"Synergising GST rate with Direct Tax Rate in sustaining economic growth in Malaysia: Is There A Laffer Curve?"

Sherly George, Universiti Tun Abdul Razak, Malaysia, sherlygeorge1966@gmail.com**,**
Y.B.Prof Dr Syed Omar Syed Agil, CEO Institute Professional Baitumal,
syedomar@ipb.edu.my

ABSTRACT

The current individual and corporate tax base rate imposed in Malaysia does not seem to generate the best possible tax revenue at its maximum point thus affecting the economic growth indirectly. The importance of generating higher tax revenue is to finance government expenditures over the years. Insufficient tax revenue will lead to government borrowings and severe government debts over the years if this issue is not adhered to immediately. With the appropriate tax rate for individual and corporate, the GST rate should then be synergized to ensure increased economic growth rate in Malaysia.

The main objective of this research is to determine optimum tax rate appropriate for both individual and corporate tax. With the optimum tax rate obtained, the Malaysian government is able to generate maximum tax revenue for both individual and corporate respectively. From these rates, the GST rate is also determined.

Optimum Tax Theory models using Laffer curve concept is used to estimate the tax rates for individual and corporate where at this point the tax revenue is at its maximum point thus contributing to the economic growth.

Data of individual and corporate tax rates, tax revenue are gathered for over 34 years (1980-2013) from Data Stream, Department of Statistics, Bank Negara Malaysia and World Bank. The data will be analyzed using Ms-Excel and EViews 8.

This paper derives the optimum tax rates for both individual and corporate denoted as Malaysia Optimum Individual Tax Rate (MOITR) and Malaysia Optimum Corporate Tax Rates (MOCTR) and GST rate in generating maximum individual and corporate tax revenue.

KEYWORDS: Individual tax revenue, corporate tax revenue, individual tax rate, corporate tax rate, optimum tax rate, Laffer Curve.

1. INTRODUCTION

The increasing indebtedness of financing government expenditures is a burden to many economies globally. One way to reduce the problem is to fine tune the taxation system with rates that generates greatest revenue without jeopardising the effect on the economy. The level of income tax and the overall effectiveness of the system have been a major debate in scientific and social circles (Karas M, 2012). Ibn Khaldun pondered the idea already in the 14th century, and so did John Maynard, Keynes and others (Lévy-Garboua, Masclet, Montmarquette, 2007) in the twenth century. The matter got more attention in the 1970s, when the prevailing Keynesian economics could not explain the phenomenon of stagflation and their methods were unable to deal with it. Advocates of the supply side theory of economics came up with the argument of excessive taxation articulated by Adam Smith in his Inquiry into the Nature and Causes of the Wealth of Nations (Hsing, 1996). The correlation between the tax rate and the tax revenue came to be known as the Laffer curve (Laffer, 1981).The supply-side economists noted the reason for stagflation is due to excessive tax burden and an economy over-regulated by the government (Van Dujin, 1982). In order to solve the stagflation problem, the policy of a tax reduction and a deregulation of the economy must be revisited (Burfa, Wyplosz, 1993). Supply-side is an idea initiated by Laffer curve which shows the relationship between tax revenue and tax rate.

1.1 Laffer Curve and Models

The Laffer curve introduced by Arthur Laffer in 1974, states that there is a parabolic relationship between tax revenue and tax rates. In 1986, Arthur Laffer noted there were always two tax rates that yield the same revenues. When tax rate is altered, the taxable income also changes but there is a point where a reduction in taxable income from higher tax is enough to completely offset the higher tax rate. This point is called the "revenue maximizing" point.

There are two types of models discussed with regards to the illustration of the Laffer curve. The static scoring model (refer to Figure 1) denotes the higher the tax, the higher the tax revenue collection by the government. Figure 2 shows the dynamic scoring model which explains the illustration of Laffer curve theory. At 0% tax rate, the government will collect no tax revenue. However, when the tax rate is 100%, people will not work and the tax revenue collected will be zero. This leads us to a notion that the Laffer curve is indeed a polynomial curve as shown in Figure 2.

Laffer noted there were two main points and that is the growth maximising point and revenue maximising point. The question is which point will benefit the country? There were critical opinions from a few economists who argue that the dynamic scoring conclusion is overstated by Congressional Budget Office (CBO)[1] because of the inclusions of some dynamic scoring elements. Including more elements will result to the politicisation of the department.

Mitchell, (2009) stressed that optimum tax revenue is not good for the economy as a whole. He said the ideal policy is at the optimum growth rate where the point is situated on the upward slopping curve and revenue is at an increasing level at that point. There is no necessity for tax revenue to ensure market function because the maximising growth rate is above zero. He added society needs to think on security, safety and honesty in courts.

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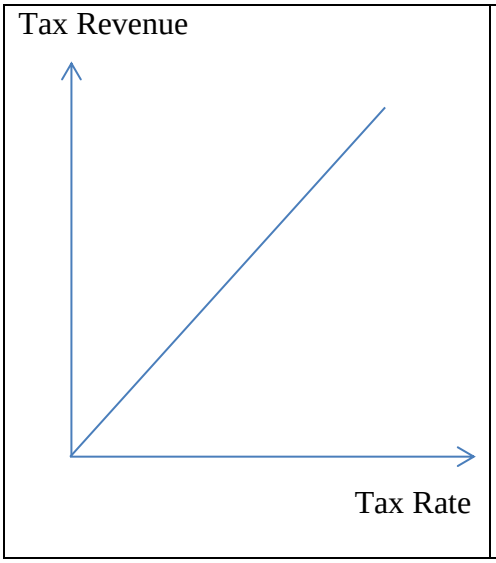
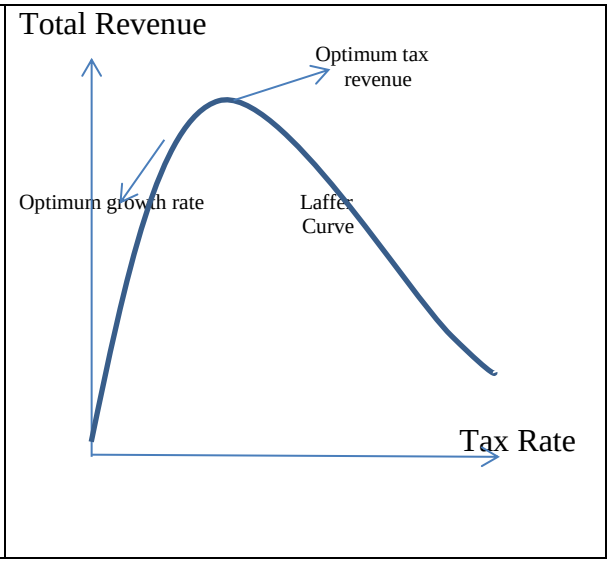
[1]The Congressional Budget Office (CBO) is a federal agency within the legislative branch of the United States government that provides economic data to Congress.[1] The CBO was created as a nonpartisan agency by the Congressional Budget and Impoundment Control Act of 1974. The Congressional Budget Office was created by Title II of the Congressional Budget and Impoundment Control Act (P.L. 93-344), which was signed into law by President Richard Nixon on July 12, 1974. Official operations began on February 24, 1975, with Alice Rivlin as director.

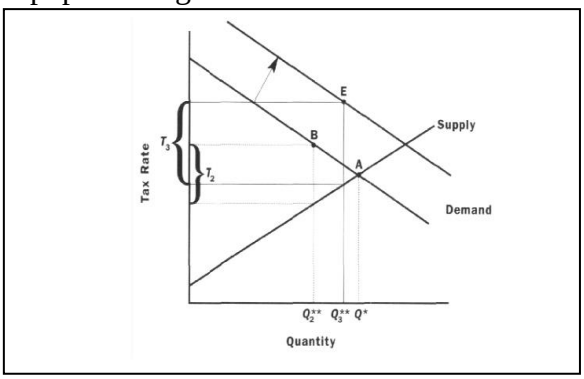




Source: Sarunas Cerekas, June 2012

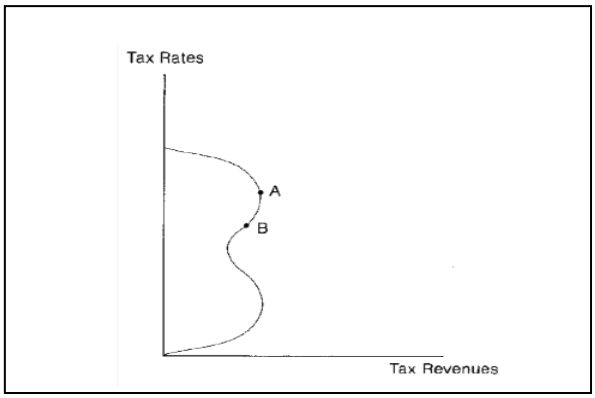
Figure 1 Static Scoring Model **Figure 2 Dynamic Scoring Model**

Becsi(2000) summarised by saying, if government tax is reduced and at the same time there is an increase in government expenditure and decrease in public investments, there is a chance of losing optimal tax revenue as shown in Figure 3.Henderson (1998) had a different opinion with regards to the Laffer curve. He concluded that the people will not work hard even if there is a tax cut, thus creating a complicated Laffer Curve as shown in Figure 4 below. People will tend to spend more leisure time then go to work as a result of cut in tax rate, moving from Point A to Point B, thus resulting in lower tax revenue. On another note, Henderson (1998) discussed that a tax cut can increase inflation, which is also another tax, known as inflation tax. Should the tax cut not result in immediate increase in tax revenue and at the same time government does not decrease government expenditure, budget deficit will definitely appear. Therefore, in countries which have issues with power of currency, inflation would increase. He also added that an increase in tax revenues could be due to population growth.



Source: Besci (2000)

Figure 3 Tax Revenues with or without Government Expenditure



Source: Henderson (1998)

Figure 4 Complex Form of Laffer Curve

Another simple model was developed by (Feige, Edgar L., Robert McGee, 1982) where the model shows the shape and position of Laffer Curve depends on power supply and progressive tax system in Sweden. An empirical study of transfer adjusted tax rates in OECD countries was done to determine whether optimal tax rate was applied in the countries. This study was backed by a simple endogenous growth model designed by (Jonas Agell, Mats Persson, 2000). Jesus Alfonso Novales and Ruiz (2002) concluded that tax cuts on labour and capital income has a positive effect on the growth rate in an economy. They managed to study how to manage deficit by substituting government debt with taxes.

The main objective of this research is to determine the optimum tax rate for both individual and corporate tax rate in order to achieve higher individual and corporate tax revenue.

1.2 Laffer Curve and Models

In order to obtain the optimum point for both individual and corporate tax rate, the Laffer curve model is used. The Laffer curve introduced by Arthur Laffer (1974), states that there is a parabolic relationship between tax revenue and tax rates. In 1986, Arthur Laffer noted there were always two tax rates that yield the same revenues. When tax rate is altered, the taxable income also changes but there is a point where a reduction in taxable income from higher tax is enough to completely offset the higher tax rate. This point is called "revenue maximizing" point. There are two types of models discussed with regards to the illustration of the Laffer curve. The static scoring model (refer to Figure 1) denotes the higher the tax, the higher the tax revenue collection by the government. Figure 2 shows the dynamic scoring model which explains the illustration of Laffer curve theory. At 0% tax rate, the government will collect no tax revenue. However, when the tax rate is 100%, people will not work and the tax revenue collected will be 0. This leads us to a notion that the Laffer curve is indeed a polynomial curve as shown in Figure 2. Mitchell (2009) stressed that optimum tax revenue is not good for the economy as a whole. He said the ideal policy is at the optimum growth rate where the point is situated on the upward slopping curve and revenue is at an increasing level at that point. There is no necessity for tax revenue to ensure market function because the maximising growth rate is above zero. He added society needs to think on security, safety and honesty in courts.

2. LITERATURE REVIEW

Generally, many authors have highlighted the relationship between tax rates and tax revenue which is uniquely discussed.

It is intriguing to know that the basic underlying theory between tax rates and tax revenue was introduced by the Muslim philosopher, Ibn Khaldun in the 14th century in his research entitled "***The Muqaddimah****: It should be known that at the beginning of the dynasty, taxation yields a large revenue from small assessments. At the end of the dynasty, taxation yields small revenue from large assessments*". His contribution was vital towards future analysis of how tax revenue and tax rates are related and how these variables play an important role in financing government expenditure over the years.

Without doubt, tax is an important instrument used by government to gain a country's national income. The income gained by a government through taxation is recognised as tax revenue and the rate imposed by a government for both individual and corporate are called tax rates. Several authors have conducted researches on tax rates and tax revenues in various aspects. Different authors have different opinions on the macroeconomic indicators provided on significant impact on tax rates and tax revenues.

A study conducted by (Arthur B. Laffer, 2004) on tax rates and tax revenues led to the creation of a new theory and model which illustrates as Laffer Curve. Laffer Curve shows that tax rates have two effects on tax revenues:

(a) Arithmetic Effect (AE): AE indicates the relationship between tax rates and tax revenues are positive. It can be said that when tax rates are lower, tax revenue will be lowered by the amount of the decrease in the constant rate.
(b) Economic Effect (EE): EE recognises positive impact that lower tax rates have on work, output, employment and tax base by providing incentives to increase these activities.

This research encompasses both Arithmetic and Economic Effect justifying the 1st and 3rd research objectives and hypothesis. The first hypothesis and research question is to find and justify the relationship between tax rates and tax revenue in Malaysia which is the arithmetic effect. The third objective and hypothesis is to investigate and justify the determinants that affect tax revenue in Malaysia which is the economic effect.

Therefore, arithmetic effects always work on the opposite direction of the economic effect. Change in tax rates on the tax revenues has no longer effect when arithmetic effect and economic effect combine together.

The initial study of an inverse relationship between tax rates and revenue was conducted by Adam Smith in his book The Wealth of Nations (1776) stating the point:

"High taxes, sometimes by diminishing the consumption of the taxed commodities, and sometimes by encouraging smuggling, frequently afford smaller revenue to government that what might be drawn from more moderate taxes (Book V, Chapter II)"

Research by (Caves and Jones, 1973) has proven the existence of a revenue maximizing tariff which had a humped-shaped tariff revenue curve identical to Figure 5.

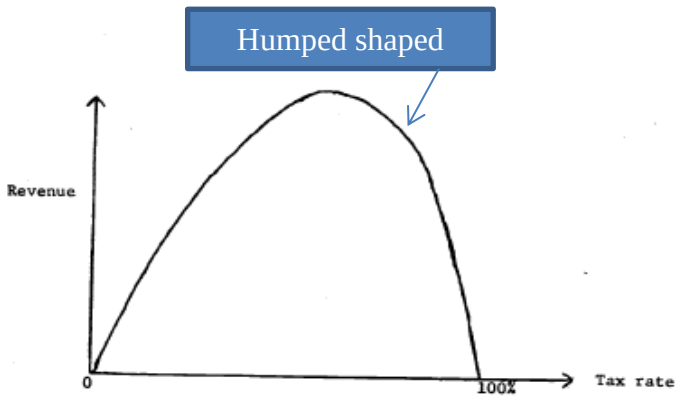


Figure 5 "Humped shaped", Don Fullerton (April 1980)

Jules Dupuit (1844) states:
"By thus gradually increasing the tax it will reach a level at which the yield is at a maximum….beyond the yield of tax diminishes…..lastly a tax (which is prohibitive) will yield nothing".
Without doubt, there were several debates by politicians and economist on the unsupported claims and opinions on the supposed range of tax rates which will generate high tax revenue. The notion that " all is well" with the current tax range even under the prohibitive area does not seem to be the key issue in Malaysia despite knowing the importance of tax as the main tool for fiscal policy. Simple theoretical models depicting prohibitive range indeed does exist. This research uses the data for tax rates and tax revenues to identify the current range that the Malaysian tax base is situated and how it affects the tax revenue of Malaysia.
The quality of debate on high taxes generates lower tax revenues after the introduction of Laffer curve and the writings of Smith-Dupuit curve in 1974 deteriorated gradually.(Jude Winniski,1978) showered insights of every fiscal mishaps starting from the fall of the Roman Empire to the Great Depression were related to high tax rates over the years.
(Grieson et al, 1970) deduced in his research the possibility of inverse relationship between tax rates and revenue for local government in New York. He quoted *"The inclusion of state taxes lost when economic activity leaves both the city and the state would……raise the possibility of a net revenue loss as a result of an increase in business income taxes".* From his research, it was concluded that the non-manufacturing has lesser choices to the location in New York and should be taxed heavily compared to manufacturing sector where the responsiveness towards tax is elastic. In Philadelphia, the case was reverse for both sectors when nonmanufacturing are under greater competitive pressure. Philadelphia was close to the revenue optimization point before the income tax increase which has resulted in excess of the socially optimum point.
In Sweden, higher tax rates led to barter system and passive market activity resulted in the economy to be situated in the prohibitive range. This was based on (Charles Stuart, 1979) research where a two sector model used to determine the 80% marginal tax wedge in Sweden exceeds their revenue maximizing rate by 10%.
This research will focus on determining the relationship between individual and corporate tax revenue and with its respective tax rates based on linear and quadratic equation using simple linear regression and quadratic equation respectively. Upon determining the relationship between tax revenue and tax rates, the next step is to determine the optimum

individual and corporate tax rate that will maximize tax revenue. The next section will highlight literature review on optimum tax rates conducted by distinguish authors.

2.1 Optimum Tax Point

Optimum point merely means identifying one distinct point or range that would maximise revenue or growth of a country. Known as optimum tax theory or the theory of optimal taxation, this theory is used in this research to identify a revenue maximising point for tax rates for both individual and corporate tax. Implementing this tax rate will induce reduction and distortions caused by taxation in the market under various economic conditions. According to (Bruce, Donlad; John Deskins and William Fox, 2005), using the optimal taxation theory to reduce inefficiency and distortion in the market using Pareto optimal moves is debated constantly. It is important for the government to reduce the inequality and inefficiency in the economic market in order to increase tax revenue. Therefore the most vital purpose of the tax system is to generate an amount to generate sufficient revenue to finance government expenditures. The limelight of this research is to determine whether an optimum tax point can be determined in Malaysia taxation scenario using the Laffer Curve concept which leads us to the next section on detailed literature on the Laffer Curve.

2.2 The Historical Origins and the Theory of the Laffer Curve

Laffer contends that the theory expressed and experimented by him was first propounded by Ibn Khaldun, a 14th century Muslim philosopher. This was followed by the opinion of John Maynard Keynes: who stated that "reduction of taxation will run a better chance than an increase in balancing the budget." In the words of Laffer, "The basic idea behind the relationship between tax rates and tax revenues is that changes in tax rates have two effects on revenues: the arithmetic effect and the economic effect. The arithmetic effect is simply that if tax rates are lowered, tax revenues (per dollar of tax base) will be lowered by the amount of the decrease in the rate. The reverse is true for an increase in tax rates. The economic effect, however, recognizes the positive impact that lower tax rates have on work, output, and employment--and thereby the tax base-by providing incentives to increase these activities. Raising tax rates has the opposite economic effect by penalising participation in the taxed activities. The arithmetic effect always works in the opposite direction from the economic effect. Therefore, when the economic and the arithmetic effects of tax-rate changes are combined, the consequences of the change in tax rates on total tax revenues are no longer quite so obvious." (Laffer 1st June, 2004). The researchers' view of the curve is the optimum tax rate that would fetch maximum revenue. Any rise from that would reduce tax revenue. Figure 6 shows this principle. It is a graphic illustration of the concept of the Laffer Curve. Figure 6 show that the government would not collect any tax revenue when the tax rates are at 0%. Government would collect no tax revenue when tax rates are at 100% because there would be no one who would be willing to work to earn an income. The Laffer curve neatly illustrates that there is an optimum point of tax rate beyond which total tax revenues decline. There is one point between 0% and 100% where a tax rate will maximize tax revenue. This optimal rate would lie between any percentage greater than 0 % and less than 100 %. By lowering tax rates through tax cuts will increase revenue and at the same time it stimulates the economy. Through this action, it leads to the increase of output, employment and production which is a positive economy indicator. Arthur B. Laffer stated that lower unemployment and higher income is the sign where the economy growth is rapid.

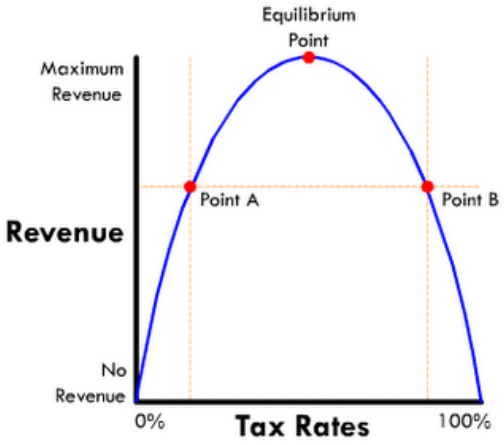


Figure 6 The Laffer Curve

3. METHODOLOGY

The methodology of this research is mainly a single research method of study rather the usual mix method used. This research encompasses solely quantitative method. Data collected are mainly secondary data collected from reliable sources. The primary data is mainly discussion with the tax officials with regards to this research study which seemed unique and challenging for the officials . This research study is divided into two main sections. This research uses the *Laffer* curve concepts consisting of two main variables that is tax revenue and tax rates for both individual/corporate tax to obtain the optimum point. The common methodology used in USA to indicate the optimum point of tax rates based on tax revenues is by using the *Laffer* curve methodology. *Laffer*'s Curve is basically an non-linear equation that indicates the relationship between individual/corporate revenue and individual/corporate tax rates which produces an inverse "U" shape to denote the optimum tax rate that will generate higher government revenue. This research uses a different approach in detecting the optimum tax rates for Malaysia for individual and corporate tax respectively using software Ms Excel and EViews 8. Tax rates of 34 years (1980-2013) were gathered from Data Stream, Department of Statistics, Bank Negara Malaysia and World Bank, analysed and plotted using polynomial trend line. From the plotted curve, the 1 Malaysia optimum points for individual and corporate tax rate can be determined. The model for the optimum point for individual and corporate are denote as Malaysia Optimum Individual Tax Rate (MOITR) and Malaysian Optimum Corporate Tax Rate (MOCTR).

4. EMPIRICAL ANALYSIS

Over the years the validity of the optimum tax rates was discuss by many political economists. Several concepts and variables were used to explain the optimum tax theory. In this research, the optimum tax rate is obtained for both individual and corporate tax rate using a unique R-programming and Ms Excel software to obtain the graphical presentation of *Laffer* curve concept. Determining an optimum tax rate here defines clearly the tax rate that should be charged to both individuals and corporates in order to maximise the generation of tax revenue.

4.1 Model for Individual/Corporate Tax Revenue and Individual/Corporate Tax Rate

The vital section of finding the optimum individual tax rate was to find the relationship between individual tax rate and individual tax revenue. Based on the *Laffer* curve theory, the inverse 'U' shaped theory does not portray a linear relationship but rather a quadratic (polynomial) relationship between individual tax rates and individual tax revenue. Data was collected on individual tax rates, individual tax revenue from the year 1980 until 2013. From here the individual tax rates ranged from approximately 35% to 25% indication a decrease in individual tax rates over the years. However, each 1% unit decrease in individual tax rates is sustained as long as 5 to 6 years. The individual tax rate from 1980 to 1992 (12 years) was 35%, 1993 and 1994 was 34% and 32% respectively. For the next four years, 1995 to 1999 the individual tax rate was 30% and it stood at 29% for the year 2000 and 2001. For the next 6 years (2002 to 2006), the individual tax rate was 28%. In 2007, the individual tax rate was 27% followed by a decrease to 26% in 2008 and 2009. From 2010 to 2011, the individual tax rate has dropped 1% to 25% in 2012 and 2013. The relationship between individual tax revenue and individual tax rate is denoted by polynomial quadratic model as shown below:

$$ITRev = \alpha + \beta_1(ITRate)^2 + \beta_2(ITRate)$$

The relationship between corporate tax revenue and corporate tax rate is denoted by polynomial quadratic model as shown below:

$$CTRev = \alpha + \beta_1(CTRate)^2 + \beta_2(CTRate)$$

Data was collected on corporate tax rates, corporate tax revenue from the year 1980 until 2013. Here the corporate tax rates ranged from approximately 35% to 25% indication a decrease in corporate tax rates over the years. However, each 1% unit decrease in corporate tax rates is sustained as long as 5 to 6 years. The corporate tax rate from 1980 to 1992 (12 years) was 35%, 1993 and 1994 was 34% and 32% respectively. For the next four years, 1995 to 1997 the corporate tax rate was 30% and it stood at 28% for the year 1998 and 2007. In 2008, the corporate tax rate was 27%. In 2009, the corporate tax rate was 2% followed by a decrease to 25% from 2010 till to date. In the recent Malaysian Budget 2014, it was announced that the corporate tax rate will drop another 1% in 2014 and an additional 1% in 2015 with the introduction of Goods and Services Tax (GST) in April 2015. With the incremental decrease of 1% to 2% for a period of a few years, no doubt has resulted in an increase in corporate tax revenue over the years. However, the fluctuation values of corporate tax revenue and is not at its optimal point. This research is to determine the corporate tax rate that can generate the maximum corporate tax revenue for the Malaysian government.

This equation is produced based on inverted "U" shape of the *Laffer* curve concept which showed a polynomial relationship. The approximate sample size of data obtain is 34. The objective of collecting individual tax revenue and individual taxes is to determine the optimum point of the individual tax rate that the government should charge the individuals in order to gain the highest individual tax revenue. EViews 8 and Ms Excel is applied for analysis of 34 data collected to further enhance the research using a unique software.

4.2 Empirical Test and Analysis – Optimum Tax Rate

This section discusses the trend of the data for both individual/corporate revenue and individual/corporate tax rates. It also explains the regression line of each individual/corporate tax revenue and individual/corporate tax rates as shown below:

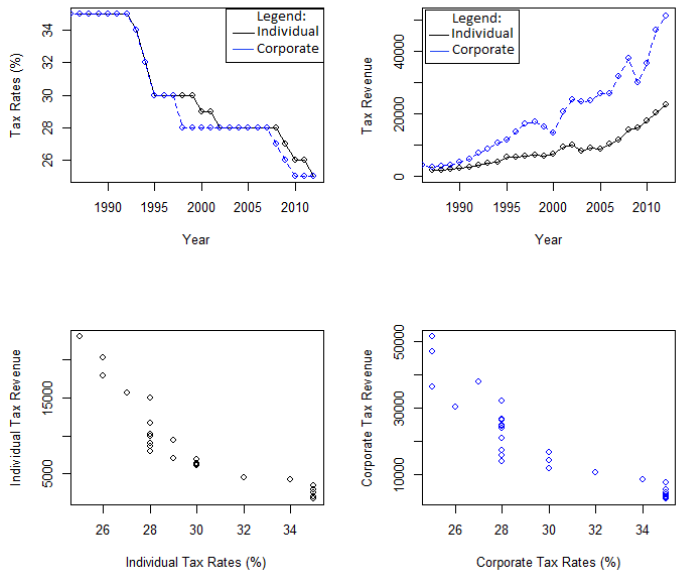


Figure 7: Individual/Corporate Tax Rates vs Individual/Corporate Tax Revenues

Figure 7 depicts the both individual and corporate tax rates exhibits a downward trend from the year 1960 to 2013. And during the same period, both GDP and individual and corporate tax revenues show an upward trend during the same period.
The scatter plot shows an inverse relationship between tax revenue and tax rates. In other words, tax revenues increases as tax rate decreases.

4.3 Measures of Central Tendency

The summary statistics of individual and corporate tax rates and tax revenues and GDP are shown in Table 1. The average or mean tax rate for individual tax rate and corporate tax rate is 29% and 29.5% respectively. Average individual and corporate tax revenues are RM 8,179.84 and RM 17,120.87 million, respectively. The standard deviation for corporate tax revenue is larger than the standard deviation for individual tax revenue thus indicating that there is a large variation in corporate tax revenue.

Table 1: Measures of Central Tendency

Descriptive statistics	Individual		Corporate		GDP
	Tax Rate (%)	Tax Revenue	Tax Rate (%)	Tax Revenue	(in Millions)
Table 4-1: Measures of Central Tendency: Tax Rates, Tax Revenues and GDP					
Sample size	34	34	34	34	34
Mean	29.04	8179.87	29.48	17120.87	395760.60
Median	29.00	6900.00	28.00	14166.00	253732.00
Standard deviation	6.62	5857.31	6.59	13856.27	270023.00
Normality test (p-value)	0.00000	0.03723	0.00000	0.01274	0.00081

Table 2 below shows correlation between the dependent variables- individual and corporate tax revenues with independent variables- individual/corporate tax rates. The correlation between individual tax revenue and tax rates is inversely related with the value of 0.16170 indicating insignificant values at 1% and 5% confidence level. These results indicate there is no relationship between individual/corporate tax rates with individual/corporate tax revenues. The values depict a weak relationship between tax rates and tax revenue. One possible reason for this could be the results depicted the gradient of half side of the curve which is downward slopping indicating a negative relationship. The coefficient values are low due to the range in the individual/corporate tax rates charged is between 25% to 35% over 30 years and the data is cluttered on the right side of the *Laffer* curve

However, the correlation between individual/corporate tax revenues and GDP indicates a positive and strong relationship.

Table 2: Correlation

	Correlation, ρ
Individual tax revenue versus individual tax rate	-0.16170
Corporate tax revenue versus Corporate tax rate	-0.30081

* The values are significant at 5% and 1% levels.

The relationship between individual/corporate tax revenue versus individual tax rates is fitted by using the quadratic model (1). Table 3 shows the empirical analysis between both tax revenues versus tax rates. The R squared value for individual model is 0.7160 indicating the model explains 71.6% variability of the individual tax revenues. For corporate tax 78.16% variability of the corporate tax revenues were explained from the R squared value of 0.7816. F-statistics for both models are significant at 5% and 1% levels thus indicating that the models are appropriate to present the relationship between the tax revenues and tax rates. The Akaike Information Criterion (AIC) is defined as the log-likelihood term penalized by the number of model parameters. From the table, the individual and corporate tax revenues have larger AIC values; 518.095 and 639.051, respectively. Here, the larger AIC values indicate the model is better to estimate the residual values. Hence the polynomial model proposed is a good model to find the optimum tax rate for both individual and corporate tax.

Table 3: Empirical Analysis – Tax Revenue versus Tax Rates

Model	R-squared	F-statistic	AIC
Individual	0.7160	30.25*	518.095
Corporate	0.7816	50.11*	639.051

* The values are significant at 5% and 1% levels.

4.4 Malaysian Optimum Individual Tax Rate (MOITR) and Malaysian Optimum Corporate Tax Rate (MOCTR).

With the empirical analysis given in this section, we can conclude that it is appropriate to determine both optimum individual/corporate tax rate. This is important for the Malaysian government because at this optimum point, the government is able to generate the maximum tax revenue which is vital to assist the government expenditures and to reduce government debt. The generic relationship between tax revenue and tax rates can be expressed as a negative quadratic relationship.
By using R-Programming, the empirical analysis of best fit the model is as given below:

$$ITRev_t = 1136.2 + 1857.3ITRate_t - 52.226\ ITRate_t^2 + \epsilon_t$$

From the above quadratic equation, β_1 indicates the intercept of $ITRev$ value when ITRate equals to zero. So when $ITRate$ is zero, $ITRev$ will equal to RM 1136.2 million. The coefficient β_2, of ITRate is the slope of the line that is tangent to the parabola as it crosses the Y-Axis. If $\beta_2 > 0$, i.e., 1857.3 > 0, then the parabola is downward sloping at $ITRate_t$ =0. The slope of the tangent line at an arbitrary $ITRate_t$ value equals to (β_2 + 2 $\beta_3 ITRate_t$), that is, as $ITRate_t$ increases, this slope will change linearly.
When the slope is zero, the relationship changes direction from positive to negative or from negative to positive, this point is $ITRate_t$ = - $\beta_2/2\ \beta_3$. In this case, the optimum point is

$$ITRate_t = -1857.3/2(-52.226) = 17.78\%.$$

This is the point at which the mean of $ITRev_t$ will at its maximum revenue if the individual tax is 17.78%. From the curve plotted, the scatter plots points shows as the government decreases individual tax incrementally with small amounts over the years, the individual tax revenue increases. However, the optimum point of tax rate is not reached in order to maximise individual tax revenue. Therefore, from the plotted curve, the optimum tax rate for individual is 17.58% in order for the government to charge the individual(s) in order to generate higher individual tax revenue. This move is vital to finance government expenditure and current accelerating debt in future. Furthermore, with lower individual tax, comsumers will be able to contribute more to spending thus increasing the consumption level in the economy. This in turn will increase the GDP of Malaysia. In conclusion, the suggested Malaysia Optimum Individual Tax Rate will have to be 17.58%.

As for the generic relationship between corporate tax revenue and tax rates can be expressed as a negative quadratic relationship given by the equations below:

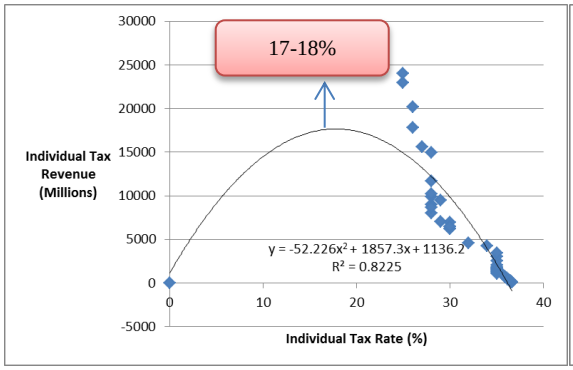
$$CTRev_t = 1824.2 + 4749.1CTRate_t - 136.85CTRate_t^2 + \epsilon_t$$

When $CTRate$ n is zero, will $CTRev$ equal to RM 1824.2 million. The coefficientβ_2, of ITR is the slope of the line that is tangent to the parabola as it crosses the Y-Axis. If $\beta_2 > 0$, i.e., 4749.1 > 0, then the parabola is downward sloping at $CTRate_t$ =0. The slope of the tangent line at an arbitrary $CTRate_t$ value equals to ($\beta_2 + 2\beta_3 CTRate_t$), that is, as $CTRate_t$ increases, this slope will change linearly.
When the slope is zero, the relationship changes direction from positive to negative or from negative to positive, this point is $CTRate_t = -\beta_2/2\beta_3$. In this case, the optimum point is

$$\text{CTR}ate_t = -4749.1/2(-136.85) = 17.35\%.$$

This is the point at which the mean of $CTRev_t$ takes its maximum revenue when the Malaysian optimum corporate tax rate is 17.35%.

The Laffer curve is then plotted for both individual and corporate tax rate and the curves are as shown in Figure 8 and 9 respectively.



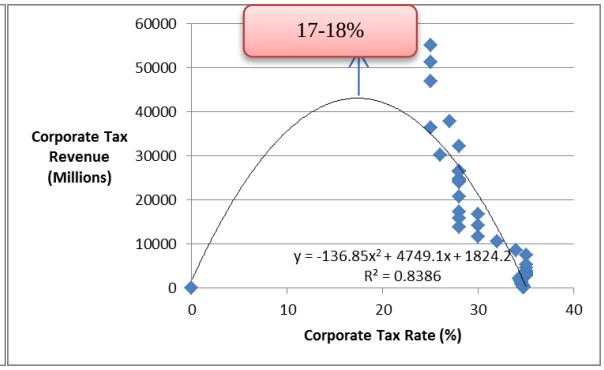


Figure 8 MOITR **Figure 9 MOCTR**

From the curve plotted, the scatter plots points shows that both individual/corporate tax are in the prohibited range which is not generating maximum government revenue.Therefore it is important that the government decreases both individual/corporate tax rate in order to generate higher tax revenue. The above curve curve clearly indicates the existence of Laffer curve in Malaysia.

4.5 Optimum GST rate (MOGST)

Upon obtaining the MOITR nad MOCTR, the next stage is to obtain the appropriate rate for Malaysia which will be denoted as MGST to ensure the economic is sustained annually. Due to insufficient data for Malaysia, Singapore, Thailand and Indonesia data is used to estimate the appropriate GST for each country.

4.5.1 Singapore

Singapore implemented 3% GST since 1994 with the individual tax rate of 30% and corporate tax rate of 27%. The economic growth decreased from 11.54% yearly to 10.93 in 1994 and recorded 7.0-7.50% in 1996/7 and peaking to 8.29% in 1998 before hitting rock bottom in 1998 to -2.23% due to Asian Financial Crisis. By dropping the individual

and corporare tax rate to 22% has revived the economic growth to 6.1% and then it has been fluctuating since. What was evident was when the GST was increased to 7% the economic growth dropped to 1.79% from 9.11% in 2008 of course which could be due to Global Financial Crisis. However with the individual tax rate dropping to 20% and corporate tax rate to 17%, the Singapore economy recovered slightly with the GST rate of 7%. Therefore, it was evident, that the individual/corporate tax rate and GST was not synergised to ensure the sustainability of Singapore economic growth rate. From the data obtained, the concept of Laffer Curve was executed and the results are as shown in Figure 10.

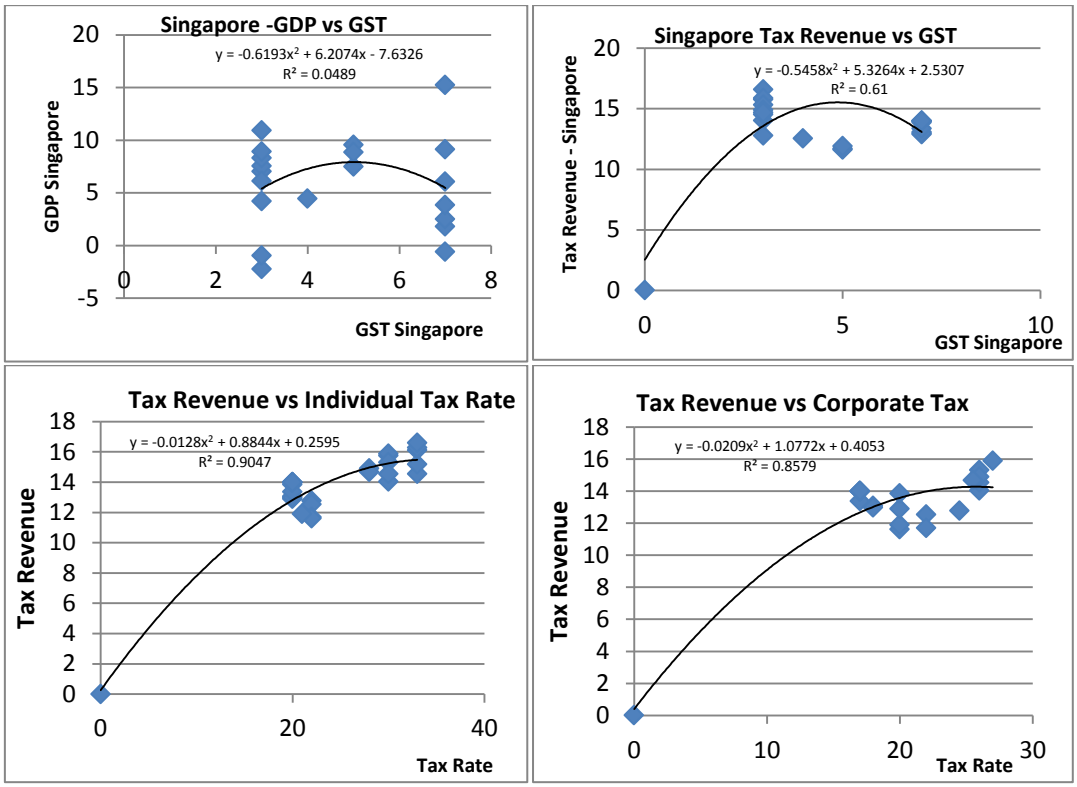


Figure 10 Singapore GDP, Tax Revenue, Tax Rates and GST

Using the Laffer Curve concept, it is predicted that in order for Singapore to achieve 8% GDP annually, the individual tax rate should be 34%, corporate tax rate at 25% and GST rate should be 5% annually.

4.5.2 Thailand & Indonesia

Both Thailand and Indonesia have been imposing the GST tax rate of 10% and 7% annually. The individual and corporate tax rate in Thailand is 37% and 30% until 2013 and was reduced to 35% and 20% for 2014/15. However, the GDP rate is fluctuating and dropping gradually over the years. In Indonesia, the individual and corporate tax rate is 30% and 25% respectively and the GDP rate has also been fluctuating and deteriorating over the years. The possible reason for this to happen is because the GST rate was imposed at a very high level above 5% with high individual and corporate tax rates. Despite the effort to bring down the individual and corporate tax rate over the recent years, both countries have failed to show an increase in GDP rate since then. It is obvious, the obvious model used in Thailand and Indonesia is not practical in ensuring the a positive outlook on the development of both countries as a whole. Thus the implementation of Laffer Curve is

unable to show a proper value to synergise the individual, corporate, GST and GDP rate for both countries.

4.5.3 Malaysia

Since the GST rate in Malaysia is imposed at 6% in April 2015, the Laffer Curve model is unable to be used under Malaysia's scenario. The current individual tax rate at 25% and corporate tax rate at 26% is unable to ensure sustainability in the economic growth rate in Malaysia and worse is to be expected in future if the current falling of the Malaysian Ringgit continues and no policy restructuring is endorsed.

The initial GST rate in Singapore was 3% increased gradually over time with both the individual and corporate tax rate decreased over the years. New studies have shown Personal Income Tax Rate in Singapore is expected to be 20.00 percent by the end of this quarter, according to Trading Economics global macro models and analysts expectations. In the long-term, the Singapore Personal Income Tax Rate is projected to trend around 22.00 in 2020, 23.00 in 2030 and 25.00 percent in 2050, according to our econometric models.Singapore Personal Income Tax Rate Forecasts are projected using an autoregressive integrated moving average (ARIMA) model calibrated using our analysts expectations. Analyst have modelled the past behaviour of Singapore Personal Income Tax Rate using vast amounts of historical data and adjusted the coefficients of the econometric model by taking into account our analysts assessments and future expectations. (Trading Economics, 2015)

5. Conclusion

It is therefore vital for the Malaysian government to restructure the tax base for both individual and corporate tax rate in order to increase the individual and corporate tax revenue. In return the overall direct tax revenue will increase contributing to the GDP of Malaysia. With the existence of Laffer curve in Malaysia, the proposed individual tax rate, MOITR is 17.78%≈ 18% and corporate tax rate, MOCTR is 17.35%≈ 17%. With this tax base for both individual and corporate, Malaysian government is able to attract foreign direct investors to invest in Malaysia and also consumers will be able to increase consumption level contributing to a higher GDP. This research explains the arithmetic effect of the Laffer Curve. It would be important for the Malaysian government to also consider the macroeconomics variables that will affect the individual and corporate tax rate also known as the economic effect. Looking at the values projected for both MOITR and MOCTR, to ensure Malaysia achieve an economic growth rate of between 6-8% annually, the predicted GST rate should be between 3-5% for 5-7 years and gradually increase to 7%. This is line with the objective of Economic Transformation Programme (ETP) to ensure Malaysia achieves high income nation by 2020.

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Author's Bibliography

Sherly George is born in Kuala Lumpur. She obtained her BEconomics and MEconononomics from University Malaya, Kuala Lumpur. Currently she is pursuing her Doctorate in Philosophy majoring in Economics (viva presentation stage) under the supervision of Y.B. Professor Dr Syed Omar Syed Agil from University Tun Abdul Razak. Her major research is in microeconomic ,macroeconomics, monetary economics, taxation, economic development and government policies.