IMPACTS OF ALLOCATION OF GOVERNMENT SPENDING ON ECONOMY GROWTH AND INCOME INEQUALITY IN MALAYSIA

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BY

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

(4) The word count of this research report is 9124.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AGRI	Agriculture and Rural Development
ARDL	Auto
e_t	Error term
IE	Income inequality
GDP	Gross Domestic Product
E-views	Econometric Views
PP	Philips-Perron

PREFACE

Since Malaysian government spending on various sectors to help the country continues increased over the years, however; challenges still persist. Therefore, there is a need to investigate the allocation of government spending on the economy growth and income inequality in Malaysia.

This study was motivated by the need to examine the effectiveness and impact of the allocation of government spending towards the economy growth and income inequality in Malaysia. Understanding the determinants and consequences of government spending has become critical as the country strives to meet the needs of promoting strong economic growth and ensuring equitable distribution of resources.

Lastly, it is my sincere to hope that this research will provide relevant information to the researchers for future research and assist policymakers in decision making to form a more prosperous and inclusive future for Malaysia.

ABSTRACT

This research investigates the impacts of allocation of government spending on economic growth and income inequality in Malaysia, with a particular focus on understanding the determinants and consequences of expenditure in key sectors. The dataset period is from the year 1980 to the year 2021. The findings reveal several notable insights. Firstly, government spending on agricultural and rural development, as well as education and training, emerges as significant determinants of economic growth in the long run. Conversely, expenditure on health and pension funds is found to be insignificant in influencing economic growth. In terms of income inequality, government spending on agricultural and rural development is identified as the sole significant determinant in the long run, while other variables exhibit insignificance. Meanwhile, in the short run, government spending on pension fund is the only significant determinant towards income inequality in Malaysia. Finally, government is recommended to focus expenditure on education and training, should review pension policies by continuously monitor and adjust the pension system, and improve transparency and accountability in government spending.

Keywords: allocation of government spending, economy growth, income inequality

Chapter 1 Research Overview

1.0 Introduction

This chapter will explain the research background, research problem, research questions, research objectives, hypotheses of the study, as well as significant of the study. Besides, chapter 1 may also provide the flow of how the research is going to conduct, giving an idea about this study.

1.1 Research Background

Over the years, the Malaysian government has developed a number of policies and initiatives with the goal of stimulating economic growth and enhancing citizen welfare. One of the key tools at the government's disposal for achieving these goals is the allocation of public spending, as government spending can have significant impacts on the economy and the income inequality of citizens, depending on how it is allocated. The public is concerned about public service budget allocations because they affect the standard of services provided to the public. Government expenditure must always be efficient and effective in order to make the most use of the resources at hand.

Meanwhile, the current status of income inequality in Malaysia is in a mix condition, poor becomes poorer and rich becomes richer. Malaysian government has made significant progress successfully in some areas, but continued challenges in others. For example, Malaysian government has implemented various social welfare programs to support vulnerable groups, such as the elderly, persons with disabilities, and children. However, there are still challenges in providing adequate social welfare support to all citizens in Malaysia. For instance, an uneven distribution of social welfare support across different regions and demographic groups. While some areas and groups have benefited from government programs, others have been left behind.

Given the importance of government spending in promoting economic growth and income inequality, there is a need to examine the effectiveness and impacts of its allocation in Malaysia. Therefore, further research is needed to determine the extent to which allocation of government spending impacts economic growth and income inequality in Malaysia.

1.2 Problem Statement

According to Albassam (2022), one of the most essential aspects in managing country operations in the direction of reaching advanced levels of growth and offering recipients high-quality services is government spending, especially for the developing countries. The public is concerned about public service budget allocations because they affect the standard of services provided to the public. Government expenditure must always be efficient and effective in order to make the most use of the resources at hand. Malaysia Federal Government spending on the operating sector such as emolument, pension and debt service charges increased over the years (in RM million). The revenue earned by government contribute a high percentage on the components of emolument and pension even if nothing is developed. During the same 10 years and an average of 4.24% over five years, the amount required to cover the civil service pension payment would increase, and this caused government to face the burden of increasing the pension funds (Yeap, 2021). To sum up, Malaysia government is taking care of the welfare of Malaysian, but at the same time they are facing the problem of public pension.

Furthermore, Malaysia government spending led to a budget deficit since 1998. The 2023 budget deficit will rank 26th globally and, following 2022, will be one of the greatest deficits ever recorded (Fong, 2022). Furthermore, Teoh and Adilla (2023) mentioned that Malaysia government debt included liabilities has attained RM1.5 trillion, which is higher than 80 per cent of the country's gross domestic product (GDP). This issue may be due to inappropriate allocation of government spending. Statistics show that the government budget deficit has a detrimental effect on economic growth of a country (Rana & Wahid, 2016). In addition, Malaysia government is putting effort on healthcare sector by spending huge amount on it,

but there are still some challenges facing by public healthcare system in Malaysia. There is an online health news site conducted a survey about the dissatisfaction with the Malaysia's health service among the health care employees. The results revealed serious flaws in the public healthcare system, with 95% of respondents—mostly healthcare professionals stating that they feel public hospitals are in "crisis." A further 80% of those surveyed claimed to feel overworked and underpaid, while 74% claimed to be burnt out. However, more than three-fifths of respondents stated they had doubts about the likelihood of job advancement (Zahiid, 2023). Besides that, the government's latest allocation of RM36.14 billion for the Ministry Of health (MoH), is the highest when compared to other sectors in Budget 2023, shows without a doubt that the healthcare industry is still among the most critical sectors in Malaysia. Nevertheless, those in lower income categories are still facing worse physical and mental health.

Therefore, the problems mentioned above raise questions about the sustainability of government spending on pension funds, education sector, healthcare sector, as well as agriculture and rural development sector. This research may also provide valuable insights since it is important to assess whether the current pension system adequately addresses the needs of retirees and whether it contributes to reducing income inequality.

Figure 1: Government Pension Costs in Malaysia
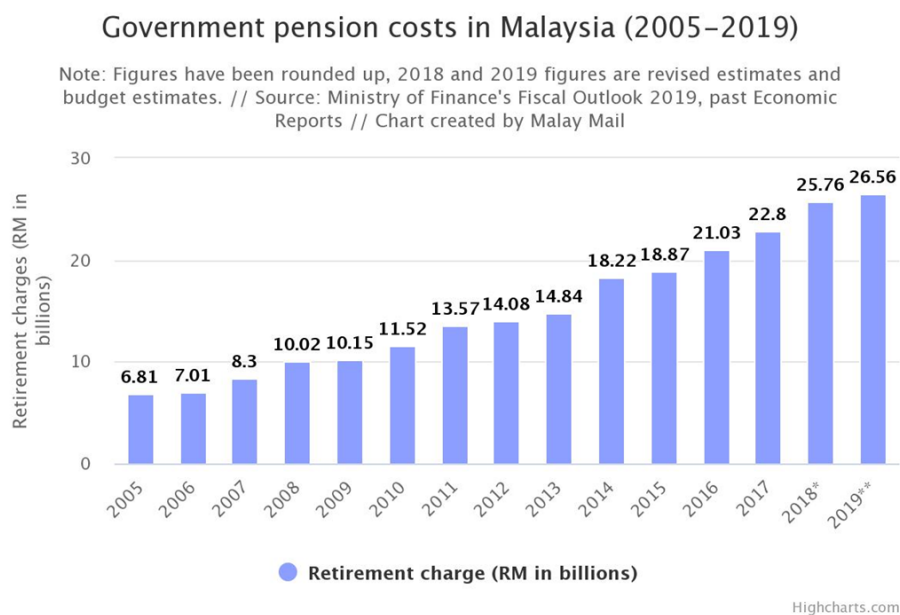
Source: Ministry of Finanace's Fiscal Outlook 2019, past Economic Reports

The above figure shows the government pension costs in Malaysia. The trend on the graph above shows an increasing trend, indicates that the government spending on pension sector was increasing over the years from year 2005 to year 2019.

1.3 Research Questions

- What is the impact of government spending allocation on different component (Public Pension Payment, Agriculture and Rural Development, Education and Training, Health) on the economy growth in Malaysia?
- What is the impact of government spending allocation on different component (Public Pension Payment, Agriculture and Rural Development, Education and Training, Health) on the income inequality in Malaysia?

1.4 Research Problem

- The government has spent money to develop the economic growth in Malaysia but Malaysia yet to achieved as a developed country.
- The government has spent money to develop the economic growth in Malaysia but Malaysia yet to achieved as a developed country.

1.5 Research Objectives

1.5.1 Research Objectives (General Objective)
- To Study the impact of allocation of government spending on the economy growth and income inequality in Malaysia.

1.5.2 Research Objectives (Specific Objectives)

- To study the impact of government spending allocation on different component (Public Pension Payment, Agriculture and Rural Development, Education and Training, Health) on the economy growth in Malaysia.
- To examine the impact of government spending allocation on different component (Public Pension Payment, Agriculture and Rural Development, Education and Training, Health) on the income inequality in Malaysia.

1.6 Hypotheses of the Study

Based on the reviewed literatures, most of the researchers examined that government spending on economic growth and income inequality are found to be significant, indicating that development expenditure increases economic growth in Malaysia.

1.7 Significance of the Study

Economic growth:

The study will dedicate to the understanding of the relationship between government spending on different components (agriculture and rural, education and training, health, pension) and economic growth in Malaysia. This knowledge is important for economic development and planning, as it can help identify for the areas where government spending can be most focus on effectively to promote country's economic growth.

Income inequality:

The study will also provide insights into the impact of government spending on different components (agriculture and rural, education and training, health, pension) towards the income inequality of Malaysian. This information can be used to

improve the allocation of government spending to sectors such as pension payments, education and training, healthcare, agriculture and rural development.

1.8 Chapter Layout

There is total of five chapters in this research. This first chapter introduced the research background, problem statement, research questions, research objectives, hypotheses of the study, as well as significant of the study. The second Chapter discussed for the review based on past studies and researchers and gave a understanding of each of the research variables. The next chapter, which is Chapter 3 is about how the research was carried out by including research design, data collection method, as well as the data analysis. Furthermore, Chapter 4 is about the results of this study from different tests conducted. Last but not least, which is the Chapter 5. This chapter is to summarize the whole research by giving implications, recommendations, and also conclusions.

1.9 Conclusion

In conclusion, this paper is to investigate for the impacts of allocation of government spending on income inequality and economy growth in Malaysia. Since government spending is important in promoting economic growth and income inequality, so there is a need to examine the effectiveness and impacts of its allocation in Malaysia.

Chapter 2 Literature Review

2.0 Introduction

This chapter will identify the important dependent and independent variables that should be considered in the research, and document the significant findings through literature review, thereby develop the hypothesis. Review of the theoretical models, past literatures for each of the variables will also be discussed in this chapter.

2.1 Review of Theoretical Framework

There will be some theories which are related to the research topic. (Afonso et al., 2005; Wijeweera and Garis, 2009) research indicates that there are school of thoughts discussed about the vital of government spending towards a country's economy growth, these included Classical Economic Theory, Wagner's law, and Keynesian theory (as cited in Albassam, 2022). In the Classical Economic Theory, introduced by Adam Smith focused on The Harmony of Interest and Limited Government. This Harmony of interests' concept argues that government intervention in the economy is unnecessary and undesirable. Besides, Smith claims that governments are ineffective, useless, corrupt, and the holders of monopoly rights harming society in the process (Har, 2022). Therefore, this research can prove whether the government intervention is ineffective on economy growth as mentioned by this Classical Economic Theory. On the other hand, Wagnes's law argued that economic growth is supported by more government spending, especially on social transfers, infrastructure, and a variety of other economic services (Sharma, Srivastava, & Khanna, 2022). This theory related to how government is paying attention on the welfare by contributing high percentage of pension funds to the Malaysian residents. In addition, for Keynesian theory, introduced by John Maynard Keynes, emphasized on active fiscal and monetary policies, which government should take a proactive approach by implementing the proper fiscal and monetary policies to encourage full employment, economic stability, and economic growth (Sharma, Srivastava, & Khanna, 2022). Hence, this research will be able to apply Keynesian Theory to test the efficiency and effectiveness of government intervention on the economy growth in Malaysia.

2.2 Review of the Variables

2.2.1 GDP per Capita

GDP per capita is a nation's gross domestic product divided by its midyear population (The World Bank Data, 2023). GDP per capita will be the proxy of economy growth in this study. The behaviour of government spending has been

investigated in many studies. According to the analysis of Hamzah (2011), there is no relationship between aggregate government development spending on social services and economic growth. Furthermore, mixed findings are found in their study on the relationship between government development spending by sector and economic growth. This is due to the potential for the impact of crowding out to exist, rent-seeking practices that have little effect on cronyism, corruption, and skilled brain drain (Hamzah, 2011).

However, according to (Albassam, 2022), one of the most crucial factors in managing nation operations in the direction of reaching advanced levels of growth while providing beneficiaries with high-quality services is government spending. Similarly, based on Keynes' theory, government spending is the most important tool for assuring economic growth. In this point of view, government spending is the primary factor that significantly influences a country's economic development (Sharma, Srivastava, & Khanna, 2022). Both of these literatures have proven that government spending plays an important role for the economy growth of a country.

2.2.2 Income Inequality

Income Inequality (Gini coefficient) refers to how income is distributed unequally across a population. The larger the income inequality, the less fair the distribution (KOPP, 2023).

According to the study of (Anderson, d'Orey, Duvendack, & Esposito, 2016), their findings indicate a slightly adverse relationship between government spending and income inequality, with the correlation being strongest for social welfare and other social spending, and when the top income distribution or the Gini coefficient are used as the measures of inequality. While there are many solutions to dealing with inequality, but considerations about the scope and composition of government expenditure are frequently brought up as crucial areas, and there is also a huge amount of research has evolved to examine into how government spending affects income inequality (al, 2015).

Another study from (Ali, Mohamed, & Mohamed, 2024) looked at the impact of public spending on income disparities and concluded that expanding the size of government, providing family benefits, and other forms of public assistance could help to reduce income inequality.

2.2.3 Agriculture and Rural Development

Agriculture and Rural Development is the government expenditure on agricultural and rural development will support more R&D on resource-saving technologies tailored to the needs of ageing farmers, as well as improve rural infrastructure quality (McPherson, 2019).

According to the findings of (Hao & Seng, 2020), it is essential that government spending is a significant influence and has a quadratic impact on Malaysia's agricultural output. They suggested that policymakers should exercise caution when setting the budget for the agricultural industry, which must not over the threshold of RM 3,057 million, which based on the "inverted U" relationship. If government spending exceeds the threshold of RM 3,057 million, it will result in a decrease in agricultural production, such as an over dependence on assistance from the government, and it would prevent the growth of innovation in this industry (Hao & Seng, 2020).

Furthermore, in line with the research from (Chandio, Jiang, Rehman, & Jingdong, 2016), which claimed that there is a positive long-term relationship between Pakistan's public spending in the agriculture sector and the economic growth, and suggesting that government can consider to increase their expenditure on agriculture sector as it aid on the economy growth and development. From these arguments mentioned, a hypothesis is formed:

Hypothesis 1 (H1): There is a significant relationship between government spending on agriculture and rural development and economy growth in Malaysia.

In terms of income inequality, the study of (Lian, Pei, & Li, 2024) discovered that significant reductions in inequality of income are achieved by government investment in many areas, such as rising security of housing, healthcare, agricultural, forestry, and other expenses. Therefore, the income inequality between rural and urban residents is being helped by investment in agriculture sector. Based on these findings, another hypothesis for income inequality is proposed:

Hypothesis 1 (H1): There is a significant relationship between government spending on agriculture and rural development towards income inequality in Malaysia.

2.2.4 Education and Training

Education and Training is considered a human capital investment because it aids in skill development, boosts ability to work, and produces more skilled workers (Zulkifli, Effendi, & Shafai, 2022).

Moving on to the spending for education, Zulkifli, Effendi, & Shafai (2022) investigated that government spending for education sector have a negative significant impact on economic growth in Malaysia. They argued that when the labour market was unable to offer graduates enough high-skilled work opportunities, the outcomes would not be reflected in economic growth. Therefore, even with major investments in education, failure to plan for what will be important in the future would not lead to a beneficial outcome (Zulkifli, Effendi, & Shafai, 2022).

However, the literature of (Alam, Singh, & Singh, 2022) found out government expenditures to education will be able to improve the Saudi Arabia's long run-economic growth. They mentioned that the socioeconomic progress of a nation depends on its level of education. The prevention of crime, poverty, unemployment, and diseases in a nation is aided by education. In addition, it makes a significant contribution to technological advancements and provides a variety of skills crucial for a country's economic development (Alam, Singh, & Singh, 2022). Just as the literature of (Alam, Singh, & Singh, 2022), the study of (Emeru, 2023) also claimed that government expenditure on education has a positive and significant effect on both short- and long-term economic growth. Their study concluded that more government investment in the education sector would contribute to the development of opportunities that may lead to enhanced levels of economic growth as well as higher participation in the labour force (Emeru, 2023). Hence, it is evident that spending on education and training is one of the important components that needs to be considered for a country's development.

Hypothesis 2 (H2): There is a significant relationship between government spending on education and training and economy growth in Malaysia.

In terms of income inequality, the study from (Ali, Mohamed, & Mohamed, 2024) suggests that government efforts and initiatives to boost secondary education completion could help reduce inequality in income. In addition, the research of

(Seefeldt, 2018) that implied Theil index as a proxy in measuring income inequality argued that income inequality can be reduced by increasing educational spending, and this effect is in general and also when split into the two major phases of education, which are primary and secondary education.

Hypothesis 2 (H2): There is a significant relationship between government spending on education and training and income inequality in Malaysia.

2.2.5 Health Expenditure

Health expenditure spend by government plays a significant role in providing a higher quality of life for residents through a good health system (Wor23). In term of spending on healthcare sector, both of the studies of (Zulkifli, Effendi, & Shafai, 2022) and (Alam, Singh, & Singh, 2022) investigated that government spending on healthcare has a negative impact on the economy growth of Malaysia and Saudi Arabica respectively. The findings in (Zulkifli, Effendi, & Shafai, 2022) paper claimed that it is not match with the previous research; therefore, they assumed that one of the factors causing the difference in findings is the difference in the range of time series used for the research. Meanwhile, Saudi Arabia's healthcare industry is heavily reliant on foreign labour and imported medical supplies, which might be the main factor preventing Saudi Arabia's public health spending from boosting the country's economy (Alam, Singh, & Singh, 2022). However, the study of Agénor (2008) believes that people can only effectively utilize human capital to perform services if they are in good health. Thus, health indirectly affects growth through increasing production.

In addition, in a sample of industrialized and developing nations, (Bloom et al. 2004, as cited in Agénor, 2008) discovered that health, has a significant positive impact on economic growth. Hence, it is vital for studies that concentrate on emerging nations to incorporate health considerations into models of economic growth. Furthermore, the study of (Ozyilmaz, et al., 2022) explored that public health expenditures had a major effect on growth, emphasizing the importance of public policy in the health sector, and they also claimed that public health initiatives can positively impact both economic growth and social wellbeing. In

such a scenario, governmental policies toward health expenditures that have a beneficial impact on social health outcomes can lead to the health sector becoming a predictor of both economic growth and social welfare (Ozyilmaz, et al., 2022). Therefore, based on this argument, a hypothesis is formed:

Hypothesis 3 (H3): There is a significant relationship between government spending on health and economy growth.

In contrast, the paper of (Miranda-Lescano, Muinelo-Gallo, & Roca-Sagalés, Human development and decentralization: The importance of public health expenditure, 2022) argued that government spending on health definitely strengthen the well-being of people by rising income per capita, because students who are in good health can attend school more frequently for gaining knowledge and healthy individuals have the ability to be more efficient at work. Their result showed that government spending on health has a significant positive relationship with income per capita (Miranda-Lescano, Muinelo-Gallo, & Roca-Sagalés, Human development and decentralization: The importance of public health expenditure, 2022).

Hypothesis 3 (H3): There is a significant relationship between government spending on health and income inequality.

2.2.6 Public Pension Payment

Public Pension Payment is the government finances and manages pension payments, which cover employees in the public sector who are on pensionable status and provide survivor benefits that are of direct importance for the welfare of employees' families (Chee, 1997). Malaysian government spending has contributed high amount of their spending on pension funds. This led to a burden for Malaysian government of covering their pension liabilities. Chee (1977) mentioned it is clear that a government pension fund might offer its employees reliable financial security and is able to raise benefit rates in step with growth in the economy and the preservation of purchasing power. However, it is important to stay aware that social security should not be seen as the sole responsibility of the government. The government's role in providing for the retired might then be gradually but

substantially reduced, as it may cause an excessive retirees' reliance on the government.

Besides that, based on the study of Ibrahim and Siri (2013), the retirement age has a need to raise for reducing the government pension liabilities as the overall number of retirees rises annually. As a result, raising the retirement age will have a positive effect on the Pension Scheme because doing so will result in lower long-term costs for the Government Pension Scheme. In order to cut costs on pension fund, the Government Pension Scheme should think about raising the retirement age in the future (Ibrahim and Siri, 2013).

Nevertheless, (Karam, Muir, Pereira, & Tuladhar, 2010) found out public pension reforms can boost economy in the short run by increasing spending and consumption from the consumers; meanwhile, in the long run by reducing government debt and allowing for greater investment in the country.

Hypothesis 4 (H4): There is a significant relationship between government spending on pension fund and economy growth.

Regarding income inequality, based on the gini coefficient as the measure of income inequality, the results indicate a moderately negative relationship between government spending and income inequality, with the largest relationship seen for social welfare and other social spending (Anderson, d'Orey, Duvendack, & Esposito, 2016). Since pension fund considered a form of social welfare expenditure, so it can also indicate that there is a negative relationship between government spending on pension and income inequality. Therefore, a hypothesis is formed as below:

Hypothesis 4 (H4): There is a significant relationship between government spending on pension fund and income inequality.

2.3 Research Gap

Since previous studies have not considered much on whether the huge amount of government spending, especially on the pension payments sector is essential for economy growth and income inequality in Malaysia. Hence, this study will explore

further about the pension payments towards economy growth and income inequality in Malaysia.

In addition, fewer studies are using income inequality which measured by Gini Coefficient to test the relationship with government spending of Malaysia. Thus, this paper will investigate for the relationship between government spending and income inequality in Malaysia to close the gap.

2.4 Proposed Theoretical/ Conceptual Framework

2.4.1 Model 1-Economy Growth
Government Spending on different components towards economy growth
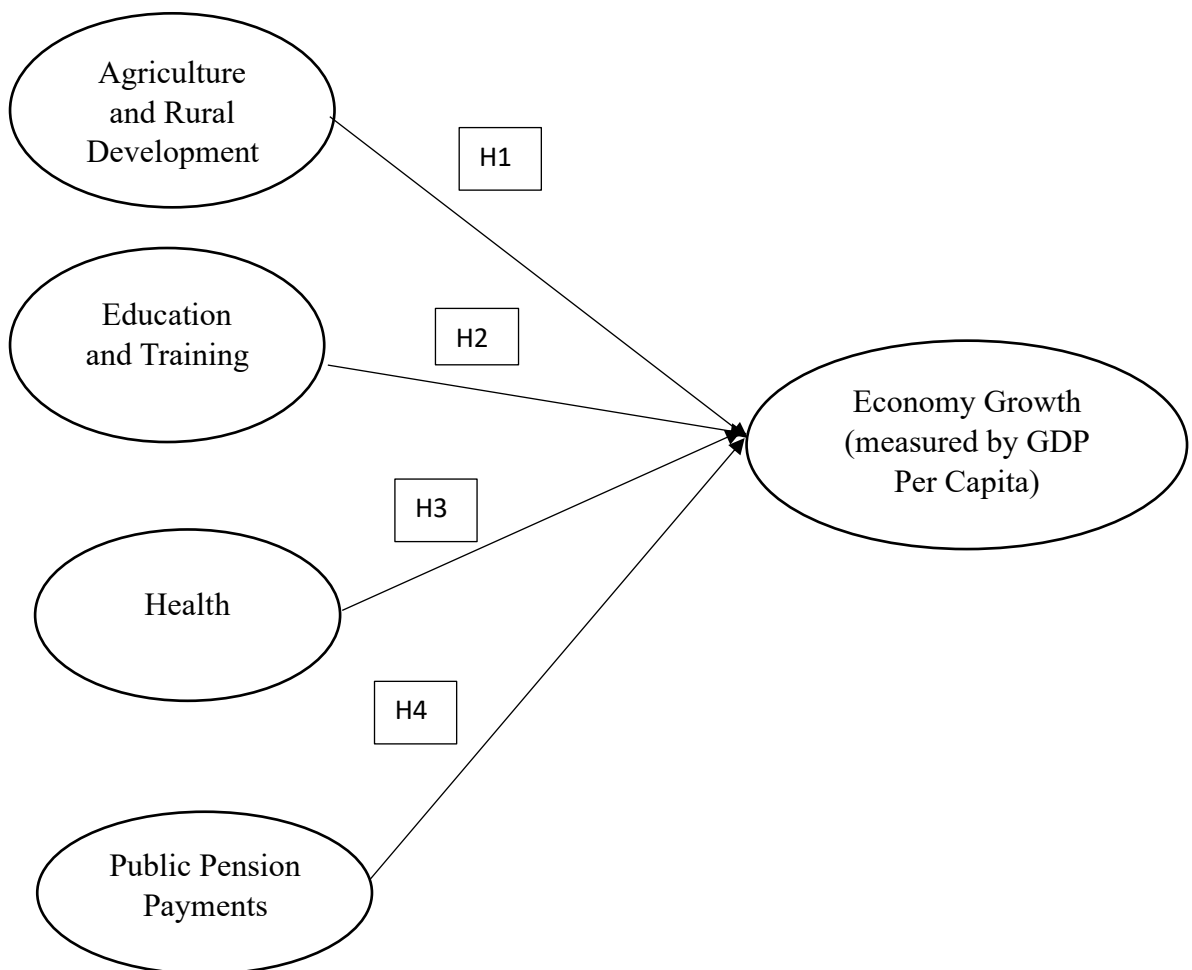
2.4.2 Model 2-Income Inequality

Government Spending on different components towards income inequality
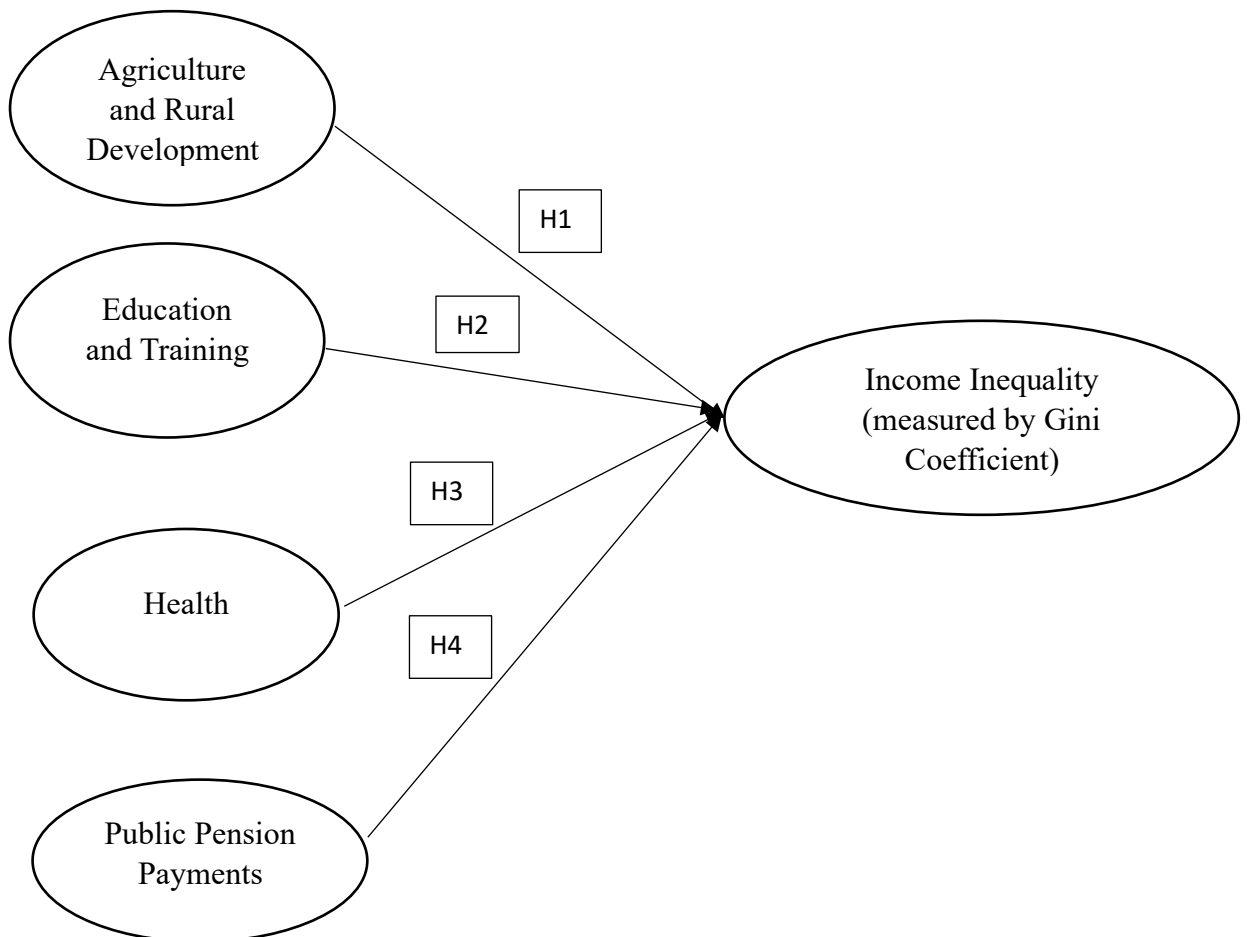
2.5 Summary of Hypothesis Development

Model 1-Economy Growth

H1: There is a significant relationship between government spending on public pension payments and economy growth.

H2: There is a significant relationship between government spending on health and economy growth.

H3: There is a significant relationship between government spending on education and training and economy growth.

H4: There is a significant relationship between government spending on agriculture and rural development and economy growth.

<u>Model 2-Income inequality</u>

H1: There is a significant relationship between government spending on public pension payments and income inequality.

H2: There is a significant relationship between government spending on health and income inequality.

H3: There is a significant relationship between government spending on education and training and income inequality.

H4: There is a significant relationship between government spending on agriculture and rural development and income inequality.

2.6 Conclusion

To sum up, this chapter summarize all the literature reviews for each of the variables related to the research topic, which consistent with the research objectives and the research problem. The hypothesis development that stated the relationships among the important variables for the two models have been covered as well in this chapter.

Chapter 3: Empirical Model, Methodology and the Data

3.1 Introduction

This chapter will cover the empirical model, methodology as well as the data. Firstly, this paper examines the relationship between government spending on different components on the economy growth and income inequality in Malaysia by using the linear Autoregressive Distributed Lag (ARDL) Model. The linear ARDL model is to test the short run and long run relationships between economic time series, which introduced by Pesaran et al. (2001). The ARDL Model is also suitable for small sample size of data, and can be implied with a mix of integrated order of 0, I(0) and integrated order of 1, I(1) data. Besides that, as the variables enter the model,

they can be given various lag-lengths. Hence, ARDL model has implied in this paper as it fulfils the criteria based on the variables selected.

Furthermore, there will be two models to analyse in this study The two models focused on economy growth, measured by GDP per Capita (Model 1), and income inequality, measured by Gini Coefficient (Model 2). Time series data is conducted from the year 1980 to the year 2021.

3.2 Research Design

The study is a quantitative and causal research that is able to investigate the impacts of allocation of government spending on different sectors (agriculture and rural development, education and training, health and pension fund) on economy growth and income inequality in Malaysia. Besides that, this study will also discuss on how to boost the economy growth and address the income inequality issue.

3.3 Econometric Estimated Model (Model 1)

i) ARDL Linear Bound Test

"Autoregressive-Distributed Lag" is recognized as the best econometric approach compared to others in a case when the variables are stationary at $I(0)$ or integrated of order $I(1)$. It is also to test for the presence of long run and short run relationships between economic time-series.

The long-run level relationship between the variables with ARDL(1,1,1,1,2) is as follows:

$$LOG\_GDP_t = \beta_0 + \sum_{i=1}^{p} \beta_i \, LOG\_GDP_{t-1} + \sum_{j=0}^{p} \gamma_j \, \Delta LOG\_AGRI_{t-j} +$$
$$\sum_{k}^{p} \delta_k \Delta LOG\_EDU_{t-k} + \sum_{m}^{p} \rho_m \, \Delta LOG\_HEALTH_{t-m} + \sum_{n}^{p} \sigma_n \, \Delta LOG\_PENSION_{t-n} +$$
$$\theta_0 LOG\_GDP_{t-1} + \theta_1 LOG\_AGRI_{t-1} + \theta_2 LOG\_EDU_{t-1} +$$
$$\theta_3 LOG\_HEALTH_{t-1} + \theta_4 LOG\_PENSION_{t-1} + e_t$$

(2.1)

Based on the above ARDL(1,1,1,1,2) model, the long run coefficients of the determinants can be computed:

$$\varphi LOG\_AGRI = \frac{\gamma_1 + \gamma_2}{1-\beta_1} \quad ; \quad \varphi LOG\_EDU = \frac{\delta_1 + \delta_2}{1-\beta_1} \quad ; \quad \varphi LOG\_HEALTH = \frac{\rho_1 + \rho_2}{1-\beta_1} \quad ;$$

$$\varphi LOG\_PENSION = \frac{\sigma_1 + \sigma_2 + \sigma_3}{1-\beta_1}$$

Then, the error terms of the equation will be the error-correction term after obtaining the long run equation.

The short-run error-correction model (ECM) equation can be made as follows:

$$\Delta LOG\_GDP_t = \beta_0 + \sum_{i=1}^{p} \beta_i \quad \Delta LOG\_GDP_{t-1} + \sum_{j=0}^{p} \gamma_j \quad \Delta LOG\_AGRI_{t-j} +$$
$$\sum_{k}^{p} \delta_k \Delta LOG\_EDU_{t-k} + \sum_{m}^{p} \rho_m \Delta LOG\_HEALTH_{t-m} + \sum_{n}^{p} \sigma_n \Delta LOG\_PENSION_{t-n} +$$
$$\emptyset Z_{t-1} + e_t \tag{2.2}$$

Where,

$$Z_{t-1} =$$

$$LOG\_GDP_{t-1} - \alpha_0 - \alpha_1 LOG\_AGRI_{t-1} \alpha_2 LOG\_EDU_{t-1} - \alpha_3 LOG\_HEALTH_{t-1} - \alpha_4 LOG\_PENSION_{t-1}$$

or the error correction term (ECT) and the αs are the ordinary least square (OLS) estimates in equation (2), while the $\emptyset$ is the speed of adjustment from short run to long run that contains ECT.

The error terms of the equation will be the error correction term once the long-run equation has been obtained. Then, the dependent variable in short run will be the changes (Δ) in the LOG_GDP, and all the independent variable change as well.

The following is a formulation for the short-run equation:

$$\Delta LOG\_GDP_t = \alpha + \sum_{i=1}^{p-1} \alpha_i \Delta LOG\_GDP_t + \sum_{j=0}^{p-1} \alpha_j \Delta LOG\_AGRI_t + \sum_{k=0}^{p-1} \alpha_k \Delta LOG\_EDU_t$$
$$+ \sum_{m=0}^{p-1} \alpha_m \Delta LOG\_HEALTH_t + \sum_{n=0}^{p-2} \alpha_n \Delta LOG\_PENSION_t + ECT_{t-1} + e_t$$
$$(2.3)$$

3.4 Econometric Estimated Model (Model 2)

The long-run level relationship between the variables with ARDL(2, 2, 0, 2, 2) is as follows:

$$LOG\_GINI_t = \beta_0 + \sum_{i=1}^{p} \beta_i LOG\_GINI_{t-1} + \sum_{j=0}^{p} \gamma_j \Delta LOG\_AGRI_{t-j} +$$
$$\sum_{k}^{p} \delta_k \Delta LOG\_EDU_{t-k} + \sum_{m}^{p} \rho_m \Delta LOG\_HEALTH_{t-m} + \sum_{n}^{p} \sigma_n \Delta LOG\_PENSION_{t-n} +$$
$$\theta_0 LOG\_GDP_{t-1} + \theta_1 LOG\_AGRI_{t-1} + \theta_2 LOG\_EDU_{t-1} +$$
$$\theta_3 LOG\_HEALTH_{t-1} + \theta_4 LOG\_PENSION_{t-1} + e_t \tag{2.4}$$

Based on the above ARDL(2,2,0,2,2) model, the long run coefficients of the determinants can be computed:

$$\varphi LOG_{AGRI} = \frac{\gamma_1 + \gamma_2 + \gamma_3}{1-\beta_1} \quad ; \quad \varphi LOG\_EDU = \frac{\delta_1}{1-\beta_1} \quad ; \quad \varphi LOG\_HEALTH = \frac{\rho_1 + \rho_2 + \rho_3}{1-\beta_1} \quad ;$$

$$\varphi LOG\_PENSION = \frac{\sigma_1 + \sigma_2 + \sigma_3}{1-\beta_1}$$

Next, the error terms of the equation will be the error-correction term after obtaining the long run equation.

The short-run error-correction model (ECM) equation can be made as follows:

$$\Delta LOG\_IE_t = \beta_0 \quad + \quad \sum_{i=1}^{p} \beta_i \, \Delta LOG\_IE_{t-1} \quad + \quad \sum_{j=0}^{p} \gamma_j \, \Delta LOG\_AGRI_{t-j} \quad +$$
$$\sum_{k=0}^{p} \delta_k \Delta LOG\_EDU_{t-k} + \sum_{m=0}^{p} \rho_m \, \Delta LOG\_HEALTH_{t-m} + \sum_{n=0}^{p} \sigma_n \, \Delta LOG\_PENSION_{t-n}$$
$$+ \emptyset Z_{t-1} + e_t \tag{2.5}$$

Where,

$$Z_{t-1} =$$
$$LOG\_IE_{t-1} - \alpha_0 - \alpha_1 LOG\_AGRI_{t-1} \alpha_2 LOG\_EDU_{t-1} - \alpha_3 LOG\_HEALTH_{t-1} - \alpha_4 LOG\_PENSION_{t-1}$$

or the error correction term (ECT) and the αs are the ordinary least square (OLS) estimates in equation (5), while the $\emptyset$ is the speed of adjustment from short run to long run that contains ECT.

The error terms of the equation will be the error correction term once the long-run equation has been obtained. Then, the dependent variable in short run will be the changes (Δ) in the LOG_IE, and all the independent variable change as well.

The following is a formulation for the short-run equation:

$$\Delta LOG\_IE_t = \alpha + \sum_{i=1}^{p-2} \alpha_i \, \Delta LOG\_IE_t + \sum_{j=0}^{p-2} \alpha_j \, \Delta LOG\_AGRI_t + \sum_{k=0}^{p} \alpha_k \Delta LOG\_EDU_t +$$
$$\sum_{m=0}^{p-2} \alpha_m \, \Delta LOG\_HEALTH_t \quad + \quad \sum_{n=0}^{p-2} \alpha_n \, \Delta LOG\_PENSION_t \quad + \quad ECT_{t-1} \quad + \quad e_t$$
$$\tag{2.6}$$

3.5 Data Collection Methods

3.5.1 Secondary Data

Time series data from the year 1980 to 2021 is used in this paper. the data are collected from World Bank Data, Ministry of Finance, Malaysia, an journal article

Department of Satistic Malaysia Official Portal. The data of GDP per capita and Gini Index are found from World Bank Data. Besides, all the information of government spending on Agriculture and Rural Development, Education and Training and Health are collected from Official Portal of Ministry of Finance Malaysia. Meanwhile, the data of Pensions Payment is collected from an Journal Article for the research, entitled "The Malaysian Government Pension Scheme" and the Official Portal of Ministry of Finance Malaysia website. Besides, the statistical analysis of time Series data for the GDP per capita, Income inequality and government spending on various components are able to generate through Eviews software.

3.6 Data Analysis

3.6.1 E-views

A statistical software called Econometric Views (E-views) has been selected to perform and provide for the econometric and statistical analyses. E-views provides forecasting, modelling, and statistical tools via an object-oriented interface that is accessible, which is convenient for researchers.

In this study, Econometric Views (E-views) has implied to generate and conduct the various tests based on the time series data collected. The tests included descriptive analysis, correlation analysis, unit root test for both ADF and PP Unit Root Test, Serial Correlation Test, ARDL Bound Test, CUSUM Test, as well as long run and short run relation test in the ARDL Model.

3.6.2 Descriptive Analysis

Table 3.1: Descriptive Statistic

Variables	Unit of Measurement	Mean	Std Devia	Min	Max
GDP per capita		18746.10	13589.95	3841	46526
Income Inequality	Gini Coefficient	0.4439	0.0342	0.3390	0.5010
Agriculture and Rural Development	Ringgit Malaysia	2211.39	1592.347	393	5415

Education and training	Ringgit Malaysia	22227.82	19578.06	2228	56546
Health	Ringgit Malaysia	8344.01	8632.26	697	27873
Pension Fund	Ringgit Malaysia	312093.90	375400.6	552.70	1281763

Source: Developed for the research

This study will also calculate descriptive statistics such as mean, median, standard deviation, and range for to get an overview of the data, which shows in Table 1. Descriptive statistics is an analysis that implied to sum up all the data in this study. The results of mean and standard deviation are only be focused on for all the variables. A research attempt may involve a very large quantity of data. Descriptive analysis is thus needed in order to produce an overview and interpretation that the researcher may use as they proceed forward with decision-making.

3.4.3 Scale Measurement

Table 3.2 Scale Measurement

Variables	Proxy	Type	Scale of Measurement	Source
Economy Growth	GDP per Capita	DV	Ringgit constant 2010 Prices	World Bank data
Income Inequality	Gini Coefficient	DV	Scale from 0 to 1 (0 indicates perfect equality; 1 indicates perfect inequality)	World Bank data
Agriculture and Rural Development	Government Spending	IV	Ringgit Malaysia (RM in Million)	Official Portal of Ministry of Finance Malaysia
Education and Training	Government Spending	IV	Ringgit Malaysia (RM in Million)	Official Portal of Ministry of

				Finance Malaysia
Health	Government Spending	IV	Ringgit Malaysia (RM in Million)	Official Portal of Ministry of Finance Malaysia
Public Pension Payment	Government Spending	IV	Ringgit Malaysia (RM in Million)	Journal Article, and Official Portal of Ministry of Finance Malaysia

The scale measurements for all the dependent and independent variables are shown in table 3.

3.6.3 Correlation Analysis

Table 3.3: Correlation Analysis

	GDP per capita	Gini Coefficient	Agriculture and Rural Development	Education and training	Health	Pension Fund
GDP per capita	1.0000					
Gini Coefficient		1.0000				
Agriculture and Rural Development	0.8617	-0.7617	1.0000			
Education and training	0.9913	-0.8138	0.8975	1.0000		
Health	0.9862	-0.8251	0.8336	0.9828	1.0000	
Pension Fund	0.8728	-0.6409	0.7353	0.8881	0.8687	1.0000

Source: Developed for the research

A correlation analysis is also conducted to determine the relationship between government spending in different sectors and economy growth, and income inequality, which shows in Table 2. This will help to identify the direction and strength of the relationship between government spending and economy growth; government spending and income inequality. The results from correlation analysis will either be positive or negative relationship. It also consists of a range between -1.00 to +1.00. When the regression residuals are correlated with one another, serial correlation also referred to as autocorrelation occurs.

Table 3.4: Strength of Correlation

Strength	Correlation Value
Very Weak	0.00-0.19
Weak	0.20-0.39
Moderate	0.40-0.59
Strong	0.60-0.79
Very Strong	0.80-0.10

3.6.4 Cumulative Sum Test (CUSUM Test)

Cumulative Sum Test is also applied in this study to make sure the two models are dynamically stable. Based on (Statistical Engineering Division Dataplot, 2004), a data collection with exactly two distinct values can be converted to a sequence of zeroes and ones using data plot, and this process is known as the Cumulative Sum Test. The zeros are changed to negative values for this test. The maximum distance from zero of a random walk, as determined by the cumulative total of the series, provides the basis for this test. Sufficient distance is a sign of non-randomness.

3.7 Conclusion

This chapter provides an overview of the research methodology by showing on how the data are collected, measurement scales of data, and methods of data analysis. The data analysis consists of Descriptive Statistic, Correlations Analysis as well as Cumulative Test (CUSUM Test). Besides that, the econometric estimated model for Model 1 and Model 2 have also formulated in this chapter. By having the sufficient

set of data for the dependent variables and independent variables for the two models, the research can proceed to the next step for running the diagnostic tests. The empirical results for every single independent variable will be presented on the next chapter, Chapter 4.

Chapter 4 Empirical Results

4.0 Introduction

Chapter 4 covered the empirical results of the study by performing ADF and PP Unit Root Test, Serial Correlation Test, CUSUM Test, ARDL Bound Test, as well as Long-run and short-run dynamic relationships. This chapter is critically important as it provides the patterns and analyses of the results which are relevant to the research questions and hypotheses.

4.1 Empirical Results

Table 4.1: ADF and PP Unit Root Test

Variables	Level		1ST Difference	
	ADF	PP	ADF	PP
GDP per capita	1.5005	1.7187	-5.2956***	-5.4115***
Gini Coefficient	-2.7727*	-2.0649	-2.4384	-2.4384
Agriculture and Rural Development	-1.6958	-1.6184	-8.5063	-8.3203***
Education and training	2.0020	1.5739	-4.2295***	-4.1319***
Health	-3.9778***	2.9341*	-2.6310*	-4.7660***
Pension Fund	1.2043	0.0656	-5.5786***	-7.5603***

Source: Developed for the research

Table 3 presents the unit root tests based on Augmented Dickey Fuller (ADF) and Phillip Perron (PP). This is a statistical approach that can be able to identify whether the time series data is stationary or non-stationary.

Unit root tests are performed to ensure none of the variables are integrated order of 2, I(2). The findings show that none of the variables in this study are having integrated order of 2, which fulfils the ARDL bounds test criterion.

Table 4.2: F-statistics for testing the existence of cointegration-Model 1

Model	F-Statistic	
	2.23 (n.s)	
	K=4, n=42	
Narayan (2005) Critical Value	**Lower Bound**	**Upper Bound**
1%	4.428	6.250
5%	4.394	5.914
10%	4.306	5.874

Source: Developed for the research

H0: $\theta_0 = \theta_1 = \theta_2 = 0$ (not cointegrated)

HA: H0 is not true (cointegrated)

k=dimension of X=4 ; n=42 (sample from 1980-2021)

Since F-stat=2.23 <upper bound l(1); hence, do not reject Null Hypothesis.

There is no cointegration relationship among GDP per capita and it determinants, which are Agriculture and Rural Development, Health, Education, and Pension.

Table 4.3: Serial Correlation Test-Model 1

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

| F-statistic	0.001464	Prob. F(2,16)	0.9985
Obs*R-squared	0.006955	Prob. Chi-Square(2)	0.9965

Source: Developed for the research

H0: There is no serial correlation among the residuals.

HA: There is a serial correlation among the residuals.

Decision: Since Probability of F(2,16)=0.9985 is higher than alpha=0.01, we do not reject the null hypothesis.

Conclusion: Therefore, Model 1 is no serial correlation problem at 1% significant level.

Figure 4.1: Diagnostic Test-Cumulative Sum (CUSUM) Test-Model 1
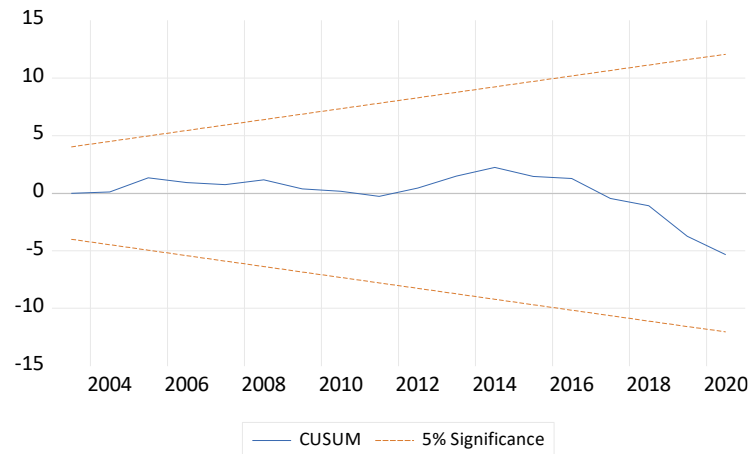
Source: Developed for the research

Figure 1 shows that Model 1 is dynamically stable. The model has passed through the two diagnostic tests, namely the Serial Correlation and Cumulative sum (CUSUM) tests.

Table 4.4: Estimated Long Run Coefficient-Model 1

	Coefficient	Std. Error	T-Statistic	P-value
LOG(AGRI)	-0.3881	0.1950	-1.9906	0.0564*
LOG(EDU)	1.3091	0.5765	2.2707	0.0310**
LOG(HEALTH)	-0.1812	0.3962	-0.4575	0.6509
LOG(PENSION)	-0.0485	0.0375	-1.2939	0.2063
LOG(CONSTANT)	2.1303	1.0128	2.1032	0.0446**

Notes: ***, ** and * indicates 1%, 5% and 10% significant levels
Source: Developed from the research

Table 5 presents the estimated long run coefficient by using the ARDL Model for economy growth (Model 1). The result reveals that government spending on both agricultural and rural development and education and training are the significant determinants at 10% level and 5% level respectively towards the economy growth (GDP) in long run relation. Meanwhile, health and pension expenditure are insignificant determinants for economy growth.

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Table 4.5: Short Run Dynamic-Model 1

	Coefficient	Std. Error	t-Statistic	p-value
Constant	0.0057	0.0219	-0.2605	0.7961
ECT_{t-1}	-0.3979	0.1038	-3.8330	0.0006***
ΔLog_Agri	-0.0227	0.0440	-0.5164	0.6091
ΔLog_Edu	-0.0240	0.2208	-0.1086	0.9142
ΔLog_Health	0.2129	0.2030	1.0487	0.3022
ΔLog_Pension	-0.0019	0.0157	-0.1213	0.9042

Notes: ***, ** and * indicates 1%, 5% and 10% significant levels
Source: Developed for the research

Table 6 shows the Short Run Dynamic for Model 1. In terms of short run, all the determinants show insignificant impact on the economy growth. The error-correction term (ECT) has a negative sign, and the coefficient is less than one and is statistically significant. This implies that any short-run deviation will adjust to the long-run equilibrium path. Any short-run deviation will take about 2.63 years to adjust to long-run equilibrium.

Table 4.6: F-statistics for testing the existence of cointegration-Model 2

Model	F-Statistic	
	11.5822***	
	K=4, n=42	
Narayan (2005) Critical Value	**Lower Bound**	**Upper Bound**
1%	4.428	6.250
5%	4.394	5.914
10%	4.306	5.874

Notes: ***, ** and * indicates 1%, 5% and 10% significant levels
Source: Developed for the research

H0: $\theta_0 = \theta_1 = \theta_2 = 0$ □ (not cointegrated)

HA: H0 is not true (cointegrated)

k=dimension of X=4

n=42 (sample size from the year 1980 to the year 2021)

Decision: Since F-statistic =11.5822 is higher than the upper bound l(1)-cointegrated at 1% significant level; hence, reject the null hypothesis.

Conclusion: There is a cointegration relationship between income inequality and its determinants, indicating that the long run equilibrium relationship exists between the variables.

Table 4.7: Serial Correlation Test-Model 2

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.122271	Prob. F(2,25)	0.8854
Obs*R-squared	0.387477	Prob. Chi-Square(2)	0.8239

Source: Developed for the research

H0: There is no serial correlation among the residuals

HA: There is a serial correlation among the residuals

Since Probability of F(2,26)=0.8854 is higher than alpha=0.05, we do not reject the null hypothesis. Therefore, we can conclude that Model 2 is no serial correlation problem.

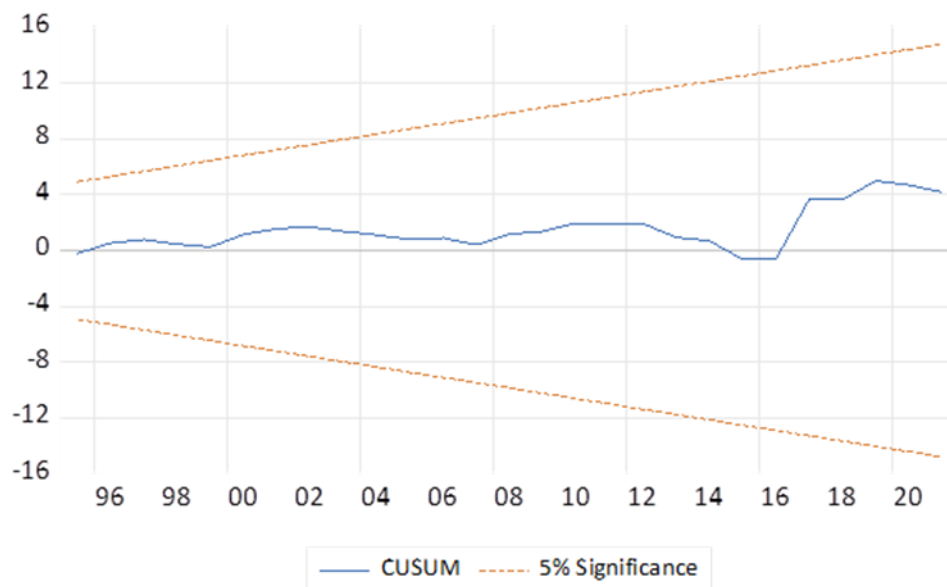Figure 4.2 Diagnostic Test- CUSUM Test (Model 2)

Figure 4.2 shows that Model 2 is dynamically stable. The model has passed through the two diagnostic tests, namely the serial correlation and Cumulative Sum (CUSUM) tests.

Table 4.8: Estimated Long Run Coefficient using the ARDL Model (Model 2)

	Coefficient	Std. Error	T-Statistic	P-value
LOG(AGRI)	-0.1867	0.0982	-1.9002	0.0681*
LOG(EDU)	0.2109	0.1830	1.1527	0.2592
LOG(HEALTH)	-0.0805	0.1381	-0.5832	0.5646
LOG(PENSION)	-0.0173	0.0221	-0.7817	0.4412
LOG(CONSTANT)	-0.5711	0.4149	-1.3766	0.1800

Notes: ***, ** and * indicates 1%, 5% and 10% significant levels

Source: Developed for the research

The result of Table 8 reveals that government spending on agricultural and rural development is the only significant determinant at 10% level towards the income inequality (Gini Coefficient) in long run relation. Meanwhile, education and training, health and pension expenditure are insignificant determinants towards the welfare in Malaysia in long run.

Table 4.9: Short-Run Dynamic Error Correction Term (ECT) - Model 2

	Coefficient	Std. Error	t-Statistic	p-value
Constant	-0.0070	0.0059	-1.1865	0.2439
ECT_{t-1}	-0.2244	0.0517	-4.3439	0.0001***
ΔLog_Agri	0.0163	0.0153	-1.0663	0.2940
ΔLog_Edu	0.0979	0.0868	1.1275	0.2677
ΔLog_Health	0.0297	0.0790	0.3759	0.7094
ΔLog_Pension	-0.0144	0.0067	-2.1648	0.0377**

Notes: ***, ** and * indicates 1%, 5% and 10% significant levels

Source: Developed for the research

Table 9 presents the Short-Run Dynamic for Model 2. In terms of short run, the only determinant that show significant impact on the income inequality is pension payments, which significant at level of 5%. The Error Correction Term (ECT) will negatively significant if there is a cointegration relationship among the variables. The ECT value=0.2244, which fulfil the criteria of falling in between zero and one. Any short-run deviation will take about 4.46 years to adjust to long-run equilibrium.

4.2 Conclusion

In summary, the two models, which are economy growth (measured by GDP per Capita), and income inequality (measured by Gini Coefficient) have passed through

all the diagnostic tests, including unit root tests, which consist of ADF and PP unit root test, serial correlation test, as well as Cumulative Sum Test (CUSUM) Test. The two models meet the criteria of Autoregressive Distributed Lag (ARDL) model. Furthermore, the findings and results of estimated long run and short run relation for the two models are also shown in this chapter respectively. This chapter presents all the empirical evidence which is then needed for further recommendations and implications for policymakers and researchers that seek to optimize government spending for fostering economic growth and address income inequality in Malaysia. Recommendation, implications and a summarize of this whole thesis will be discussed on the next chapter, Chapter 5.

Chapter 5 Discussion, Conclusion, and Implications

5.0 Introduction

This chapter will conclude and sum up the study by providing discussion, recommendations, and implications. This chapter is essential to give a whole picture about the research. Moreover, the major findings for each of the independent variables are also discussed and explained with valid reasons on the results that turned out to be. Therefore, readers will have a deeper understanding on it.

5.1 Summary of Statistical Analyses

To sum up, the statistical analyses for the thesis included Descriptive Analysis and Inferential Analysis. Descriptive Analysis covered the Unit Root Tests, which indicate that none of the variables exhibit an integrated order of 2; hence, this fulfils the criteria for the ARDL bounds test. Besides, the Descriptive Analysis also covered the Serial Correlation and Diagnostic Tests. The model diagnostics of both model: Model 1 and Model 2 confirm the absence of serial correlation and indicate dynamic stability.

  Meanwhile, in terms of Inferential Analysis, this analysis covered the long run relationship and short run relationship between the determinants for Model 1 and Model 2. For Model 1, the significant determinants of economic growth in the long run include government spending on agriculture and rural development, and

education and training, and the health and pension expenditure are found to be insignificant. In the short run, all determinants show insignificant impact on economic growth. The error-correction term suggests adjustment to long-run equilibrium will take 2.63 years. For Model 2, none of the determinants show significant impact towards income inequality in the long run. However, the only significant determinant for short run towards income inequality is pension fund. In the short run, all determinants show insignificant impact on economic growth. Furthermore, the error-correction term suggests adjustment to long-run equilibrium will take 4.46 years.

5.2 Discussion of Major Findings

5.2.1 Agriculture and Rural Development

Although agriculture and rural development expenditure is significant determinant for economy growth; however, it's coefficient value is negative, which indicated that it has a negative effect. Based on the research of Lian and Seng (2020), policymakers should be cautious when allocating funds to the agriculture sector, since they must avoid on spending over the RM 3,057 million expenditure threshold. The reason of this is because if government expenditure exceeds the threshold, agriculture productivity will drop mainly due to the over-reliance on government assistance and a restriction on the growth of innovation in this industry, according to this "inverted U" relationship. However, Malaysian government had exceeded the threshold when spending on agriculture sector for several years. Hence, there is why Malaysian government spending on agriculture and rural development sector has negative impact towards economy growth and in Malaysia.

Meanwhile, spending on agriculture and rural development has negative relationship with income inequality in the long run. This result indicates that government spending on agriculture and rural development increases, income inequality tends to decrease, which tally with the research of (Lian, Pei, & Li, 2024), suggested that government investment on agriculture may improve the income inequality issue.

5.2.2 Education and Training

The empirical results confirm that government spending on education and training has a significant positive impact towards economy growth in long run. This result is not constant with the study of Zulkifli, Effendi, & Shafai (2022), which argued that government spending for education sector have a negative significant impact on economic growth in Malaysia. However, the result is consistent with the research with Hota (2023), which conclude that government spending on infrastructure and education significantly boosts economic growth. This research can be proven as Odisha's (India) education system has a huge impact on its overall economic performance.

Figure 5.1 Government Spending on Education and Training (in RM Million)
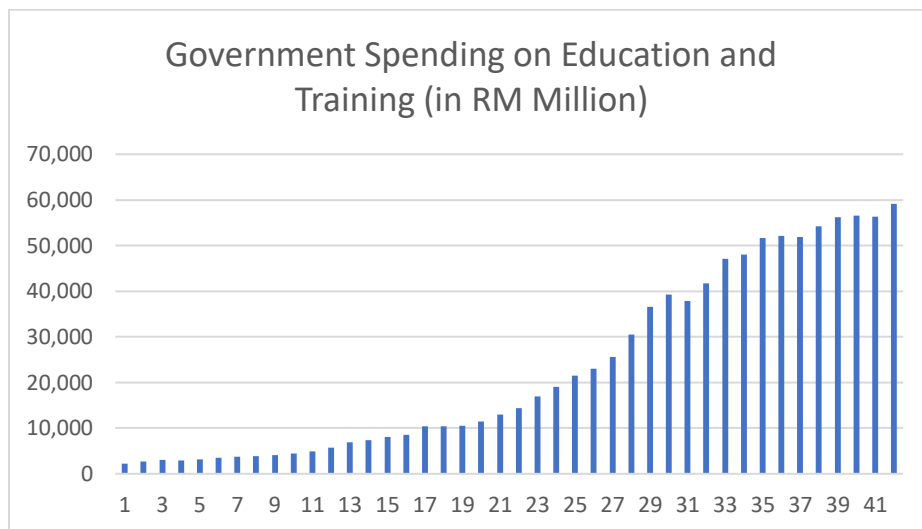
Source: Official Portal of Ministry of Finance Malaysia

Figure 5 shows the government spending on education and training from the year 1980 to the year 2021 is on an increasing trend. Based on the findings of this paper, the trend of this graph above indicates that heavily invest in this education and training sector is a right decision from government to boost the Malaysia's economy growth, and Malaysian government should focus on this sector continuously.

The result of this paper for spending on education and training is also consistent with the research of (Ahmed, Khan, & Naeem, 2019) , claiming that government spending on education is an important explanatory variable that influences agricultural and economic growth. Apart from this, many theories and models that

related to economic growth have been established by economists such as Adam Smith, Lucas, Rome, and Solow, and these theories and models have identified education as a key driver of economy growth (Ahmed, Khan, & Naeem, 2019).

On the other hand, government spending on education and training is an insignificant determinant of income inequality. According to the study of (Seefeldt, 2018) , their results emphasize that simply spending a high amount on education does not necessarily ensure a more educated population and address the issue of income inequality. Other factors like access, quality, and the type of education provided play a crucial role as well. Besides that, the research of (Al, 2015) stated that by creating a more equitable distribution of human capital, government spending on health and education lowers income inequality. However, the effectiveness of such investment is a determining factor in the extent of the effect. The literature of (Al, 2010) also indicates that the impact of government spending on different sectors can have varying effects on income inequality. Spending on primary and secondary education, for example, may be more effective in reducing inequality compared to higher education spending that primarily benefits the wealthy.

5.2.3 Health

Moving on to government spending on health sector, the results showed that it is an insignificant determinant towards both economy growth and income inequality. This may due to the complex relationship between health expenditure and economic outcomes. The result from this study is inconsistent with many past literatures conducted. For instance, in the research of Ndaguba & Hlotywa (2021) claimed that their findings proved a positive relationship between public health expenditure and economy development in South Africa. Meanwhile, the study of Hamzah (2011) also showed a statistically significant and beneficial relationship between the health sector and economic growth, and it is anticipated that this sector would have a direct effect on economic growth. Given the importance of the health sector in supporting both economic growth and high worker productivity, the government may also choose to boost its expansion on this sector (Hamzah, 2011).

Nevertheless, there is also a researcher showed government spending is an insignificant determinant towards income inequality. The findings of Djohan, Hasid, & Setyadi (2016) suggested that variations in government spending have a negligible, adverse, and insignificant impact on changes in economic growth. Their research also argued that their findings did not reveal any evidence of an indirect relationship between changes in government spending and changes in economic growth in regions of the Indonesian islands. Therefore, this can be justified why the findings of this study showed there is an insignificant effect of government spending on health sector towards economy growth and income inequality in Malaysia.

There are two ways arguments regarding this result obtained, according to past literatures. However, we still have to admit that health sector is still very crucial for a nation and cannot be neglected. Therefore, some recommendations will be suggested relating to this result.

5.2.4 Pension Fund

Next, government spending on pension is significant determinant towards the income inequality in short run but showing negative effect. This can be explained by the study of Gustafsson (2022), which the findings suggested that cases with redistributive pension plans show higher income inequality than earnings-based pension plans. In fact, a redistributive pension scheme may increase permanent inequality if the rise in wage inequality is large enough (Gustafsson, 2022).

However, the findings show that government spending has insignificant effects on economy growth in Malaysia. The result is consistent with the research of Zandberg & Spierdijk (2010), which claimed that there is no relationship between pension funding and economic growth during the year of 2001 to the year of 2008 in a sample of OECD and non-OECD nations.

5.3 Implications of the Study

The study provides policymakers with evidence on how different types of government spending influence economic growth. This can help guide decisions on

how to allocate resources more effectively. Furthermore, the recommendations from the study can be implied to enhance the quality and efficiency of public services.

Besides, the positive impact of education spending on economic growth suggests that continued and targeted investment in education and training can boost long-term economic benefits.

In addition, it would be preferable if the future studies can imply a broader variety to measure income inequality, instead of the Gini coefficient. The reason is because broader measurements are significantly more sensitive towards the fluctuations in income inequality and thereby giving a more accurate results.

To conclude, this paper can be served as a basis for further research on the impact of government spending on other aspects.

5.4 Limitation of the study

One of the limitations of this study is which the availability and quality of data may be different across the various variables and time periods, so there will be a chance to affect the accuracy and reliability of the findings and results. In addition, the components of the government spending in this paper are limited. The other variables such as infrastructure investment, political stability and global economic factors that could influence the economic growth and income inequality are not included in the analysis. Therefore, the future studies could explore the impact of these variables on the relationship between government spending and economic growth, as well as income inequality.

5.5 Recommendations for Future Research

According to the results and findings, government is recommended to focus expenditure on education and training that has a significant positive effect on the economy growth. For instance, government can improve this sector by establishing vocational training. This is due to there is a lack of emphasizing on vocational education in Malaysia. According to Loo (n.d.), Vocational Training is the training

that provides specialized skills and knowledge, as well as focus on the skills required for a particular job function. Hence, Malaysia could potentially improve its industrial development and contribute to economy growth.

On the other hand, since the pension payment is insignificant towards the economy growth; therefore, government should review pension policies by continuously monitor and adjust the pension system to ensure long-term sustainability and effectiveness.

In addition, there is a need to improve transparency and accountability in government spending, especially in sectors with significant negative impacts. According to the prevailing international institutions, "good governance" should be promoted by establishing its "four pillars": public engagement, accountability, transparency, and predictability (Kristiansen & Santoso, 2005). The construction of the four pillars should involve making public services available and decentralizing administrative and political decision-making. According to Kristiansen & Santoso (2005), it can also facilitate increased political representation and the involvement of various groups in decision-making, as well as increase the accountability of public institutions and improve service delivery. Furthermore, the study of (Ali, Mohamed, & Mohamed, 2024) also mentioned that increasing public financial management's transparency is essential, since fiscal policy is the nation's main and most useful tool for managing its economy. This will ultimately promote sustainable economic growth by helping to realize the goals of fiscal policy and facilitating the effective deployment of public resources (Ali, Mohamed, & Mohamed, 2024).

5.6 Conclusion

This chapter provides an overall conclusion of the entire research project which aligned with the research objectives mentioned. The objective of this research is to study the impacts of allocation of government spending on economy growth and income inequality in Malaysia. The research problems have also discussed and thereby became the motivation to investigate for this topic.

 In addition, the research highlights the critical importance of government spending allocation in shaping the economy growth and income inequality in Malaysia. The challenges and opportunities on allocation of government spending on various

sectors towards economy growth and income inequality in Malaysia are also pointed out and discussed form this study. Therefore, policymakers can utilise this paper as a reference for their further research. It is believed that Malaysia can become a prosperous country by looking into the opportunities for growing the country's economy and implementing the recommendations suggested in this paper.

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