AN ANALYSIS OF THE RELATIONSHIP BETWEEN EXPORTS AND ECONOMIC GROWTH: EVIDENCE FROM MYANMAR (FY 1990-2015)

By

SANN, Thi Lwin

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

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ABSTRACT

This study analyzes the impacts of the exports on the economic growth for the period 1990-2015 by using annual data of GDP, Exports, Imports and FDI in Myanmar. The main objective of this study is to determine whether the exports have positive or negative effects on the economic growth. Autoregressive Distributed Lag (ARDL) Model is mostly used to observe the relationship among exports and economic growth. This study used the ADF test to check the unit root of the time series and all variables are stationary at first differencing level (except FDI which is stationary in the level). The residual normality test, heteroskedacity and serial correlation tests are used to check diagnostic tests. This model also checked the stability by CUSUM test. The ARDL model describes a statistically significant long-run positive relationship between exports and gross domestic product in Myanmar. Moreover, this study finds that exports and FDI have positive effects on the economic growth while imports have positively insignificant in the long-run. As a policy implication, this study suggests that the government should focus on economic stability, new SMEs capabilities and openness policy within the country.

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1. Introduction

1.1 Background of the study

Myanmar is located in the Southeast Asian region and it is surrounded by China in the north and northeast, Laos and Thailand in the east and southeast, Bangladesh and India in the west respectively. The land areas are 2051 kilometres from north to south and 936 kilometres from east to west while 677,000 square kilometres in total area. According to 2014 census, the population of Myanmar is 51.49 million which is about 70 percent of the total population live in rural area and the rest is in the urban area.

Myanmar economy based on agriculture, which accounted for 57.3% of GDP in 1990, according to the indicators for Asia and the Pacific 2010. During the same period, service and industry sectors accounted for 32.2% and 10.5%, respectively of the country's GDP. But in 2015, the structure of output has changed on agriculture which accounted for 26.7% of GDP, according to the indicators for Asia and the Pacific 2016. During the same period, service and industry sectors accounted for 38.7% and 34.5%, respectively of the country's GDP. Giving to the World Development Indicators (WDI 2015), Myanmar GDP per capita, (i.e., USD 1346) is one of the lowest among the Southeast Asia. Myanmar economy showed the average growth rate of 7.3% from 2002 to 2015 fiscal years, in terms of annual percentage growth rate.

The main commodities of exports in Myanmar are natural resources such as gas, jade, mineral products, and agricultural products such as pulses, sugar, sesame seeds and rice. The main exported countries are China, Indonesia, India, Hong Kong, Japan, Malaysia, Singapore and Thailand. And also Singapore, China, Korea, Japan, India, United States and Vietnam are importing countries. Although the share of the agricultural sector to the national GDP indicated a recurrent falling tendency over the last three decades, the sector remained to have a paramount contribution to the country's employment creation and hard currency earnings.

In 1990, exports and imports accounted for $476.5 million and $888.6 million respectively but in 2015 the respective amount of exports and imports increased to $11.1 billion and $16.6 billion. The portion of exports and imports in the national economy (GDP) has significantly increased. In 1990, the share of exports was 14 % and the share imports were 27% of GDP but the share of exports and imports raised 39 % and 57 % respectively in 2005.

In 2012 the Government of Myanmar introduced a new Foreign Investment Law (FIL). This law replaced the 1988 Foreign Investment Law (1988 FIL). In 1998, the law on Investment was issued in 1998 and revisions have been carried out frequently on Foreign Direct Investment (FDI) to persuade more investment from foreign. When the investors are doing business in Myanmar they can benefit from significant tax exemptions and other benefits by Foreign Investment Law. In 1948 Myanmar was the member of General Agreement on Tariffs and Trade (GATT). It has been a member of the World Trade Organization (WTO) since 1 January 1995. It is a milestone for the global combination process of the country. The portion of FDI has risen slightly in GDP. The share of FDI in GDP was 7% and now in 2015, the share of FDI increased to 10% in 1990.

For the economic development, the stability of export sector performance has been critical in developing countries. Therefore, it's highly imperative for least developing economies like Myanmar to focus on structural and policy dimensions to bring about a sustainable and balanced diversification and export growth.

1.2 Statement of problem

Exports play a very important position in the country's economic growth. Countries with the highest per capita GDP also have the highest exports (Marconi, 2013). Moreover, exporting is considered as a key engine of economic growth since it also serves as an international marketing strategy to attract more foreign investors with various kinds of investment such as directly invest, joint venture and investment with a legal license which

supports the growth of the national economy of a country (Grigoryan, 2011). And based on macroeconomics, the most important roots of foreign income, government' fiscal policies and monetary policies, shape public perception of competitiveness consider being exported which determines how a country can effort for the level of imports. Currently, Myanmar is a developing country that is also considered an emerging economy with a GDP growth rate of 7.3 percent in 2015. Except from 2002 to 2011, Myanmar trade was deficit. Trade deficit has been largely due to an increase in importation while exports decreased.

The objective of this study is analyzing the impacts of exports, imports and FDI for both short and long-run impacts on economic growth in Myanmar. The result expected that exports and FDI will positively effect on the growth of an economy. This paper mainly focuses on how exports and economic growth of Myanmar are related using annual data for the period 1990-2015, with possible implications for current export policies by the government.

The paper is composed of five sections; introduction, theoretical framework and empirical evidence, methodological issues and data, empirical analysis and conclusion and policy recommendation.

1.3 Objective of study

This study purposes to analyze the growth of Myanmar' economy based on exports, imports and FDI. In particular, the research tries to address the following specific objectives:

➢ Examine the linkage between exports and economic growth.

➢ Myanmar external trade policies and strategies towards export growth.

➢ Examine the structure and performance of Myanmar exports.

1.4 Research question and Hypothesis

This study will review by using the following research question:

How are exports and economic growth related in Myanmar?

Hypothesis: there is a positive relationship between exports and growth of Myanmar's economy over the period covering from 1990 to 2015.

2. Literature Review

According to the Economic Complexity Index (ECI), Myanmar is the world's 78th largest export economy with the 137th most complex economy. In 2015, Myanmar exported $11.1B and imported $16.6B, resulting in a negative trade balance of $5.5B. In 2015 the GDP growth rate of Myanmar was 7.3 percent. But in 2000, Myanmar export was $2.0B and import was $2.3B. There was a negative trade balance of $0.3B. The GDP growth rate of Myanmar was 13.7 percent in 2000. From 2000 to 2015, while exports have increased from $2.0B to $11.1B, the GDP growth rate declined from 13.7 to 7.3 percent.

The study intended to find out the effect of exports on national economy of Myanmar, with possible implications for current export policies by the government. This paper will contribute to the theories explaining how important exports are for the economic growth of a country. Moreover, many scholars' studies concerned with the effect of exports on economic growth will be reviewed.

Many studies on the effect of export on national economy can be divided mainly into panel data analysis and time series data analysis based on the structure of data. Although findings from the studies are different, some findings have a mixed result and other results proved that significant effect of exports on national economy (Shirazi, & Manap, 2004). However, time series analysis will be used in the study.

There are many scholarly studies that show exports effect on economic performance including economic growth. Anwer & Sampath (2000) examined that the correlation of exports and economic growth in 96 countries with time series analysis and Granger causality approach for the period of 1960-1992. In their study, the main objective is to find out the effect of exports on economic growth for 96 countries over the periods of 1960-1992. They

confirmed that the variables are individually stationary with unit root test before analyzing the causality test. Finally, they concluded that relation of exports and GDP is the positive bidirectional correlation for 8 countries only and positive unidirectional correlation for 9 countries. The remaining cannot prove in their study.

Babalola, Dogon-Daji and Saka (2012) examined that there is a significant relationship among FDI, exports and economic growth in Nigeria for the period 1960-2009. They used the cointegration and error correction model in their study.

Caleb, Mazanai & Dhoro (2014) analyzed the connection between international trade and economic growth in Zimbabwe from 1975 to 2005. The purpose of this research is to explore the long-run relationship among different macroeconomic indicators and trade from 1975 to 2005. This result showed the co-integration of economic growth and trade but the correlation is supported by the steadiness of macroeconomic policy.

Chemeda (2001) found the effect of exports on the development of the economy in Ethiopia over the periods of 1950-1986. The purpose of this analysis was to examine the existence and magnitude of linkage among economic growth and exports in Ethiopia. The research finds out the connection between real Gross Domestic Product (GDP) per capita and exports for 36 years (from 1950 to 1986) with annual time series data. This study evaluated the economic growth through the effect of export in the economy of Ethiopia with Cobb-Douglas model. In order to investigate this linkage, this study used time series econometric tools such as error correction mechanism, co-integration test, and unit root test. He concluded that the rates of economic growth and the progress of real exports have a long-run positive relationship.

Kayha (2011) studied that the causality between the economic growth and foreign trade for the period 1980-2009 in Turkey. He clearly point out imports is the main determinants of Turkey's economic growth but exports have no significant effect.

Ray (2011) indicated the relationship of exports and the growth of the economy in India with annual data for the periods of 1972-1973 to 2010-2011. He used Granger causality and co-integration methods for finding out the export-led economic development strategy among economic growth and exports. Analyzing long-term and the causative connection between economic development and export level is the major purpose of the study. In results, there is co-integration between the growth of national economy and exports with a long-term relationship which is proved by the co-integration test. And then, the direction which runs both from economic growth to exports and exports to economic growth proved by Granger causality.

Saaed and Hussain (2015) examined that the unidirectional causality between exports and imports and between exports and economic growth in Tunisia by using ADF test, Granger Causality and Johansen cointegration approach.

Shihab, Soufan & Abdul-Khaliq (2014) used Granger methodology to address the causal correlation between the growth of national economy and exports of Jordan with time series data over the period of 2000-2012. The data from the Central Bank and the Statistical Department of Jordan were obtained to analyze the study. And the annual change in Gross Domestic Product (GDP) (real) and exports were used. In this analysis, they used the unit root test to investigate both GDP and exports. This study concluded the causality among the variables by using Granger causality test. To know there is a long-run relationship or not, they used co-integration test. This research pointed out the indication of unidirectional correlation among economic growth and exports and also ran exactly the way of an effect of economic growth on exports only and not an effect of export on economic growth.

Tessema (2016) investigated the linkage between economic growth, export, and import in Ethiopia over the periods of 1995-2014. The result shows that the income, exports, imports and relative prices are co-integrated. This result indicates that the promotion policy

for import-export supports to the economic growth in Ethiopia.

Olayiwola and Okodua (2013) showed that promoting non-oil export is important for growth in Nigeria's FDI. This study used granger causality, Vector Error Correction Model, Impulse response functions.

Jayachandran and Seilan (2010) investigated a positive trade and FDI growth relationship in India over the period 1970-2007. The cointegration analysis prove that there is a long run equilibrium relationship and causal relationship by Granger causality test. They found that exports and FDI is one of the factors effective on economic growth in India.

Dritsaki and Stiakakis (2014) found that strong bidirectional causal relation between exports and economic growth both long run and short run in Croatia over the period 1994-2012. They applied ARDL approach and the ECM- ARDL model among the exports, foreign direct investment and economic growth.

Nguyen (2017) found that FDI has a significant positive impact on economic growth of Vietnam in the long run while the effect of export is negative. But there is no effect of export and FDI on economic development in the short run. This analysis used the time series data and the ARDL bounds testing approach to analyze the linkage among the variables from 1986 to 2015.

Belloumi (2008) indicated that there is no Granger causality from FDI to economic growth, from growth to FDI, from trade to economic growth in the short run in Tunisia. This study applied ARDL bounds testing model for the period 1970-2008 and there is a long run relationship.

Tapşın (2016) described that causality relationship among FDI, exports and economic growth in Turkey from 1974 to 2011. This study used Toda and Yamamoto causality method and found out a significant relationship among the variables except export to FDI, FDI to GDP.

In 2004, Shirazi & Manap studied the relationship between real imports, real exports and real output for long-term and short-term in Pakistan for the period 1960-2003. In this study, they showed that unidirectional correlation between exports to the growth of the national economy by using the Toda Yamamoto causality and co-integration methods.

In conclusion, the abovementioned studies argue that the effect of exports is both positive and negative on the growth of the national economy as well as on international trade in theoretical and empirical methods. Most of the countries used unit root test, Granger causality test and co-integration test for finding out the correlation between economic growth and exports. For analyzing the correlation between exports and economic growth rate of Myanmar, this study will explore empirical evidence with the outcome of economic growth affected by exports.

3. Data and Methodological issues

According to the literature review, Granger causality test, the co-integration, and error correction method were mostly used in the studies. In this analysis, unit root (ADF) test, the order of lags selection, co-integration test, ARDL bound test, Error Correction Model (ECM) and lastly the diagnostic and stability test will check in order to observe the correlation between economic growth, exports, imports and FDI in both long run and short run.

3.1 Data

This study employs four variables: (i) real gross domestic product (RGDP), (ii) exports (EXP), (iii) imports (IMP) and (iv) foreign direct investment (FDI). The dependent variable is RGDP while the independent variables are export, import and foreign direct investment and also imports and FDI are used as the control variables. The secondary data are collected from UNCTAD and CSO in Myanmar for period 1990-2015.

Trends of Myanmar Exports and Imports

Figure 1 show that the value of foreign trade in Myanmar. In this figure, the value of exports, imports, total trade volume and balance of trade are represented for the period of 1990-2015.
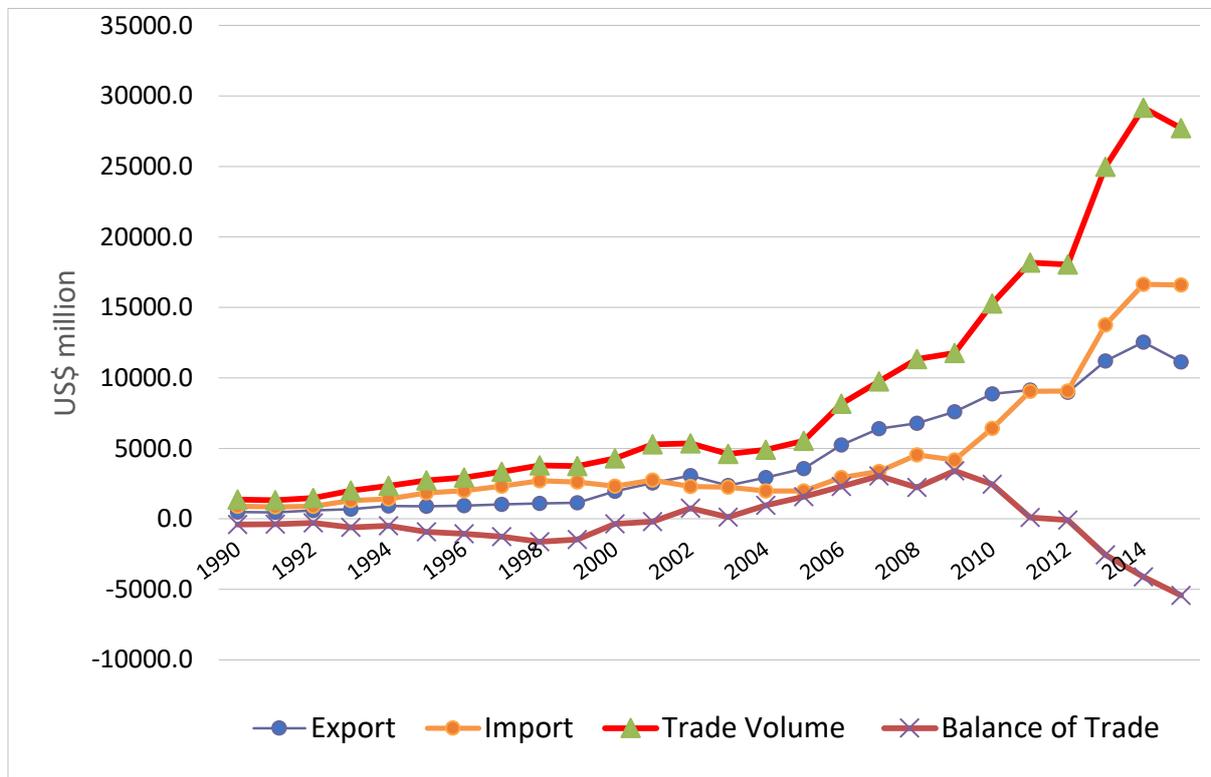
Figure 1: Foreign Trade of Myanmar

Source: Central Statistical Organization

Table 1 shows the value of total foreign trade of Myanmar during the period of 1990-2015. From the below table, it describes that the exports steadily rising during 1990 to 2002. The value of exports grew from 476.5 US$ million to 3062.9 US$ million. In July 2003, the military government of Myanmar was faced trade sanctions by the United States , the exports value sharply dropped from 3062.9 US$ million in 2002 to 2356.8 US$ million in 2003. For this sanction the garment industry sector was affected because this sector exported to the United States market 50 percent of their product.

From 2002 to 2011, it was the only period that Myanmar had trade surplus due to the

Oil and Gas sector development. Especially in 2009, the FDI flows to oil and gas sector mainly from China. Therefore the exports of oil and gas became accelerated and there was a biggest surplus in 2009 through the time from 1990-2015. For the other periods, there were trade deficits. During 2012-2015, the trade deficits became larger due to the transition period and the country was in reconstruction period.

Table 1: Foreign Trade of Myanmar (US$ million)

Year	Export Value	Import Value	Trade Volume	Balance of Trade
1990	476.5	888.6	1365.1	-412.1
1991	467.2	850.5	1317.7	-383.3
1992	596.5	882.8	1479.3	-286.3
1993	692.1	1297.1	1989.2	-605.0
1994	917.4	1414.3	2331.7	-496.9
1995	896.9	1831.9	2728.8	-935.0
1996	928.5	1992.9	2921.4	-1064.4
1997	1036.0	2308.7	3344.7	-1272.7
1998	1081.8	2701.5	3783.3	-1619.7
1999	1137.9	2605.4	3743.3	-1467.5
2000	1960.9	2319.1	4280.0	-358.2
2001	2544.3	2735.6	5279.9	-191.3
2002	3062.9	2299.6	5362.5	763.3
2003	2356.8	2240.0	4596.8	116.8
2004	2927.8	1973.3	4901.1	954.5
2005	3558.0	1984.4	5542.4	1573.6
2006	5232.7	2936.7	8169.4	2296
2007	6401.7	3353.4	9755.1	3048.3
2008	6779.1	4543.3	11322.4	2235.8
2009	7586.9	4181.4	11768.3	3405.5
2010	8861.0	6412.7	15273.7	2448.3
2011	9135.6	9035.1	18170.7	100.5
2012	8977.0	9068.9	18045.9	-91.9
2013	11204.0	13759.5	24963.5	-2555.5
2014	12523.7	16632.6	29156.3	-4108.9
2015	11136.5	16577.8	27714.3	-5441.3

Source: Central Statistical Organization

3.2 Econometric Model

This data are transformed into logarithm for each variable. It can be denoted by I. By using logarithm, "*the model can be linear and can avoid heteroskedasticity problem*" (Shawa and Shen, 2013). In order to examine the effect of exports on growth of GDP, the following model will be applied;

$$Y = f(Exp, Imp, FDI) \qquad (1)$$

The econometric equation can be stated thus:

$$Y_t = \alpha_0 + \beta exp_t + \delta imp_t + \sigma fdi_t + \varepsilon_t \qquad (2)$$

The linear equation by using log can also be shown as:

$$Y_t = \alpha_0 + \beta Iexp_t + \delta limp_t + \sigma lfdi_t + \varepsilon_t \qquad (3)$$

Where, Y = Real Gross Domestic Product (Million US$), exp= exports (Million US$), imp= imports (Million US$), fdi= foreign direct investment (million US$), $\alpha, \beta, \delta, \sigma$ = parameters to be estimated, ε = error term, t= 1,2,3,……,26 (time series is from 1990-2015) and l = natural log.

The relationships among the exports, imports and FDI on GDP are analyzed with ARDL approach to cointegration for long- run. The rationale behind using the model is first of all, the data should be stationary at least in the first difference. It should not be I(2) and the ARDL approach can be used at the mixed level either at level or it' first difference. Because Engle and Granger (1987) and Johansen and Juselius (1990) tests must not use mixed level co-integration. Although the analysis sample is very small, the ARDL model can be produced valid results which means it is more suitable than others (Paul, 2014).

ARDL approach can be applied with four steps. First of all the variables in the model should check the stationary not to be at I(2). Second, the lag selection order for ARDL model can be used with AIC approach automatically in E-views 9.5. The third step, after testing the relationship between the variables, the model can be applied for the short run and long-run

analysis. Lastly, to confirm the model's goodness of fit the diagnostic tests and the stability test are used. ARDL test equation can be used as below:

$$\Delta lgdp_t = \delta_0 + \sum_{i=1}^{l} \tau_i \Delta lgdp_{t-i} + \sum_{i=0}^{m} \theta_i \Delta lexp_{t-i} + \sum_{i=0}^{n} \omega_i \Delta limp_{t-i} + \sum_{i=0}^{o} \alpha_i \Delta lfdi_{t-i} + \varphi_1 lgdp_{t-1}$$

$$+ \varphi_2 lexp_{t-1} + \varphi_3 limp_{t-1} + \varphi_4 lfdi_{t-1} + n_t \quad (4)$$

Δ means first difference , l, m, n, o are the lag length and n_t is the error term.

The null hypothesis to be tested H$_0$: $\varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = 0$. In the ARDL bound test, F statistic is higher than the value of critical statistic it can be concluded that there is a relationship between the variables in the long run. This relationship can explain the effect of the explanatory variables on the response variable. The model can be applied to the following equation in the long-run;

$$lgdp_t = \alpha_0 + \sum_{i=1}^{k} \partial_{1i} lgdp_{t-i} + \sum_{i=0}^{p} \mu_{1i} lexp_{t-i} + \sum_{i=0}^{q} \theta_{1i} limp_{t-i} + \sum_{i=0}^{l} \omega_{1i} lfdi_{t-i} + \varepsilon_{1t} \quad (5)$$

The effect of the independent variables can be explained in the short run. Error correction term is as below;

$$\Delta lgdp_t = \alpha_0 + \sum_{i=1}^{g} \partial_{2i} \Delta lgdp_{t-i} + \sum_{i=0}^{h} \mu_{2i} \Delta lexp_{t-i} + \sum_{i=0}^{u} \theta_{2i} \Delta limp_{t-i} + \sum_{i=0}^{j} \omega_{2i} \Delta lfdi_{t-i} + \theta ect_{t-1} + \varepsilon_{2t} \quad (6)$$

The error correction term ect_{t-1} denotes the response of stabilizing disequilibrium system. In the existence of co-integration, ect_{t-1} should be negative and significant also the value of ect_{t-1} should be higher, it can be adjusted the speed.

3.2.1 Augmented Dickey-Fuller Unit Root Test

Before ARDL analysis, stationary of variables should be tested because it is necessary to check the relationship between variables. To verify the stationary level for all variables, the ADF test was used. The hypotheses are as below;

H$_0$: Variable is not stationary or there is a unit root.

H$_1$: Variable is stationary or there is no unit root.

There are two approaches to confirm the stationary level of the data. The first approach is if the p-value is greater than 5 percent, the null hypothesis cannot reject. The second approach is that the null hypothesis can be rejected if test statistics of a variable is more than the critical value in absolute term. For ARDL analysis, the unit root test should be ensured that no variables are I (2). And also the combination of I (0) and I (1) can be used in ARDL model.

3.2.2 ARDL Bounds Testing Approach

The ARDL bound model can be used for all the cases which mean that the variables are stationary at mixed levels which are at level and it's first different. ARDL bound test is an appropriate method in this stationary conditions of variables (Pesaran et al., 2001). ARDL method is mainly relied on the ordinary least square method and it suggested that $\varphi_1, \varphi_2, \varphi_3, \varphi_4$ parameters are multipliers for short run, $\partial_i, \mu_i, \theta_i, \omega_i$ are meant for long run, α_0 is constant term and εt is error term. H$_0$ of the ARDL regression analysis is that all long run multipliers' values are equal to zero, $\partial_i = \mu_i = \theta_i = \omega_i = 0$ which indicates that there is no long-run relationship between dependent and independent variables. H$_1$ is that long run multipliers' values are different and not equal to zero, $\partial_i \neq \mu_i \neq \theta_i \neq \omega_i \neq 0$ which means that there is long-run relationship between dependent and independent variables.

3.2.3 Diagnostic Testing

The ARDL model tries to find the best linear unbiased estimator (BLUE) so the diagnostic tests need to be conducted to ensure the results are statistically robust. Serial correlation, heteroscedasticity, and normality test are used to check the stability in the residuals. If the model contains none of these biases, the results can be used for the analysis. In order to determine the diagnostic tests, the p-value of all tests should be greater than 5%.

4. Empirical Results

The following table shows the descriptive statistics over the period from 1990 to 2015.

Table 2: Descriptive Statistics

	Lgdp	Lexp	Limp	Lfdi
Mean	9.120221	7.865784	8.018287	5.602614
Median	9.067609	7.911809	7.807138	5.984591
Maximum	10.27104	9.435378	9.719120	8.805285
Minimum	8.093192	6.146757	6.745824	0.785726
Std. Dev.	0.736221	1.100112	0.858025	1.762779

Source: Calculation by author

Table-3: Unit Root test (Augmented Dickey Fuller, ADF test)

Variables	Constant without trend		Constant with trend		Integration
	Level	1st Difference	Level	1st Difference	Result
Lgdp	-0.628756	-3.779906***	-2.281972	-3.298392*	I(1)
Lexp	-0.832629	-4.539304***	-2.255846	-4.521827***	I(1)
Limp	0.423851	-4.830986***	-1.064678	-4.789002***	I(1)
Lfdi	-4.532656***	-9.311434***	-4.724778***	-9.167125***	I(0)

Note: All figures are t-statistics. * , *** represents at 10% and 1% significance level respectively.
Source: Calculation by Author

This study applied the Augmented Dickey-Fuller (ADF) unit root test to check the existence of unit root in each of the time series variables. The result in ADF test states that all the variables (except LFDI found stationary at the level both Intercept, Intercept & Trend) were not stationary in level. ADF tests results showed that the variables are stationary at mixed levels which are I(0) and I(1). Only Lfdi is stationary at I (0). For Lgdp, Lexp and Limp, they are non-stationary at the level I(0). Therefore, the author checked whether they are stationary or not at first difference level and found that they are stationary at I (1). So, we can conclude that time series data of both dependent and independent variables are stationary

at mixed levels. In view of these facts, the author applied ARDL approach to co-integration method in this study which is the most suitable method for this type of dataset.

4.1 ARDL Bounds Testing Approach

After checking the variables' stationary levels, this study used ARDL bound test approach to analysis the long-run co-integration between the variables. According to the unit root test results, it suggested that the variables are stationary at mixed levels. First of all, the author checked the optimal lag length of the model before applying ARDL bound test. The selection criteria for the optimal lags are mostly used to determine the order of the ARDL model. In order to choose the lag length, the author chose AIC method (Akaike Information Criterion) and found that the optimal lag length was at (1,0,0,1) as shown in the below figure.
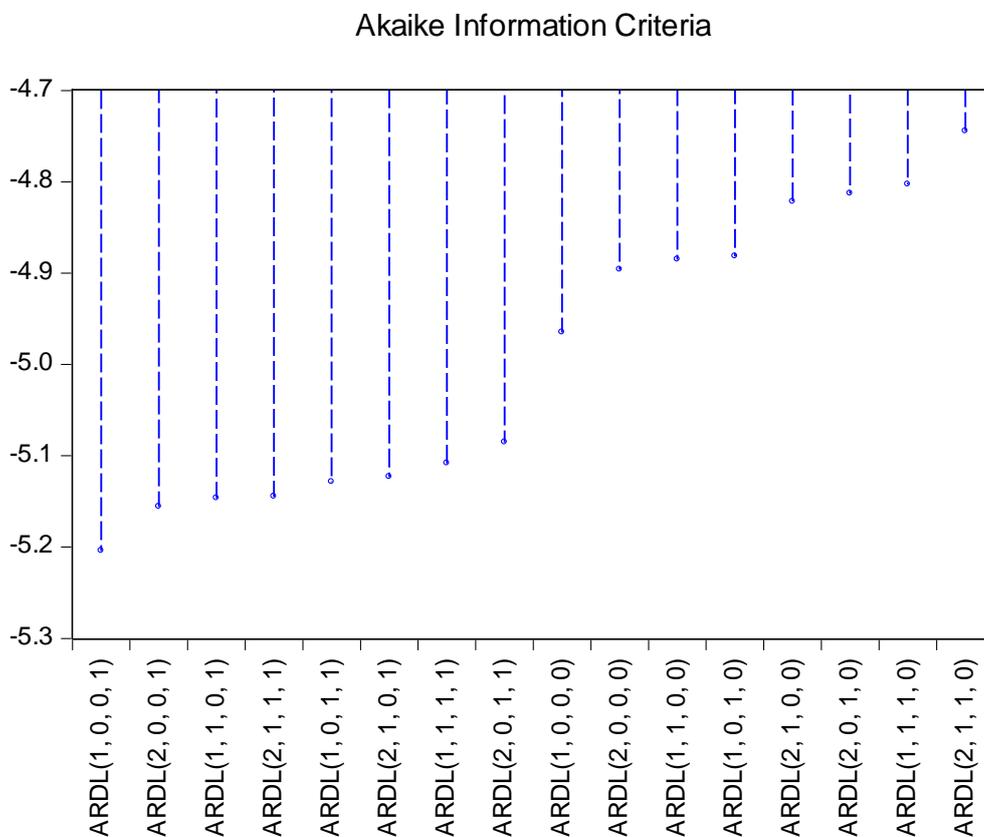
Figure 2: Akaike Information Criteria

Source:Calculation by author

The bound test result of F statistics value is the key to making a decision of whether it is greater or smaller than the critical values of the upper bond. If the null hypothesis of the bound test is failed to accept, there is long run co-integration, which means that F statistic is greater than the critical values of the upper bound. If F statistic is smaller than the critical values of the upper bound, there is no long-run co-integration and thus accepts the null hypothesis.

Table-4: ARDL bound test result

Null Hypothesis: No long run relationships exist		
Test Statistic	value	K
F- statistic	70.02117	2
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.37	3.20
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: Calculation by author

The result illustrates that the value of F-statistic is larger than the critical value of both lower and upper bound at 10% and 5% level of significance by using unrestricted intercept and no trend. This confirmation is the presence of a long run relationship among economic growth, FDI, export, and import.

In ARDL bound test, F statistics is 70.02117 which is higher than the critical values of both lower bound and upper bound. The null hypothesis H_0 is failed to accept at 1% significance level, and thus, co-integration exists for this equation. Therefore, there is a long run co-integrated relationship between dependent variable (GDP) and independent variables (Exp, Imp, FDI).

4.2 ARDL Long-run Coefficients Estimation

After bound test's results confirmed that there is long run co-integration relationship between independent variable (GDP) and its determinants factors, exports, imports and foreign direct investment inflows with the optimal lag structure of the variables (1,0,0,1). The following table showed the results for ARDL long run coefficients.

Table-5: long run coefficients Estimation with lag (1,0,0,1)

Dependent variable is Lgdp

Variable	Coefficient	Std.error	t-Statistic	Probability
Lexp	0.858351	0.120293	7.135526	0.0000***
Limp	-0.191562	0.150099	-1.276241	0.2173
Lfdi	0.034750	0.017245	2.015100	0.0583*

Note: * , *** indicates at 10% and 1% significance respectively
Source: Calculation by author

Table 5 showed that the estimation of coefficients for the long run with ARDL (1,0,0,1) model. In this study, the ARDL model (1,0,0,1) is chosen by AIC. The results indicated that exports and foreign direct investment have the positive impact on economic growth in Myanmar. And also import has the negative relationship with GDP. The coefficients of lexp and lfdi indicated that they are statistically significant at 1 % and 10 % respectively. The value of the coefficient on lexp is 0.858351 which means that a 1% increase in exports is related to approximately 0.85% increase in GDP. A 1% increase in foreign direct investment causes GDP to increase by approximately 0.03%.

Based on the long run results, the estimation results confirmed that Myanmar economic growth mostly relies on the exports of goods and services and foreign direct investments in the long run. Since the country's trade balance is showing negative which means fewer exports and more imports in the country, the government should enhance and promote export sector by improving trade-related policies, liberalize the sector and encourage local production firms to produce export quality products. Moreover, the government should

also maintain the stability of the economy by applying effective fiscal policies and monetary policies. Trade deficit gap should be close and local production needs to accelerate to substitute the imports from other countries.

Table-6: Short-run result with Error correction Model

Variable	Coefficient	Std.error	t-Statistic	Probability
LGDP(-1)	-0.165010	-0.051534	-3.201941	0.0047***
LEXP	0.141637	0.032160	4.404081	0.0003***
LFDI	0.005734	0.003332	1.721099	0.1015
LIMP(-1)	-0.031610	0.013624	-2.320064	0.0316**
D(LIMP)	-0.083312	0.027570	-3.021834	0.0070***
C	0.689367	0.185373	3.718805	0.0015***
CointEq(-1)	-0.165010	0.008015	-20.58670	0.0000***
CointEq= LGDP - (0.0347*LFDI + 0.8584*LEXP – 0.1916*LIMP + 4.1777)				

Note: *, *** represents at 10% and 1% significance respectively
Source: Calculation by author

In table 6, the Error Correction Model is applied to check the short run effects of exports of goods and services on Myanmar economic growth. As shown in table 4, the value of the coefficient of the error correction term is significant and it has a negative sign. This confirms there is a cointegration relationship between the variables. About 16.5% with a statistical significance of one percent disequilibria from the previous year's shock converge back to the long run equilibrium in the current year. FDI has no significant impacts on Myanmar economic growth in the short run.

The results suggested that EXP has both short-run and long-run impact on economic growth in Myanmar. For import, IMP value is a significant negative effect on growth of economic in the short-run both this year and last year also.

4.3 Diagnostic Tests

In this paper, the diagnostic test was applied to check the model's stability, normality, Heteroskedasticity and serial correlation. The LM test is to check serial correlation of the

residual diagnostic in the model. Heteroskedasticity test is for checking Heteroskedastic problem of the model. Normality test also checks for the normality distribution. The results of these tests are as shown in Table 7.

Table-7: Diagnostic Tests Result

	Test Statistic	P-value
Serial Correlation	F-statistic=0.346447	0.7922
Normality	$X^2_{(2)}=1.029815$	0.597556
Heteroskedasticity	F-statistic= 2.095997	0.1106

Source: Calculation by author

In order to determine diagnostic tests, the p-value of all tests should be greater than 5%. In Table-5, LM test of H_0 shows that there is no serial correlation. The p-value for LM test is 0.7922 which is greater than 5%, so H_0 is failed to reject which means that there is no serial correlation among the variables. H_0 for heteroskedasticity is that there is no heteroskedasticity problem. Here p-value for heteroskedasticity is 0.1106 which is greater than 5%. So H_0 is failed to reject which means there are no heteroskedasticity problems. Normality test result and CUSUM rests are shown in the following diagrams. The normality test showed that the residuals are normally distributed. The probability of normality test is 0.597556 which is greater than 5%. (See Figure-3)

Series: Residuals	
Sample 1991 2015	
Observations 25	
Mean	9.60e-16
Median	-0.000430
Maximum	0.042465
Minimum	-0.050305
Std. Dev.	0.019121
Skewness	-0.319192
Kurtosis	3.762291
Jarque-Bera	1.029815
Probability	0.597556
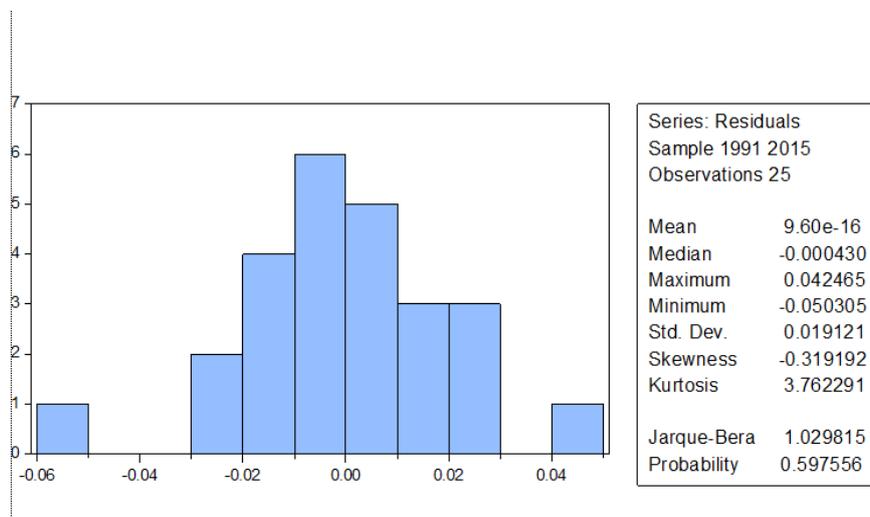
Figure-3 Normality test

This study checked the stability of the economic growth equation by using the cumulative sum of residual (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests. Figure 4 and Figure 5 showed the results of the tests within the critical bounds. It represented by a pair of a straight line. This means that the model is stable over the same period.
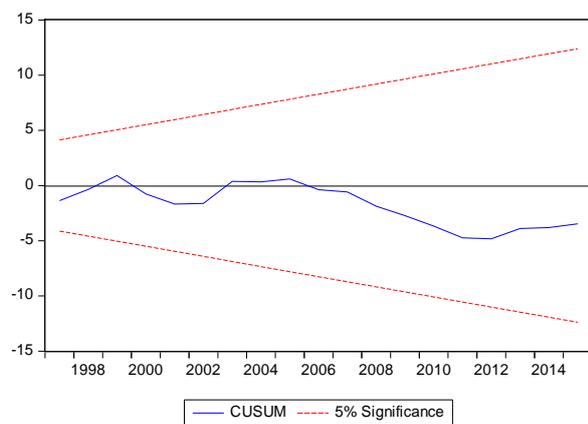
Figure-4. CUSUM test

Source: Calculation by author
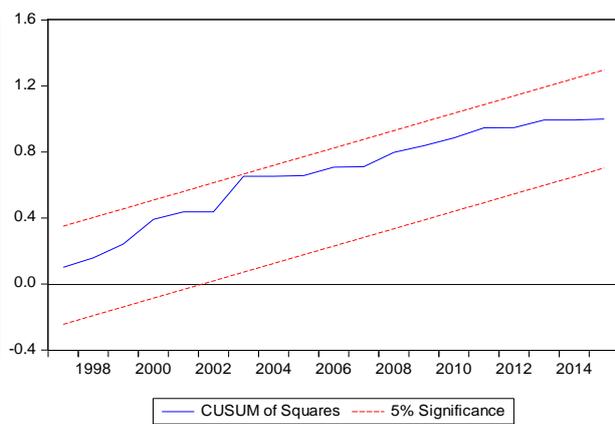
Figure-5. CUSUM of Squares test

Source: Calculation by author

5. Summary, Conclusion and Recommendations

5.1 Summary and Conclusion

This study purposes to analyze the short-run and long-run impact of exports on economic growth of Myanmar while imports and foreign direct investment are control variables for the period 1990-2015. The Autoregressive Distributed Lag (ARDL) model for long-run, error correction model for short-run and diagnostic tests are applied to check for serial correlation and residuals are normally distributed of not. The outcomes show that the model can explain the impact of exports on economic growth. It has been able to meet its objectives, which are: to determine the economic growth of Myanmar based on exports, imports and FDI; to analyze the linkage between economic growth and exports; to promote Myanmar external trade policies and strategies towards export growth; to examine the structure and performance of Myanmar exports.

The unit root testis checked by using the Augmented Dickey-Fuller test (ADF) after that the cointegration test is conducted. The ARDL model was also estimated the short-run and long-run effect among the exports, imports, FDI and economic growth. The finding is showed that GDP, exports and imports are stationary at the first differences and FDI is at the mixed level. This means that the time series data of the variables are stationary at the mixed level I (0) and I (0), therefore the model is valid to apply ARDL model and the sign of error correction term (ect_{t-1}) is negative so that there also has short-run relationship among the dependent and independent variables.

Based on Autoregressive Distributed Lag (ARDL) model these variables are cointegrated. In the long-run, exports have a significantly positive effect on Myanmar's economic growth however imports is negatively insignificant. And FDI also has positive significant effect on GDP in the long-run over the same period.

The effect of short run is determined by applying ARDL error correction model which show that exports and imports reveal the impact on Myanmar's economy in the short-run. But FDI does not show any impact on Myanmar's economy in the short-run. This is defined that it may take a long time for FDI to influence economic growth in Myanmar.

5.2 Policy Recommendations

The empirical results assist some key points for the trade policy of Myanmar. In recent years the export sector denoted by the increased share of exports in economic growth, but there is no confirmation to explain the export growth is the main reason of long-run economic growth in Myanmar. But this does not suggest that export does not perform any vital role in Myanmar's economic growth. For the exports policy, the product package should be modified as the international markets. And the local firms in Myanmar should produce from primary goods to value-added goods as well as the transportation also should be promoted. In Myanmar, the weakness for the local market is the transportation. By reducing the shipping time and supporting the quality of the road, the local market can be expanded to an international market. As for the import policy, the government should consider the import items with customers behaviors based on the needs of the country.

Although FDI has a significantly positive effect on economic growth, in the long run, it does not effect on economic growth in the short-run. It is very important for policymakers to generate policies targeted at inviting FDI. The government should consider incentives of new investment law, the stability of both economic and political environments to become more open economy. And also the accelerating international trade, attracting more foreign capital inflows and outflows together to increase economic growth in Myanmar.

During the past decade, exports of Myanmar highly depend on primary goods by exploring of non-renewable natural resources and by taking extractive industries. The sharing portions of gas and wood products in exports are 53 % and 16 % while sharing portions of

manufacturing of clothing and accessories is only 11 % in 2012 (CSO). So, a key requirement for long-term economic growth of Myanmar is changing in economic structure including diversification of product and upgrading both within and across sectors. Export oriented manufacturing industries can stimulate the economy growth of Myanmar into the global economy and drive forward our development potential.

To increase the export value of primary goods policy interventions that support investments, the creation of new processing related businesses and integration within the regional and global supply chains will stimulate the prioritized development of added-value industries. To add-value to primary goods exports requires that, at a minimum, first level processing is undertaken which can be accommodated within the industrial zones or the cross border economic areas by domestic SMEs and joint ventures. Later added-value development will be accommodated through the up scaling of the SMEs that introduce new production processes and which diversify the manufacturing base and export markets for Myanmar products. Introducing of new manufacturing and production to attain diversification of the export mix should be taken through developing the low skilled labor-intensive manufacturing such as garments, apparels, and foot wares, attracting the investments to support new SME manufacturing capabilities that primarily provide added-value to primary goods, and upgrading the competitiveness of labor market through higher skills acquisition and enhanced productivity.

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