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The Impact of Fiscal Policy Instruments on Economic Wellness: Evidence From Malaysian Per Capita Income*

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Abstract

This study examines the strength of the impact of fiscal policy tools on economic wellbeing as measured by per capita income in Malaysia from 1996 to 2020. The impact of fiscal policy instruments on economic wellness, represented by real income per capita, is measured using the autoregressive distributed lags model. The speed of adjustment from short-run disequilibrium to long-run equilibrium is also measured to assess the strength of the fiscal instruments' impact on per capita income. Empirical results exhibit the existence of co-integration relationships between per capita income, tax revenue, and government spending. The findings provide strong support for the presence of a long-run positive impact on government spending and a long-run negative impact of tax revenue on per capita income. The coefficient of ECT_{t-1} indicates that deviations from a short-run disequilibrium to a long-run equilibrium from the current to the future period are corrected with a speed of 76% (equivalent to a duration of 1.5−2 years to return to equilibrium). The practical and policy implication of the results is fiscal instruments play a significant role, mainly in alleviating the economic impact of the COVID-19 pandemic in the long run.

Keywords: Income Per Capita, Government Spending, Tax Revenue, Co-Integration, Malaysia

JEL Classification Code: E60, E69, O23

1. Introduction

The effect of fiscal policy on macroeconomic activities is one of the most vital and unsettled issues in economics. Currently, as the COVID-19 pandemic exacerbates, this issue once again becomes a topic of intense debate among economists and policymakers worldwide. The main agenda is to introduce strong preventive measures with significant impacts on the global economy to address the ongoing economic issues, including a decrease in economic wellness that encompasses income and standard of living (Kawohl & Nordt, 2020).

Many academics and researchers have looked into the effectiveness of fiscal policy in influencing economic growth using various cases and problems in the past few decades (Arvin et al., 2021; Othman & Bekhet, 2021; Chishti et al., 2021; Alzyadat & Al-NSour, 2021; Stoian & Iorgulescu, 2020; Adedokun, 2018; Zulkofli et al., 2018; Sivitanides, 2018; KaragÖz & Keskin, 2016; Lahirushan & Gunasekara, 2015; Hamdi & Sbia, 2013; Bekhet & Othman, 2012; Magazzino, 2012; Narayan, 2005). However, the results of these studies are inconclusive. According to some economists, fiscal policy instruments are non-productive and negatively contribute to economic growth (Basuki et al., 2020; Hsing, 2019). Meanwhile, some economists are of the view that development expenditures are productive and contribute to positive economic growth (Arvin et al., 2021; Alzyadat & Al-NSour, 2021; Tsaurai & Odhiambo, 2013; Hamdi & Sbia, 2013).

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The COVID-19 pandemic had a detrimental effect on Malaysia's per capita income growth in 2020. Figure 1 shows that the country's annual per capita income growth was 3% during the 1996–2020 period. There was an increasing trend in per capita income throughout much of the period followed by a decline from 2019 to 2020.

The Malaysian government revised its 2020 total expenditure allocation upwards to RM314.7 billion from the initial budget estimate of RM297 billion due to the prolonged COVID-19 pandemic crisis (The Edge Market, 2020). This strategy was one of the government's positive actions to cushion the impact of the crisis and stimulate gross domestic product (GDP) growth. Expansionary fiscal policy measures through additional allocation and tax relaxation are crucial to protect people's livelihood, support businesses, and mitigate the fallout of economic activities from the crisis. Figure 2 shows the government spending and tax revenue records from 1996 to 2020.

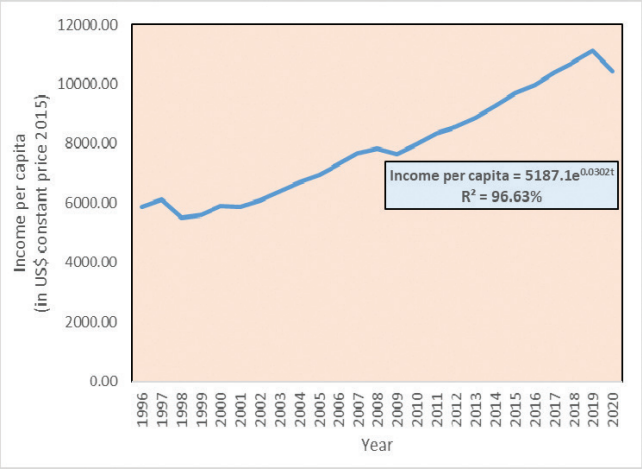

Figure 1: The Income Per Capita in Malaysia
Source: https://databank.worldbank.org

Some studies support the association between fiscal policy and economic activities, saying that fiscal policy influences economic wealth, the environment, and communities (Alzyadat & Al-NSour, 2021; Othman et al., 2020; Zulkofli et al., 2018; Lahirushan & Gunasekara, 2015). This notion is consistent with the schools of thought of Keynes and Wagner. Nonetheless, policymakers still need to consider the size of the impact of fiscal policy instruments on per capita income. In this regard, this study aims to measure the impact of fiscal policy instruments on per capita income in Malaysia. This aim can be achieved by: (a) confirming the existence of a co-integration relationship between fiscal policy instruments and per capita income, (b) examining the interaction between short-run and long-run equilibriums, and (c) determining how fast the short-run disequilibrium moves towards the long-run equilibrium within the suggested framework. This study is significant to policymakers, which in this case is the government of Malaysia, as it shows how sensitive economic wellness is to fiscal instruments, especially at a time when the government is seeking to recover the country's economy after being hit by the COVID-19 pandemic.

This paper is structured as follows. Section 2 summarizes the past literature and the development of the hypotheses. The data, methodology, and analysis of results are presented in sections 3 and 4. Finally, section 5 presents the conclusion and policy implications of the study.

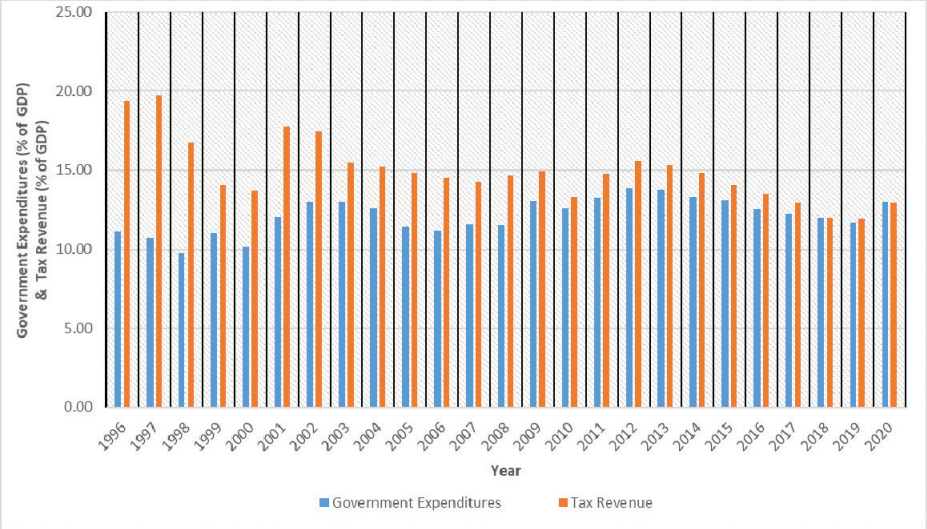

Figure 2: Government Spending and Tax Revenue in Malaysia
Source: https://databank.worldbank.org

2. Literature Review and Hypothesis Development

There is vast literature on the nexus between government expenditure and economic growth. The focus of the researcher in this section is, however, to review the past studies that examined the impact of fiscal instruments on economic growth or activities. The results were found to be inconsistent and reported as follows.

Magazzino (2012) measured the connection between several types of government expenditure and GDP in Italy. The study found a strong positive correlation between real GDP and interest expenditure, indicating that higher values of real GDP are associated with higher values of government expenditures. In Zimbabwe, Tsaurai and Odhiambo (2013) investigated the interaction between government expenditure and economic growth by utilizing the autoregressive distributed lag or ARDL-bounds testing approach. The study found that government expenditure drove economic growth only in the short run. Hamdi and Sbia (2013) empirically examined the dynamic relationship between oil revenue, government expenditure, and economic growth in the Kingdom of Bahrain. The study demonstrated a positive relationship between tax revenue and GDP. However, a negative relationship was found between tax revenue and GDP in the short run. Mehrara (2014) investigated the relationships between government expenditure, economic growth, capital stock, oil revenue, and education. The study found co-integrations among the variables, but government expenditure did not seem to make a significant contribution to GDP.

Adebumiti and Mansur (2018) investigated the nonlinear asymmetric relationship between energy consumption and economic growth by incorporating government expenditure and oil prices into a production function using the Nigerian economy from 1980 to 2014. Co-integrated relationships were found among the variables. Likewise, negative shocks to government expenditure were found to affect economic growth. Mazorodze (2018) assessed the economic growth–government expenditure nexus and found that government expenditure positively influenced GDP growth, which is consistent with Keynes's theory. Arvin et al. (2021) measured the interactions between institutional quality, government expenditure, tax revenue, and economic growth in low-income and middle-income countries. They found co-integration relationships among the variables, with government expenditure, tax revenue, and institutional quality positively impacting economic growth.

Alzyadat and Al-NSour (2021) measured the financial instruments and the economic prosperity in Jordan. They discovered that government spending has a favorable effect on economic growth. Tax income stimulates economic growth in the short run but has a detrimental impact on economic growth in the long run. Basuki et al. (2020) analyzed the determinants causing economic growth in Indonesia and discovered that fiscal tools only provide a limited and ineffective contribution to economic growth in Indonesia. Hsing (2019), on the other hand, compared the interplay of fiscal instruments on economic output and monetary instruments on economic output. The results showed that fiscal instruments had a negative impact on economic output, whereas monetary instruments had a favorable impact.

In the case of Malaysia, recently, Ismail and Houssein (2020) investigated the relationship between income per capita and government spending using annual data spanning from 1980 to 2018. They found that income per capita had a negative relationship with government consumption spending but a positive relationship with government expenditure on education in the long run.

Thus, in some cases, expansionary fiscal policy was found to accelerate economic growth, but in other cases, it was unable to create positive economic growth. Due to this paradox and to achieve the aim of this study, the following hypotheses have been formulated:

H1: *A significant co-integration relationship exists between per capita income and fiscal instruments in Malaysia.*

H2: *Per capita income has a significant short-run relationship with fiscal instruments in Malaysia.*

H3: *Per capita income has a significant long-run relationship with fiscal instruments in Malaysia.*

3. Data and Methodology

This study employs the latest secondary data consisting of annual time series data from 1996 to 2020. Data were extracted from the websites of the World Development Indicator (WDI) and the Department of Statistic Malaysia (DOSM). Annual data were interpolated into semi-annual data to increase the number of observations. Four variables are used variables to satisfy the objectives of the study: income per capita (I), government spending (GE), government tax revenue (T), and price index (P).

The empirical framework is grounded on endogenous growth theory, in which fiscal policy instruments have a role in influencing income. The relationship is presented as $I = f$ (GE, T, P), where income per capita is a function of government spending, government tax revenue, and price. I, GE, T, and P are proxied by income per capita growth (logarithm of income per capita), government spending as a percentage of GDP, government tax revenue as a percentage of GDP, and customer price index (CPI), respectively. The static model is presented in equation (1):

$$\ln I_t = \beta_1 + \beta_2 \mathrm{GE}_t + \beta_3 T_t + \beta_4 P_t + \varepsilon \quad (1)$$

where β_i [i = 1, 2, 3, 4] is the marginal impact on I as a result of changes in GE, T, and P. The larger the coefficient, the larger the impact on I (Xu et al., 2020). For this study, the dynamic model via ARDL introduced by Pesaran and Shin (1995) is used. This model entails both long-run and short-run impacts of the underlying independent variables on the dependent variable. Thus, the empirical model can be specified as follows:

$$\begin{aligned}\Delta \text{In } I = {} & \delta_1 + \alpha_1 \text{In } I_{t-1} + \alpha_2 \text{GE}_{t-1} + \alpha_3 T_{t-1} + \alpha_4 P_{t-1} \\ & + \sum_{m=1}^{k} \Delta\theta_1 \text{In } I_{t-m} + \sum_{m=0}^{k} \Delta\theta_2 \text{GE}_{t-m} \\ & + \sum_{m=0}^{k} \Delta\theta_3 T_{t-m} + \sum_{m=0}^{k} \Delta\theta_4 P_{t-m} + \varepsilon\end{aligned} \quad (2)$$

Where Δ is the first difference operator, δ_1 represents the intercept, α_{1-4} denotes the long-run marginal impact of the variables, and θ_{1-4} represents the short-run marginal impact of the variables. ε represents the error term, k is the maximum lag length, and m indicates the lag's optimal number. This study also uses the Akaike information criterion (AIC). AIC tends to select the maximum relevant lag length, increase the model's dynamic, and prevent the model from being under-fit (Zhang et al., 2021; Othman & Bekhet, 2021; Dickey & Fuller, 1979).

In the ARDL estimation, the technique-bound test introduced by Pesaran et al. (2001) is used to determine whether or not long-run relationships exist among the variables. The null hypothesis of no co-integration among the variables is tested using the joint significance value of F-statistics. An F-statistic value that is greater than the upper critical value Narayan (2005) would lead to the rejection of the null hypothesis of no co-integration, implying the existence of long-run relationships among the variables. If the test statistics value is found to be lower than the lower bound value, then the hypothesis of co-integration would be rejected. However, if the F-statistics value is between the lower and upper bounds, then the decision would be inconclusive.

If the long-term relationship is confirmed by the bounds test, the error correction model (ECM) is valid (Singhania & Saini, 2020) to measure how quickly an equilibrium distortion is corrected (see equation [3]). Also, the long-term and short-term coefficients of the model will be discussed to assess their impacts on the dependent variable, with the primary purpose of analyzing how the fiscal instruments to influence per capita income.

$$\begin{aligned}\Delta \text{In } I = {} & \delta_1 + \sum_{m=1}^{k} \Delta\rho_1 \text{In } I_{t-m} + \sum_{m=0}^{k} \Delta\rho_2 \text{GE}_{t-m} \\ & + \sum_{m=0}^{k} \Delta\rho_3 T_{t-m} + \sum_{m=0}^{k} \Delta\rho_4 P_{t-m} \\ & + \gamma \text{ECT}_{t-1} + \varepsilon\end{aligned} \quad (3)$$

where γ captures the speed of adjustment to reach equilibrium in the event of a shock to the system and ECT_{t-1} counted the residual that was obtained from the estimated co-integration model of equation (1). To test the validity and reliability of the estimated ARDL model, this study conducts a number of diagnostic tests on its residuals including the Breusch-Godfrey serial correlation LM test, the White test for heteroscedasticity, and the Jarque-Bera normality test. The test statistics for serial correlation (χ^2 sc), heteroscedasticity (χ^2 H), and normality (χ^2 N), along with their corresponding p-values, explain the presence of serial correlation, heteroscedasticity, and non-normality if the p-values are lower than the chosen significance level. Moreover, the ARDL model is tested for stability with the aid of cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests. The stability of the estimated coefficients is confirmed if the values of both tests remain within the critical values at 5%.

4. Results

The ADF test is used to assess the co-integration relationship among the variables (see Table 1). All variables are substantially stationary [I(1) at least at 5%]. These results are consistent with most previous studies that employed financial and macroeconomic variables (Othman & Bekhet, 2021).

Since all data is stationarity and the sample size is relatively small (n = 46), the F-bounds assessment is the most proper method for measuring the co-integration relationship. Before conducting the F-bounds test, the optimal lag selection is determined using AIC, and the result shows that the best lag extent for this model is 4.

Table 2 presents the results of the F-bounds test. The empirical findings show long-run relationships between all variables at a 1% significant level over the 1996–2020 period, and the findings are consistent with Othman et al. (2020). This is because the calculated F-statistic for each model is higher than the upper bound critical value at a 1% level of significance.

Regarding the above findings, the ECM has been formulated to confirm the long-run elasticities between fiscal instruments and per capita income. The results in Table 3 show that the government spending and price index coefficients have long-run positive impacts on per capita income. However, government tax revenue has a long-run negative impact on per capita income. These findings imply an increase in productive government spending will lead to increased demand for goods and services, which will stimulate the production process, boost employment, and ultimately increase income per capita. This study's findings are thus consistent with Hamdi and Sbia (2010), Mehrara (2014), Mazorodze (2018), and Arvin et al. (2021).

Table 1: Stationary Test Result

Variables	Level	ADF Statistic	Critical Value			Decision
			1%	5%	10%	
lnI	I(0)	–4.19[a]	–4.16	–3.50	–3.18	I(1)
	I(1)	–3.89[b]				
GE	I(0)	–2.25				I(1)
	I(1)	6.74[a]				
T	I(0)	–2.97				I(1)
	I(1)	–6.90[a]	–3.57*			
P	I(0)	–0.98		–2.92*	–2.60*	I(1)
	I(1)	–3.15[b]				

Note. [a, b,] and [c] indicate 1%, 5%, and 10% significant levels, respectively. Type of test = ADF statistic. * indicates the critical value with trend and intercept. Source: Output of EVIEWS package version 12.

Table 2: Result of *F*-Bounds Test

Model	*F*-Stat.	Critical Value			Decision
		Level	I(0)	I(1)	
lnI/GE, T, P	15.94[a]	10%	2.56	3.42	Co-integrated
		5%	3.07	4.02	
		1%	4.27	5.41	

Note. [a, b,] and [c] are already defined in Table 1. Source: Output of EVIEWS package version 12.

In addition, the coefficient of the lagged error term is significant at the 1% level with a negative sign, which supports the evidence of stable long-run relationships among the variables (Singhania & Saini, 2020). The coefficient of ECT_{t-1} indicates that deviations from the short-run to the long-run equilibrium from the current to the future period are corrected with a speed of 76% within 6 months (equivalent to a duration of 1.5 to 2 years to return to equilibrium). During that particular time, the ability of the Malaysian population to improve their economic wellness in the event of economic disruption is quite limited. Another 24% of the disequilibrium is transmitted from one period to the next, and it will take around 1.5–2 years to dissipate fully, assuming no other shocks occur in the meantime. The negative sign means that the model is converging towards equilibrium (Al-Bajjali & Shamayleh, 2018). Besides, the R^2, adjusted R^2, and DW results signify that this model is fit and supports the above results.

The marginal impact of past per capita income on current per capita income is positive and statistically significant in the short run. Further, the marginal impacts of per capita income with government spending and tax revenue are significantly negative and positive, respectively, in the short run. This finding implies that government spending on public goods will not improve the income of the population in the short run. The impact can only be seen in the long run.

The diagnostic test results, as presented in Table 3, show that the model has the desired econometric properties, i.e., the residuals are normally distributed, serially uncorrelated, and homoscedastic, besides possessing a correct functional form (Abbasi et al., 2021; Law, 2008). The cumulative sum (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) test statistics are well within the 5% critical boundaries, indicating relatively stable long-run and short-run coefficients in the ECM (Figure 3). Therefore, the empirical model may be used to derive the policy implications for fiscal instruments, per capita income, and price index in the case of Malaysia.

5. Conclusion

The purpose of this research is to measure the impact of fiscal policy instruments on economic wellness represented by per capita income in Malaysia for the 1996–2020 period. The ARDL model was used to achieve this aim.

Table 3: Long-Run Elasticities, Short-Run Elasticities, and Residual Diagnostic Test

Level Equation, Case 2: Restricted Constant and No Trend							
Long-Run				Short-Run			
Variables	**Coefficient**	***t*-statistic**	**Prob.**	**Variables**	**Coefficient**	***t*-statistic**	**Prob.**
GE	0.03[a]	4.02	0.00	ΔlnI_{t-2}	0.35[a]	3.16	0.00
T	–0.04[a]	–4.83	0.00	ΔlnI_{t-3}	0.35[a]	3.23	0.00
P	0.01[a]	10.11	0.00	ΔGE	0.01[b]	2.16	0.03
constant	8.22[a]	55.00	0.00	ΔGE_{t-1}	–0.01[a]	–2.97	0.00
				ΔGE_{t-2}	–0.01[b]	–2.37	0.02
				ΔGE_{t-3}	0.02[a]	–3.77	0.00
				ΔT	–0.02[b]	–5.71	0.00
				ΔT_{t-1}	0.01[b]	1.82	0.07
				ΔT_{t-2}	0.01[a]	3.49	0.00
				ΔT_{t-3}	0.01[a]	7.07	0.00
				ΔP	0.01[a]	1.63	0.00
				ECT_{t-1}	–0.76[a]	–9.54	0.00

ECT_{t-1} = lnI – (0.0350 * GE – 0.0454 * T + 0.0098 * P + 8.2268)

Test	***F*-stat/Probability**	**Decision**
Normality test	4.91 (0.09)	H0: Normal distributed
Breusch-Godfrey Serial Correlation test	2.64 (0.09)	H0: No serial correlation
Breusch-Pagan-Godfrey -Heteroscedasticity test	1.24 (0.29)	H0: No Heteroscedasticity
Ramsey RESET test	1.74 (0.20)	H0: Model has a correct functional form

Note. [a, b,] and [c] are already defined in Table 1. R^2 = 83%; Adj R^2 = 76%; DW = 1.5.

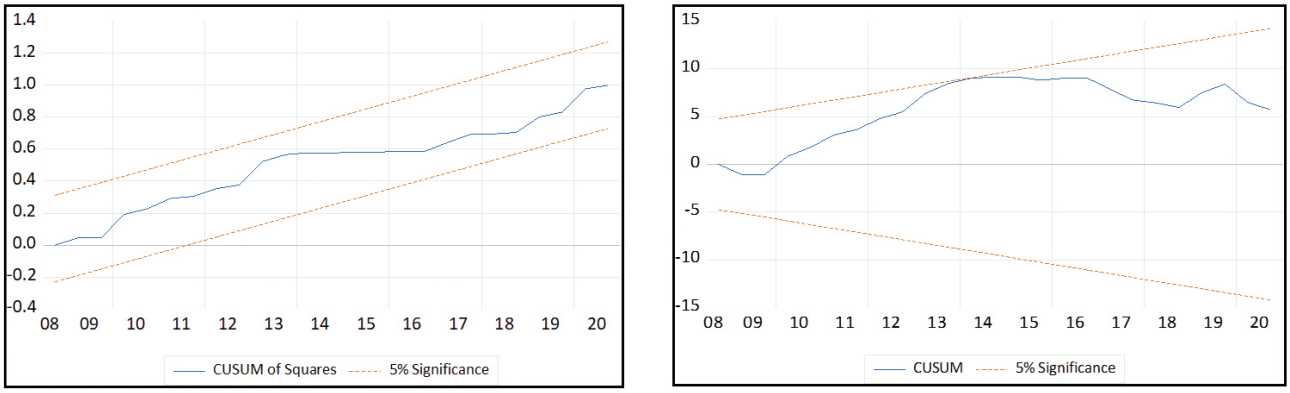

Figure 3: CUSUM and CUSOMSQ Curves Tests

The significance of the ECT_{t-1} coefficient was measured to assess the strength of fiscal instruments' impact on per capita income. Empirical results exhibit the existence of co-integration relationships between per capita income, tax revenue, and government spending. The findings provide strong support for the presence of a long-run positive impact on government spending and a long-run negative impact of tax revenue on per capita income. The coefficient of ECT_{t-1}

indicates that deviations from the short-run disequilibrium to the long-run equilibrium from the current to the future period are corrected with a speed of 76% (equivalent to a duration of 1.5–2 years to return to equilibrium).

The significance of fiscal instruments in determining economic wellness represented by per capita income has an important policy implication in addressing the economic impact of the COVID-19 pandemic or any other future unexpected circumstances. In line with the Keynesian theory, during economic uncertainty, when the economic recession is caused by an unexpected disaster, expansionary fiscal policy is the best solution to stimulate the GDP growth of a nation. Expansionary fiscal policy is a productive measure to protect people's livelihood, support businesses, and mitigate the fallout of economic activities. Policymakers may use this study's findings to put in place sound public finance policies that support sustainable economic growth.

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