in the economic growth help to explain the changes that occur in the Export. The study suggested that, the direct effect towards policies that will enhance economic growth such as import such as import substitution industrialization, in order to impact more on exports.

Shah et al. (2015) examined the impact of agricultural export on microeconomic performance of Pakistan by using secondary data from the period 1972- 2008. The study investigated the relationship between Gross Domestic Product (GDP) and agricultural and non- agricultural exports as dependent and variables respectively by employing Johansen co-integration technique. The main findings of the study were found that agricultural exports have a negative relationship while non-agricultural exports have a positive relation with economic growth.

Bakari et al. (2017) investigated the nexus between exports, imports and economic growth in Tunisia using annual time series data for the period 1965-2016 by implementing co-integration analysis and vector error correction model. The empirical results show that in the long run (i) exports affect negatively on economic

growth, (ii) imports have positive on economic growth, (iii) economic growth have positive effect on exports, and imports have positive effect on exports. In the short run empirical results show that there is (i) bi-directional causal relationship from exports to economic growth, (ii) unidirectional causal relationship from exports to imports, (iii) unidirectional causal relationship from imports to economic growth.

Ambreen et al. (2018) studied the impact on the Economic Growth in Pakistan. This study is an empirical investigation to Export led Growth hypothesis in case of Pakistan by applying co-integration analysis and dynamic error correction mechanism, by considering yearly data ranging from 1971 to 2016. Through co- integration analysis, both in long run and short run the theory, it is positively proved as a confirmation to literature and economic views. The dynamic error correction model basically confirmed the short run relationship between Real GDP and Real Exports along with other independent variables (labor, Real Investment, DPCS).

III. METHODOLOGY AND DATA

The export and GDP (Gross Domestic Product) of some Asian countries were analyzed in this study. The study period is from 1971 to 2019 and based on the secondary data and the require data and information are collected from the reports of World Bank and Internet Websites. Among the various econometric time series model, Unit Root (ADF) test, Granger's Co-integration and Error Correction Models (ECM) were used for binary variables. The entire data analysis has been performed E-view -9 econometrics software in this study.

1. Tests of Stationarity

To determine whether, the series is stationary or non-stationary, (1) graphical analysis (2) the correlogram test and (3) unit root test can be applied. Among them, unit root test is applied in this study.

The Unit Root Test The tests were performed an all series (Gross domestic product and Export) by using the Augmented Dickey-Fuller (1979) and Phillips and Perron (1988) tests. The ADF test is a parametric test and it has low power whereas PP test is based on non-parametric modification of Augmented Dickey-Fuller tests. A test of stationary (or non- stationary) that has become widely popular over the past several years in the unit root test.

The unit root (stochastic) process is

$$Y_t = \rho Y_{t-1} + u_t; \quad -1 \leq \rho \leq 1$$

if $\rho=1$ the case of the unit root, equation becomes a random walk model without drift. If it is, Y_t is non-stationary. This is the general idea behind the unit root test of stationary. For the theoretical reasons, subtract Y_{t-1} from both side of above equation to obtain;

$$\begin{aligned} Y_t - Y_{t-1} &= \rho Y_{t-1} - Y_{t-1} + u_t \\ &= (\rho - 1)Y_{t-1} + u_t \end{aligned}$$

Since u_t is a white noise error term, it is stationary, which means that the first differences of a random walk time series are stationary. Take the first differences of Y_t and regress them on Y_{t-1} and see if the estimated slope coefficient in this regression is zero or not. If it is zero, it can be concluded that Y_t is non-stationary. But if it is negative, it can be concluded Y_t is stationary.

2. Co-integration Test

Co-integration is the statistical implication of the existence of long run relationship between the variables which are individually non-stationary at their level form but stationary after first difference. The theory of co-integration can therefore be used to study series that are non-stationary but a linear combination of which is stationary. Two main procedures are used to test for co-integration: the Engle and Granger (1987) test and the Johansen (1990) co-integration test. In this paper, the Engle and Granger (1987) co-integration test based on residuals was used. This equation is:

$$\varepsilon_t = Y_t - \beta_0 - \beta_1 X_t$$

The following equation used for testing co-integration.

$$\Delta \varepsilon_t = \mu + \phi \varepsilon_t - 1 + \varepsilon_t$$

3. Error Correction Model (ECM)

In order to estimate the short run relationships of the model, the error correction model has been used. Error correction term included in the model, explains the speed of adjustment towards the long run equilibrium. Initially, if the variables confirm the existence of co-integration, then the error correction model (ECM) will be estimated. Engle and Granger (1987) pointed out that if two variables are co-integrated in first difference, their relationship can be expressed as the ECM by

taking past disequilibrium as explanatory variables for the dynamic behavior of current variables. The ECM method corrects the equilibrium error in one period by the next period. Therefore, the deviation from the long run relationship should be included as an explanatory variable in an Error Correction Model which can be represented as follows:

$$\Delta Y_t = \beta_0 + \beta_1 \Delta X_t + \beta_2 \mu_{t-1} + \varepsilon_t$$

where, $\Delta Y_t = Y_t - Y_{t-1}$, $\Delta X_t = X_t - X_{t-1}$, β_1 and β_2 are the dynamic adjustment coefficients, μ_{t-1} is the lag of residual representing short run disequilibrium adjustments of the estimates of the long run equilibrium error, while ε_t is the random error term (Gujarati, 2004). The error correction coefficient must be negative which indicates the existence of a short run relationship. The size of the error correction coefficient determines the speed of adjustment toward equilibrium. In this study the Error Correction model (ECM) is estimated as follows;

$$\Delta LGDP_t = \beta_0 + \beta_1 \Delta LExport_t + \alpha ECM_{t-1} + \varepsilon_t$$

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 U_{t-1} + \varepsilon_t$$

Where, $\Delta LGDP_t$ is the change in natural logarithm of export, β_0 constant term, β_1 is a parameter of the independent variable and ε_t is the stochastic error term. ECMt-1 represents short run disequilibrium adjustments of the estimates of the long run equilibrium error and α is the coefficient of the error correction term.

4. Engle and Granger Causality Test

According to Engle and Granger(1986) , if the variables are integrated of degree I (1) and are co- integrated then either unidirectional or bi-directional Granger causality must exist in at least the I (0) variables. If the variables are co-integrated there must exist an error correction presentation. It can be described as follows

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 U_{t-1} + \varepsilon_t$$

$$\Delta X_t = \gamma_0 + \gamma_1 \Delta Y_t + \gamma_2 V_{t-1} + \varepsilon_t$$

Where $V_{t-1} = X_{t-1} - \theta_1 - \theta_2 Y_{t-1}$ and U_{t-1} and V_{t-1} are error correction terms. The bi-directional causality exists between and can be detected based on the statistical significance of the error correction coefficients α_2 and γ_2 . The error correction terms U_{t-1} and V_{t-1} represent the long run impact of one variable on the other

while the changes of the lagged independent variables describe the short run causal impact.

In above two equations, the statistical significance of non-zero coefficient of ΔX_t , show that the short-run Grange causality runs from X_t to Y_t . Similarly, the statistical significance of non-zero coefficient of ΔY_t , show that the short-run Grange causality runs from Y_t to X_t .

IV. RESULTS AND DISCUSSION

Firstly, the stationary of the variables are checked by using unit root test before testing for causality. Secondly, test for co-integration between the two variables and estimate the Error Correction Model were applied in this study. After that, Engle and Granger Causality Test are used for causality between GDP and Exports. The Annual Time series data of Myanmar are used from the period 1971 to 2019, gathered from World Bank and Internet Websites.

By using unit root test, the test statistics of Augmented Dickey Fuller (ADF) will be calculated for GDP and Export of Myanmar. These results are presented in table 1 and 2.

Table 1. Results of Unit Root Test for GDP of Myanmar

Order	t-Statistic	P value
level	0.409959	0.9814
First Differences	-5.109651	0.0001***

Source: E-view output

According to table (1), GDP of Myanmar is stationary at integrated order one at 1% significant level.

Table 2. Results of Unit Root Test for Export of Myanmar

Order	t-Statistic	P value
level	0.065639	0.9597
First Differences	-7.190894	0.0000***

Source: E-view output

According to table (2), Export of Myanmar is stationary at integrated order one at 1% significant level.

The integrated order of residual of the estimated linear regression line of GDP and Export for Myanmar will be investigated. The result of unit root test for residual

is presented in the following table 3.

Table 3. Results of Unit Root Test for Residual in Myanmar

Order	t-Statistic	P value
level	-2.084548	0.2516
First Differences	-6.972089	0.0000***

Source: E-view output

The regression functions have dependent, constant and independent variable, thus t statistic valued obtained is compared with significance level at 1%, 5% and 10%. It can be found that the two variables are co- integrated. Therefore, export is a long run determinant of economic growth in Myanmar.

In order to examine the short run relationship of the model, the error correlation model has been used. The error correlation model of GDP on export is estimated as follows:

$$\Delta \ln \text{GDP} = 0.056 + 0.136 \Delta \ln \text{Export} - 1.458 \text{ECM}_{t-1}$$

T statistic = (2.837) (1.700) (-10.957)

P-value = (0.0067) (0.0959) (0.0000)

According to this result, the coefficient of error term is negative and significant at 1% level an be concluded that there is short-run equilibrium between GDP and Export of model. This re r a 1% increase in export, there is about 14% increase in GDP. Therefore, the GDP of Myanmar xport.

Lastly, Granger causality was applied to test the causal relationship between export economic growth of Myanmar.

Null Hypothesis:

H0: Ln (GDP) does not Granger Cause Ln (EXPORT)
: Ln (EXPORT) does not Granger Cause Ln (GDP)

Alternative Hypothesis:

H1: Ln (GDP) has Granger Cause Ln (EXPORT)
: Ln (EXPORT) has Granger Cause Ln (GDP)

The result of pairwise Grander causality tests for Myanmar is presented in the following table 4.

Table 4. Results of Pairwise Granger Causality Test for Myanmar

Null Hypothesis (H0)	F-Statistics	P-value
Ln (GDP) does not Granger Cause Ln (EXPORT)	0.26317	0.7699
Ln (EXPORT) does not Granger Cause Ln (GDP)	3.63892	0.0349**

Source: E-view output

The above table shows that Granger Causality test result; there is a 5% level of significant Granger Causality from export to economic growth of Myanmar, but the reverse is not significant. The result confirms that there is uni-directional causality between these two variables.

V. CONCLUSION

The main objective of this paper is to analyze the causal relationship between exports and economic growth in Myanmar during the years 1971-2019. Econometric time series techniques are used to determine the trends of economic growth on exports. These are unit root (ADF tests), co-integration test (Engle and Granger) to study the existence of long run relationship between economic growth and exports, Error correlation method and Granger Causality test are used to test for appropriates of the estimations in order to avoid any spurious regression.

The result of the unit root tests indicated that all the variables are stationary in first differences I (1), therefore, I (1) series are adopted to test for co-integration between economic growth and exports. It can be found that there is long run relationship between GDP and Export of Myanmar. In additional, Error correlation model is estimated to determine the short-run equilibrium between economic growth and exports of Myanmar. According to estimate results, it can be found that there are short-run equilibriums between economic growth and exports.

Finally, Granger Causality was applied to test the causal relationship between economic growth and exports. In the long run causality result showed that there is only unidirectional causality running from exports to economic growth of Myanmar. The overall empirical estimates of the study reveal that there is causal relationship between GDP and Export. Hence, the government of Myanmar is in the position to encourage export to sustain the growth trend by finding a permanent solution for current account deficit.

ACKNOWLEDGEMENTS

I would like to express my deep gratitude and thanks to Professor Dr. Tun Aung, Rector, Meiktila University of Economics, and Dr. Thida Kyu, Prorector, Meiktila University of Economics for their kind permission to submit this paper. I also owe a great thanks to my parents.

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The Myanmar JOURNAL

– Volume 8 Number 3 August 2021

30 August 2021

Yangon University of Economics (Myanmar)
Korea Myanmar Research Association (Korea)
2014~, Semiannual
ISSN : 2383-6563(Online)

Co-published with **Yangon University of Economics (YUE)** and
Korea Myanmar Research Association (KOMYRA)
<http://www.komyra.com/doc/submission.php>