CHAPTER 4

Results of the Study

4.1 Overview of the Myanmar Tourism Sector

Together with growing international interest in Myanmar due to dramatic shift in political section, abundance of colorful heritage sites, diversified culture and religion, and various ethnic groups in Myanmar; Myanmar has become the "every must-see list" in tourism industry in recent years. The tourism sector has grown rapidly by increasing tourist arrivals, tourism receipts, and contribution to the country's GDP and employment. The Asia Development Bank (ADB report) on Myanmar explains that tourism has become the major driving force in the economy in recent years. According to the bank's report, tourism revenues grew by 19% last year as inbound traffic increased, totaling $2.1bn, or more than 4% of GDP. In its 2016 outlook for the industry, the World Travel and Tourism Council (WTTC) forecasts the sector's total contribution to Myanmar's GDP – including indirect inputs – would increase by 5.9% this year and by a further 7.8% per annum through to 2026. This should take the sector's contribution to GDP to 6.5%, while employment from tourism will rise by 66% between 2015 and 2026 to 2.1m.

Seeing the significant growth in Tourism Industry, Myanmar Government selects tourism as a priority service in National Export Strategy, together with six products such as rice; beans, peas and oil crops; fishery products; textiles and garments; wood and wood products; and rubber. Furthermore, in June 2013, Ministry of Hotel and Tourism (MoHT) established the Tourism Master Plan for the period 2013 to 2020. This tourism master plan will play as a key guideline or roadmap for future tourism development. Policies on the Responsible tourism and Community Involved tourism was developed in 2012. In cooperation with ministries, private sector,

public sector and international responsible tourism professionals, it was formulated to obtain sustainable tourism and prevent negative impacts to the society, culture, and environment due to a speedy increase of tourists. Some policies like Myanmar Ecotourism Policy and Air Transport Policy are still under processing. Additionally, Daw Aung San Su Kyi's new NLD Government with President U Htin Kyaw set up 100-day plans in each ministry as fast paced reform programs for the country development. Likewise, MoHT emphasizes the community-based tourism CBT as one of the priorities of a three-pronged strategy for its 100-day plan together with the improvement of human resources and discovering new tourist areas.

Looking to the Butler's Tourism Lifecycle Theory, R.W Butler (1980) suggests that tourism destination has multiple stages such as exploration, involvement, development, consolidation, stagnation, and a range of possibilities from rejuvenation to decline. Out of these stages, it is believed that Myanmar tourism industry is currently in "development" stage. At growth and development stage, more tourists arrive to the country through heard about the place by word of mouth; describing the place as the top destination in articles and travel blogs or tourist guides; and the fact that regarding Pyu ancient cities such as Mandalay, Magway, and Bago as World Heritage List in Southeast Asia designated by UNESCO (United Nations Educational, Scientific and Cultural Organization) in 2014. The extra tourists attracted by the publicity and people willing to visit somewhere new will lead to the building of new hotels, restaurants, shops and services to cater for the influx of people. Myanmar has experience a dramatic increase in tourist arrivals as the door to democracy has been started to open during the previous government. By 2015, travel destinations are increasingly crowded with the emerge of tourists as thing began to positively change with a rise in more hotels, restaurants and tourist guides; improvement in land, sea and air transport; and electricity supply through the assistance from the Government and funds of international organizations. Nowadays, tourists have more varieties to choose for food and accommodation in compared with the past. Therefore, although "Growth and Development" stage represents the current situation of Myanmar Tourism industry based on Butler's "Tourism Lifecycle", community participation or public involvement in tourism activities is still weak in the "Involvement" stage.

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It is true that the tourism sector in Myanmar has been developed rapidly during the past five years. There are still limitations, weaknesses and challenges in this sector for the effective management and sustainable development. One of the challenges of Myanmar tourism sector is that unreliable power infrastructure, and limited and poor quality in road networks in tourist destination areas. On May 16, 2016, the Minister of Electricity and Energy stated that two major projects such as (i)generation of the Mawlamyaing combined cycle plant 30 MW power more by May 18 and (ii) the power generation of 133 MW more by natural gas power plant in Myingyan by May 31 to boost electricity generation within 100 days. However, reportedly by BLP (Berwin Leighton Paiser), Myanmar's power plants can generate only 2450 MW whereas the country's power consumption in this summer was reached to 2730 MW. As power consumption of the whole country exceeds electricity supply, system breakdowns together with blackouts, technical errors in power lines and distribution are still occurring. Moreover, as country's infrastructure impacts critically on the tourism expansion; Myanmar road and railway networks, and aviation services are still under-developed compared with other ASEAN countries. Domestic airline continues to increase with number of planes while the schedules are stills limited. Delays or cancellations are occurring in common. Moreover, a rise in tourist arrivals leads to an increase in routes and carriers of international airlines. This influx puts a burden on existing airport infrastructure, airport capacity and aviation services.

Due to the requirement of visa validity for foreign nationals to travel around Myanmar, in 2012, a visa-on-arrival program was initiated by Myanmar Government. In September 2014, an online e-visa system was established for tourist visa and in July 2015, business visa was introduced. The visa will be obtained within five working days. Besides, the period of stay permit in Myanmar will be 28 days with single entry for tourist visa and 70 days for business visa. The visa will be valid within 90 days. Currently, tourists can enter into Myanmar with e-visa only through three main ports_ Yangon, Mandalay and Naypyitaw. The e-visa is not valid for overland travel to Myanmar. Thus, the visa application process period is taking too long for tourists. Although Myanmar Government hasn't implemented yet the ASEAN Framework agreement on visa exemption, recently bilateral immigration agreement on free visa travel has been reached with Thailand, Singapore, Vietnam, the Philippines, Indonesia,

Cambodia and Laos. However, if the tourist overstay in Myanmar, it will be hard to book hotel and travel in the period of overstay. In addition, restrictions on entry and exist through land borders are noticed due to political stability. Besides, to get permission for foreigners to travel some prohibited areas, it takes three days for working process. Thus, visa process in Myanmar is complicated and time-consuming.

Furthermore, with the bulk of its international visitors, according to the MoHT, in 2014, the number of hotels registered in Myanmar reached 1019 at the end of July, up from 960 recorded in March. In 2015, more than 1000 new hotel rooms are available due to arrivals and investment rising. However, banned by the Ministry of religious affairs and culture, some new "limbo" hotels will not be allowed to operate due to the cultural heritage law. For instance, in Bagan, over two dozen "limbo" hotels were banned to operate because the properties deemed too close to the ancient pagodas. Likewise, 25 buildings for the purpose of running hotel, motel and guesthouse legally under construction can be completed as residences homes only; and 17 proposed hotels will not be allowed to resume construction. As the hoteliers in Bagan cannot accept the Bagan Heritage Management Committee's direction, they have submitted petition to the President's office for this case. Likewise, one negative impact of hotel zones said by field researchers is the impact on the opportunities for future community or local involvement in tourism activities, environmental and cultural conservation activities; and transparency. Further development of hotel zone affects the well-being of local residents and damages to the cultural and heritage sites of the tourist destinations.

Last but not least, the Ministry of Hotel and Tourism decided to implement activities to promote Community Based Tourism (CBT) in Myanmar as one of the first priority in 100-day plan of the new government. Although the CBT establishment generates job opportunities, reduces poverty, utilizes women empowerment and preserves the sustainable tourism environment; it is found that the undertaking system in Community Based Tourism is still weak. The local residents have still lack of skills in areas such as language level, quality of food, services like water and electricity supply, better transportation, handicraft and ethic lifestyle, and the peace and stability of the environment which tourists will be able to stay for community based and regional based tourism in project areas.

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In conclusion, it can be seen that recently Myanmar tourism sector has been developed with the pace of tourist arrival growth and growing international interest in country. However, in 2015, based on the travel and tourism competitive index, Myanmar ranks in 134th out of 141 countries. The main reason is poor governance in areas such as infrastructure, transportation networks, ICT readiness, the capacity of human resources, etc.

4.2 Empirical Results

To examine the impact of tourism expansion on economic growth in Myanmar, this paper tested the annual time series data from 1985 to 2015 (31 observations) using four proxy variables through the autoregressive distribution lags co-integration (ARDL) approach. The author puts Real Gross Domestic Product in a percentage of growth rate (RGDP) as a proxy of economic growth whereas the tourism related variables such as tourist arrivals in the number of visitors (TA) and tourism receipts in the millions of US dollars (TR) are denoted to represent tourism sector with the unofficial exchange rate of Myanmar in local currency unit term "Kyats" compared to the one US dollar (UER). The used methodology to forecast all the used variables and set equations in this research contains four steps: (1) Unit Root Testing (2) Bound Testing (3) VECM model and lastly the Granger Causality Test. The empirical results of these steps will be described as follows:

4.3 Descriptive Analysis

The following table 4.1 explains the summary of the basic statistics of the used variables of the research including the value of their mean, median, maximum and minimum values, standard deviation, skewness, kurtosis and Jarque-Bera test at the level. Table 4.2 describes these values after taking first differences to the proxy variables. Based on the descriptive analysis, the mean and medium values measure the central tendency of the data distribution of the variables. The skewness and kurtosis explain how the tails and peak of a data distribution differ from the normal distribution.

Table 4.1 Discriptive Analysis of the used proxy variables (Data in the Level)

	RGDP	TA	TR	UER
Mean	6.655419	682234.2	245.0898	568.3323
Median	6.800000	487000.0	84.00000	500.0000
Maximum	13.84400	4681020.	2122.000	1450.000
Minimum	-11.40000	7699.000	2.421300	30.00000
Std. Dev.	5.666541	973454.7	495.4378	479.4815
Skewness	-1.107355	2.848267	2.908342	0.290384
Kurtosis	4.688586	11.27846	10.49454	1.581620
Jarque-Bera	10.01850	130.4370	116.2526	3.034246
Probability	0.006676	0.000000	0.000000	0.219342
Sum	206.3180	21149259	7597.782	17618.30
Sum Sq. Dev.	963.2907	2.84E+13	7363757.	6897075.
Observations	31	31	31	31

Source: Author Calculation

Table 4.2 Descriptive Analysis of the used proxy variables (Data in 1st difference)

	RGDP	TA	TR	UER
Mean	0.186633	154822.8	70.58293	37.82433
Median	0.067000	21465.50	9.622911	17.00000
Maximum	15.10000	1599608.	863.0000	300.0000
Minimum	-8.391000	-43000.00	-17.00000	-209.3500
Std. Dev.	4.415083	374840.4	178.0497	123.7699
Skewness	1.314167	2.799641	3.388054	0.079066
Kurtosis	6.630075	9.849807	14.57371	3.068706
Jarque-Bera	25.10698	97.83976	224.8331	0.037158
Probability	0.000004	0.000000	0.000000	0.981593
Sum	5.599000	4644685.	2117.488	1134.730
Sum Sq. Dev.	565.2957	4.07E+12	919349.3	444250.7
Observations	30	30	30	30

Source: Author Calculation

The results of skewness of the used variables are greater than zero. That means the time series data of this research has positive skewness and negative skewness. It suggests that all the variables except RGDP growth rate for the data in the level have long right tails whereas all the used variables such as RGDP, TA, TR and UER for the data in first difference have long right tails. On the other hand, P-values related with Jarque-Bera test, the resulted value of kurtosis is significantly different from zero. A kurtosis value of 0 shows the perfectly normal distribution of the data. All variables in the research have positive kurtosis which means the data distribution has heavier tails and a sharper peak than the normal distribution.

4.4 Unit Root Test Results

Before testing whether the variables are stationary or non-stationary, all the variables except RGDP growth rate are transformed into logarithm form. It is better to use the log values of the variables because it can remove serial correlation from the constructed model; it helps to overcome the heteroscedasticity problem; it contributes to achieve normality by altering the scale and making the variables more normally distributed. Moreover, taking log can give better interpretation of the results as the author can directly interpret the coefficient of the dependent variable like RGDP growth rate as elasticity with respect to the exogenous variables such as tourism arrivals, tourism receipts and unofficial exchange rate in the tourism sector. The variable RGDP growth rate cannot take in log form due to containing negative numbers. Taking log cannot define for non-positive numbers.

The unit root testing is undertaken to determine the degree of stationary of the variables thorough three different tests such as ADF test, PP test and KPSS test. It can help to make the model selection for the research.

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Table 4.3 ADF Unit Root Test Results

Variables	Test in	No. of lags	Intercept		Intercept & Trend		Result
			t-statistics	P value	t-statistics	P value	
RGDP	I(0)	0	-2.249532	0.1941	-2.622690	0.2736	Non-stationary
	I(1)	0	-7.117722***	0.0000	-7.030311***	0.0000	Stationary
LnTA	I(0)	1	-0.443111	0.8886	-2.397364	0.3731	Non-stationary
	I(1)	0	-4.148318***	0.0032	-4.124441**	0.0153	Stationary
LnTR	I(0)	0	0.546384	0.9856	-3.524171*	0.0560	Stationary
LnUER	I(0)	0	-1.880569	0.3365	-0.445693	0.9807	Non-stationary
	I(1)	0	-3.787226***	0.0077	-4.249315**	0.0115	Stationary

Note : *** Statically significant at 1% Level
** Statically significant at 5% Level
* Statically significant at 10% Level

Source: Author Calculation

The Augmented Dickey Fuller test is performed to check the integrated level of each variable. Since ARDL co-integration approach can be run in the mixed integrated condition of I(0) and I(1) variables. The optimal lag length must be selected for each variable in this unit root test by using Akaike Information Criteria (AIC).

The null hypothesis of this ADF unit root test is the variable is non-stationary (i.e. the data has a unit root). If the negative test statistics value is higher than the critical values of 1%, 5% and 10% levels, the variable is stationary as rejected the null hypothesis in favor of alternative hypothesis. Table 4.3 shows the t-statistics and probability value of the used variables together with optimal number of lags.

As the variables are tested by ADF unit root test by including only constant term at level and first difference, the test critical values are -3.67, -2.96 and -2.62 at 1%, 5% and 10% respectively. When intercept and trend are included, the test critical values are -4.30, -3.57 and -3.22 at 1%, 5% and 10% respectively. During the condition of all the data in the level I(0), all the variables except LnTR are smaller than the test critical

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values at different levels. It means the variable such as RGDP growth rate, LnTA and LnUER are non-stationary as it has to accept the null hypothesis. However, the tourism variable LnTR is stationary at level I(0) by including intercept and trend. The resulted t-statistics value of tourism receipts -3.524171 is higher than the test critical value -3.22 at 10% level. The p-value of tourism receipts (LnTR) also shows 0.0560. Although the author uses the different lag criteria; and increase or decrease the number of lag, the results still show that the data are non-stationary at level.

After apply the same test to the first difference of variables with intercept and trend, the resulted test statistics values are higher than the critical values. Thus, the data used in this time series analysis are integrated at the first difference I(1). Therefore, it can be assumed that with intercept and trend, the variables such as RGDP growth rate, LnTA and LnUER are stationary at first difference and the variable LnTR is integrated at level.

Table 4.4 PP Unit Root Test Results

Variables	Test in	No. of lags	Intercept		Intercept & Trend		Result
			t-statistics	P value	t-statistics	P value	
RGDP	I(0)	3	-2.160955	0.2239	-2.700971	0.2432	Non-stationary
	I(1)	2	-7.601474***	0.0000	-7.173211***	0.0000	Stationary
LnTA	I(0)	2	-0.305054	0.9128	-2.121853	0.5135	Non-stationary
	I(1)	1	-4.169633***	0.0030	-4.078215**	0.0169	Stationary
LnTR	I(0)	1	0.560195	0.9860	-2.195360	0.4749	Non-stationary
	I(1)	1	-5.117733***	0.0003	-5.232362***	0.0011	Stationary
LnUER	I(0)	2	-1.702578	0.4198	-0.708407	0.9632	Non-stationary
	I(1)	3	-3.886437***	0.0061	-4.212146**	0.0125	Stationary

Note   :   *** Statically significant at 1% Level,   ** Statically significant at 5% Level

        * Statically significant at 10% Level

Source: Author Calculation

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The Phillip Perron (PP) unit root test has the same null hypothesis of non-stationary as the ADF test. The main difference between these two tests is considering the serial correlation and heteroscedasticity problems in error terms. It incorporates an automatic correction to the DF procedure to allow for auto-correlated residuals procedure to allow for auto-correlated residuals. Therefore, in PP test, the serial correlation of the residuals does not impact on the asymptotic distribution of the test statistics. Mostly, the outcome of the PP test will be slightly same with the ADF unit root test. The PP unit root test is performed to check the final conclusions coming from the ADF test. The PP unit root test can be interpreted by looking at the test statistics value and p-value of the test. Like the ADF unit root test, for the data not only with intercept but also with intercept and trend, the negative values of t-statistics which are less than the critical values can be found in the level. Thus, all data are not integrated at the level as it has to accept the null hypothesis of non-stationary.

The author takes first difference to all variables to test the stationarity of time series data. In this connection, all the negative t-statistics values of the variables with intercept and trend are greater than its critical values. The null hypothesis can be rejected and the data is stationary at first difference. If p-value of the PP test is below 0.05, it can explain the existence of the stationary variable. Looking at the probability values of the variables, all p-values are less than 0.05 at the first difference. In this situation, the author can reject the null hypothesis that it has a unit root. Therefore, like the same conclusion of ADF test, with intercept and trend, the variables such as RGDP growth rate, LnTA, LnTR and LnUER are integrated at first difference.

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Table 4.5 KPSS Unit Root Test Results

Variables	Test in	No. of lags	Intercept t-statistics	Intercept & Trend t-statistics	Result
RGDP	I(0)	4	0.376856**	0.152315***	Non-stationary
	I(1)	2	0.084390	0.054925	Stationary
LnTA	I(0)	4	0.645428***	0.101323	Stationary
LnTR	I(0)	4	0.718037***	0.063960	Stationary
LnUER	I(0)	4	0.664607***	0.160759***	Non-stationary
	I(1)	3	0.285229	0.103020	Stationary

Note : *** Statically significant at 1% Level

         ** Statically significant at 5% Level

Source: Author Calculation

The KPSS test proposed by Kwiatkowski et al. has opposite null hypothesis unlike ADF and PP tests. The null hypothesis of KPSS test is that it has no unit root (i.e. stationary. The KPSS test determines whether each variable is stationary in the level or first difference forms. The test critical values of KPSS test for the data with intercept and trend are 0.216, 0.146, and 0.119 at 1%, 5% and 10% respectively. The above table 4.5 describes the unit root results for all variables used in the model.

The resulted LM-statistics value of RGDP growth rate with intercept and trend is lower than test critical value at 1% in the level I(0). Then, taking first difference will be carried out to obtain better results. The LM-statistics value is below the critical vales of all 1%, 5% and 10% levels so that it is failed to reject the null hypothesis of stationary.

For the tourism sector proxy variables such as tourism arrivals (LnTA) and tourism receipts (LnTR), the resulted test statistics value of the data containing intercept and trend are less than all the critical values levels. So LnTA and LnTR are integrated at the level in favor of accepting null hypothesis. The unofficial exchange rate variable LnUER which includes intercept and trend is non-stationary at level because its test value is less than critical value for only 1% level. By taking first difference into LnUER, it turns into stationary due to the lower LM-statistics value at all level.

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In conclusion, different unit root tests give similar results for all used variables in the research to assign integration order. With intercept and trend, the stationary of RGDP is significant at first difference I(1); LnTA is significant at I(1), LnTR is integrated at level based on ADF and KPSS test and at the first difference on PP test; and LnUER has stationary property at I(0) at the 1%, 5% and 10% respectively. These mixed integration results force to choose the Autoregressive Distributed Lags (ARDL) co-integration approach instead of Johansen co-integration technique.

4.5 Long run ARDL bound test for Co-integration

The following figure shows the model selection summary of the top 20 ARDL co-integration model using Akaike Information Criterion. The best model that the author chose with ARDL(1,2,2,2).

Akaike Information Criteria (top 20 models)
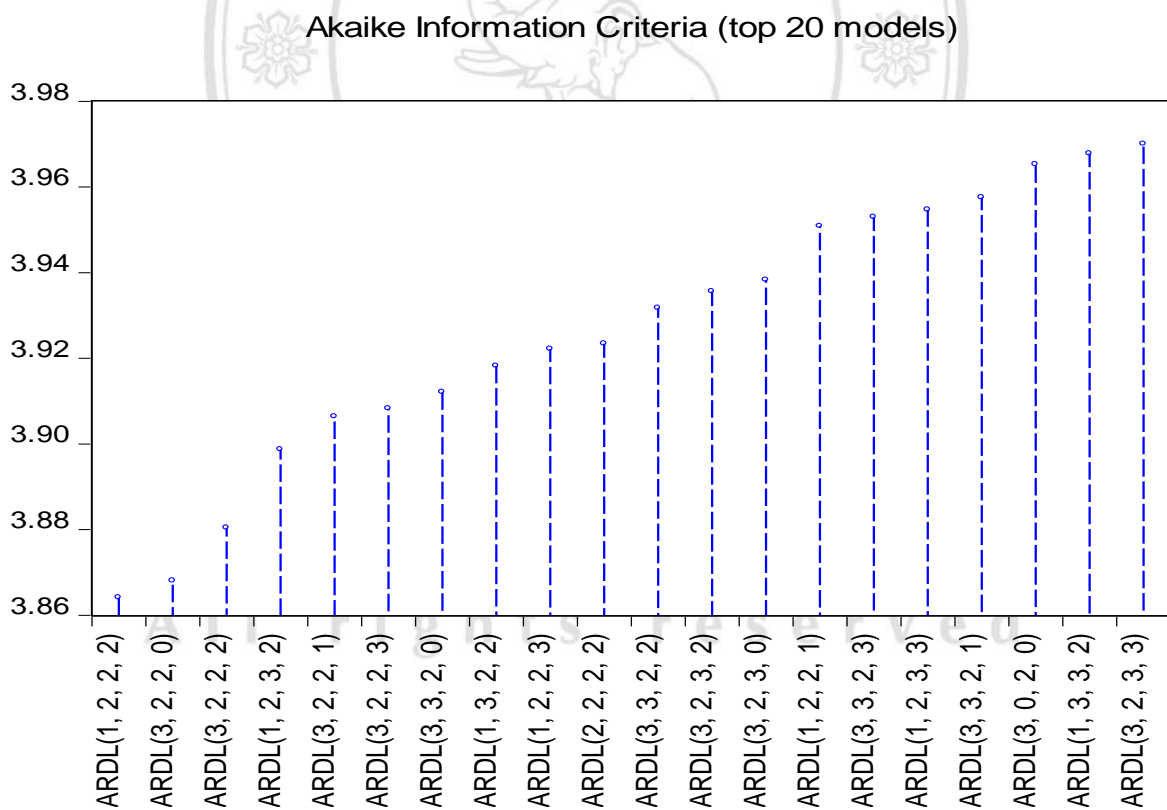
Source: Author Calculation

Figure 4.1: Lag Criteria Graph of the ARDL Model

Using the appropriate lag length in this model, the multiple break points are employed to check whether the regression has significant structural breaks in the model over the period between 1985 and 2015. Two break points such as 1989 and 2008 are used in the regression. The year 1989 was chosen as the breakpoint because Slorc (State Law and Order Restoration Council) declares the martial law; arrests thousands of people including advocates of democracy and human rights; officially renames Burma into Myanmar, put NLD leader Aung San Suu Kyi, the daughter of General Aung San, under house arrest. Moreover, the New Military Government taken power by a coup d'état, decided to decide on a different strategy in opening the market to foreign investments. Again, the Junta thus decided to make the development of tourism one of its economic priorities. The breakpoint 1989 is the starting time when tourism sector is decided to set one of the country's economic priorities. Additionally, the author set 2008 as a breakpoint due to the Nargis Cyclone in Myanmar. Together with the Cyclone's effects such as environmental and food crises, 2008 financial crisis gave more hardships to the economy of the country which was suffering internal domestic financial crisis cause of high inflation. Inflation rate in Myanmar is reaching high all the time.

Table 4.6 ARDL Bound Test for Co-integration

Variables	F-statistics	k	Co-integration
F(RGDP/LnTA, LnTR, LnUER)	24.10744***	3	Co-integration

Critical Value	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Note   :   *** Statically significant at 1% Level

** Statically significant at 5% Level

* Statically significant at 10% Level

Source: Author Calculation

The bound test is applied to examine the existence of the long run co-integration relationship among the variables. As the calculated bound test value is above the upper

bound value at all critical value levels whether the variables are integrated of level I(0) or order one I(1), the null hypothesis of no long run relationship among the used variables can be rejected. That means there is the long run relationship among the variables such as RGDP growth rate, LnTA, LnTR and LnUER. The table 4.6 describes the dynamic results of the ARDL estimates and long run coefficient of used proxies for tourism expansion and economic growth.

Table 4.7 Estimated ARDL dynamic results for Economic Growth and Tourism

ARDL (1, 2, 2, 2) selected based on Akaike Information Criterion

Dependent Variable: RGDP Growth Rate			
Regressors	**ARDL Estimates**		
	Coefficient	**t-Statistic**	**Prob**
RGDP(-1)	-0.269460*	-1.748158	0.0996
LNTA	2.409176*	2.100741	0.0519
LNTA(-1)	-3.506505***	-3.106991	0.0068
LNTA(-2)	2.688328*	2.994040	0.0086
LNTR	4.550222***	4.666726	0.0003
LNTR(-1)	-0.934220	-0.657128	0.5204
LNTR(-2)	-3.279877**	-2.576098	0.0203
LNUER	0.270951	0.133534	(0.8954)
LNUER(-1)	-0.578883	-0.223931	(0.8256)
LNUER(-2)	3.190319	1.637945	(0.1209)
BREAK08	-11.37606***	-7.012724	0.0000
BREAK89	5.855829**	2.858365	0.0114
C	-32.49022	-4.283775	0.0006
R-squared	0.964948	Mean dependent var	7.052345
Adjusted R-squared	0.938659	S.D. dependent var	5.620346
S.E. of regression	1.391999	Akaike info criterion	3.801204
Sum squared resid	31.00259	Schwarz criterion	4.414129
Log likelihood	-42.11745	Hannan-Quinn criter.	3.993164
F-statistic	36.70529	Durbin-Watson stat	2.598485
Prob(F-statistic)	0.000000		

Note : *** Statically significant at 1% Level, ** statically significant at 5% Level and
       * statically significant at 10% Level

Source: Author Calculation

The ARDL estimates explain the dynamic relationship between tourism expansion and economic growth of Myanmar by the chosen lag effect. The adjusted R^2 value of 0.93 indicates that tourism growth model explains about 93 percent in Myanmar's economic growth. Both break89 and break08 are highly significant at 1% and 5% respectively in the regression of the model. As for the level-log regression, it has to be interpreted that Y is expected to be increase $(\beta_1/100)$ units of Y if X increase by one percent.

Empirical evidence reveals that this year tourism arrival has a significant positive relationship on economic growth with 0.024 percent at 10% level. New tourist attractions in Myanmar like Gaw Yan Gyi Island, Myeik Islands and Naga Land seduce more tourists to enjoy diverse ethnic culture and history of Myanmar. Likely, Tourism Receipts this year has a significant positive relationship on economic growth with 0.045 percent. In 2015, tourism industry stood unabated growth in Myanmar as around 5 million tourism visitors have been seen in the country. According to the economic impact 2015 by World Travel and Tourism Council, Money spent by foreign visitors to a country (or visitor exports) is a key component of the direct contribution of Travel and Tourism. In 2014, Myanmar generated MMK1163.0bn in visitor exports. In 2015, this was expected to grow by 8.1%, and the country is expected to attract more 1,275,000 international tourist arrivals.

However, last year tourist arrival gave negative impact on this year RGDP growth rate. This will be also the same to the tourism receipt variable. $LnTR_{(-1)}$ and $LnTR_{(-2)}$ has negatively significant relationship with RGDP growth rate. The result comes out negatively because of pushing up local prices and high volatile exchange rate. Some tourist remote areas are still being with underdeveloped infrastructure. So companies are forced to use at high significant expense to import needed goods. So incomes coming from the tourism sector have to reinvest in the companies' business to offer better services. In some cases, the tourism companies fail to expand economic opportunity due to lack of local capacity.

Lastly, explaining the dynamic effects of ARDL estimates for tourism expansion and economic growth by the chosen lag effect, unofficial exchange rate has no

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significant impact on Myanmar's economic growth at all due to insufficient or merging data problem.

Table 4.8 Estimated Long Run Coefficients for Economic Growth and Tourism

Variable	Coefficient	t-Statistic	Prob.
LNTA	1.253288**	2.147842	0.0474
LNTR	0.264778	0.369307	0.7167
LNUER	2.270562***	3.192902	0.0057
BREAK08	-8.961343***	-9.214383	0.0000
BREAK89	4.612852**	2.516735	0.0229

Source: Author Calculation

Looking at the long run coefficients of the tourism sector and economic growth, increase in tourism arrivals positively impact on Myanmar's economic growth with 0.01253288 percent in the long run. But for tourism receipts, the long run coefficient sign of LnTR is positive with 0.264, but not significant. Such divergence is due to the compiling data from the various sources and endogeneity and omitted variable bias. However, it can be concluded that there is the long run co-integration relation between tourism expansion and economic growth. The finding of the research is consistent with the economic growth theories (mainly based on the Keynesian multiplier effects). Tourism expansion contributes to local development through direct, indirect and induced effects. Based on the information from Ministry of Hotel and Tourism Myanmar, in 2013, Tourism industry is the fourth greatest recipient of approved FDI (foreign direct investment) after capital-intensive industries such as oil, gas and mining sectors. New Government lead by Daw Aung Su Kyi together with the President is undertaking 100 day plan action in every sector including tourism industry. Actions are taken to implement activities for the development of Community Based Tourism-CBT, the improvement of human resources and discovering new tourist areas.

In the long run, unofficial exchange rate and economic growth has positive relationship with 2.27. Although Myanmar exchange rate drastically improves the purchasing power of foreigners, Myanmar exchange rate volatility is too high before official market exchange rate set by the Central Bank of Myanmar in 2011.

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4.5.1 Long Run Diagnostic Test

Table 4.3 Estimated Long Run Diagnostic Test

| Test Statistics	F-statistics	P- Value
Serial Correlation Test	2.244095	Prob. F(2,14) 0.1428
Normality Test	2.920236 (Jarque-Bera statistics)	0.232209
Heteroscedasticiy Test	0.746934	Prob. F(12,16) 0.6915

Source**:** Author Calculation

To check the validity of the long run coefficient of the regression, the author tested the regression model by some diagnostic tests. Serial correlation of the residuals is tested by Breusch-Godfrey Serial Correlation LM test. The probability value of test 0.1428 is above 0.1 at 10 percent level. So the null hypothesis of no serial correlation can be accepted. The normality test is based on the Jarque-bera value and kurtosis of residuals. The results show that errors are normally distributed. The author used heteroskedasticity test proposed by Breusch-Pagan-Godfrey. As the probability value 0.6915 is above the 5% critical value, the alternative hypothesis can be rejected in favour of null hypothesis of no heteroskedasticity. Therefore, the report indicates that there is no error autocorrelation and heteroskedasticity, and the error terms are normally distributed. It can be noted that the long run regression model is specified well.

The parameters stability of the model is checked by both CUSUM and CUSUM squares test. The result of CUSUM test reported that the plot of CUSUM graph within the critical limits. Similarly, The CUSUM squares graph shows that the resulted graph line does not cross the lower and upper critical values. Therefore, it is noted that the dynamic ARDL estimates and long run estimates are stable. The results of the estimated model are reliable and efficient.
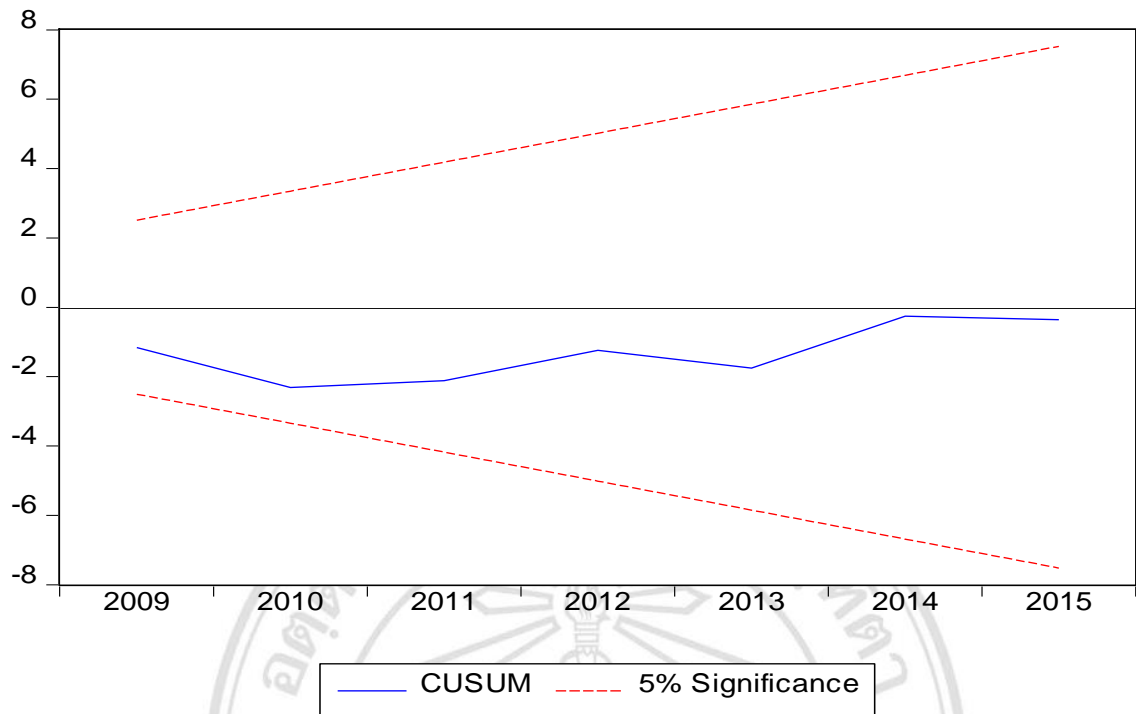
Source: Author Calculation

Figure 4.2: Plot of Cumulative sum of Recursive Residuals
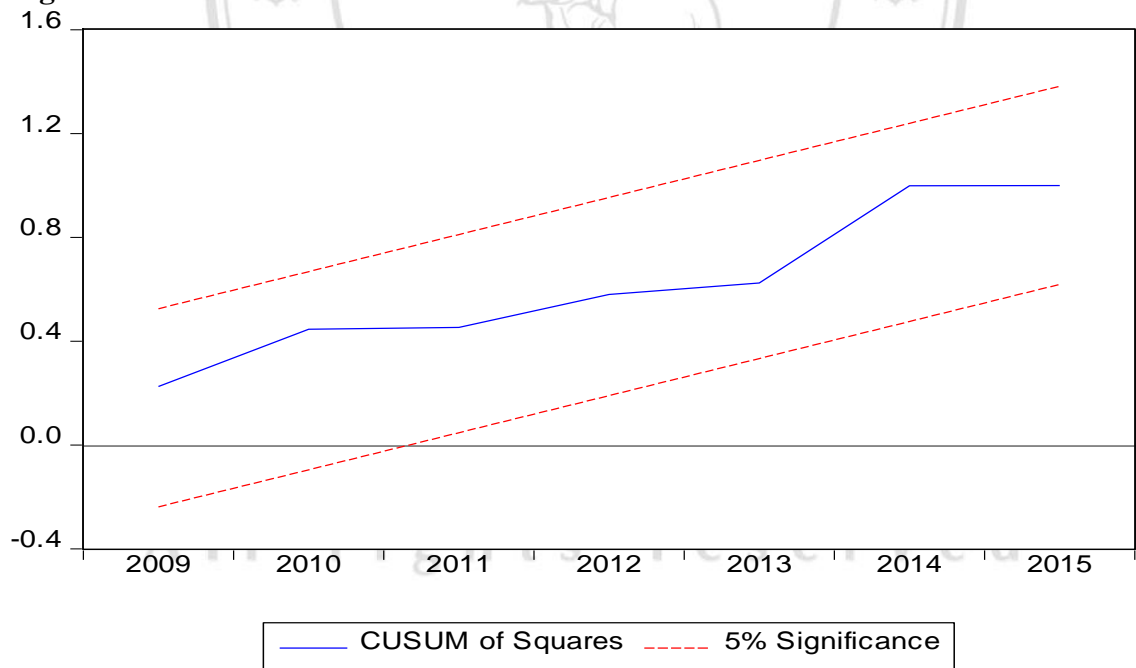
Source: Author Calculation

Figure 4.3: Plot of Cumulative sum of squares of recursive residuals

4.6 Short Run Error Correction Estimates

Table 4.4 Estimated Short Run Coefficient for Error Correction Representation

ARDL (1, 2, 2, 2) selected based on Akaike Information Criterion

Dependent Variable: RGDP Growth Rate				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LNTA)	2.450688***	0.690806	3.547578	0.0027
D(LNTA(-1))	-2.718809***	0.771333	-3.524816	0.0028
D(LNTR)	4.812239***	0.896798	5.366023	0.0001
D(LNTR(-1))	3.611569***	1.086544	3.323903	0.0043
D(LNUER)	0.500955	1.406879	0.356076	0.7264
D(LNUER(-1))	-3.215176**	1.506143	-2.134708	0.0486
D(BREAK08)	-10.368128***	1.385180	-7.485039	0.0000
D(BREAK89)	5.413322**	2.252961	2.402758	0.0288
C	-34.996750	3.623604	-9.657996	0.0000
CointEq(-1)	-1.362829***	0.140983	-9.666625	0.0000

Cointeq = RGDP - (1.2533*LNTA + 0.2648*LNTR + 2.2706*LNUER -8.9613
*BREAK08 + 4.6129*BREAK89)

R-squared	0.861342	Mean dependent var	7.052345
Adjusted R-squared	0.805878	S.D. dependent var	5.620346
S.E. of regression	2.476283	Akaike info criterion	4.900520
Sum squared resid	122.6396	Schwarz criterion	5.324854
Log likelihood	-62.05755	Hannan-Quinn criter.	5.033416
F-statistic	15.52991	Durbin-Watson stat	2.353512
Prob(F-statistic)	0.000001		

Note : *** Statically significant at 1% Level

       ** Statically significant at 5% Level

       * Statically significant at 10% Level

Source: Author Calculation

The short run error correction model is estimated after the long run coefficient estimation of the model. The adjusted R-squared value is 0.806 that means 80.6% of the variation of the proxy variables of tourism sector in Myanmar can explain the variation

of the dependent variable RGDP growth rate. The durbin-Watson statistics 2.35 tells that there is no autocorrelation in the short run model and the F-statistics is quite robust.

The table 4.9 explains the short run coefficients of the relationship between tourism and economic growth using the error correction mechanism. The equilibrium error correction mechanism is significant and negative. Thus, it implies the speed of adjustment to equilibrium with elasticity 1.36 after a shock. Besides, around 136.22 percent of the disequilibrium from the last year's shock converges back to the long run equilibrium.

The coefficient value of the short run error correction estimates is slightly same with the dynamic result values of the ARDL estimates. The existence of significant positive short run relationship between tourism expansion proxy variables (tourism arrivals and tourism receipts) and RGDP growth rate can be found in Myanmar (**Brida, J. G., Pereyra, J. S., Risso, W. A., Devesa, M. J. S., & Aguirre, S. Z. (2008)**).

What's more, in the short run error correction estimates, the previous year unofficial exchange rate has the negative significant impact on this year RGDP growth rate. **Moya, M., & Watundu, S (2009)** explained about the depreciation of Real Effective Exchange Rate does not contribute to the Gross Domestic Product growth of Uganda. So in Myanmar, a real depreciation of domestic currency did higher the cost of imported raw materials in the tourism industry. Due to the low quality of local products and unskilled labour condition, the Myanmar tourism industry has to rely on imported goods and services.

Moreover, to test the stability of the short run estimation model, the Breusch-Godfrey Serial Correlation LM test, normality test and the Breusch-Godfrey heteroskedasticity test are applied in the short run model. Results of the following table 4.10 suggested that there is no serial correlation and no heteroskedasticity as accepted the null hypothesis. The residuals of the short run estimation are also normally distributed. In conclusion, the short run error correction model is fitted well to investigate the short run coefficient of tourism expansion and economic growth.

4.6.1 Short Run Diagnostic Test
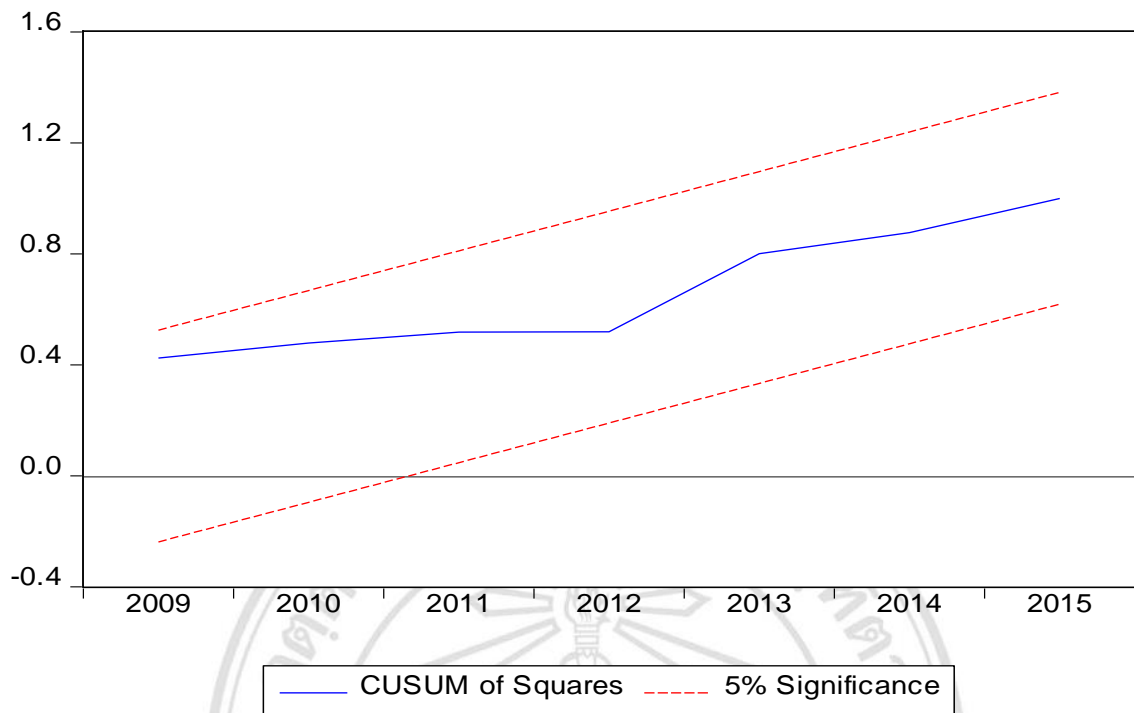
Table 4.5 Estimated Short Run Diagnostic Test

Test Statistics	F-statistics	P-Value
Serial Correlation Test	0.650162	Prob. F(2,18) 0.5338
Normality Test	4.022770 (Jarque-Bera)	0.133803
Heteroscedasticiy Test	0.323139	Prob. F(8,20) 0.9475

Source: Author Calculation
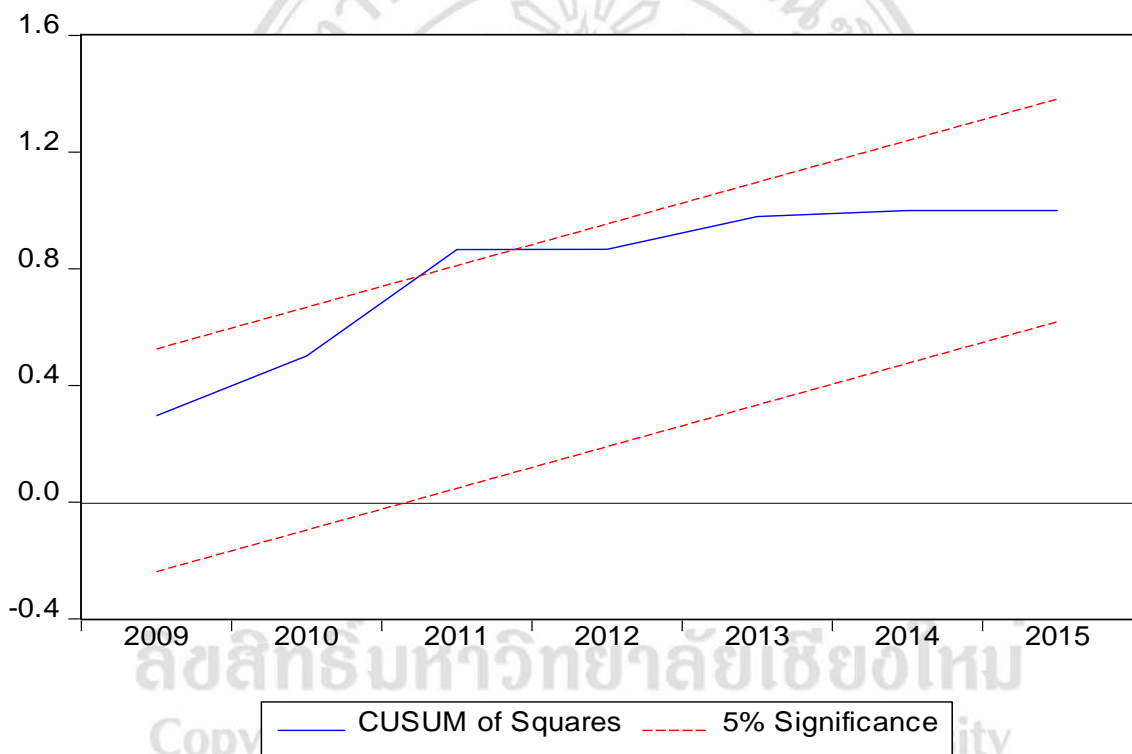
Source: Author Calculation

Figure 4.4: Plot of Cumulative sum of recursive residuals

Figure 4.5: Plot of Cumulative sum of squares of recursive residuals

Both CUSUM and CUSUM squares test are employed to check the parameters stability of the model. The result of CUSUM test reported that the plot of CUSUM graph within the critical limits. Likewise, The CUSUM squares graph shows that the resulted graph line does not cross the lower and upper critical values. Therefore, the conclusion can be done that the dynamic ARDL estimates and long run estimates are stable. The results of the estimated model are reliable and efficient.

4.7 Granger Causality Test Results

Table 4.6 Estimated Pairwise Granger Causality Test with 2 lags difference

Null Hypothesis:	Obs	F-Statistic	Prob.	Result
LNTA does not Granger Cause RGDP	29	3.41344**	0.0496	Bidirectional Causality
RGDP does not Granger Cause LNTA		4.22932**	0.0267	
LNTR does not Granger Cause RGDP	29	0.60304	0.5552	No Causality
RGDP does not Granger Cause LNTR		0.34408	0.7123	
LNUER does not Granger Cause RGDP	29	3.89040**	0.0344	Causality from LNUER to RGDP
RGDP does not Granger Cause LNUER		0.88784	0.4246	
LNTR does not Granger Cause LNTA	29	4.55741**	0.0210	Causality from LNTA to LNTR
LNTA does not Granger Cause LNTR		0.72914	0.4927	
LNUER does not Granger Cause LNTA	29	1.21189	0.3152	No Causality
LNTA does not Granger Cause LNUER		1.74719	0.1957	
LNUER does not Granger Cause LNTR	29	0.10570	0.9001	No Causality
LNTR does not Granger Cause LNUER		0.54304	0.5880	

Note : *** Statically significant at 1% Level

** Statically significant at 5% Level

* Statically significant at 10% Level

Source: Author Calculation

Concerning with identifying the direction between tourism expansion and economic growth, the outcomes of the studies showed mixed and conflicting results on the link between tourism sector and economic growth. The pairwise Granger Causality test is applied with the number of lags 2. The result reveals that there is bidirectional causality between tourism arrivals and RGDP growth rate as a proxy of economic growth in Myanmar. That is tourism arrival may be not only a cause for RGDP growth rate change but is also the effect whereas RGDP can also be the cause for the increase in tourist arrivals **(Katircioglu, S. (2009)).** So it can be recommended that the assumption

of both the tourism-led growth and growth-led tourism hypotheses are to be valid for Myanmar.

However, the insignificant causal relationship between tourism receipts and economic growth occurs in the model due to the problem of merging data from various sources.

Furthermore, there is the unidirectional causality from unofficial exchange rate to economic growth. So, the volatility in exchange rate can cause the change in RGDP growth rate of economic growth. The similar results were obtained by (**Alom, K. (2015).**) for the case of Bangladesh.

In Summary, the long run stable bilateral causal relationship between tourism expansion and economic growth exists at 5% critical level whereas the occurrence of unidirectional causality from unofficial exchange rate to economic growth can be found in this research of Myanmar.