

MALAYSIA GOVERNMENT REVENUE AND PUBLIC DEBT – 1970 THROUGH 2019

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ABSTRACT:

This study aims at examining Malaysia's fiscal management over the past 50 years with a specific focus on investigating strength of relationship between government revenue and government debt. Within the framework of Public Finance theory, this paper deploys Ordinary Least Squares (OLS) regression as an estimation tool to model the yearly data from 1970 through 2019. The empirical results from the study show that government revenues (tax revenue and non-tax revenue) do influence government borrowings or public debt in Malaysia. From Pearson correlation coefficient, we observe a strong positive correlation between government revenue and government debt. As such, government revenues from tax collections and public investments play an important role not only in financing public expenditure but also in sustaining an optimal fiscal policy. Government borrowing that aims at financing accumulation of public capital would allow Malaysia economy to reach its long-term optimal growth faster.

Keywords:

Government Revenue, Public Debt, Fiscal Policy, Government Expenditure

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INTRODUCTION

Malaysia's economy has been transformed since 1970 from one based primarily on the export of raw materials (rubber and tin) to one that is among the strongest, most diversified, and fastest-growing in Southeast Asia. Primary production remains important: the country is a major producer of rubber and palm oil, exports considerable quantities of petroleum and natural gas, and is one of the world's largest sources of commercial hardwoods. Increasingly, however, Malaysia has emphasized export-oriented manufacturing to fuel its economic growth. Using the comparative advantages of a relatively inexpensive but educated labor force, well-developed infrastructure, political stability, and an undervalued currency, Malaysia has attracted considerable foreign investment, especially from Japan and Taiwan.

Since the early 1970s the government has championed a social and economic restructuring strategy, first known as the New Economic Policy (NEP) and later as the New Development Policy (NDP) that has sought to strike a balance between the goals of economic growth and the redistribution of wealth. The Malaysian economy

has long been dominated by the country's Chinese and South Asian minorities. The goal of the NEP and the NDP has been to endow the Malays and other indigenous groups with greater economic opportunities and to develop their management and entrepreneurial skills. Official economic policy also has encouraged the private sector to assume a greater role in the restructuring process. A major component of this policy has been the privatization of many public-sector activities, including the national railway, airline, automobile manufacturer, telecommunications, and electricity companies.

The primary objective of this study is to examine strength of relationship between government revenue and government debt in the Malaysian context. Government revenue is considered as one of the imperative components that has been supporting Malaysia economic growth over the past 50 years. For this reason, a sound fiscal policy is required as it could contribute essentially to long-term economic growth. Public finance involves the role of government in navigating the economy and adjustments in either government revenue (via taxation) or government expenditure is vital so as to achieve desirable outcomes. All in

all, the issue of optimal public finance requires serious attention among policy makers since it could prompt either positive or detrimental effect towards developing a country's long-term competitive advantage.

LITERATURE REVIEW

Malaysia is a trading nation that practises an open economic system. It is closely intertwined with the global economy and greatly influenced by the cyclical nature of the systems, as evidenced by the 2008 global financial crisis. Malaysian economy coalesces around domestic as well as international activities such as export, import and foreign direct investment with its numerous trading partners. These are the major contributors to the government revenue. The other half of the Malaysian government revenue come from taxation which include tariff, duties, corporate taxes and other non-tax revenues.

Even though Malaysia pursues an expansionary fiscal policy espoused by Wagner Law (Wagner, 1883) which is characterized by increase in spending and lower taxes (Taha and Loganathan, 2008), this fiscal approach is not necessarily trigger sustainable economic growth for the country. Aziz *et al.* (2001) reveal a bidirectional causality between federal government revenue and expenditure from 1960 to 1996 suggesting that government may change its fiscal policy to suit the country's current economy situation and above all for national interest.

Loganathan *et al.* (2011) report a unidirectional causality in that the government spending is directly funded by direct and indirect tax revenue. Using time series data from 1970 to 2009, their study suggests that Malaysian government should reform its taxation policies to ensure continuous growth in tax revenue in order to support its spending regime. Taha *et al.* (2008) find that there is a bidirectional relationship running from direct tax revenues and indirect tax revenues to government spending. The results indicate that any reduction to direct and indirect taxes rates (government revenues) will lead to a fall in government spending. In addition, non-tax

revenue is just a secondary contributor to the government revenue.

In order to sustain economic development and production capacity, a productive country requires a substantial amount of capital and resources to generate projected government revenue. In numerous circumstances, government expenditure exceeds its revenue thereby creating a budget deficit, which in turn financed by domestic borrowing (public debt) or external borrowing (Mankiw, 2013). Budget deficit is part of fiscal policy strategy attracting interest of many modern economists and researchers. The justification of using this borrowing approach receive mixed views among scholars and policy makers. Neoclassical theorist illustrates an inverse relationship between economic growth and budget deficit, simply because persistent deficits tend to "crowd out" private investment. Siddiqui and Malik (2001) state that the impact of budget deficit on Gross Domestic Product (GDP) growth is expected to negatively crowd out public saving as well.

Ricardian school of thought views budget deficit as merely postponing taxation and having no real economic effect (Ricardo, 1911). The Ricardian argument is built on the understanding that a lower tax rate and a budget deficit require higher taxes in future. Any attempts to stimulate an economy by increasing debt-financed government spending are doomed to failure because demand remains unchanged. Cebula (1995) investigates the impact of U.S. budget deficits on real GDP growth from 1955 to 1992 and his study clearly supports the notion that federal budget deficits reduce the rate of economic growth thus requiring an aggressive taxation regime later on.

In contrast, the Keynesian advocates hypothesize that the public expenditure is an exogenous factor that can be used as a policy variable, and which can exert an impact upon growth and development in the short-run. As such, the use of public debt can accelerate the growth process (Keynes, 1936). Abd-Rahman (2012a) defines public debt as a situation when a government need to issue financial securities to finance previous budget

deficits. Malaysia fiscal policy that relies on public debt may impose detrimental effect on long-term economic growth due to rapid accumulation of public debt resulting from many years of budget deficits. Reinhart and Rogoff (2010) view that the existence of high debt can have negative impact on economic development. As Malaysia is committed towards transforming the country into a developed and high-income country by 2020, reliance on public debt to accelerate growth has led to some setbacks in the country's economic fundamentals. Evidence from earlier researchers (Abu Bakar and Hassan, 2008; Choong et al., 2010; and MohdDaud et al., 2013) indicate some inconsistencies in findings between debt and economic growth. Choong *et al.* (2010) and MohdDaud *et al.* (2013) find that external debt has a negative impact on Malaysia's long-run economic growth. Their studies also point to the existence of short-run causality linkages between external debt and economic growth. Meanwhile, Abu Bakar and Hassan (2008) posit that external debt do have a positive effect on Malaysian economic growth at the aggregate level. Although Malaysia's public debt is considered moderate according the World Bank standards, Clements *et al.* (2003) contend that the uncertainties of national debt service payment and debt burden may not augur well in pursuing future economic reform as Malaysia's national debts continued to grow over time. Other macroeconomic theories suggest that public sector expenditure should have a positive impact on economic growth. Freeman and Webber (2009) find that the productive type of public service expenditure in education and health can lead to long-term positive economic returns and growth for the country. On the other hand, investment of government revenue into unproductive types of expenditure such as subsidies or pensions, may cause a decline in economic growth (Abd-Rahman, 2012b); and Teles and Cesar Mussolini (2014).

DATA & METHODOLOGY

This study involves yearly data from 1970 through 2019. All data on government revenue and government debt are obtained from Bank Negara Malaysia (BNM) Statistical Bulletin. Total government debt is made up of domestic debt plus offshore borrowings, while total government revenues are derived from tax collections (direct and indirect taxes) and non-tax revenues. Ordinary Least Square (OLS) Regression and Pearson correlation functions are deployed to investigate the relationship between government debt and government revenue. The OLS regression is chosen as an estimation method because it is the most common method for analysing a linear model.

3.1 Dependent and Independent Variables

In this regression analysis, Malaysia's government debt is designated as the dependent variable or the variable of interest, while government revenue functions as the explanatory variable. As part of the statistical processes, the descriptive statistics for these two variables is also presented and analysed.

3.2 Pearson Correlation and Estimated Model

The Pearson correlation analysis is applied to investigate the degree of association between government debt and government revenue. To determine the variation among the dataset and validity of the model, both ANOVA and diagnostics tests are carried out to ascertain if the model may experience any collinearity issues. Based on the Theory of Public Finance (Bailey, 2004) and deploying linear regression function, this study attempts to measure the degree of relationship between government debt and government revenue. Here, we postulate that government debt is a function of government revenue as the size of borrowing is subject to the borrower's financial capability to service the debt. Often times, government borrowing is warranted particularly when tax revenues are less than predicted. Mathematically, the estimated model is expressed as follows:

$$Debt_t = \alpha + Revenue_t + \varepsilon_t \quad (t=1,2,\dots,N=T)$$

.....(1)

Where,

α = Intercept of the regression model

$Debt_t$ = Total Government Debt at time t

$Revenue_t$ = Total Government Revenue at time t.

ε_t = Error term (assumed to be normally distributed)

EMPIRICAL RESULTS

This study employs econometric time series analysis involving yearly data from 1970 till 2019. This section provides detailed explanations on the descriptive statistics as well as the empirical results from both Pearson correlation function and OLS regression analysis. The diagnostics tests are also explained in this section.

4.1 Descriptive Statistics and Pearson Correlation Analysis

Figure 1 presents the trajectories of both government revenue and government debt over a 50-year period from 1970 through 2019. It is clear that both variables are moving in tandem and have been demonstrating a robust upward momentum since 1999, a sign of strong economic recovery from the Asian Debt crisis 1997-1998. Observing these two line charts, we can see an exponential rate of change in the government debt, which begins in 2007 during Abdullah Badawi’s premiership.

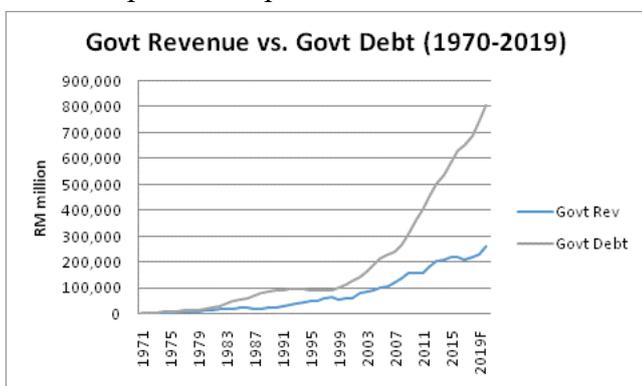


Figure 1. Growth in Government Revenue and Debt over a 50-year period

Looking at Table 1 below, the mean of government revenue over the past 50 years settles at RM79 billion in comparison with higher government debt at RM198 billion. This staggering amount of government debt

represents 2.50 times of total government revenue on the average basis. From the extreme values, the leverage is found to be even 3 times higher than the total government revenue. It is also important to note that the standard deviation of government debt is very much higher than the government revenue. This high standard deviation simply means that the statistical distribution of the government debts are more spread out as compared to the government revenue.

Table 1. Descriptive Statistics of Government Revenue vs. Government Debt

Variable	Mean	Std. Deviation	Max	Min
Revenue (RM mill)	79,414	79,352	263,324	2,400
Debt (RM mill)	198,679	224,097	804,845	5,019

Figure 2 below shows the annual percentage change in both government revenue and government debt from 1970 till 2019. It is obvious that both variables are volatile with erratic movements. From this line chart, we can also observe a marginal decrease in the amount of government debt from 1992 till 1996. However, a significant decline in government revenue was registered during the peak of Asian Debt Crisis in 1998.

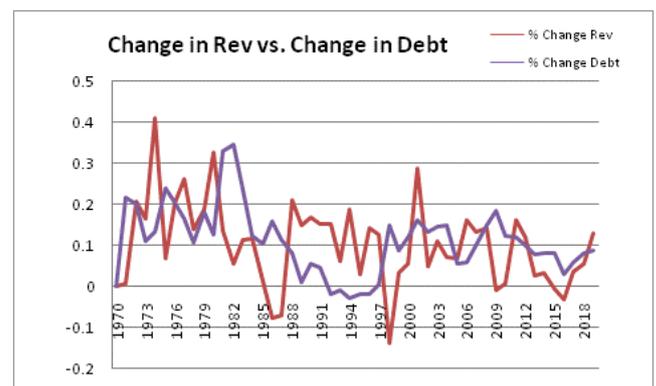


Figure 2. Percentage Change in Government Revenue vs. Government Debt

It is worthy to note that there was a drastic change in Malaysia fiscal policy during Pakatan Harapan’s (PH) administration from May 2018 till February 2020. As soon as PH won the Malaysian 14th General Election in May 2018, this coalition government removed Goods and Services Tax (GST) and reinstated Sales and

Services Tax (SST). As shown in Table 2, government revenue from indirect tax collection has dropped significantly by approximately 28.60% in 2018 and interestingly this decline was compensated by a sharp increase in non-tax revenue at almost similar magnitude

(29.35%). PH's focus on non-tax revenue is continued in 2019 registering another significant increase by almost 60%. Over a two-year period from 2018 till 2019, PH has been able to sustain growth in virtually all segments of the government revenue.

Table 2. Structural Change in Fiscal Focus (2017-2019)

Year	Govt Rev	% Change Rev	Govt Debt	% Change Debt	Non-tax Rev (NTR)	% Change NTR	Direct Tax (DT)	% Change DT	Indirect Tax (IT)	% Change IT
2017	220,406	3.76%	686,838	5.92%	39,520	1.21%	116,024	5.85%	61,634	3.18%
2018	232,883	5.66%	741,050	7.89%	51,118	29.35%	130,035	12.08%	44,026	28.57%
2019	263,324	13.07%	804,845	8.61%	81,454	59.34%	132,335	1.77%	45,077	2.39%

(Source: Bank Negara Malaysia's Statistical Bulletin)

Looking at the Pearson correlation coefficients in Table 3 below, there is a strong positive correlation between government debt and government revenue. Furthermore, the p-value indicates that this degree of association is statistically significant.

Table 3. Pearson Correlation Coefficients (N=50)
Ho: Rho = 0.00 (p-value)

Variable	Govt Debt	Govt Rev
Govt Debt	1.00	0.9760 (<0.0001)
Govt Rev	0.9760 (<0.0001)	1.00

4.2 OLS Regression Analysis

Analysis of variance (ANOVA) is a preliminary test which examines the estimated model's goodness of fit. The test results in Table 4 clearly show a significant F value which implies that the model is statistically credible. Furthermore, the coefficient of determination or the adjusted R-squared is high at 95% which suggests that a strong goodness-of-fit measure for the linear regression model.

Table 4. Analysis of Variance (ANOVA)

Source	DF	Sum of Squares	F value	Pr > F	R ²	Adj-R ²
Model	1	2.34E+12	964.99	<0.0001	0.9526	0.9516
Error	48	1.17E+11				
Corrected Total	49	2.46E+12				

The anticipated relationship between government debt and government has been proven valid as there is a strong presence of statistical significance between them. As shown by the p-value of the

explanatory variable in Table 5, we accept the alternative hypothesis of significant relationship. From this 50-year period of observation, it is clear that the Malaysian stock market will not be

influenced by report of corruptions or financial impropriety within the government of the day. When as early as 2017 news of 1MDB financial scandal began to hit the mainstream media in and out of Malaysia, there were some initial

negativemarket reactions but it was not prolonged. Suffice it to say that the TI report alone could not influence the stock market sentiment as there are other relevant factors that must be factored in.

Variable	DF	Parameter Estimate	Standard Error	t value	Pr > t
Intercept	1	-20214.	9911.43	-2.04	0.0469
Govt Revenue	1	2.7563	0.0887	31.06	<0.0001

Table 5. Parameter Estimates Dependent Variable: Government Debt

From the diagnostic perspective, the estimated model does not seem to have autocorrelation or heteroscedasticity issues. It is important to highlight that one of the main assumptions for the OLS regression is the constant variance of the residuals. If the model is well-fitted, there should be no pattern to the residual plotted against the predicted or fitted values. If the variance of the residuals is non-constant, then this residual

Now, looking at the statistical method called the White test, its p-value as shown in Table 5 is very small and we would have to reject the null hypothesis of this test that the variance of the residuals is homogeneous. While this White test is statistically significant, the distribution of residuals as shown in Figure 1 does not seem overly heteroscedastic. Needless to say, our estimated model is still efficient and statistically reliable.

variance is said to suffer from heteroscedasticity problem.

There are two common ways in detecting this heteroscedasticity problem – carrying out the graphical method as well as the statistical method. The former involves plotting the residuals against the predicted values and identify the pattern that emerges. At Figure 1, we can see that the pattern of the data points is getting a little narrower towards the left end, which is an indication of mild heteroscedasticity.

Table6. Heteroscedasticity Test Dependent Variable: Govt Debt

DF	Chi-Square	Pr>ChiSq
2	11.11	0.0039

Unlike the White test, the autocorrelation test on model’s residuals is unfavourable. The positive coefficient of 0.875 indicates positive autocorrelation and this is obviously a violation of the OLS assumption on absence of serial correlation between successive residuals. Needless to say, the model’s estimators are still consistent but not statistically efficient.

Table7. Autocorrelation Test Dependent Variable: Govt Debt

Durbin-Watson D	0.163
No. Observation	50
1st Order Autocorrelation	0.875

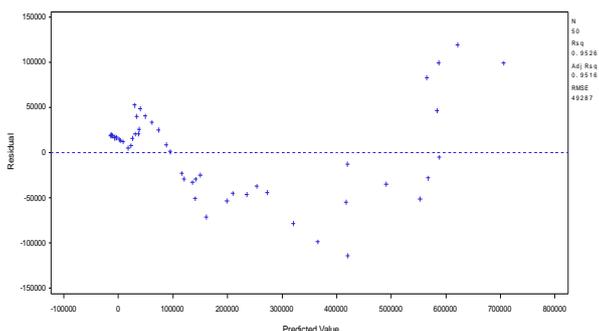


Figure 3. Graphical Method on Testing Heteroscedasticity

The study presents an imperative case to the policy makers in formulating or devising some effective strategies in fiscal management. Any approach or strategy that can help increase the level of government revenue should be lauded as

this effort will support future increase in government spending and its sovereign credit rating. A sovereign credit rating provides investors with insights on the level of risk associated with investing in government debt instruments, particularly government bonds and treasury bills. The significant relationship between government debt and government revenue is a clear indication on how mutual they are in supporting one another. There is no doubt that a sustainable increase in government revenue is of paramount importance as it will improve not only the country's credit worthiness but also leveraging its borrowing margins.

CONCLUSION

This study focuses on examining the theoretical relationship between government debt and government revenue using yearly data from 1970 till 2019. The study reveals a strong positive correlation and significant relationship between these two variables. The empirical findings could be substantiated by two possible explanations. Firstly, one must understand that a steady increase in government revenue is the key prerequisite to secure fresh borrowings either locally or internationally. Differential public finance constraint across countries is the underlying reason that limits debt capabilities. It is also important to assert that government borrowings should be channelled into sustaining optimal public expenditure and investment. Although an increase in public expenditure could help improve national productivity, government should not borrow excessively because the resulting increase in government debt would lower public welfare and economic growth in the long run. Second, there is a mutual dependency between the two variables as any budget deficit resulting from insufficient government income must be financed by government borrowings. Practically, it is much easier for government to resort to borrowings than initiating some efforts to reduce government expenditure in the short run.

As a whole, this study has shed some light that a good fiscal management is needed in navigating

economic activities and ultimately rejuvenating economic growth. For an industrialized developing country like Malaysia, a sustainable economic growth coupled with a steady increase in government revenue would reflect market confidence and best practices. This dynamic and desirable approach must be continued by the government of the day with the clear objective of optimizing economic resources and promoting operational efficiencies at all levels.

In view of mounting cases of excessive government borrowings among Asian countries, a new dynamic methodological approach is deemed desirable in terms of enlarging the sample size and employing a more robust technique in model estimation. Combining this government revenue with other relevant macroeconomic variables will not only improve the existing model but also help contribute to the development of new knowledge. It is hoped that future studies will take into this suggestion so that better understanding can be established and deliberated to the policy makers and monetary authorities worldwide.

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