Macrothink Institute™

International Journal of Accounting and Financial Reporting
ISSN 2162-3082
2019, Vol. 9, No. 2

Designing Malaysia's Tax Structure to Achieve Higher Income Country

Chung Tin Fah

ELM Graduate School, HELP University, Kuala Lumpur, Malaysia

E-mail: tfchung52@gmail.com

Received: April 4, 2019 Accepted: April 19, 2019 Published: April 29, 2019

doi:10.5296/ijafr.v9i2.14722 URL: https://doi.org/10.5296/ijafr.v9i2.14722

Abstract

After four decades of rapid, inclusive growth averaging 6.4% pa since 1970, due to successful transformation of the economy from agriculture to a modern and open economy, Malaysia needs to embark on painstaking reforms to launch its trajectory to a higher growth path. Malaysia has a lower tax burden when compared to most G8 and BRIC economies. It collects about 16.9% of GDP in tax revenues, compared with the OECD average of 34.3% in 2016 (OECD, 2015). Among the urgent reforms are taxes which need a restructuring from direct and commodity taxes with overdependence on oil and gas to a more diversified tax base. Its tax dependence on the oil and gas sectors for revenue reached a 41% high of GDP in 2009, before settling to 14% with the introduction of GST/SST. The long-run elasticity of tax burden is -0.25, which implies that GDP growth will be reduced by 0.25% for every 1% increase in tax burden, compared with -0.27 for OECD countries (Arnold, 2012). In general, taxes are negatively correlated with economic growth, even after taking into account the different types of taxes. The structure of taxation showed that GST is most sensitive to economic growth and has the highest impact. Among taxes, GST, PIT and CIT are negatively correlated to growth whereby for every 1% increase in taxes, economic growth will be reduced by 0.17%, 0.06% and 0.06% respectively. PROTAX and OTHTAX are positively related to GDP growth. Tax reforms are needed to broaden the overall tax base, resize the sources to uncover additional resources to fund needed programs for inclusive growth. Over the medium time-span, it is important that the government focus on strengthening its tax collection administration to cut off leakage and in reducing the number of tax exempt items, inevitably looking into indirect taxes and a broader tax base to contribute to a progressive income tax system in its tax reform agenda.

Keywords: Dutch disease, Correlation, Tax buoyancy, Tax elasticity, ARDL, Granger causality, Gini coefficient

JEL Classification Numbers: C22, E62, H21

1. Background

This paper's purpose is to evaluate on an analytical and comparative framework, Malaysia's trajectory path towards a higher income country using the experiences of OECD countries in the period 1990-2015. The tax measures that will be evaluated are: Corporate Income Tax, the Personal Income Tax, Property Tax, Labor Tax and the Value-Added Tax or GST. There are competing theories about how taxes affect economic growth. Past studies reveal a variation in key parameters of taxes on economic growth.

However, in our review of the literature, the empirical evidence indicate that the tax structure will have differential impact on economic growth. A priori our view is that different taxes will have an impact on economic growth, however significant or otherwise, which can be negated by government expenditure. Our expanded research will focus more on the effect of taxes on economic growth due to corporate income, goods and services, import tax, personal income tax and tax on property. This paper will adopt these widely-accepted models of taxation and growth. The data are sourced from OECD and Datastream. The data will cover 26 years of annual observations, 1990-2015.

1.1 Problem Statement and Research Questions

Malaysia, which is blessed with abundance of natural resource is afflicted with symptoms of a Dutch disease, caused by an overdependence on oil and gas revenues. This has resulted in a narrow tax base and distorted relative pricing. While taxation is obviously a fundamental source of income to fund government expenditure, it affects relative prices, which in turn can influence consumption and production patterns. Malaysia has a lower tax burden when compared to most G8 and BRIC economies. It collects about 16.9% of GDP in tax revenues, compared with the OECD average of 34.3% in 2016 (OECD, 2015). There is, therefore, large room to improve tax revenue in the country.

The following research questions will be addressed in this paper: i) the differential effects of tax structures on economic growth? ii) the ranking of tax impact on economic growth and iii) calibrating tax structure shifts to promote more economic growth.

1.2 Level of Taxation

Malaysia has a lower tax burden when compared to most G8 and BRIC economies. It collects about 16.9% of GDP in tax revenues, compared with the OECD average of 34.3% in 2016 (OECD, 2015). Figure 1 below shows that Malaysia's tax to GDP ratio has been trending downwards from 1991 to 2015. The tax revenues trend in Malaysia does not show significant changes over the last ten years. There is, therefore, large room to improve tax revenue in the country.

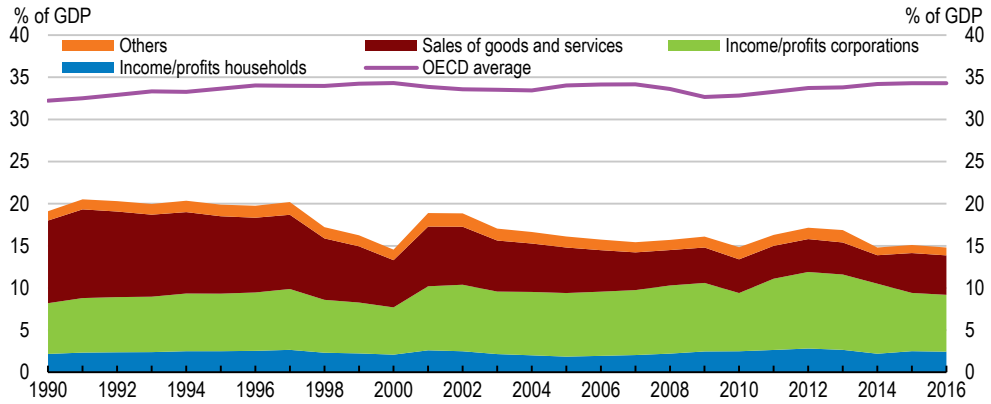

Figure 1. Malaysia VS OECD – tax revenue as % of GDP

Source: OECD countries and Bank Negara Annual Report, various issues

For comparisons of overall tax burden, tax-GDP ratios are commonly adopted in international publications, in general reflecting the performance of the country's revenue agency in collecting taxes. The tax ratio can also indicate the extent of any tax gap, or how much tax potential is not being realized. The tax ratio approach shows that the revenue performance of taxation institutions in Malaysia is far from optimal in comparison with that of developed countries. However, the tax –GDP ratio is affected by households' transfers in the form of benefits, due to different tax rates on transfers and earnings. For some transfers, taxes are imposed at lower rates, which will impact tax-GDP ratio. There could be reasons for their low tax ratios – poor enforcement by tax authorities or lack of voluntary compliance by taxpayers. Not all taxpayers pay the taxes they should: non-compliance can take the form of underpayment of taxes due, under-reporting of income or not reporting it at all. Not all taxpayers pay the taxes they should: non-compliance can take the form of underpayment of taxes due, under-reporting of income or not reporting it at all. With all these conceptual and statistical problems involved, the level and structure of taxation would be a better focus. Across OECD countries, the ratio of tax to GDP ratio rose uniformly by 6 percentage points in the period 1975-2008. This has stabilized in the recent period.

Although there are differences between tax instruments in the tax burden distribution, the bulk of most OECD countries revenue come from goods and services tax, personal and corporate income and taxes on social security (low for most developing countries). Table 1 shows the unweighted OECD average for the three main taxes as a share of total tax revenue, where some are endogenously driven while others are due to government induced policy. Table 1 shows how globalization and structure of open economies may also be factors affecting the OECD countries taxation trend. As shown in in Figure 1, over the last thirty years, the main patterns for the OECD unweighted average can be summarized as follows:

● In developed OECD countries, income tax is the main contributor of state revenue. In most OECD countries, the regressive impact of indirect taxes is mitigated by personal income tax (PIT) systems that are progressive and help provide good social security systems. This has resulted in fairly constant share of PIT/GDP for the United Kingdom, Italy, Greece and

Austria, compared to France, Iceland, and Canada, PIT's share has increased considerably. In Malaysia, the share of PIT has been constant at around 10-15% of revenue.

Table 1. Evolution of the average tax mix in the OECD VS Malaysia, % of total revenues

OECD						
Year	PIT	CIT	SSC	Property	Goods	Other
1990	30.3	7.8	23.1	5.6	31.3	1.9
1995	26.1	8.1	26.4	4.8	33.0	1.5
2000	25.6	9.7	25.3	5.3	32.1	2.1
2005	24.1	10.1	25.3	5.4	32.1	3.0
2010	23.6	8.3	27.0	5.2	32.5	3.4
2015	24.3	8.1	26.3	5.5	29.8	6.1
Malaysia						
1990	11.0	31.7	0.0	3.1	45.2	9.0
1995	14.0	32.2	0.0	3.0	40.8	10.0
2000	13.5	39.2	2.0	3.0	31.3	11.0
2005	9.9	48.4	2.0	4.0	28.7	7.0
2010	15.1	48.4	2.0	4.0	23.6	7.0
2015	14.8	44.8	2.0	3.0	30.4	5.0

Source: OECD countries reports, various issues

● Compared to developing countries, where the redistributive effect of income tax is not optimized; thereby indirect taxes feature strongly in the structure of taxation in developing countries. In a number of developing countries, indirect taxes/ total revenue is as high as 62% in Brazil. The table above shows that Malaysia's 45.2% indirect taxes/total revenue in 1990 has declined to 30.4% in 2015.

● For social security contributions/total revenue, the share has increased steadily to about 27% in 2007, while the shares for Netherlands, Italy, Spain and France have decreased. The share of Social Security Contributions (SSC) is the main difference with OECD countries (26.3%) where in Malaysia, the share is only 2%. This reflects the social security benefits for workers in most developing countries where workers are not as well provided for.

● In the majority of OECD countries, corporate income tax share of total tax revenues has improved to account for 8-10%. In developing countries, the proportion of CIT outweighs revenue from PIT. In Malaysia, being a commodity producing countries, CIT from some of these companies are the mainstay of CIT which occupy a share of 45% of total revenue in 2015. CIT is easier to levy because businesses are obliged to produce audited financial statements. For developing countries, this might indicate a lack of compliance by individual taxpayers, whereby PIT collection has not been satisfactory and optimal.

● The share of consumption taxes to GDP (specific and general consumption taxes) has declined, although the consumption of goods and services in consumption tax revenue has shifted to higher general consumption taxes, particularly VAT/GST. The share of general consumption taxes/GDP ratio among OECD countries - Belgium, Unites States, and Italy has stagnated, while this ratio has declined in Turkey, France, Iceland, Norway and Austria. In Malaysia, of the 30.4% share of goods/total revenue, the SST's share is only 6-11%, except for 2015 which rose to 18.22% inflated by GST's contribution.

● The share of property taxes/total revenue ratio (which include items such as "immovable property, net wealth, inheritances and legal transactions") has stagnated for the majority of OECD countries except for Korea, Luxembourg, Spain, Ireland and France where there is a more than 25% increase since 1980, while in New Zealand it declined by more than 25%. In Malaysia, property/total revenue ratio of 3% is still low. The taxes collected from the property sector come from the property companies through payment of corporate income taxes rather than individuals through property taxes.

2. Literature Review

In our review of the literature, studies by Agell, Ohlsson & Thoursie, (2006), Folster & Henrekson (2001), and Papara & Richter (2015), have tried to improve on the methodology to measure impact of taxes on economic growth and whether there is a feedback from growth to taxes, without any clear consensus. Evidence from the literature as postulated by Myles (2000) stated that the financial or economic capacity of any government depends on the fiscal resources available to it, the revenue base of the government, and the way these resources are generated and utilized.

Firstly, it didn't consider the way tax revenue is spent. Higher taxes will lead to an increase of expenditure on public goods, which is government collect money from the citizens to finance program and improvement in infrastructure such as improving public facilities, public education, and health-care system. Furthermore, increase in government services will benefit the public especially to lower income groups and higher the economic growth as well. Redistribution of tax revenue transfers the wealth from the rich to those poor income groups.

Hence the poverty gap will become smaller and thus promote the long run economic growth. Barro (1990) and Glomm and Ravikumar (1994) claims that if all the taxes revenues used to fund public goods and services will enhance private returns and thus sustained the economic growth.

Secondly, tax rate is normalized by GDP. Higher growth rate, which causes GDP tend to be larger, will lead to lower tax rate. In the previous researches, both GDP and tax rate are normally considered as the main component to determine the economic growth. However, in order to obtain the net effect of taxes on the economic growth, we should ignore the business cycle effect so that the tax effect is not underestimated. This is associated with the third problem that is endogeneity problem has not been taken into account by those researchers in the previous studies. It is important for us to understand that not only tax rate will affect the growth rate, but it might also be in the other way round where the growth rate will affect the tax rate as well. Higher growth rate indicates that nations' income per capita has improved. So, they will fall into a higher income tax bracket, paying higher tax to the government. Combination of these several evidences leads us to come across the query as whether the impact of taxation on economic growth is jointly determined and inconsistent among the countries with differences in income level.

The discussion on the tax structure has shifted to the relative merits of direct vs indirect taxes and whether the tax structure has created a growth-centric environment. The consensus is that indirect taxation especially consumption taxes is a better alternative. Myers (2009), reported that all the findings support a shift to consumption taxation from income taxes to raise economic growth. Over the years, EU member states (EU Commission, 2011) have shifted to indirect taxation, esp. consumption taxes from labor and capital among indirect taxes. This relationship between tax structure and economic growth have been reported by Dackehag and Hansso (2012), Branaerdi (2013), Szarowska (2013), Canavire-Bacarreza, et al (2013) and Tanchev (2013).

2.1 A Keynesian Perspective From Empirical Evidence

From the literature, a good number of studies are consistent with the views and arguments of Keynesian philosophy and this includes the following contributions: Abata (2014) investigates the impact of tax on the Nigerian economy using a descriptive survey approach by employing a simple percentage and narration response in 2012. The result shows that, while inefficiency in the tax administration affects the revenue generation in Nigeria, tax revenue has a significant impact on government budget implementation and by extension to output growth. Likewise, in a regression analysis on the impact of tax on GDP growth in Nigeria, Ojong (2016) found no relationship between CIT and GDP in the period 1986-2000, while a positive and significant relationship exist between Petroleum Profit Tax and non-oil tax revenue and the growth of the Nigerian economy. Tancheve (2016) in a study on Bulgaria using OLS regression found that progressive income taxation has positive impact on economic growth for the period 2004-2012.

Similarly, using data from 1986Q1-2014Q4, a neoclassical Solow growth model and Toda-Yamamoto causality test, Iyke (2015) reveals a strong unidirectional causal relationship

from tax revenue to economic growth in Ghana. Therefore, economic growth depends on tax revenue. The government should therefore, introduce more policies to improve the tax scope in order to generate more revenue from taxation.

In another development, Umeora (2013) using a linear regression model studied the effects of value added tax revenue on the economic growth of Nigeria over the period 1994-2010. The result from the study shows that tax revenue has a significant and positive effect on the gross domestic product within the review period. Similarly, using an OLS regression model, Akwe (2014) examines the impact of non-oil tax on economic growth in Nigeria, where non-oil tax revenue has a positive and significant impact on economic growth in the period 1993-2012. Szarowska (2013) found that consumption taxes on GDP growth are statistically significant on panel data for EU-24 member states for the period 1995-2010. Bernardi (2013) reported that the shift to indirect taxes from direct taxes using aggregate and country-wide data in Euro Area (EA-17) member countries are not as obvious. For the Latin American countries, Canavire-Bacarreza, Martinez-Vazquez and Vulovic (2013) using vector auto-regression on panel data, found that personal income tax has no negative impact on economic growth, while for corporate income tax reducing tax evasion and more emphasis on tax collection may boost economic growth in Latin America.

In addition, using a Cobb-Douglas regression model and descriptive statistics from 1994-2010, empirical findings from Izedonmi (2014) on Nigeria shows that, total revenue significantly account for 92% variation in the GDP. This high explanatory power indicates that total revenue is an essential element as well as an important determinant of economic growth in Nigeria. Moreover, Ogbonna (2012) using granger causality test to examine the impact of petroleum profit tax on the economic growth in Nigeria, for the period of 1970 to 2010, reported that petroleum profit tax does granger causes gross domestic product. This implies the existence of a long-run equilibrium relationship between economic growth and petroleum profit tax in Nigeria.

Likewise, Onwuchekwa (2014) utilizing an OLS regression model studied the impact of value added tax revenue on economic growth in Nigeria from 1994 to 2011, which showed that tax revenue contributes significantly to the aggregate economic performance of government and economic growth of Nigeria. Although, GDP growth is volatile, tax revenue growth is steadier and not as volatile.

In another development, using an ARDL Bound testing technique and VAR on different types of tax and RGDP from 1986 to 2012, results from Ihendinihu (2014) in a study that assess the equilibrium relationship between tax and output growth in Nigeria indicate that aggregate tax revenue has a positive and significant effect on economic growth; explaining about 73.4% of the total variation in RGDP. The study, therefore, holds the view that, there exist a long-run equilibrium relationship between total tax revenue and economic growth in Nigeria.

2.2 A Classical View From Empirical Evidence

In an early attempt to examine the relationship between tax revenue and output growth under the Classical assumptions, the contribution of Skinner (1987) reveals the negative relationship between tax and growth. Engen et al (1992) employed a Neo-classical aggregate production function on a panel data from 107 developing countries spanning 1970-1985, and the study reveals that taxation is negatively correlated with output growth rate in the above period.

Njogu (2015) examine the effects of value added tax revenue on economic growth in Kenya using Poisson regression model from 1990 to 2014. The study found that a percentage change in the incidence rate of GDP is an increase of 7% for every unit decrease in tax revenue. Similarly, with regard to the effect of tax revenue on economic growth, Eugene (2014) examines the effect of tax policy on economic growth in Nigeria by applying time series regression analysis from 1994 to 2013. The result shows that indirect tax has a strong and a significant positive relationship with the level of economic growth while direct tax shows a weak relationship with economic growth in Nigeria within the period under review.

In a similar analysis, Ebrahimi (2013) assess the impact of tax on the output growth of Canadian province from 1981-2010 using a fixed-effect panel regression model. The study shows that taxation has a negative impact on per capita GDP growth rate for the Canadian provinces, but this impact depends on the structure of taxation. For instance, the negative impact of personal income tax is less on growth rate compared to corporate income tax and consumption tax which has higher negative effects. Using OLS regression analysis on annual data from 1954 to 1986 to examine the effects of tax revenue on output growth in Taiwan, Wang (1992) shows that the total tax rate does not have a significant effect on the long-run growth rates of private output, production and consumption factor inputs. This result is due to the positive effect of consumption taxation balancing the negative effect of factor taxation on economic growth.

Dackehag (2012) applied a fixed-effect regression model on a panel of 25 rich OECD countries for the period 1970-2010 to examine the influence of tax on economic growth and discover a negative relationship between taxation and economic growth. In addition, there exists a non-linear relationship between personal income tax, corporate income tax and economic growth, where low levels of income tax positively influence economic growth and vice versa.

3. Research Methodology

To capture which tax structure has the most influential impact on economic growth, this paper divides the analysis into two parts. First, this paper analyzes the correlation between different types of taxes (personal income, corporate income tax, property tax, labor tax and consumption taxes) and economic growth, controlling for human capital, physical capital and population.

Then, we will use ARDL cointegration analysis to relate taxes to economic growth and the control variables of human capital, physical capital and population. Tax structure on personal

income, corporate income, consumption, property and labor will be the focus of interest among taxes and how they relate to per capita GDP growth. In an equation, some of these variables such as human capital, physical capital and population will be held as control variables and a partial analysis is conducted holding these variables constant when interpreting the coefficients.

In diagrammatic form, this is shown in Figure 2, where the factors affecting per capita GDP growth rate are illustrated. In this approach, there are limitations in that i) a joint empirical comparison of the effect of different taxes on per capital GDP growth cannot be undertaken and ii) that not all potential effects between different taxes and their institutions can be explored. The described effects are partial, since the effect of one tax on GDP per capita and its determinants are assessed holding all other taxes constant.

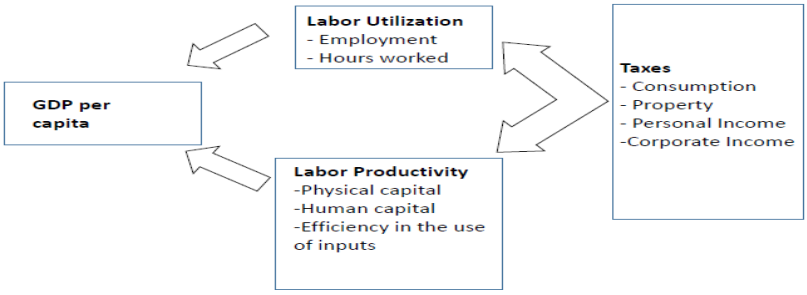

Figure 2. Determinants of GDP

Source: Author's compilation

The initial regression analysis testing the tax rates on labor, consumption and corporate income will be performed as follows:

$$\text{GDP Per Capital Growth} = \begin{aligned} &\alpha + \beta InitialGDPperCapita + \beta PhysicalCapital \\ &+ \beta HumanCapital + \beta PopulationGrowth + \beta CorporateTaxRate \\ &+ \beta LaborIncomeTaxRate + \beta ValueAddedTaxRate + e \end{aligned}$$

Where α constant term and ε is the error term in the regression. GDP per capita is real GDP per head of population aged 15-64 years expressed in constant prices and in logs. The logarithm of initial GDP per capita was used as a convergence variable in the analysis. Physical capital is the ratio of gross fixed capital formation to GDP. Human capital is proxy by years of schooling of the population from 25 to 64 years of age. Population growth is growth rate of the population aged 15-64 years in percent. Overall tax burden is the ratio of Government tax revenue to nominal GDP.

3.1 Data

Data from 1990 - 2015 are extracted from Annual Reports & Statement from Ministry of Finance (MOF) and Bank Negara Malaysia (BNM) and BNM Statistical Bulletin.

Control variables such as human capital (education), inflation rate, population growth and physical capital (% of GDP) were collected from World Development Indicators (WDI)

provided by World Bank organizations. The data for investment as a percentage of GDP and human capital is cross-checked from Penn World Tables, version 7.0 (PWT 7.0).

Descriptive and analytical approaches are used in this study to assess the Malaysian tax structure. A correlation analysis is adopted to assess the relationship among the components of the Malaysian tax structure (INCTAX, PIT, CIT, GST, LABTAX, PROPTAX and OTHTAX) and economic growth. The descriptive statistics of the variables used in the regression are shown in Table 1a.

Table 1a. Descriptive statistics of variables in regression

	DLGDPPC	GDPPC	LHUMCAP1	HUMCAP1	LGDPPC	LPHYCAP	PHYCAP	POP	TAXB	LTAXB
Mean	0.035	24293.79	3.47	34.41	10.08	3.31	28.49	2.07	17.44	2.85
Median	0.041	23158.50	3.51	33.22	10.05	3.21	24.90	1.95	16.64	2.81
Maximum	0.072	33861.00	3.93	50.90	10.43	3.78	43.64	2.70	20.52	3.02
Minimum	-0.101	15427.00	2.04	7.71	9.64	2.88	17.84	1.47	14.40	2.67
Std. Dev.	0.040	5171.11	0.47	12.46	0.22	0.26	8.06	0.42	2.04	0.12
Skewness	-2.098	0.14	-1.45	-0.28	-0.21	0.64	0.85	0.14	0.31	0.22
Kurtosis	7.434	2.05	5.03	2.48	2.18	2.06	2.13	1.43	1.60	1.64
Jarque-Bera	37.27	0.99	13.03	0.59	0.85	2.52	3.61	2.54	2.35	2.05

	LINCTAX	LGST	LPROTAX	LABTAX	LPIT	LCIT	LOTHTAX
Mean	2.31	1.53	-0.53	0.26	0.74	2.08	-0.67
Median	2.31	1.47	-0.57	0.25	0.78	2.11	-0.66
Maximum	2.44	1.86	-0.29	0.30	0.99	2.21	-0.46
Minimum	2.04	1.29	-0.69	0.24	0.46	1.74	-0.84
Std. Dev.	0.11	0.20	0.11	0.02	0.15	0.12	0.11
Skewness	-0.94	0.30	0.75	0.87	-0.14	-1.54	0.29
Kurtosis	3.80	1.62	2.66	2.66	2.28	4.98	2.24
Jarque-Bera	2.77	1.51	1.56	2.11	0.40	8.96	0.60

Sources: Economic and Annual Reports of MOF/Treasury and Central Bank of Malaysia (BNM), Statistical Bulletin of BNM, World Bank National Accounts Data and CIA World Factbook.

From the Table, it can be seen that all macroeconomic variables (except for DLGDPPC) are normally distributed. The large difference between maximum and minimum is explained by the large standard deviation for each variable. The Jarque Bera normality test showed that the variables (except of DLGDPPC) follow a normal distribution with a probability of <0.05. Average GDP growth for the period 1990-2015 is 3.5% pa with a maximum growth of 7.2% and minimum of 10.1% during the recession year of 1998. During the same period, investment as a share of GDP averaged 28.5% pa while the tax burden averaged 17.4% pa and population growth rate is 2.1% pa. The above correlation results will help in the specification of an equation to test for causation. An ARDL cointegration methodology is

adopted to test for the relationship between the components of the Malaysian tax system and economic growth in this paper. Since most time series are not stationary, a unit root test is first conduced for cointegration, before conducting causality and a long-run relationship test (Granger, 1986; Engle and Granger, 1987).

4. Discussion of Results

For cointegration, a necessary but not sufficient condition is to determine whether each of the variables is stationary and, its level of stationarity. The Augmented Dickey-Fuller (ADF) and the Philips-Perron (PP) tests are carried out for stationarity tests. The results of the Augmented Dickey- Fuller (ADF) and Phillips-Peron (PP) unit roots rests are reported in Table 2.

Table 2. Unit root results

Variables		Levels			First Difference	
	Lag	ADF Statistic	PP Statistic	Lag	ADF Statistic	PP Statistic
Malaysia						
dlgdppc	1	-3.9878**	-4.5757**	1	-6.6394***	-17.0046***
lgdppc	5	-4.5296***	-2.9218	1	-3.9878***	-4.5757***
lhumcap1	1	-1.7937	-6.8239***	0	-6.09139***	-5.7705***
lphycap	0	-1.9454	-2.0067	0	-5.2427***	-5.2815***
ltaxb	0	-3.2735	-3.3440*	2	-4.0749**	-8.2046***
pop	2	-1.3909	-1.8218	2	-4.0309**	-2.2417
linctax	3	-4.4014**	-7.1870***	3	-4.8258***	-10.0879***
lcit	1	-4.7660***	-3.4838*	3	-4.8948***	-9.2909***
lpit	0	-2.4153	-2.4622	1	-4.1347**	-5.4112***
lgst	0	-1.6847	-1.6056	0	-5.3354**	-5.3354***
llabtax	0	-2.6981	-2.6981	2	-4.1200**	-13.3551***
lothtax	3	-3.2244	-2.4201	4	-3.8550**	-5.1691***
lproptax	0	-2.4298	-2.4298	0	-5.9295***	-6.4628***

Sources: MOF Treasury and Central Bank of Malaysia (BNM), Economic and Annual Reports, BNM Statistical Bulletin, National Accounts Data from World Bank and World Factbook from CIA.***indicates significant at 1% or a rejection of the null hypothesis of no unit root at the 1% level

** Indicates significant at 5% or a rejection of the null hypothesis of no unit root at the 5% level * indicates significant at 10% or a rejection of the null hypothesis of no unit root at the 10% level

The results indicated that all the components of the Malaysian tax system are stationary at 1% after first difference using the Philips-Perron (PP) tests, except for TAXb variable which is significant at 5% and all are integrated of order 1 with intercept terms. This shows that the hypothesis that the presence of a unit root in any of the variables under the PP tests is accepted on first difference. The ADF test results confirm results from the PP tests, as all the components of Malaysian tax structure are significant at 5% and integrated of order 1. After first differencing the variables, the ADF test confirms that the variables are stationary (that is, the absence of a unit root in any of the tax variables (TAXB, GST, PIT, CIT, LABT, PROPT and OTHT). Despite similarities in the test results, the PP tests are more robust on a lower percentage level of significance. The PP tests are more robust as the results hold even if the error terms are serially correlated and heterogeneous, which is not the case in the ADF tests for the error terms.

A correlation analysis is conducted between the tax variables and economic growth, after the unit root tests for stationary properties. The results of the correlation analysis presented in Table 3a show a negative and statistically insignificant (weak) relationship between real GDP (growth) and Malaysian tax structure (TAXB, GST, PIT, CIT, LABT, PROPT and OTHT) during the 1990-2015 period. A correlation coefficient of less than 0.5 is a weak correlation according to the correlation theory, while that above 0.5 shows a strong correlation.

In Table 3a, the results of the correlation matrix revealed a negative correlation coefficient, (-0.43) between economic growth and TAXB, and (-0.46) between economic growth and INCTAX, both of them statistically significant at 10% level. The correlation coefficient (-0.40) between economic growth and PIT and a negative correlation of (-0.08) between economic growth and GST. Cross correlation of between CIT and the components of other taxes showed that CIT is negatively related to GST (-0.31) and Labtax (-0.13), even though CIT is positively related to PIT (0.28), Protax (0.13) and Othtax (0.14). This implies that as the growth rate of revenue from CIT increases, those of PIT, Protax and Othtax will also increase, while the growth rate of revenue from GST and Labtax would be decreasing, vice versa.

The cross correlation of PIT and the components of other taxes also revealed that the correlation of PIT and Protax is negative and statistically insignificant (-0.52) whereas a positive correlation exists between PIT and Othtax (0.28) and GST (0.02). This means that when the growth rate of PIT's revenue increases, Protax's revenue would experience declining growth rate, and Othtax and GST's revenue would be increasing growth rate. A negative and insignificant correlation also exists between GST and Othtax (-0.60). This implies that as the growth rate of revenue from GST is increasing, revenue from Othtax would also be decreasing.

Table 3a. Correlation matrix

	DLGDPPC	LTAXB	LGST	LINCTAX	LCIT	LPIT	LPHYCAP	LHUMCAP1	LPOP	LLABTAX	LOTHTAX	LPROTAX
DLGDPPC	1.00											
LTAXB	-0.43	1.00										
LGST	-0.08	0.53**	1.00									
LINCTAX	-0.46*	0.68***	-0.26	1.00								
LCIT	-0.39	0.61***	-0.31	0.96***	1.00							
LPIT	-0.40	0.48***	0.02	0.53***	0.28	1.00						
LPHYCAP	0.62***	0.02	0.09	-0.10	-0.21	0.28	1.00					
LHUMCAP1	-0.13	-0.39	-0.80	0.25	0.13	0.47	0.05	1.00				
LPOP	-0.03	0.33	0.78	-0.31	-0.32	-0.11	0.02	-0.74	1.00			
LLABTAX	-0.26	0.60***	0.83***	-0.04	-0.13	0.24	0.10	-0.61***	0.80***	1.00		
LOTHTAX	0.34	-0.23	-0.60	0.20	0.14	0.28	0.49*	0.62***	-0.54**	-0.49*	1.00	
LPROTAX	-0.06	0.19	0.30	-0.04	0.13	-0.52**	-0.54***	-0.60***	0.21	0.15	-0.44*	1.00

Sources: MOF Treasury and Central Bank of Malaysia (BNM), Economic and Annual Reports, BNM Statistical Bulletin, National Accounts Data from World Bank and World Factbook from CIA. ***indicates significant at 1%. ** indicates significant at 5% * indicates significant at 10%.

Table 3b. Correlation matrix - a comparison of Malaysia with Santiago, A.O. and Jiae Yoo (2012)

	DLGDPPC	LTAXB	LGST	LINCTAX	LCIT	LPIT	LPHYCAP	LHUMCAP1	LPOP	LLABTAX	LOTHTAX	LPROTAX
Malaysia[1/]												
DLGDPPC	1.00	-0.43	-0.08	-0.46*	-0.39	-0.40	0.62***	-0.13	-0.03	-0.26	0.34	-0.06
IMF[2/]												
LIC DLGDPPC		0.02	-0.01	-0.01	-0.02	-0.02	0.32***	0.03	-0.07	.03	-.04	.01
MIC DLGDPPC		0.05	0.02	0.01	-0.05	-0.05	0.25***	0.09	-0.08*	-.02	-.01	0.10*
HIC DLGDPPC		-0.06	0.04	-0.10**	0.06	0.09**	0.18***	-0.14***	0.09**	-.07*	.11*	-.07*

***indicates significant at 1%. ** indicates significant at 5% * indicates significant at 10%.

1/ Author's compilation

2/ Santiago, A.O. and Jiae Yoo (2012) Tax Composition and Growth: A Broad Cross Country Perspective. IMF Working Paper 12/257.

Table 3b shows a comparison of Malaysia's findings with Santiago and Yoo (2012), which shows that Malaysia's correlation of Tax variables with GDPPC is relatively higher than most countries. The negative impact of tax burden (LTAXB) on GDPPC growth is reflected in the HIC countries unlike the LIC and MIC countries which has a positive impact. Similar as Santiago and Yoo (2012), physical capital has the highest correlation across countries (LIC, MIC and HIC). For human capital, Malaysia and HIC countries have a negatively correlation with GDPPC as in Santiago and Yoo (2012).

The Malaysian tax system main focus is on the generation of revenue, as taxation is not the primary instrument of stimulating economic growth and development. Other objectives of taxation are creation of conducive environment for private sector development, provision of infrastructure and basic social amenities as well as accelerating the production of goods and

services. The Government's use of tax expenditure and other micro policies are to create an environment for growth through infrastructure spending.

4.1 Tax Elasticity and Buoyancy

The tax/GDP ratio measures the tax revenue collected by a government to income that a country receives for its output of goods and services. Traditionally, this tax/GDP ratio has been used to measure how various countries' taxes performed. Generally, it can be concluded that developing countries have lower tax ratios as compared to developed countries. When comparing the tax/GDP ratio among countries, economists can gauge how much the economy of a specific government is funded by tax collection. Malaysia's tax to GDP ratio of 18% is low compared to an average of 34% for OECD countries in 2016. Our regression results of tax buoyancy by regressing tax revenue against GDP show an elasticity coefficient of 0.87 which means for every 1% increase in GDP, was followed by a 0.87% increase in tax revenue. This is low by international standard where an elasticity coefficient of greater than one is preferable to demonstrate a buoyant tax system.

As show above in Table 3 (a and b) once a correlation relationship exists between the components of tax structure (CIT, PIT, GST, Protax, Labtax and Othtax) and economic growth, it is important establish the direction of the relationship. After verifying the unit-root properties of the variables, we next proceed to establish whether or not there is a long-run relationship among the tax variables by using Granger Causality method (Engle and Granger, 1987).

In Table 4, the Granger Causality tests among components of the Malaysian tax system are shown as to which out of the two variables drives the other and in which direction. The results show that TAXB, INCTAX CIT, PIT and GST do not granger cause economic growth, while economic growth granger causes TAXB. Similarly, all the components of tax system do not granger cause one another, except for GST and CIT which granger causes TAXB and there is a bidirectional effect between INCTAX and TAXB.

Table 4. Causality test results

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**	**Comments**
LTAXB does not Granger Cause DLGDPPC	23	0.53798	0.593	
DLGDPPC does not Granger Cause LTAXB		4.69427	0.0229	DLGDPPC ⇨LTAXB
LCIT does not Granger Cause DLGDPPC	23	0.38379	0.6867	
DLGDPPC does not Granger Cause LCIT		2.46683	0.1130	
LPIT does not Granger Cause DLGDPPC	23	0.24921	0.7821	

DLGDPPC does not Granger Cause LPIT		0.3469	0.7115	
LINCTAX does not Granger Cause DLGDPPC	23	0.19018	0.8284	
DLGDPPC does not Granger Cause LINCTAX		0.96884	0.3985	
LGST does not Granger Cause DLGDPPC	23	0.32064	0.7297	
DLGDPPC does not Granger Cause LGST		0.79056	0.4687	
LGST does not Granger Cause LTAXB	24	3.60899	0.0469	LGST ⇨ LTAXB
LTAXB does not Granger Cause LGST		2.60354	0.1002	
LCIT does not Granger Cause LTAXB	24	7.3863	0.0042	LCIT ⇨LTAXB
LTAXB does not Granger Cause LCIT		2.15745	0.1431	
LINCTAX does not Granger Cause LTAXB	24	5.82351	0.0107	LINCTAX⇔ LTAXB
LTAXB does not Granger Cause LINCTAX		2.9248	0.0781	
LPIT does not Granger Cause LTAXB	24	0.13243	0.8768	
LTAXB does not Granger Cause LPIT		0.64433	0.5361	
LPIT does not Granger Cause LCIT	24	1.15302	0.3368	
LCIT does not Granger Cause LPIT		0.16086	0.8526	
LGST does not Granger Cause LCIT	24	0.45261	0.6426	
LCIT does not Granger Cause LGST		0.31115	0.7363	
LINCTAX does not Granger Cause LCIT	24	1.15023	0.3376	
LCIT does not Granger Cause LINCTAX		1.71942	0.2059	
LINCTAX does not Granger Cause LGST	24	0.43517	0.6534	
LGST does not Granger Cause LINCTAX		0.20383	0.8174	

LPIT does not Granger Cause LGST	24	0.90587	0.4209
LGST does not Granger Cause LPIT		0.41042	0.6691
LPIT does not Granger Cause LINCTAX	24	1.65671	0.2172
LINCTAX does not Granger Cause LPIT		0.13878	0.8713

Sources: MOF Treasury and Central Bank of Malaysia (BNM), Economic and Annual Reports, BNM Statistical Bulletin, National Accounts Data from World Bank and World Factbook from CIA.

4.2 ARDL Cointegration Analysis

Given the weakness of the traditional cointegration approaches, this paper used the ARDL Bound testing approach developed by Pesaran et al. (2001) for cointegration analysis. The ARDL technique does not require pretests for unit roots, as this method uses the F-test (Wald test) to test for the long-run relationship between economic growth and taxes. Long-run relationship of the series is said to be established when the F-statistic exceeds the critical bound value. In testing for cointegration, the ARDL is preferable because of the following reasons:

Small sample size, where the Bound-testing F-statistics of the ARDL modelling perform better than Johansen and Granger, which require a larger sample size to meet reliability criteria

System of equations to estimate long-term relationship for the Johansen method, the ARDL used a single equation.

Regression variables in an ARDL approach take sufficient number of lags to reduce the intensity of serial correlation of residuals compared to the Johansen approach. A dynamic error correction model (ECM) can be derived from ARDL through simple linear transformation. The ECM merges the short-run dynamics with the long-run stable equilibrium without losing long-run information.

Nature of the stationarity of the data is different, then the use of the ARDL Bounds test is appropriate. A unit root test is not necessary if a conclusion can be made from the Bounds test for cointegration (Pesaran et al., 2001) using the I(0) and I(1) criteria. However, the model breaks down for I(2) integration.

In estimation of regressions with unbiased results appropriate specification of the ARDL helps to resolve the endogeneity problem and residual serial correlation (Harris and Sollis, 2003).

The ARDL model for this study is specified as follows:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \beta_0 x_t + \beta_1 x_{t-1} + e_t \quad (1.1)$$

In long-run equilibrium

$$y_t = y_{t-1};\ x_t = x_{t-1}$$

Rewriting 1.1 as

$$y_t - y_{t-1} = \alpha_0 + (\alpha_1 - 1)y_{t-1} + \beta_0(x_t - x_{t-1}) + (\beta_0 + \beta_1)x_{t-1} + e_t \qquad (1.1')$$

and

$$\Delta y_t = \alpha_0 + \beta_0 \Delta x_t + \gamma_1 y_{t-1} - \sigma_1 x_{t-1} + e_t$$

The estimated model can be rewritten as:

$$\Delta \mathrm{LGDPPC_{it}} = -\emptyset_i(\mathrm{LGDPPC_{it-i}} - \theta_1 \mathrm{LPHYCAP}_{it} - \theta_2 \mathrm{LHUMCAP}_{it} - \theta_3 \mathrm{LTAXB}_{it} - \theta_4 \mathrm{POP}_{it})$$

$$+ b_{1i}\Delta \mathrm{LPHYCAP}_{it} + b_{2i}\Delta \mathrm{LHUMCAP}_{it} + b_{3i}\Delta \mathrm{LTAXB}_{it} + b_{4i}\Delta \mathrm{POP}_{t-i} + e_{1t} \qquad (1.2)$$

In Equation (1.2), $\Delta \mathrm{LGDPPC_{it}}$ refers to the difference in log of real per capita GDP , LPHYCAP is physical investment, LHUMCAP1 represents stock of human capital, LTAXB is overall tax burden, POP is population growth and Δ is the first-difference operator. LINCTAX, LPIT, LCIT, LGST, LLABTAX, LPROTAX, LOTHTAX are the other taxes we tried to investigate.

The hypothesis of no cointegration deals with H_0: $\theta_1 = \theta_2 = \theta_3 = \theta_4 = 0$ and H_1: $\theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq 0$ is an alternative hypothesis of cointegration.

For small sample sizes of 30-80 observations, we use the critical values from Narayan (2005) to compare the F-statistics. These values show one set of statistics for variables that are I(0) and another set for variables that are I(1). If the computed F-statistic fall within the upper and lower critical bounds, the decision is that the test is inconclusive. If the F-statistic falls below the lower critical bound, the decision is that the test shows no co-integration. If the calculated F-statistic exceeds the upper critical bound value, the decision is that the test shows that there is cointegration, therefore we reject H_0. In Tables 6 (a and b) our computed F statistic equal 22.8607, which exceed the upper bound (5.06) critical value reported at the 95% critical level for 24 observations. The decision is to reject the null hypothesis of no co-integration and accept the hypothesis H_1: that the variables in the model are cointegrated and that there is a long-run relationship.

The results of Tables 5 (a and b), show the coefficients in the long-run, from the ARDL model with error correction version (ECM). The estimates for short-run coefficients with ECM approach are also shown. The ECM shows the speed of adjustment whereby the balance in a dynamic model is restored. The coefficient indicates how slow or fast the speed of adjustment to its equilibrium growth path will be achieved, where the results must be statistically significant with a negative sign. As shown in Banerjee et al. (1998), if we have a highly significant error correction term, this is further proof of the existence of a stable long term relationship.

Table 5. ARDL cointegration results

Table 5a: Long-run Coefficients of ARDL					
Dependent Variable: GDP (dlgdppc)			Dependent Variable: GDP (dlgdppc)		
Variable	Coeffcieint	t-statistic	Variable	Coeffcieint	t-statistic
LPHYCAP	0.19***	8.08	POP	-0.19**	-2.80
LOG(HUMCAP1)	-0.01	-0.65	LPHYCAP	0.24***	3.86
LOG(TAXB)	-0.25***	-3.84	LOG(HUMCAP1)	0.04	1.18
POP	-0.21***	-3.93	LPIT	-0.06	-1.24
@TREND	-0.01**	-2.91	LGST	-0.17	-1.83
			LCIT	-0.06	-1.28
			LPROTAX	0.16	1.31
			LOTHTAX	0.02	0.43
			@TREND	-0.01**	-2.68
Cointeq = DLGDPPC - (0.1917*LPHYCAP - 0.0145*LOG(HUMCAP1) -0.2496*LOG(TAXB) -0.2095*POP - 0.0106*@TREND)			Cointeq =DLGDPPC - (-0.1854*POP + 0.2432*LPHYCAP + 0.0429*LOG(HUMCAP1) -0.0575*LPIT -0.1725*LGST - 0.0628*LCIT + 0.1572*LPROTAX + 0.0188*LOTHTAX - 0.0144*@TREND)		
*** 1% significance level, ** 5% signficance level, * 10% significance level					

Table 5b. Coefficients of ECM

Table 5 b: Coefficients of ECM					
Dependent Variable: DLGDPPC			Dependent Variable: DLGDPPC		
Variable	Coeffcieint	t-statistic	Variable	Coeffcieint	t-statistic
C	1.09***	13.36	C	0.26***	13.96
DLOG(TAXB)	-0.21***	-4.50	D(POP)	-0.66***	-11.51
CointEq(-1)	-0.78***	-4.19	DLOG(HUMCAP1)	0.23***	8.93
			D(LPIT)	-0.23***	-8.93
			D(LGST)	0.04	1.71
			D(LCIT)	0.00	0.06
			D(LPROTAX)	0.11***	3.72
			D(LOTHTAX)	-0.03**	-2.53
			CointEq(-1)*	-0.93***	-15.01
Cointeq = DLGDPPC - (0.1917*LPHYCAP - 0.0145*LOG(HUMCAP1) -0.2496*LOG(TAXB) -0.2095*POP - 0.0106*@TREND)			Cointeq = DLGDPPC - (-0.1854*POP + 0.2432*LPHYCAP + 0.0429*LOG(HUMCAP1) -0.0575*LPIT -0.1725*LGST - 0.0628*LCIT + 0.1572*LPROTAX + 0.0188*LOTHTAX - 0.0144*@TREND)		
*** 1% significance level, ** 5% signficance level, * 10% significance level					

Source: Author's compilation

Our expectation is for a negative sign for ECM and to be statistically significant. The results on Table 5b showed that the coefficient of the ECT(-1) is estimated to be -0.78 and statistically significant at 1%, which suggest that 78% of deviation from long-run growth path is corrected in the following year. When other taxes are added to the model, the deviation from the long-term growth path is -0.93, which suggest that 93% of the deviation from long-term growth is corrected in the following year.

From Table 5a, the long-run coefficients of ARDL are estimated using the OLS with the lags determined by the Schwartz Bayesian Criterion. All variables (Phycap, Taxb and Pop) are significant at the 5% level, showing long-run effect on economic growth. Physical investment (LPHYCAP) has a positive and significant relationship with economic growth at 1% level in the short-run and in the long-run. This implies that a 1% increase (increase in LPHCAP) will increase economic growth by 0.19% in the short-run and long-run. Intuitively, the impact of physical investment will increase Malaysia's GDP, thereby output positively. Physical

investment is a driver of Malaysia's growth in the 1990s. When other taxes are added in, the above conclusion remained the same as LPHYCAP remained the largest contributor to Malaysia' growth with a coefficient of 0.24 and statistically significant in the long-run and short-run.

The other three determinants of GDPPC growth, human capital, population and tax burden are negatively related to GDPPC growth. As the economy embark towards higher income status, human capital needs to the main driver. However, in the 1990-2015, human capital is negatively correlated with GDP growth, with a 1% increase in human capital reducing GDP growth by 0.01% but statistically insignificant. The quality of Malaysia's education has been increasingly emphasized. A reform of the education system is in the blueprint if Malaysia were to strive for higher income status. Similarly, higher population growth will impact GDPPC growth negatively, a 1% pt increase in pop growth rate will reduce GDPPC growth by 0.21%.

Table 6. ARDL cointegration tests

Table 6a. Using tax b

Variables	F-stats	Cointegration	Lag Optimal
	22.8607***	Cointegration	1, 0, 0, 1, 0
	Critical Value	Lower Bound (I, 0)	Upper Bound(I, 1)
f(GDDPC, PHYCAP, HUMCAP, POP, TAXB)	1%	3.81	4.92
	5%	3.05	3.97
	10%	2.68	3.53
*** 1% significance level, ** 5% signficance level, * 10% significance level			

Source: Author's estimate

Table 6b. Using other taxes – PIT, CIT, GST, PROTAX, OTHTAX

Variables	F-stats	Cointegration	Lag Optimal
	9.0155	Cointegration	1, 1, 0, 1, 1, 1, 1, 1, 1
	Critical Value	Lower Bound (I, 0)	Upper Bound(I, 1)
f (GDDPC, PHYCAP, HUMCAP, POP, PIT, CIT, GST, PROPTAX, OTHTAX)	1%	2.93	4.06
	5%	2.38	3.41
	10%	2.13	3.09
**** 1% significance level, ** 5% signficance level, * 10% significance level			

Source: Author's compilation

A dependence on taxes (direct taxes is a major component of tax revenue) will affect Malaysia's drive towards higher income because direct taxes (being a major component of total tax revenue) impact growth negatively from the burden of taxation. The long-run elasticity of tax burden is -0.25, and statistically significant at 1%, which implies that a 1%

increase in tax burden will reduce GDPPC growth by 0.25%. This can be compared with the findings from Arnold (2012) who reported a tax burden -0.27 for OECD countries. Adding the components of taxes to the equation showed that human capital is positively related to economic growth and statistically insignificant with a coefficient of 0.04. Among taxes, PIT, CIT and GST are negatively correlated to growth but not statistically significant, as a 1% increase in taxes will reduce economic growth by 0.06%, 0.06% and 0.17% respectively. PROTAX and OTHTAX are marginally positively related to GDPPC by 0.16% and 0.02% respectively. In general, taxes are negatively correlated with economic growth in the long-run, even after taking into account the different types of taxes but statistically insignificant. GST is most sensitive to economic growth and has the highest impact, followed by CIT and PIT in terms of impact on GDPPC.

Cointegration tells us that there is a long-run relationship between variables. However, there could be a short-run deviation from the long-run equilibrium. Cointegration does not indicate the process of short-run adjustment to bring about long-run equilibrium. Thus, we will proceed to the error-correction model (Table 5b) to examine the short-run dynamics.

Adding other taxes to the model showed that in the short run, physical capital and human capital, have a significant positive impact on economic growth. The empirical results in Table 5b revealed that in the short -run human capital (LHUMCAP1) and physical investment (LPHYCAP) are positively related to economic growth while POP is negatively relative to economic growth. The result for the long-run and short-run also showed that physical investment (LPHYCAP), human capital (LHUMCAP1) and population (POP) have high significant impact on economic growth in Malaysia. The adjusted coefficient of determination (R^2) is 0.8077 which shows high significance of the model, indicating that 80.8% of the dependent variable was explained by model. Among components of taxes, PIT and OTHTAX are negatively correlated with growth, while CIT, GST and PROTAX are positively related to economic growth.

5. Policy Implications and Conclusion

Malaysia's overall tax collection and distribution system has a lot to catch up for inclusive growth when benchmarked against OECD and international standards. To achieve high income status, tax reform should be prioritizing among others, as its population ages against a background of addressing a fiscal deficit.

Tax reforms are needed to broaden the overall tax base, resize the sources to uncover additional resources to fund needed programs for inclusive growth. In addressing medium-term sustainability on the fiscal accounts, an overall review of the tax base is needed to look into additional reforms that have not been introduced or previously considered. Tax/GDP ratio has fallen below 20% and trending down if not addressed, compared to an average of 34% for OECD and high income countries.

When GST was first introduced in 2015, this helped to address the long-term decline in indirect tax revenue and a structural shift in oil revenue from declining oil prices. Although the initial 6% GST rate was low by international standards, it was successfully implemented

and boosted revenue beyond expectations, despite the rising number of exempt items when compared to OECD (OECD and Korea Institute of Public Finance, 2014).

Among taxes, PIT and OTHTAX are negatively correlated to growth as a 1% increase in taxes will reduce economic growth by 0.23% and 0.03% respectively. CIT and GST are marginally positively related to GDP growth while the lagged impact of these taxes will reduce GDP growth by 0.09% and 0.27% respectively. In general, taxes are negatively correlated with economic growth, even after taking into account the different types of taxes. PIT is most sensitive to economic growth and has the highest impact. CIT and GST are not as sensitive and their impact is offset by higher GDP growth. Over the medium time-span, it is important that the government focus on strengthening its tax collection administration to cut off leakage and in reducing the number of tax exempt items.

Among the components of taxes, the share of property taxes to total revenue is insignificant. Adjusting and basing it on the rising property values, the contribution of property taxes to total revenue will increase, along with a higher property tax rate. Although property assessment rates fall within the ambit of the state governments, the tax reform agenda should accommodate fiscal decentralization. Malaysia lacks a tax on inheritance. Such a tax will help to promote a progressive tax structure and reduce wealth and income inequality (Brys et al., 2016).

5.1 Improve Revenue Collection to a Turnaround From Decline

Compared with the experience of other countries that are on a higher income level, tax revenue/GDP is less than half of OECD average of 34%. Malaysia acted to cut fiscal spending to achieve fiscal stability when faced with lower oil revenue. Chung and Ong (2017) estimated that oil price has a significant impact on government expenditure arising from revenue impact, impacting expenditure by 0.48% for every 1% change in oil price. Increasing the marginal income tax rate to 28% from 25% and introducing GST in April 2015 were among measures the Government implemented to address the fiscal deficit. In the medium-term, a more sustainable revenue trajectory for a fiscal medium term plan is needed as part of the tax reform so that measures to support social and communications infrastructure for rural projects, healthcare and social protection can be realized.

5.2 Indirect Taxes and the GST in Perspective

With an informal sector (including foreign workers) of an estimated 1.7 million, taxes on consumption spending will be a suitable and optimal tax structure to prevent leakage. More than 350,000 Malaysians commute to work in Singapore and tourists from overseas will help to consumption taxes substantially. Reducing compliance costs and distortions can be achieved with a differential tax system as shown in OECD countries research (OECD/Korea Institute of Public Finance, 2014).

5.3 A Broader Tax Base Will Contribute to a Progressive Income Tax System

Traditionally, Malaysia's main source of tax revenue is from corporate income tax and taxes on from state-owned oil companies' profits. Diversifying the tax base will complement

measures to support industrial and environmental objectives of the government as well. Only 10% and below of Malaysians above the age of 15 years paid tax which skewed the contribution from the high income threshold. Low-income households are sheltered by tax exemptions as the tax burden fall on the middle and high-income earners. Recently, the government raised the top marginal tax rate for high income earners to 28%, which still remained below the 45-55% bracket in OECD countries. This will contribute to higher tax revenue from personal income tax.

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