

FROM CLASSROOMS TO ECONOMIES: EXAMINING THE EDUCATIONAL ACHIEVEMENT-ECONOMIC DEVELOPMENT NEXUS

Sheikh Ahmad Faiz Sheikh Ahmad Tajuddin¹, Wan Mohamad Asyraf Wan Afthanorhan¹,
Fahru Azwa Mohd Zain¹, Hamdy Abdullah¹, Hazrin Izwan Che Haron¹, Ahmad Firdhauz
Zainul Abidin²

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¹ Faculty of Business and Management,
Universiti Sultan Zainal Abidin, 21300
Kuala Nerus, Terengganu, Malaysia

² Centre of Transformation, Strategic
Planning and Risk, Universiti Malaysia
Terengganu, 21300 Kuala Nerus,
Terengganu, Malaysia

Corresponding Author:

Sheikh Ahmad Faiz Sheikh Ahmad
Tajuddin

Email: sheikhafaiz@unisza.edu.my

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ABSTRACT

Each states play pivotal roles in contributing to the economic performance of the nation. They have their own unique economic strengths, resources, and industries that contribute to the overall economic development. Terengganu, an east coast state in Malaysia has historically faced economic challenges, marked by a lag in development compared to other regions. The fundamental problem addressed is the potential correlation between educational attainment and the region's economic growth, aiming to understand how advancements in education might serve as a catalyst for economic progress. The objective of this research is to empirically analyze the impact of educational achievement on the economic development in Terengganu. Utilizing secondary data sourced from the Department of Statistics Malaysia and Economy Planning Unit Terengganu spanning from 2006 to 2022, Autoregressive Distributed Lag (ARDL) model has been employed to estimate and understand the relationship between educational attainment and economic development. The findings suggested that educational achievement plays positive impact in heightening the economic development within the region. Education contributes to the development of human capital, fostering a skilled and knowledgeable populace capable of engaging in diverse economic activities. This, in turn, attracts investments and facilitates the emergence of industries and sectors that rely on a knowledgeable and skilled labour force. This study would provide valuable insights for policymakers and academicians to formulate targeted policies and initiatives, ultimately enhancing the economic development of the states, thus contribute to a prosperous Malaysia.

Keywords: *autoregressive model, economic development, educational achievement, gross domestic product, Terengganu*

1. INTRODUCTION

Malaysia, a burgeoning Southeast Asian nation, has made substantial strides in economic development over the past decades, propelled by its commitment to education. The government has consistently prioritized education, recognizing it as a key driver for both individual and national advancement. The East Coast region of Malaysia, encompassing states such as Kelantan, Terengganu, and Pahang, has been a focus of developmental efforts. However, challenges such as economic disparities, limited access to quality education, and demographic variations have impacted the efficacy of these efforts (Dluhopolskyi et al., 2023).

Despite government initiatives to enhance educational opportunities and infrastructure, disparities in educational achievement persist within the East Coast region of Malaysia, particularly Terengganu. These disparities manifest in variations in literacy rates, access to higher education, and skill development. Additionally, economic development in the region faces impediments due to an inadequately skilled workforce and limited entrepreneurial activity, hindering the realization of sustainable economic growth.

Terengganu holds a unique position in the nation's economic landscape. Despite being endowed with rich natural resources, including oil and gas reserves and a vast coastline ideal for tourism and fisheries (Zulkifli et al., 2021), Terengganu has historically faced economic challenges that have hindered its development compared to other regions. The significance of studying the relationship between education and economic development in Terengganu lies in the potential to uncover key insights that could address these challenges and drive sustainable growth. Education serves as a fundamental pillar for socio-economic progress, empowering individuals with the knowledge and skills necessary to participate effectively in the economy. Understanding how improvements in education can stimulate economic progress in Terengganu is crucial for policymakers and stakeholders seeking to unlock the region's full economic potential and promote equitable development.

The correlation between educational achievement and economic development is multifaceted. Access to quality education, equitable opportunities, and relevant skill acquisition directly impacts employment prospects, income levels, and overall productivity (Tajuddin et al., 2023). Insufficient educational attainment, particularly in rural and marginalized communities, exacerbates existing inequalities and obstructs the achievement of Sustainable Development Goals (SDGs) related to poverty reduction, gender equality, decent work and economic growth, and reduced inequalities.

The United Nations' 2030 agenda for sustainable development underscores the transformative potential of education, linking it to numerous SDGs. Pertinently, SDG 4 emphasizes the importance of inclusive and equitable education, promoting lifelong learning opportunities for all. Additionally, SDG 8 advocates for sustained economic growth, fostering full and productive employment, and ensuring decent work for all, aspects intricately tied to educational quality and attainment. Top of Form

The relationship between education and economic development is a fundamental aspect of socio-economic progress, with education often considered a key driver of economic growth and societal advancement. Nations around the world have recognized the crucial role of education in shaping their economic landscape and development trajectories. East Coast Malaysia, comprising the states of Kelantan, Terengganu, and Pahang, represents a unique region within Malaysia that has historically grappled with economic challenges, lagging behind other more developed regions in the country. This lag in development has prompted a critical examination of the potential correlation between educational attainment and economic growth within this region, aiming to understand how improvements in education might act as a catalyst for economic progress.

Historically, Terengganu has faced economic hurdles characterized by slower development compared to other regions within the country. Factors such as geographical location, resource availability, and infrastructural limitations have contributed to this economic disparity. However, an often underestimated and intrinsic factor in this economic equation is the state of education within the region. Education is a fundamental element that can reshape the socio-economic landscape by empowering individuals with knowledge, skills, and capabilities necessary for economic productivity and innovation. Hence, exploring the relationship between educational

achievement and economic development in Terengganu is crucial to unveil potential pathways for overcoming the existing challenges and promoting sustainable economic growth.

The primary problem addressed in this research is understanding the extent to which educational attainment influences the economic growth and development of the East Coast region in Malaysia, particularly Terengganu. The significance of this research stems from the potential positive impact that educational achievement can have on fostering economic development. By examining this correlation empirically and analyzing the data over a specific time frame (2006 to 2022), this study aims to provide valuable insights into how advancements in education can stimulate economic progress in the region. These insights will serve as a basis for formulating targeted policies and initiatives that can contribute to a more developed Terengganu, ultimately playing a role in the broader economic prosperity of the nation (Abdullah et al., 2023).

This paper aims to analyze the nexus between educational achievements and economic development within Terengganu, considering the imperatives set forth by the Sustainable Development Goals (SDGs). By evaluating current challenges, identifying opportunities, and proposing targeted interventions, it endeavours to contribute to the advancement of both educational outcomes and economic well-being in this region, thereby aligning with the broader global agenda for sustainable development.

This study endeavours to unravel the dynamics and delineate the impacts of education on economic development, providing valuable insights for policy formulation and development initiatives. By doing so, it seeks to align with the SDGs and contribute towards achieving sustainable economic growth and socio-economic equity in this region and beyond. This study seeks to provide fresh insights and contribute new knowledge to the understanding of this crucial interplay within the Malaysian socio-economic landscape.

2. LITERATURE REVIEW

A study by Emerson et al. (2020) in the United Kingdom (UK) has utilized a five-category system to measure the highest level of educational attainment. The categories included higher educational qualification (such as degrees and diplomas from universities), A-Levels or equivalent (examinations completed at the end of high or secondary schooling), O-Level or GCSE grade A-C or equivalent (examinations typically taken at age 16 before pursuing A-Levels), other qualifications (including foreign credentials), and no formal qualifications.

Chen et al. (2021) analyzed the importance of education within the framework of Green GDP, which encompasses social welfare, progress, and sustainable economic development. Unlike prior research that predominantly used traditional economic accounting systems to estimate education's contributions to economic growth, the study utilized the green GDP accounting system. It seeks to analyze education's impact on green GDP and aims to underscore education's significance in economic development, particularly sustainable economic growth. The findings highlight that education positively influences national green economic development, and its impact on green GDP surpasses that on traditional GDP. The study underscores the pivotal role of education in China's evolving economic model, presenting crucial strategic opportunities for the country.

Hailat and Hailat (2021) analyzed the relationship between educational attainment and employment outcomes, as well as wages, in Jordan. Using data from the Jordan Labor Market Panel Survey from 2010 to 2016, the study found a positive impact of education on both employment probability and monthly wages—individuals with higher education levels tend to have better employment prospects and earn higher wages. Although the effect slightly diminished from 2010 to 2016, it remained statistically significant. The study highlighted that good employment

outcomes due to the quality education would contribute to the national income or economic development.

Deme and Mahmoud (2020) examined the influence of both the quantity and quality of education on per capita real-GDP growth in African countries. Utilizing dynamic generalized method of moment estimation on panel data from 2003 to 2016, the research revealed that increased quantities of primary and secondary education positively impact per capita real-GDP growth significantly. However, the correlation between the quality of education and economic growth is found to be weak and not robust. The study suggested that in striving for per capita real-GDP growth, policymakers should emphasize both the quantity and quality of education, with a specific focus on achieving universal primary education.

Pastor et al. (2018) explored the impact of Higher Education Institutions (HEIs) on economic growth and Gross Domestic Product (GDP) per capita in European Union (EU) countries from 2000 to 2015. The study focused on the influence of universities on the supply side of national economies, specifically highlighting the role of HEIs' research and development (R&D) in enhancing technological capital within EU countries. Employing a methodology involving counterfactual scenarios, assuming a scenario without HEIs, and utilizing growth accounting techniques, the study estimates the effects of HEIs on economic growth. The findings revealed that HEIs significantly contribute to economic growth in EU countries and help mitigate the adverse impacts of economic crises. The study suggested that GDP per capita would be over 11% higher in the current scenario due to the presence of HEIs. Additionally, the research identified notable differences in GDP per capita among EU countries associated with the activities of HEIs.

Ifa and Guetat (2018) examined the influence of public education expenditures on GDP per capita in Tunisia and Morocco. Using the data from 1980 to 2015, the study employed the Auto-Regressive Distributive Lags (ARDL) approach to estimate the relationship. In the short term, the relationship between public spending on education and GDP per capita is positive in Morocco but negative in Tunisia. However, in the long term, public expenditure on education positively impacts GDP per capita in both countries, with a more pronounced effect observed in Morocco compared to Tunisia.

Appiah (2017) studied the economic efficiency of further investment in education, both publicly and privately, within developing countries. The central inquiry revolves around whether an increase in education expenditure yields a favourable impact on per capita GDP, with a specific focus on Sub-Saharan African (SSA) nations. Recognizing education as a critical element for fostering economic growth through enhancing human capital and productivity, the study acknowledged challenges such as adverse macroeconomic conditions and resource competition that hinder extensive investment in education by governments. Utilizing the 'system' GMM estimator, the research offers a unique approach by analyzing the effects of heightened education spending on per capita GDP across a range of developing countries. The findings reveal a positive correlation between increased education expenditure and per capita GDP in developing countries, with this effect consistent across SSA nations, emphasizing the significant role education plays in economic development.

A study that has been conducted by **Schubert and Kroll (2016)** has investigated the impact of higher education institutions (HEIs) on regional economic indicators in Germany using spatial panel-data models. Unlike previous case study-based evidence, this study aimed for generalizable findings. The research explored the effects of HEI activities, including both demand-side and indirect long-term effects related to knowledge generation, on GDP per capita and unemployment rates. Accounting for regional spill overs, the study revealed that, on average, HEIs contributed €8,300 to regional GDP per capita during the period from 2000 to 2011. Additionally, they were found to significantly reduce unemployment rates in the long run, highlighting

the positive influence of HEI activities on the regional economy.

Previous studies have shown how important the education on the economic development. In the realm of economic development, education emerges as a critical factor acknowledged by prior research for its immense impact. Extensive studies have elucidated the pivotal role education plays in fostering economic growth, productivity, and societal progress on a global scale. While extant literature underscores the interconnectedness of educational achievement and economic development, there is a significant dearth of research exploring this relationship within the Malaysian context, particularly in the state of Terengganu.

3. METHODOLOGY

This study employs a quantitative research design to analyze the relationship between educational achievement and economic development in Terengganu, Malaysia. To achieve the objective, this study employed secondary data available from the Department of Statistics Malaysia, and The Basis Data report from Economy Planning Unit Terengganu for a period spanning from 2006 to 2022. The dataset includes information on educational level and gross domestic product (GDP) of Terengganu. GDP is used to measure the economic development of the state.

In addition to considering educational achievement and GDP, the study examined two additional variables: the population growth and average salary growth. Population growth is the rate of change in the total population of the region over the study period. Including population growth as a variable in the analysis is due to its significant impact on economic development. Population growth can affect economic indicators such as demand for goods and services and overall market dynamics (Maja & Ayano, 2021). A growing population can lead to increased consumer demand, which in turn stimulates economic activity and investment. Moreover, population growth affects labour supply and resource allocation, all of which are crucial determinants of economic development. Therefore, examining the relationship between educational attainment and economic development while controlling for population growth allows for a more comprehensive understanding of the research topic.

Meanwhile, salaries are the average monthly salaries for each state within the region. Salary is a key determinant of human capital investment and productivity (Tajuddin et al., 2023). Higher levels of educational attainment are often associated with higher earning potential, as individuals with advanced education levels typically command higher salaries in the labour market. Additionally, salaries play a significant role in shaping consumption patterns, savings behaviour, and overall living standards, all of which influence economic development. By including salary as a variable in the analysis, the study aims to assess the extent to which changes in educational attainment impact wages and, consequently, contribute to economic growth. This helps in understanding the direct economic returns associated with investments in education and human capital development.

3.1. ECONOMETRIC MODEL

This study applies Autoregressive Distributed Lag (ARDL) to examine the existence of long run and short run relationship between education level and economic growth. Before applying ARDL model, the data need to meet the criteria of not having a unit root in the series. In order to avoid problem from non-stationary time series, we using two test namely Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) unit root test. Applying unit root test will verify the order of integration to avoid problem of non-stationary time series (Laurenceson & Chai, 2003). ADF test will include the lags of the first difference of dependent variable while PP test assumes the variable have a random movement (Hamilton, 1994).

The Econometric model for the relationship between education level and economic growth are follows:

$$\begin{aligned} \Delta \log(GDP)_t = & \alpha_0 + \sum_{i=1}^k b_{1i} \Delta \log(GDP)_{t-i} + \sum_{i=1}^k b_{2i} \Delta \log(PRIMARY)_{t-i} \\ & + \sum_{i=1}^k b_{3i} \Delta \log(SECONDARY)_{t-i} + \sum_{i=1}^k b_{4i} \Delta \log(TERTIARY)_{t-i} \\ & + \sum_{i=1}^k b_{5i} \Delta \log(POPULATION)_{t-i} + \sum_{i=1}^k b_{6i} \Delta \log(SALARY)_{t-i} + u_t \end{aligned} \quad (1)$$

Where Δ is the first difference operator for all variables, u_t is the error term, $i = 0, 1, 2 \dots k$ and k is the optimal lag length. GDP refers to the gross domestic product, PRIMARY refers to the primary education, SECONDARY refers to the secondary education and TERTIARY refers to tertiary education. ARDL approach uses F-statistic to examine the cointegration among variables by comparing critical values of upper and lower bound. If F value are higher than critical values, therefore there are existence of cointegration and the model (1) need to be constructed with error-correction model as presented in the following model (2):

$$\begin{aligned} \Delta \log(GDP)_t = & \alpha_0 + \sum_{i=1}^k b_{1i} \Delta \log(GDP)_{t-i} + \sum_{i=1}^k b_{2i} \Delta \log(PRIMARY)_{t-i} \\ & + \sum_{i=1}^k b_{3i} \Delta \log(SECONDARY)_{t-i} + \sum_{i=1}^k b_{4i} \Delta \log(TERTIARY)_{t-i} \\ & + \sum_{i=1}^k b_{5i} \Delta \log(POPULATION)_{t-i} + \sum_{i=1}^k b_{6i} \Delta \log(SALARY)_{t-i} + \Psi ECM_{t-1} + m_t \end{aligned} \quad (2)$$

Where Ψ is the adjustment coefficient and ECM represent the error correction. The value for Ψ should be negative between 0-1 (Bae et al., 2007).

4. RESULTS

Table 1 presents the descriptive statistics for all variables. The mean value for logGDP is 9.995 with max value is 10.38. The mean value for logPRIMARY, logSECONDARY and logTERTIARY is 10.869, 12.361, and 11.6 respectively. The mean for both logSALARY and logPOPULATION is 8.408 and -3.942.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
logGDP	17	9.995	.366	9.419	10.38
logPRIMARY	17	10.869	.328	10.073	11.225
logSECONDARY	17	12.361	.116	12.181	12.572
logTERTIARY	17	11.6	.278	11.078	11.991
logSALARY	17	8.408	.401	7.749	8.888
logPOPULATION	16	-3.942	.444	-4.569	-2.778

Source: STATA output

This study using ADF and PP unit root test to determine the stationarity of a series. To obtain unbiased test from the result, unit root test was performed to determine the equilibrium between variables (Türsoy, 2017). Table 2 presents the result for trend and intercept of ADF and PP unit root test. From the table 2, all variable were stationary at the first difference level I(1) for both ADF and PP test.

Table 2. ADF and PP unit root test with trend and intercept

Augmented Dickey and Fuller unit root test								
Variable	At level I(0)				1 st Difference I(1)			
	Trend		Without Trend		Trend		Without Trend	
	Z(t)	p-value	Z(t)	p-value	Z(t)	p-value	Z(t)	p-value
logGDP	-1.411	0.858	-1.237	0.657	-4.319	0.003	-4.268	0.001
logPRIMARY	-3.429	0.040	-0.999	0.754	-5.252	0.000	-5.276	0.000
logSECONDARY	-4.953	0.000	-0.924	0.780	-6.954	0.000	-7.236	0.000
logTERTIARY	-2.931	0.152	-1.391	0.587	-4.202	0.004	-4.289	0.001
logSALARY	-0.519	0.983	-1.649	0.457	-5.031	0.000	-4.034	0.001
logPOPULATION	-3.748	0.019	-3.255	0.017	-4.830	0.000	-5.158	0.000

Phillip-Perron unit root test								
Variable	At level I(0)				1 st Difference I(1)			
	Trend		Without Trend		Trend		Without Trend	
	Z(t)	p-value	Z(t)	p-value	Z(t)	p-value	Z(t)	p-value
logGDP	-1.492	0.832	-1.247	0.553	-4.320	0.003	-4.250	0.000
logPRIMARY	-3.472	0.042	-0.758	0.831	-5.819	0.000	-5.591	0.000
logSECONDARY	-5.012	0.000	-0.867	0.799	-7.898	0.000	-8.039	0.000
logTERTIARY	-2.916	0.157	-1.496	0.535	-4.290	0.003	-4.448	0.000
logSALARY	-0.231	0.991	-1.859	0.352	-5.004	0.000	-4.041	0.001
logPOPULATION	-3.636	0.027	-3.172	0.022	-5.416	0.000	-5.429	0.000

Source: STATA output

After each variable have been verified of not having a unit root in series, bound test were conducted to examine the existence of long-run relationships (Law, 2018). Following table 3 presents the boundary test result among variables. The lag were determined using Akaike Information Criterion (AIC). From the table, it is found that there are long run relationships between education level, salary and population growth on economic growth in Terengganu. The F-statistic value is 14.796 with k is 5 is larger than critical value at upper bound level I(1), and significant at 1 percent level. This result indicates in the long term, education level, salary and population growth have influence on Terengganu economic growth.

Table 3. The result of cointegration test using boundary testing

F-statistic	k	Lag	Significance Level	Lower bound I(0)	Upper bound I(1)
14.796	5	1	10%	2.26	3.35
			5%	2.62	3.79
			1%	3.41	4.68

Source: STATA output

Table 4 shows the results for the estimations by applying ARDL model with lag(1,0,0,0,0). For the long run model, the education levels (PRIMARY and SECONDARY), salary and population growth have positive influence on economic growth at 1 percent significant level. 1 percent increase of primary education contributes toward economic growth at 0.459 percent. Meanwhile, an increase in 1 percent of secondary education, will increase economic growth by 2.04 percent. On the other hand, TERTIARY education has negative influence on economic growth at 5 percent level. 1 percent increase in tertiary education will reduce economic growth of 0.395 percent. In the short run model, the PRIMARY level contributes toward economic growth at 0.728 percent, SECONDARY level contributes toward economic growth at 3.245

percent. Meanwhile, 1 percent increased of TERTIARY level reduce economic growth at 6.28 percent.

In term of controlled variables, both salary and population growth will increase economic growth in long run at 0.946 and 0.107 percent respectively. While in the short run, both salary and population growth will increase economic growth 1.502 and 0.170 percent respectively. The result implied that higher average salary per month of Terengganu people reflect the improvement of life quality thus increasing the demand for goods and services. The more people spend on quality of goods and services, directly contributing toward economic growth in Terengganu. Similarly, as the number of population increases, the economic growth would also increase.

Table 4. ARDL model with logGDP as dependent variable

VARIABLES	ARDL (1,0,0,0,0)		
	Adjusted	Long run (lags 1)	Short run (Difference)
logGDP	-1.587*** (0.189)		
logPRIMARY		0.459*** (0.0724)	0.728*** (0.156)
logSECONDARY		2.044*** (0.374)	3.245*** (0.748)
logTERTIARY		-0.395** (0.128)	-0.628*** (0.187)
logSALARY		0.946*** (0.118)	1.502*** (0.222)
logPOPULATION		0.107*** (0.0291)	0.170*** (0.0485)
Constant			-36.85*** (9.723)
Observations	15		
R-squared	0.917		
Adjusted R-squared	0.855		
F-statistic	17.762***		

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: STATA output

Table 5 presents the diagnostic test of ARDL bound model. The result shows that the model has no problem of normality, serial correlation and heteroscedastic as p-value is larger than 5 percent for all tests.

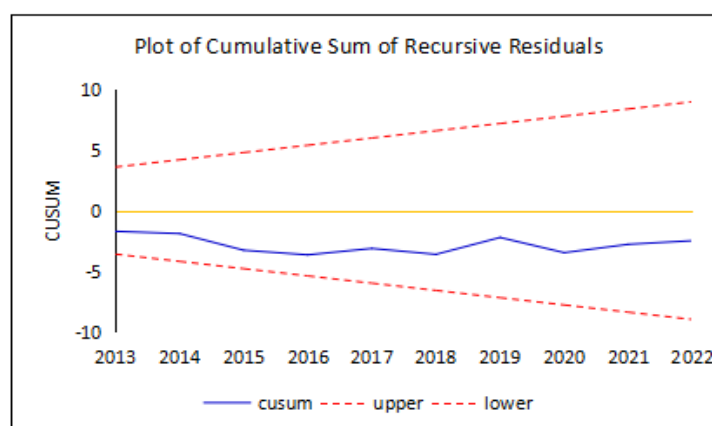
Table 5. Diagnostic test for ARDL Bound test

	Chi2	p-value
Jarque-Bera test (Normality)	0.843	0.341
Breusch-Godfrey LM test (Serial correlation)	5.488	0.200
White test (heteroscedasticity)	15.000	0.378

Source: STATA output

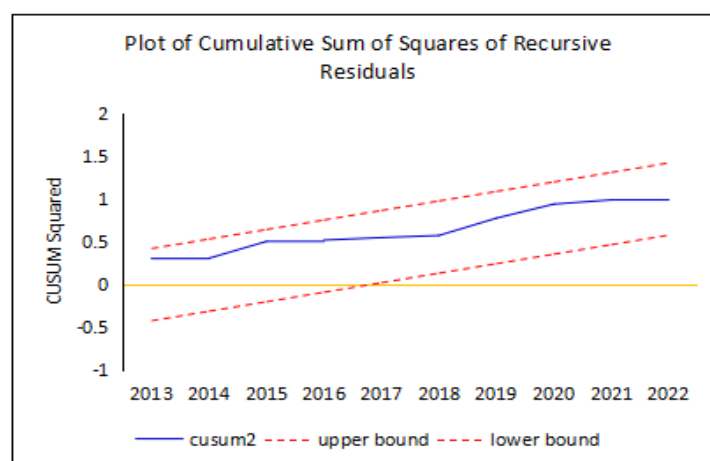
We performed stability test as requirement for ARDL method. Both cumulative sum of residual recursive (CUSUM) and cumulative sum of square of residual recursive (CUSUM Squared) tests were conducted to determine the stability of long-run coefficients. Figure 1 and figure 2 present the plots of CUSUM and CUSUM Squared.

Figure 1. Plot of Cumulative Sum of Recursive Residuals (CUSUM)



Source: STATA output

Figure 2. Plot of Cumulative Sum of Squares of Recursive Residuals (CUSUM Squared)



Source: STATA output

Based on the figure 1 and figure 2, the test shows the stability of the coefficients as both CUSUM and CUSUM Squared lines in figure 1 and figure 2 does not touch the 5 percent upper and lower boundary lines (Sapuan & Sanusi, 2013).

5. DISCUSSION

The findings of this study underscore the crucial role of educational attainment in fostering economic development in Terengganu, Malaysia. Through Autoregressive Distributed Lag (ARDL) model analysis spanning from 2006 to 2022, the study observed a positive and significant impact of educational achievement on economic growth within the region. The study provides compelling insights into the relationship between educational achievement and economic development in the Terengganu. Understanding this relationship is crucial for devising effective policies and strategies to uplift the economic status of the region and bridge the development

gap with other parts of Malaysia.

One key insight from our analysis is the contribution of education to the development of human capital. By equipping individuals with knowledge and skills, education enhances productivity and innovation, thereby driving economic growth. In Terengganu, investments in education have led to a more skilled and knowledgeable workforce, which has in turn attracted investments and facilitated the emergence of industries reliant on a skilled labour force.

Furthermore, our findings highlight the importance of educational attainment in promoting inclusivity and reducing income inequality. As individuals attain higher levels of education, they are better positioned to access higher-paying jobs, thus narrowing the gap between the affluent and marginalized segments of society. This trend not only fosters social cohesion but also contributes to sustained economic growth by ensuring that all members of society can actively participate in and contribute to the economy.

The empirical analysis of the data consistently demonstrates a positive impact of educational attainment on economic development, as measured by GDP. Higher levels of educational achievement correspond to increased economic growth within Terengganu. This aligns with the existing body of research that highlights education as a fundamental driver of economic progress. Education equips individuals with the necessary skills, knowledge, and capabilities to contribute effectively to the workforce, fostering innovation, productivity, and overall economic dynamism.

Nevertheless, tertiary education has negative influence on economic growth at 5 percent level. This is due to the fact that graduates from tertiary institutions in Terengganu are migrating to other regions or countries in search of better job prospects or higher education opportunities. This brain drain phenomenon can deprive the local economy of skilled and educated individuals, thereby dampening economic growth despite higher levels of tertiary education attainment. Therefore, enhancing job opportunities within Terengganu is crucial in incentivizing graduates to stay in the region. This can be achieved by attracting investments in key industries, promoting entrepreneurship and small business development, and implementing targeted economic development initiatives to create a conducive environment for job creation. Additionally, improving the quality and relevance of tertiary education institutions in Terengganu can encourage graduates to pursue higher education locally rather than seeking opportunities abroad. This includes enhancing academic programs, research facilities, and faculty expertise to provide a competitive educational experience.

Based on this result, it is important for Terengganu to improve each educational level to increase economic growth. Education level reflects the human capital available to support working capital in various industry. Higher educated worker will lead to better skill improvement and improve efficiency therefore contributed toward Terengganu GDP.

For the controlled variables, population growth and salaries allowed a deeper understanding of the interplay between educational achievement and economic development. Population growth emerged as a significant influencer of economic indicators, impacting demand, labour markets, and overall market dynamics. This underscores the importance of considering demographic changes in economic policy planning. Salaries were identified as another crucial factor affecting economic development. Higher salaries lead to increased consumer spending and investment, ultimately stimulating economic growth. Addressing issues related to income levels and wage disparities is imperative to sustain economic development.

In light of these findings, policymakers are urged to prioritize investments in education and human capital development as a means of fostering sustainable economic growth. Initiatives aimed at improving access to quality education, enhancing vocational training programs, and

promoting lifelong learning opportunities can yield substantial dividends in terms of economic prosperity and societal well-being. Policymakers should prioritize and invest in educational infrastructure, curriculum enhancements, and educational access to elevate educational attainment levels. Targeted policies should aim to reduce educational disparities, particularly in marginalized areas, to ensure inclusivity and equal opportunities for all.

Efforts to stimulate economic growth should encompass strategies to boost salaries and maintain a reasonable cost of living. This includes strategies to enhance employment opportunities, incentivize industries, and ensure fair wages. Furthermore, addressing population growth through family planning initiatives and sustainable population management can positively influence economic development by aligning labour force growth with economic capacity.

While this study sheds light on the positive correlation between educational achievement and economic development, further research is needed to delve into the specific mechanisms through which education impacts different sectors of the economy. Future studies could explore bigger sample size or another sectors that benefit most from a highly educated workforce and investigate the long-term implications of educational policies on economic sustainability and competitiveness. Another factors such as technological innovation and business development should be considered in future research in determining the relationship between educational attainment and economic development. Moreover, Future research could explore qualitative aspects of educational achievement, such as the quality of education and its direct and indirect effects on economic growth.

Overall, this study underscores the need for strategic investments in education and broader socioeconomic factors to drive economic growth in Terengganu. By addressing these aspects, the region can position itself as a vibrant and integral contributor to the nation's overall prosperity, embodying a testament to the transformative power of education on economic development.

6. CONCLUSION

This study analyzed the potential correlation between educational attainment and economic development in Terengganu. Historically facing economic challenges and lagging behind other regions, understanding the role of education in catalyzing economic progress was a critical objective. Utilizing the Autoregressive Distributed Lag (ARDL) model with a focus on secondary data spanning from 2006 to 2022 sourced from the Department of Statistics Malaysia and Economy Planning Unit Terengganu, the study revealed compelling insights into this relationship.

The findings unequivocally suggest that educational achievement exerts a positive impact on the economic development within Terengganu. Through the empirical analysis, it became evident that higher levels of educational attainment are associated with enhanced economic growth, as reflected by the gross domestic product (GDP) of the respective states. This positive correlation underscores the critical importance of investing in education as a means to stimulate economic development and drive progress within the region.

Moreover, this study considered two controlled variables; population growth and salaries. These factors were crucial to understanding the nuanced dynamics influencing the relationship between education and economic development. Population growth was identified as a significant factor affecting economic indicators, influencing demand for goods and services, labour supply, and market dynamics. Additionally, salaries were found to be positively linked to economic activity, supporting increased consumer spending and investment, thereby impacting economic development.

The implications of this study are profound, offering valuable insights for policymakers and academicians alike. The demonstrated positive relationship between educational attainment and

economic development underscores the necessity of targeted educational policies and initiatives to uplift the East Coast region of Malaysia. By focusing on educational enhancement, the region can unlock its potential for inclusive economic development, bridging the gap with other regions and contributing significantly to a prosperous Malaysia.

In conclusion, this study advocates for continued efforts to advance educational attainment in Terengganu, recognizing it as a cornerstone for fostering a more developed and economically vibrant East Coast Malaysia, ultimately enriching the national landscape. Further research and continuous policy adjustments in light of these findings will be vital to ensure sustained progress and a brighter future for the region and the nation as a whole.

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