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Letter from the Editor-in-Chief

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.

February 28, 2022

Youngjun Choi *yj choi*

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

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The Relationship between Education Expenditure and Economic Growth in Myanmar (1989-90 to 2018-19)

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ABSTRACT : Economists, scholars, and politicians have always been interested in education since it is such an important component of human capital. Governments all across the world, including Myanmar's, are attempting to increase human capital through increasing educational spending. The goal of this research is to analyze spending on education and significant macroeconomic indicators in Myanmar, checking them for stationary applying the ARDL time series model, which included the Augmented Dickey-Fuller (ADF) and Phillip-Peron unit root tests. Education expenditure (EDUC), labor force participation rate (LFPR), gross capital formation (GCF), and real gross domestic product (RGDP) are the variables studied in this study from 1989-90 to 2018-2019. The effects of long-run and short-run connection between real GDP and education spending, gross capital creation, and labor force participation are investigated using (ARDL) model. ARDL model estimated results show that a positive and substantial long-run and short-run connection between real GDP and education spending, gross capital creation, and labor force participation. The findings of this study can help to shed light on how to formulate and implement appropriate fiscal policies that are relevant to Myanmar's growth.

Key words *: Economic Growth, Education expenditure, Labour Force Participation, Gross Capital Formation, ARDL time series model*

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I. Introduction

Education is defined as the process of changing an individual's behavior, cognitive structure, and skills. Education can also be defined as the process by which a person develops societal behavioural patterns such as ability and attitude (Alşkan et al., 2013: 31). With the available labor skills and the price of these capabilities, education affects the value of countries in the global economy. (Karaçor et al., 2017) Economic growth is characterized by an increase in production capacity as well as, more importantly, a rise in national income and per capita income. (Guma, 2014) It is commonly acknowledged that investing in education is vital for societal economic progress and social cohesion. Many of the potential societal benefits of various sorts of public investments in education are not immediately evident, but they are nonetheless significant. More investments in education are necessary for increased productivity and economic growth. (Abhijeet, 2010) Education and higher education in particular, are essential elements in economic growth, and the relationship between higher education and economic growth has long been a focus of economics research. Although there is a sound theoretical underpinning for economic growth and its relationship with education (Greiner et al, 2005; Mankiw et al, 1992; Barro and Sala-i-Martin, 1995; Romer, 1990), empirical data is lacking (Awel, 2013; Danacica, 2011; Mariana, 2015)

II. Brief Country Profile of Myanmar

Myanmar is the largest country in Southeast Asia's continent. It has an area of 676577 square kilometers (261228 sq. miles). It is more than twice the size of Vietnam and a quarter the size of Thailand. From north to south, three forest-covered mountain ranges run. The country is divided into three major river systems by these mountain chains. Fertile cultivable plains can be found mostly in the valleys between mountain chains and the Ayeyarwady delta. Myanmar is located in Asia's monsoon area. It is a predominantly agricultural country. Myanmar is made up of seven states, seven regions, and one union territory. Myanmar's population is expected to exceed 54.1 million by 2020. In 2014, it was the 25th most popular country in the world. In Myanmar, 70 people live in rural areas and 30 in urban areas for every 100 people.

III. Literature Review

Many studies have been conducted to investigate the relationship between education and economic growth. Some of these studies found a positive and significant relationship between education and economic growth, with the result that economic growth influenced education positively. (Schultz ,1963) discovered that increasing labor education levels contributed significantly to growth in both developing and developed countries.(Hicks,1980) examined the social and private benefits of educated investments. Investment in human resources has increased the rate of growth. (Karaçor et al. 2017). The importance of investing in human skills was emphasized by (Adam Smith,1776) and the classical economists. (Denison ,1967) emphasizes the importance of investing in education for the first, which is thought to affect growth and development. Investment in education can boost growth and development by encouraging activities that help the country catch up with foreign technological advancements (Berthelemy and Varoudakis, 1996). (Islam,2014). Azila Abdul Razak (2012) investigated the long-run relationship and causality between government expenditure on education and economic growth in Malaysia from 1970 to 2010. The author demonstrates that economic growth (GDP) is positively correlated with a number of variables, including fixed capital creation (CAP), labor force participation rate (LAB), and government education spending (EDC).

The author uses the outcome of the granger causality test to show that economic growth is a short-run granger cause for education variables and vice versa. Furthermore, this research has shown that capital, such as the education variable, has a significant impact on Malaysia's economic growth. (Hussin and colleagues, 2012). Since 1965, according to Gylfason and Zoega (2003), education has been one of the most important predictors of global economic growth. Stevens and Weale (2003) conduct a study on the relationship between education and economic growth. The major goal of Teles and Andrade's research is to depict the relationship between government spending on basic education and the human capital accumulation process, as well as the effects of this spending on individual investments in higher education and economic growth.(Islam, 2014) Mehmet and Sevgi (2014) used ARDL and Co-integration analysis to investigate the effects of education spending on economic growth in Turkey between 1970 and 2012. The results of the estimation reveal that education spending has a beneficial effect on economic growth in both the short and long run. The author's findings in this research could be explained by a transfer of chances for knowledge creation and manufacturing at universities, which is fueled by an increase in education spending, which eventually leads to economic growth. Owusu-Nantwi (2015) used Vector Error Correction and Co-integration

Analysis to examine the relationship between education spending and economic growth in Ghana from 1970 to 2012. The author's empirical results in this paper show a positive and significant long-run relationship between education expenditure and real GDP, gross capital formation, and labor force participation. The authors recommend that provide some insights into how the formulation and implementation of appropriate fiscal policies relating to education could help improve education quality and thus contribute to Ghana's economic development (Owusu-Nantwi. 2015,). Tafirenyika (2017) used the ARDL bound test to investigate the relationship between education spending and economic growth in Mauritius from 1976 to 2016. In the short run, the author discovered that education expenditure granger causes economic growth in Mauritius. Furthermore, the study discovers that economic growth does not increase education spending in the short run. However, in the long run, the study discovered that there is a long-run relationship between education expenditure and economic growth in both equations, which means that an increase in one variable will eventually lead to an increase in the other. He believes that Mauritius has the potential to benefit from additional educational investments in the future. (Sunde, 2017).

Fozieh and Tabar (2017) investigated the effects of government education spending on economic growth in Iran between 1981 and 2012 using ARDL methods for both short-run and long-run relationships. The author used Wagner's Law, which stated that the variables real GDP, capital stock, and labor force stock had a positive, negative, and positive impact on total government expenditure, and that the long-run relationship is true in this regard. Furthermore, in the estimation of the Keynesian model, educational expenditures, unlike real government expenditures, had a long-run relationshipIn all models, capital factors have a comparable influence on real GDP and the labor force coefficient in the presence of total expenditures and educational expenditures, which were both negative and positive. (2017) (Jeyhoon Tabar et al.) According to Weiss (1995), people with a higher level of education and greater job experience get higher salaries. Employee productivity rises as a result. Patrinos and Psacharopoulos (2002) conducted a research to examine the societal impact of educational investments. Education is also viewed as a long-term road to economic development, and it is critical in the battle against unemployment, maintaining social equality, laying solid foundations , awareness and cultural vitality. (Karaçor et al., 2017) Arab Emirates, Bahrain, Oman, and Qatar) nations and investigated the connection between education spending and economic development from 1977 to 2004. In his research, he used the error correction model and Granger causality approaches.

The study's main finding is that the link between education spending and economic development cannot be generalized across nations. (Kouton, 2018). Kui

(2006) examined China's economic growth and its link with education from 1978 to 2004 and discovered an intriguing result: economic growth is influenced by elementary education and is a direct cause of higher education. Huang et al. (2009) studied the long-run link between economic growth and higher education in China and discovered that there is a long-run association between enrolment in higher education and economic growth. (Mariana, 2015)

IV. Methodology and Data

The paper uses secondary time series data on different components of education expenditures and GDP from 1989-1990 to 2018-2019 in order to asses the long run causal relationship between education and economic growth. A unit root test will be done to determine if the variables to be used are stationary or not. The bound test, long-run co-integration, and error correction mechanism for the short run among variables were also studied in this work utilizing the ARDL technique for co-integration. This study's variables include Education Expenditure (educ), Labor Force Participation Rate (lfpr), Gross Capital Formation (gcf) and real gross domestic product (rgdp).

Table 1. Data Description and Sources

Variables	Definition	Data Source
RGDP	The real gross domestic product which measures economic growth	World Bank
EDUC	Education expenditure as a proxy for Human capital	World Bank
LFPR	Labour Force participation as a proxy for labour	World Bank
GCF	Gross Capital Formation as a proxy for physical capital	World Bank

Source: Author Design

V. Empirical Results

The data used in the study was taken from the world Bank database on the ARDL model to estimate yearly time series data from 1989-1990 to 2018-2019 in order to analyze education spending and important macroeconomic variables in Myanmar. According to the estimated empirical results, this research paper will

discuss how education spending, labor force participation rate, and gross capital creation would affect Myanmar GDP growth based on projected empirical data. The data analyzed in four steps: (1) the unit root test using ADF and PP test, (2) bound testing for the sample period, (3) co-integration test for the long run, and (4) error correction method for the short run.

1. Auto-regressive Distributed Lag Model

The ARDL model of the bound test and co-integration technique utilized to study the short and long term, as well as the dynamic interaction of all the relevant factors. The advantages of the ARDL model in this case are as follows: (1) the methodology avoids the problem of integration order; (2) the results are valid for small sample sizes; (3) the model accepts mixed level stationary I(0), I(1); and (4) this methodology results in the unbiased estimation of the long-run model.

2. Unit Root Test Results.

The ADF unit root test is used to determine whether or not all of the data are integrated and stationary in the same sequence. Because of its numerous advantages, the ADF test is the most commonly employed test for time series data analysis. To obtain a trustworthy result, they are the test that can automatically remove the error term autocorrelation issue. The maximum number of delays is defined by the AIC criterion. For the regression, both a constant log level and the first difference level of the variables are evaluated. The findings of the time series data, both stationary and non-stationary, are presented in the table below. The sequence of integration of each variable is tested by PP. The null hypothesis of a series with unit roots cannot be rejected at even a 5% level for the level of the series. It is, however, categorically denied for each differenced series. This means that the variables are of order integrated. I (1).

Table 2. ADF and PP unit root test results.

Test		Augmented Dickey Fuller (ADF)			Phillip- Perron (PP)		
Variables	Level		First Difference		Level		First Difference	
	Intercept	Trend & Intercept	Intercept	Trend& Intercept	Intercept	Trend & Intercept	Intercept	Trend & Intercept
LRGDP	0.2378	0.6708	0.0000***	0.0001	0.3198	0.7908	0.0000***	0.0000***
LEDUC	1.0000	0.9124	0.8635	0.2311	0.7146	0.0547	0.0000**	0.0003***

							*	
LLFPR	0.9999	0.7173	0.6561	0.1851	1.0000	0.8905	0.0555**	0.1083
LGCF	0.0303**	0.1217	0.0001**	0.0008**	0.0326	0.1295	0.0000***	0.0001**

Source: By using E-views 10
Note: 10% level significant *
5% level significant **
1% level significant ***

Table 3 Co-integration for Bound Test

Variables	F-statistics	K	Co-integration
F (lnRGDP/lnEDUC, lnLFPR, lnGCF)	6.294681	3	Co-integration
Critical Value	I0 Bound	I1 Bound	
1%	3.29	4.37	
2.5%	2.88	3.87	
5%	2.56	3.49	
10%	2.2	3.09	

Source: Calculated by using E-views 10

3. Bound Test

The table shows the results of the computed bound test for real GDP, education spending, labor force participation rate, and gross capital creation. The bound test's null hypothesis is that there is no co-integration among variables. The null hypothesis of no co-integration has been rejected based on the F-statistic=6.294681, which is more than the upper limit value=3.29 and lower bound value=4.37 at the 1% level. This indicates that the variables have a co-integrated long-run connection.

Table 4. The ARDL Approach Long Run Co-integration Test results Based on Akaike Information Criteria ARDL (1, 2, 2, 3)

Dependent Variable: LN RGDP			
Variable	Coefficient	t-statistics	Probability
LN EDUC	1.205587	1.480222	0.1595
LN LFPR	23.93993	0.188797	0.8528
LN GCF	60.89198	2.250531	0.0398
Constant	2109.286	3.121184	0.0070

Source: Calculated by author by using E-views 10

According to the estimations of the long-run connection given in the table above, education expenditure (LEDUC), gross capital formation (LGCF), and labor force participation rates (LLFPR) all have statistically significant positive impacts on Real Gross Domestic Product (LRGDP). This study showed a positive and substantial link between educational spending and GDP, as shown by earlier studies such as Tamang (2011), Odit et al. (2010), Haldar and Mallik (2010), Rao and Jani (2009), and Jung and Thorbecke (2003).The Authors advocated for education to play an important part in a country's economic progress by generating a competent and informed workforce and increasing the country's income. This study also shown that government spending on education, labor engagement, and capital has a stronger effect on the long-term economic performance, notably in Myanmar.

Table 5 Error Correction Mechanism Result of Short Run Estimation

Variable	Coefficient	Probability
LNEDUC	1.205587	0.0365
LNLFPR	23.93993	0.7699
LNGCF	60.89198	0.0054
CointEq(-1)	-0.555951	0.0000
Cointeq = LN_GDP – (1.205587*LN_EDUC +23.93993*LN_LFPR+ 60.89198*LN_GCF -0.555951)		

Source: Calculated by using E-views 10

The error correcting process determines the short-run associations of these variables after analyzing the long-run correlations among variables. The outcome of constant short-run and education spending is positive, but the coefficient of labor force participation rate and gross capital creation is also positive. This finding suggests that change in gross capital creation is driven in the near run by variation in labor force participation. In terms of economics, if labor force participation rises in the near term, productivity rises, and companies make economic profits, allowing them to contribute considerably to capital creation in terms of physical capital investment. This study may provide some insight into how the creation and execution

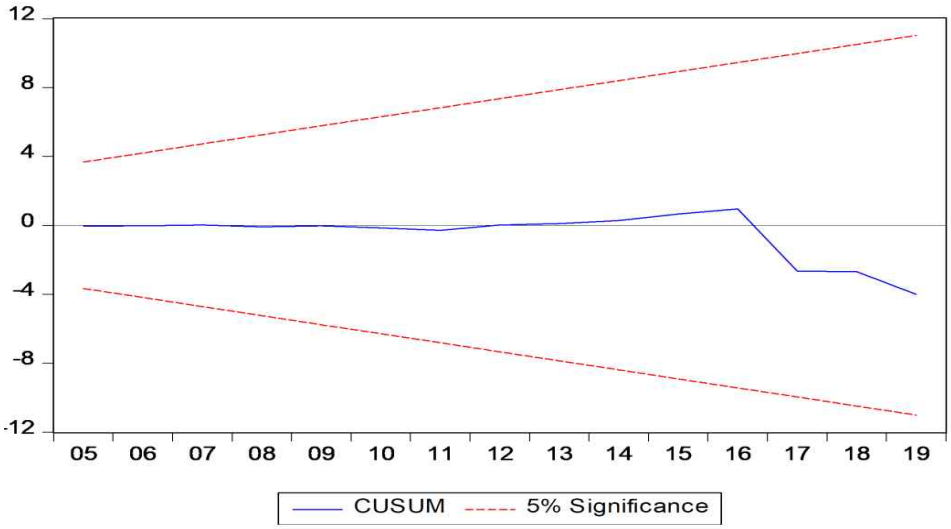
of suitable fiscal policies for education may help enhance educational quality and hence contribute to Myanmar's economic growth. Furthermore, the positive and statistically significant link between education spending and economic growth is substantial, demonstrating the importance of education to Myanmar's long-term economic development.

Table 6. Diagnostic Test Result

Test Statistics	F-Statistcs	Probability
Heteroskedasticity	1.368172	0.2809
Normality	1.327470	0.514924

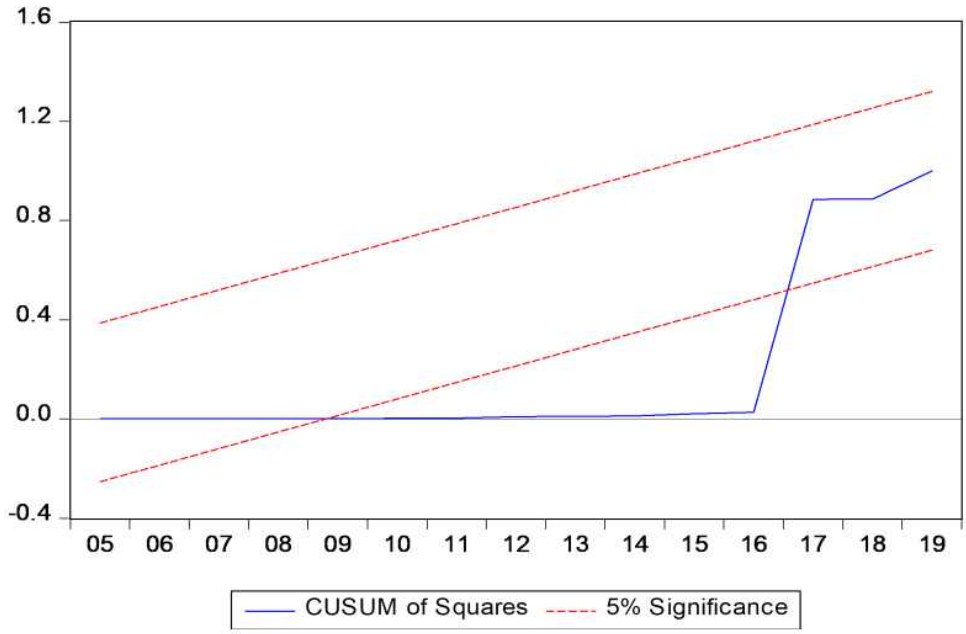
Source: Author calculation

Figure 1. Plot of Cumulative Sum of Recursive Residuals



Source, Calculated by using E-views 10

Figure 2. Plot of Cumulative Sum of Squares Recursive Residuals



Source: Calculated by using E-views 10

The normality test and the heteroscedasticity test of Breusch-Godfrey are employed in the model to assess the model's stability. Accepting the null hypothesis, the estimate of this model indicates that there is no heteroscedasticity. The CUSUM and CUSUM-squared tests, however, are used at a 5% level of significance to investigate the stability of the long-run and short-run efficiency of education spending. When the CUSUM line falls within the lines of the significant level, the model is said to be stable. Variables are unstable when the CUSUM line is not between these two lines.

VI. Conclusions and suggestions

The purpose of this research is to investigate the education expenditure and major macroeconomics variables of Myanmar . Secondary data on yearly real GDP growth, education spending, labor force participation rate, and gross capital formation were utilized in this study from 1989-1990 to 2018-2019. In this study, ADF unit root test, bound test, co-integration test, and error correction term are employed inside the ARDL model process. The empirical findings show a positive and substantial long-run and short-run connection between real GDP and education spending, gross

capital creation, and labor force participation. The findings suggest that education raises the standards, quality, and productivity of Myanmar's labor force, therefore contributing to the country's economic development and prosperity. However, Myanmar has a high young unemployment rate, and so education spending can be used efficiently to alleviate this issue.

This entails increasing the quality and accessibility of education in Myanmar, as well as revamping the school curriculum to include entrepreneurship training in order to guarantee that the youth generate creative business ideas and are able to turn those ideas into commercial possibilities. The fact that the government, through fiscal measures, give seed cash to help young entrepreneurs turn their company ideas into business ventures. This might be accomplished through the use of revolving loan funds, guaranteed loans, and venture capital. Furthermore, the collaboration between the educational sector and the industry is important since it will allow students to gain practical experience through internships, which will better prepare them for the job market.

This research might be expanded in the future to incorporate school quality characteristics to see how these factors have affected the labor force and, as a result, Myanmar's economic progress. Future research might also determine whether degree or level of education (basic, secondary, or tertiary) contributes the most to Myanmar's economic growth. This will enable policymakers to direct resources towards which level of education contributes less to the economic development of Myanmar.

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