Do taxes generate more on economic development? Evidence from income's group and OECD countries

Taufik Abd Hakim, Imbarine Bujang
Universiti Teknologi MARA (UiTM) Sabah, Malaysia
and
Ismail Ahmad
Universiti Teknologi MARA (UiTM) Shah Alam, Malaysia

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Abstract
The theory of taxes that was created by traditional schools of thought believed that lower tax rates will generate greater economic growth. However, modern schools of thought propagated that higher tax rates actually will produce more economic development, especially for developed countries. An expert in tax policy, Slemrod (2003) supports modern schools of thought that mentioned a country can increase its economic performance through spending the higher tax revenue for education and infrastructure. He also suggested adopting more sophisticated econometrics methods to get the evidence of clear positive impact of taxes on economic growth. With that, this study have been investigated the recent impact of tax rates and the other components of taxes not only for economic growth but the other economic indicators, in which employed Arrelano and Bond-Generalized Method of Moments (GMM) estimator, system and different GMM and also fixed and random effects instrumental variables (RE/FE-IV). We were investigated the different impacts of taxes in low income, lower middle income, upper middle income and high income countries for the period of 2003-2009. In order to support the findings in high income countries, we also include 24 high income-OECD countries. This study found statistical evidence that the highest marginal tax rates and the other components of taxes have the positive and significant impact on economic development in high income and OECD countries which is supports the modern schools of thought. However, taxes in low income and middle income countries still burden for its economic indicators. We conclude that the different impacts of taxes are caused by the different optimum level of taxes, tax's elasticity and purchasing power among the group of countries.

Introduction

Taxes can be considered as the major revenue in a country due to generate expenditure that will contribute for the improvement of facilities, standard of living, health care, education and many more. Many countries especially high income and OECD countries were actively applied tax policy adjustment to control economics activities and settle down the budget deficit. According to Dritsaki and Gialitaki (2005), taxation policy can be regarded as the important component of economic policies to improve and sustain the competitiveness and growth internationally. It means, adjustment in tax policy will influence the movement of economic development in a country.

Theoretical literature suggests that increased taxation is likely to have an important factor to the fall in economic growth and the other important economic indicators such as saving and investment. However, a study of tax theory by Bonu and Pedro (2009) mentioned that there have two different theories of taxes which are based on traditional and modern schools of thought perspective. Traditional schools of thought believe that low income tax rates will influence for the development of economy while the modern schools of thought propagated that higher income tax rates will produce the economic growth in a country, especially for high income or developed countries. An expert in tax policy, Slemrod (2003) was agreed with the modern schools, in which mentioned high tax will generate more revenue that can be spent for improvement of facilities, education and standard of living. The previous studies of taxes still have no clear evidence to support and apply high tax rates by modern schools of thought.

In order to boost economic growth, countries have applied different methods and philosophies in collecting their tax revenue. The past several decades shown that many of countries have reduced taxation quite dramatically due to promote more consumption and investment that can generate for economic growth. Saxton (1997) studied the tax cuts by two earliest presidents of United States which are Kennedy and Reagan's tax cuts in the period of 1960s and 1980s. These two earliest presidents succeed to overcome the recession during their era and create the longest expansion in U.S. history. The implementation of tax cuts also was conducted during the era of George W. Bush, in which have reduced tax rates for all levels of income. However, Bush tax cuts not only failed to overcome the problem of budget deficit in United States,

but also increased the budget deficit from -2 percent of GDP in 2008 to -10 percent of GDP in 2008. This is caused by the lower revenue generated that unable to cover the large budget deficit and debt in United States. The recent issue of tax cuts has appeared by president Obama which is intend to extend the Bush's era tax cuts in 2012. However, Obama's tax cuts only for low and middle income levels (income less than $250 000 per year) while increase tax for wealthier (income more than $250 000 per year). Obama's tax adjustment actually follow the theory of high tax rates by modern schools of thought that believed will generate more economic growth. The question that arises is whether this tax adjustment really can promote growth and recover the recession in a country.

T he gap between positive and negative impact of tax structures actually was debated since the several decades ago. The economists, finances and accountants were conducted the studies of taxes and its impact based on the different journals such as economics, finance and accounting journals. However, the findings and results are not constant that gave a lot of knowledge and inputs about this issue. Bretschger (2010), Padovano and Galli (2001; 2002), Stokey and Rebelo (1995) and Turnovsky (1996a) are the studies that found the negative impact of tax revenues' components such as corporate tax, income tax and marginal tax rate on the economic growth. The growth in United State will reduce 0.25 percent if the rates of tax increase 5 percent (Engen and Skinner, 1996). All these previous studies of taxes were agreed with the theory of low tax rates by traditional school of thought, in which found taxes will harm or burden the economic growth in a country.

However, not all studies found the negative impact of tax structures. It is based on the left side of Laffer curve, in which increase in tax rate until the optimum level of rate will increase the government revenue and improve the growth. This means, the tax policy that was conducted by the countries in the previous studies are still under optimal level of tax rate as mentioned by Wanniski (1978) that was produced the Laffer curve. Gober and Burns (1997), Glomm and Ravikumar (1998) and Uhlig and Yanagawa (1995) are three of the studies that found the positive correlation between taxes and economic growth. Marsden (1983), Slemrod (2003) and Gober and Burns (1997) conclude that, increase in tax ratios and components of tax structures such as personal income tax, corporate income tax, sales tax and other tax actually will improve the economic growth in a country. However, these studies only investigate taxation in OECD or industrial countries and developed countries.

The purpose of this study is to determine either theory of high tax rates (modern schools of thought) or low tax rates (traditional schools of thought) is relevant to stimulate growth. We also intend to investigate and compare the impact of tax structures on economic growth and several economic indicators in the different groups of countries which are low income, lower middle income, upper middle income, high income and OECD countries.

This study consists five main sections. Section 2 describes literature review that includes previous studies of taxes and its compositions on economic indicators. Section 3 present data and methodology used for the analysis of the impact of taxes followed by section 4 provides the empirical results of the regression functions. Finally, section 5 is conclusion of this study.

Literature Review

Most of the previous studies found the significant impact of taxes on economic growth. An expert in tax policy, Slemrod (2003) believed that higher tax will generate more economic growth especially in high income countries. He also suggested that spending the higher tax revenue for education and infrastructure will also increase the economic growth. One of the recent studies of taxes was conducted by Hakim and Bujang (2011) that found increase in total tax revenue and taxes on income, profit and capital gain will generate economic growth in high income or developed countries. It's caused by higher tax revenue that collected from high income and large companies which is contribute for the large revenue in high income countries. The large amount of tax revenue in developed and OECD countries also were found by Zee (1996) and Chen et al. (2007). Zee (1996) found that OECD countries stated the highest amount of total tax revenue, in which over 32 percent of GDP, while four of newly industrialized economies (NIE) had the lowest amount of total tax revenue. Most of the countries that have high GDP such as developed and OECD countries associate with the high corporate income taxes, in which exceeding 30 percent of GDP (Chen et al., 2007).

Around 117 panel data analysis over 32 years was used by Baunsgaard and Keen (2005) in order to investigate and relate the growth and taxes in the different level of income that involves different groups of countries. They found that Sub-Saharan Africa has the highest percentage of trade taxes (25 percent of revenue) compared with Asia and Pacific countries (15 percent of revenue). Level of taxation in developing countries will burden the growth and the government have to restructure the tax policy (Mahdavi, 2008). The other study that involves developing countries also was conducted by Gordon and Li (2009), in which specific to the impact of each component of taxes. They found that consumption tax stated the highest

percentage of total tax revenue (43.5 percent) in developing countries, while high income countries had the highest percentage of personal income tax (42.7 percent of total tax revenue). Economic growth and indirect tax (non-income taxes) had the negative correlation among the other in South African for the period of 1960-2002 (Koch et al., 2005). The tax mix (indirect and direct taxes) will generate the growth in a country (Mamatzakis, 2005).

Change in components of taxes will also influence people to save their money in the banking institutions. According to Jenkins (1989), the incentive to save will lower with the higher taxes but generate for the economic growth. A study that explored the correlation between tax mix and tax policy in developing countries for the period of 1970-1994 was conducted by Peter and Kerr (2001) conclude that the rise in taxes was reduced the private saving in Colombia. They conclude that, 0.58 point of private saving was reduced caused by increase 1 point of tax to GNP ratio.

According to Hanlon and Heitzman (2010), decision of managers to make an investment also was influenced by change in corporate tax. It caused by the amount, timing and uncertainty of tax payment that affect the net present value of project and affect the decision of managers to invest in the project. The investors and managers will make an investment if the marginal benefits or profit in the future are greater than marginal cost (Biddle and Hilary, 2006, McNichols and Steubben, 2008, and Biddle et al., 2009). A study of the effect of corporate tax on FDI was conducted by Ghinamo et al. (2007) and found the significant relationship among the tax and FDI. Based on Scholes and Wolfson (1992), change in rate of returns on assets that caused by change in tax will influence the decision of foreign investors to make the investment in a country. They also suggested that FDI inflow in a country will reduce if the government state higher tax rate, in which reduce the rates of return on investment.

Taxes not only affect economic growth but also influence the movement of the other economic indicators such as inflation, size of international trade and unemployment. According to Gavin et al. (2007), increase in the rate of inflation will reduce the rate of return after tax and increase the real pre-tax rate of return to capital, in which will decline in the capital stock caused by lower in after-tax return. Brumbaugh (2006) was mentioned the theory of taxes which agrees that taxes will affect the size of international trade. However, theory of comparative advantage believed taxes do not affect the trade balance directly but they can be one of the potential tools to alter the compositions or components of trade. A study that focused on the relationship among labor taxes and unemployment was studied by Berger and Everaert (2010), in which using a panel of 16 OECD countries for the period of 1970-2005 and divided the countries into three which are European, Nordic and Anglo-Saxon Countries. Based on their study, they found a positive relationship between taxes on labor or personal income tax and unemployment in European and Nordic countries, while no impact of the change in labor taxes in Anglo-Saxon.

Data and Methodology

In this study, we were used 4 types of tax revenue which are taxes on income, profit and capital gain, taxes on goods and services, international trade tax and other taxes. All types of taxes are ratio to total revenue. We also include total tax revenue to GDP ratio (Tax/GDP) and tax rates (marginal tax rates) as regressors. In order to involve fiscal policy or tax policy as moderating variable, this study measures changes in tax rates as a dummy variable, in which if the tax rate change for the next year, it will be represented by 1 and 0 if the tax rate is unchanged. Change in GDP, gross saving to GDP ratio (Saving/GDP) and inflow of FDI to GDP ratio (FDI/GDP) were became dependent variables. These three economic indicators are the most important indicators that will measures the growth of economy for every country. The other indicators that involve as dependent variables are money and quasi money (M2) that was influenced by monetary policy, inflation rates, urban population, size of international trade that involve import and export of goods, and unemployment rates.

In order to investigate further the recent impact of taxes on economic indicators, we were used 52 countries and divide it with four groups of countries based on the classification by World Bank 2012 for the period of 2003-2009. The classification of countries are based on the GNI per capita of the countries, which are low income countries (US$1005 or less), lower middle income countries (US$1006-US$3975), upper middle income countries (US$3976-US$12275) and high income countries (US$12276 or more). Each of the group consist 13 countries. Moreover, we also include the tax structures and economic indicators in 24 OECD countries. All the data were collected from World Bank through World Development Indicators (2012).

(1) Summarize of Tax Structures and Economic Indicators

The previous studies of taxes such as Bonu and Pedro (2009) and Hakim and Bujang (2011) mentioned that high income and industrial countries have the highest tax-GDP ratio compared with developing and low income countries. In this study, we also summarize all tax structures and economic indicators by measuring the average (mean) value of each variable for the period of 2003-2009 that shown in Table 1.

Table 1: Average value of taxes and economic indicators (2003-2009)

Variable	Group of countries (%)			
	Low	Lower middle	Upper middle	High
TAXES	12.32	14.36	16.14	19.70
GOODT	32.61	37.96	37.61	26.71
INCOMET	15.85	22.76	24.26	29.41
INTERT	19.25	8.60	3.47	4.97
OTHERT	2.79	2.02	3.26	5.57
MTR	N/A	31.34	25.66	29.94
SAVING	15.74	22.30	23.07	24.37
FDI	3.03	3.70	6.06	5.88
INFLN	7.86	8.27	5.23	2.54
X	25.90	33.24	43.89	55.28
M	39.87	44.11	45.43	54.62
M2	30.66	48.18	64.57	101.39
URBANP	26.61	47.38	71.25	77.92
UNEMPLOYMENT	N/A	7.69	9.07	7.58

Notes: All components of taxes are weighted by total revenue of each country. Total tax revenue (TAXES) and economic indicators such as gross saving (SAVING), FDI, import (M), export (X) and money and quasi money (M2) are weighted by gross domestic product (GDP). Urban population (URBANP) are percentage of total population, while inflation (INFLN) is based on annual percentage of consumer prices and unemployment rates (UNEMPLOYMENT) is weighted by total labor force.

Table 1 shows that high income countries have the highest percentage of total tax revenue (19.70% of GDP) compared with the other group of countries. It is caused by highest per capita income and many large companies that can be taxed in high income countries. Taxes on goods and services (GOODT) and taxes on income, profit and capital gain (INCOMET) can be considered as two main sources of revenue of each country. High income countries stated the highest percentage of INCOMET (29.41% of total revenue), while low and middle income countries have the highest GOODT, in which stated 32% until 37% of total revenue in a country. However, low income countries have the highest international trade tax (INTERT) even though it was stated the lowest percentage of import and export (M and X).

The highest percentage of money and quasi money (M2) in high income countries that above 100% of GDP prove that its citizen have the greatest purchasing power. Surprisingly, it still stated the lowest inflation rate (2.54%) compared with the other group of countries. This is caused by high productivity by many large and medium sized companies that followed by high M2 was stabilized the prices of goods and services in high income countries. Urban population shows the highest percentage of total population in high income countries. It concludes that many citizens in higher income countries live in urban areas, while many citizens in lower income countries live in rural areas.

(2) Panel Data Analysis

This study involved with panel data analysis that consist 13 countries for each group and 24 OECD countries from 2003 until 2009 (7 recent years). We employed advanced econometrics methods such as Arellano and Bond-Generalized Method of Moments (GMM) estimator, system and different GMM, fixed and random effects instrumental variables (FE/RE-IV) and also Two Stage Least Squares Instrumental Variables (2SLS-IV). According to Mileva (2007), Arellano-Bond GMM estimator can be considered as the best estimator in dealing with some econometric problems such as endogeneity, time-invariant country characteristics (fixed effects), autocorrelation and short time dimension but large country dimension in panel dataset. We also conduct panel unit root tests and Breusch and Pagan LM test to know whether panel dataset can be pooled or not. In order to make sure all the independent variables have no multicollinearity problem, this study adopts the Variance Inflation Factor (VIF) test.

2 (1) Variance Inflation Factor (VIF)

Multicollinearity or perfect collinearity occurs in the explanatory variables or independent variables that have exact linear relationship among the variables. One of the consequences if we ignore multicollinearity problem is the model regression will become bias and no longer best linear unbiased estimator (BLUE). With that, this study employed VIF test due to detect either multicollinearity occur among independent variables. The formula of VIF can be shown as below:

$$VIF_j = \frac{1}{1-R_j^2}$$

in which the R_j^2 indicates the multiple correlation coefficient. If the value of R_j^2 is zero, it means that there is no correlation among the explanatory variables and the value of VIF will be 1 (no multicollinearity problem). The large value of VIF (more than 10) can be considered as multicollinearity problem. In this study, the small value of VIF (less than 10) indicates that multicollinearity problem do exist among independent variables.

2 (2) Breusch and Pagan LM Test

In order to test whether the panel data can be pooled or not, we have to conduct the Breusch and Pagan LM test that was produced by Breusch and Pagan (1979). The null hypothesis stated model regression of panel data is homoscedasticity which is the variance are constant across observation (no panel effect) against the alternative of the variance are not constant (has panel effect). Baltagi (2005) was formulated this test based on the study by Breusch and Pagan (1979) as follow:

$$BP_{LM} = b^2\, s^2 \qquad \text{or} \qquad BP_{LM} = \frac{nT}{2(T-1)} \frac{\sum_{i=1}^{n}(\sum_{t=1}^{T}\varepsilon_{it})^2}{\sum_{i=1}^{n}\sum_{t=1}^{T}\varepsilon_{it}^2} - 1$$

where, $H_0 = var(\mu) = 0$ and $H_1 = var(\mu) \neq 0$

Rejecting the null hypothesis means we can proceed to adopt GMM or difference and system GMM, FE/RE-IV and the other model estimators that can fit with panel data.

2 (3) Panel Unit Root Test

This test is important test due to know either the time series in panel data for each variable present unit root or not. In this study, we employed two types of panel unit root test which are Levin, Lin and Chu (LLC) and Im, Pesaran and Shin (IPS) test. We decide to adopt these two tests because it allows heterogeneity in the linear trend and fixed effects coefficient that usually occur in panel countries dataset. The null hypothesis stated time series has unit root (not stationary) against alternative that time series has no unit root (stationary). The LLC test was originally developed by Levin and Lin (1992 and 1993) and followed by the final work that was published by Levin, Lin and Chu (2002). The error term in this test was adjusted by the Newey-West corrected the standard error. This test is more suitable to test the existence of unit root for moderate size of panel data, in which appropriate with this study. The equation of this test can be formulated as below:

$$\Delta y_{it} = \alpha_i + \delta_{it} + \theta_t + \rho_i y_{it-1} + \varepsilon_{it}$$

Where *i* indicate the number of samples with the time period, *t* and allow the two-way fixed effects (α and θ) and unit specific time trends which is important source of heterogeneity.

Im et al. (2003) were created the IPS test that based on the ADF test. They mentioned that this test has greater performance than the LLC test. The advantages of this test are very powerful performance even

though the period of time in panel data is small and the error term is serially correlated. According to Breitung and Pesaran (2005), this test also can perform test for panel unit root for unbalanced panel data. Osbat (2004) shows the IPS structure as follows:

$$\Delta y_{it} = \alpha_i + \delta_{it} + \theta_t + \rho_i y_{it-1} + \varepsilon_{it}$$

Where *i* donates the samples, *t* is time period and the error term, ε_{it} is serially correlated and heteroscedastic. The null hypothesis of non-stationary (H_0:$\rho_i < 0$) against the alternative of time series in panel data are stationary (H_0:$\rho_i = 0$). The results of unit root test conclude that all variables are stationary at level and first different.

For the analysis of the relationship between tax structures and economic indicators the following function is used:

$$y_{jit} = \beta_{0it} + \beta_1 y_{jit-1} + \beta_2 TAXES_{it} + \beta_3 GOODT_{it} + \beta_4 INCOMET_{it} + \beta_5 INTERT_{it} + \beta_6 OTHERT_{it} + \beta_7 MTR_{it} + \beta_8 DUMMY_{it} + u_{it}$$

in which, *i* represent the number of countries, *t* is time period (years) and u_{it} is error term. y_{jit} indicates the dependent variables which are change in GDP, FDI, gross saving, money and quasi money (M2), and size of international trade (import and export). The dependent variables are ratio to GDP. Besides that, this study also includes the other indicators such as urban population, inflation rate and unemployment rate. We also include the dummy variable (DUMMY) that relate with the changes in MTR. If the tax rates (MTR) change for the next year, we will put value of 1, while 0 if it unchanged. The dummy variable will represent the tax policy (moderating variable) that was conducted by each of the countries that included in this study for the period of 2003-2009. The model regression will be applied for each of the group of countries including 24 OECD countries.

Empirical Results

The results for all countries are shown in Table 2, 3, 4, 5 and 6 that explains statistical evidence of taxes and economic indicators. All tax structures are significant and correlated with economic indicators especially on GDP, gross saving (SAVING) and FDI. These results are consistent with the most previous studies of taxes such as Hakim and Bujang (2011), Hristu-Varsakelis et al. (2011), Hanlon and Heitzman (2010) and Mahdavi (2008). However, findings and results are inconsistent among all the group of countries. For low income countries, Table 2 shows that total tax revenue (TAXES), taxes on income, profit and capital gain (INCOMET) and taxes on goods and services (GOODT) have negatively and significantly effect on economic growth. The coefficient implies that a 10% point decrease in GOODT and INCOMET are associated with a 1.2% and 0.42% point increase in GDP. However, taxes on international trade that stated the highest value of tax revenue in low income countries shows the positive significant on growth. TAXES also have positive and significant relationship with the other economic indicators such as money supply (M2), import and export (X and M) and inflation rate. It means that, change in taxes actually will influence the movement of these economic indicators in low income countries. International trade activities (X and M) were influenced by changes in INCOMET, in which increase in INCOMET leads to reduce the real income and profit that will lower the purchasing power and demand for import and export. This empirical evidence supports Brumbaugh (2006) that agreed taxes will affect the size of international trade (theory of comparative advantage).

	GDP		SAVING		FDI		M2		X		M		URBANP		INFLN	
Variable	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
y_{it-1}	-0.406*	0.297	-0.274	-0.108	-0.369	0.087	0.870***	0.950***	0.450**	0.493***	0.501***	0.300**	1.055***	1.027***	-0.424**	-0.511***
	(0.077)	(0.180)	(0.115)	(0.514)	(0.212)	(0.624)	(0.001)	(0.001)	(0.045)	(0.007)	(0.002)	(0.022)	(0.001)	(0.001)	(0.032)	(0.006)
TAXES	0.071	-0.047	0.136**	0.081	0.119**	0.066**	0.090**	0.071**	0.124*	0.041	0.256*	0.093	-0.015	-0.011	0.251*	0.164
	(0.161)	(0.332)	(0.029)	(0.164)	(0.015)	(0.045)	(0.026)	(0.063)	(0.059)	(0.545)	(0.079)	(0.219)	(0.448)	(0.247)	(0.062)	(0.203)
GOODT	-0.129	0.004	-0.028**	-0.015	-0.001	0.007	-0.002	0.009	-0.011	0.001	0.036	0.031*	0.001	0.001	-0.057*	-0.038
	(0.294)	(0.752)	(0.048)	(0.285)	(0.742)	(0.353)	(0.781)	(0.254)	(0.545)	(0.954)	(0.400)	(0.070)	(0.649)	(0.666)	(0.099)	(0.246)
INCOMET	-0.042*	-0.040**	0.040*	0.020	-0.003	-0.005	0.007	-0.002	-0.740**	-0.057**	-0.082***	-0.056*	-0.001	-0.003	0.110*	0.054
	(0.052)	(0.048)	(0.076)	(0.432)	(0.845)	(0.730)	(0.684)	(0.909)	(0.013)	(0.045)	(0.002)	(0.052)	(0.673)	(0.443)	(0.055)	(0.332)
INTERT	0.029*	0.016	-0.036*	-0.024	0.006	0.015*	-0.015	-0.004	0.006	0.007	0.054*	0.035*	-0.001	0.001	0.021	-0.032
	(0.068)	(0.196)	(0.061)	(0.111)	(0.496)	(0.086)	(0.169)	(0.968)	(0.751)	(0.698)	(0.052)	(0.059)	(0.862)	(0.698)	(0.660)	(0.389)
OTHERT	0.054	0.039	0.046	0.039	0.091***	0.043	0.015	-0.018	0.045	0.033	0.050	0.011	-0.008	-0.003	0.008	0.070
	(0.289)	(0.399)	(0.358)	(0.483)	(0.009)	(0.181)	(0.647)	(0.582)	(0.446)	(0.618)	(0.711)	(0.872)	(0.436)	(0.747)	(0.941)	(0.570)
Common C		1.098		1.291		-1.050*		-0.819		1.525		1.012		-0.161		0.098
		(0.171)		(0.182)		(0.060)		(0.170)		(0.210)		(0.391)		(0.714)		(0.966)
F Test	2.38 (0.0235)		4.31 (0.0004)		11.15 (0.0001)		3.05 (0.0001)		3.19 (0.0001)		4.08 (0.0007)		42.20 (0.0001)		2.12 (0.0432)	
W. Chi Square	293.26 (0.0001)		1695.2 (0.0001)		245.09 (0.0001)		18634.9 (0.0001)		3263.3 (0.0001)		7868.8 (0.0001)		2470.5 (0.0001)		119.82 (0.0001)	
R-squared	0.2146		0.1722		0.2757		0.8057		0.2691		0.3176		0.9950		0.2638	
BP LM Test	3.47 (0.063)		92.25 (0.0001)		10.54 (0.0012)		3.57 (0.0589)		168.47 (0.0001)		82.17 (0.0001)		127.13 (0.0001)		5.67 (0.0001)	
Hausman Test	28.61 (0.0001)		99.08 (0.0001)		19.64 (0.0015)		17.51 (0.0076)		19.75 (0.0031)		17.71 (0.0070)		17.63 (0.0072)		12.29 (0.0310)	
A. Bond Test																
order 1	-1.07 (0.284)		-1.77 (0.077)		-0.95 (0.344)		-0.84 (0.404)		-2.32 (0.020)		-1.74 (0.081)		-0.54 (0.591)		-4.50 (0.001)	
order 2	-0.27 (0.787)		-0.69 (0.491)		-0.26 (0.793)		-0.65 (0.513)		0.98 (0.329)		1.39 (0.165)		0.92 (0.358)		0.72 (0.473)	
Sargan Test	9.47 (0.924)		3.32 (1.000)		10.21 (0.984)		8.99 (0.940)		8.77 (0.994)		4.73 (0.998)		11.18 (0.972)		8.64 (0.995)	
M. Wald Test	216.21 (0.001)		26.95 (0.013)		1752.2 (0.001)		115.58 (0.001)		21.46 (0.064)		39.40 (0.002)		1134.9 (0.001)		2445.4 (0.001)	

Table 2: Results of low income countries

Notes: (1) and (2) represents two different estimators which are Arellano-Bond system or different GMM and Fixed or Random Effects Instrumental Variables (FE/RE-IV). Sargan/Hansen test for over-identifying restrictions with the null hypothesis of instrument validity. Values in parentheses are p-value. ***, **, * indicate statistical significance at the 1, 5 and 10% level, respectively.

Table 3: Results of lower middle income countries

	GDP		SAVING		FDI		M2		X		M		URBANP		INFLN		UNEMPLYMNT
Variable	(3)		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
y_{it-1}	0.494		0.281	0.131	-0.239	0.223	0.983***	0.871***	0.480*	0.531***	0.142	0.288	1.016***	1.017***	0.009	-0.466*	0.367**	0.247
	(0.141)		(0.139)	(0.514)	(0.501)	(0.294)	(0.001)	(0.001)	(0.051)	(0.004)	(0.474)	(0.022)	(0.001)	(0.001)	(0.958)	(0.075)	(0.044)	(0.081
TAXES	0.028**		-0.040	0.034	0.112**	0.032	0.037***	-0.014	0.088*	0.107**	0.328***	0.309***	-0.059***	-0.240***	0.004	0.075	-0.014	-0.006
	(0.033)		(0.322)	(0.532)	(0.024)	(0.429)	(0.001)	(0.771)	(0.061)	(0.049)	(0.001)	(0.001)	(0.002)	(0.008)	(0.775)	(0.455)	(0.467)	(0.693
GOODT	-0.003		-0.111	0.004	-0.026	0.015	-0.009***	-0.008	-0.039	-0.003	-0.054	0.024	0.005	0.085	-0.004	0.063	0.005	-0.003
	(0.574)		(0.702)	(0.907)	(0.178)	(0.526)	(0.001)	(0.752)	(0.271)	(0.920)	(0.264)	(0.621)	(0.172)	(0.103)	(0.443)	(0.283)	(0.752)	(0.748
INCOMET	-0.002		-0.024	-0.041	-0.022	-0.028*	-0.006**	0.007	-0.027	-0.037*	-0.065**	-0.089**	0.015***	0.134***	-0.014**	-0.030	0.010	0.006
	(0.718)		(0.240)	(0.110)	(0.400)	(0.095)	(0.018)	(0.704)	(0.255)	(0.097)	(0.044)	(0.010)	(0.002)	(0.001)	(0.047)	(0.466)	(0.330)	(0.299
INTERT	-0.003		0.048	0.067	-0.020	0.041	0.012*	-0.018	0.031	0.022	0.061	0.111	-0.010	0.003	0.033**	-0.084	0.005	-0.188
	(0.683)		(0.235)	(0.111)	(0.488)	(0.266)	(0.065)	(0.678)	(0.464)	(0.698)	(0.352)	(0.151)	(0.259)	(0.974)	(0.049)	(0.392)	(0.644)	(0.161
MTR	-0.011		-0.038*	0.007	0.014	0.028	0.003	-0.010	-0.126***	-0.018	-0.149***	0.064	-0.005*	0.093	0.035***	0.104	-0.014	-0.210
	(0.332)		(0.098)	(0.879)	(0.479)	(0.377)	(0.263)	(0.786)	(0.001)	(0.675)	(0.001)	(0.319)	(0.090)	(0.191)	(0.001)	(0.182)	(0.135)	(0.085
DUMMY	0.265**		0.183	0.028	-0.138	-0.228	-0.247	-0.055	0.144	-0.021	0.134	-0.672*	-0.044	-0.231	-0.574	-0.582	0.056	0.073
	(0.031)		(0.256)	(0.914)	(0.337)	(0.232)	(0.171)	(0.803)	(0.488)	(0.933)	(0.619)	(0.086)	(0.581)	(0.589)	(0.149)	(0.223)	(0.527)	(0.305
OTHERT	0.028		-0.022	0.013	-0.006	-0.015	-0.025**	-0.014	0.086*	0.028	0.035	-0.080	0.067***	-0.254**	-0.021	0.031	0.029*	0.045*
	(0.167)		(0.560)	(0.847)	(0.885)	(0.756)	(0.045)	(0.806)	(0.061)	(0.669)	(0.565)	(0.428)	(0.003)	(0.021)	(0.557)	(0.799)	(0.095)	(0.016
Common C	1.069***			1.417		-1.195		1.595		1.183		-3.048		42.510***		-4.086		1.310
	(0.004)			(0.531)		(0.459)		(0.418)		(0.210)		(0.371)		(0.001)		(0.301)		(0.033
F Test	10.40 (0.01)		4.74 (0.001)		2.44 (0.0227)		2.10 (0.0474)		25.21 (0.0001)		2.49 (0.0204)				2.37 (0.0032)		3.77 (0.001	
W. Chi Square	30.07 (0.01)		3043.1 (0.001)		241.26 (0.001)		2309.88 (0.001)		5688.6 (0.001)		5709.6 (0.0001)		53626.22 (0.0001)		171.14 (0.001)		4409.7 (0.0001	
R-squared	0.1627		0.3973		0.2385		0.7284		0.2324		0.4215		0.5122		0.1638		0.3869	
BP LM Test	3.47 (0.06)		44.41 (0.001)		31.53 (0.0001)		116.77 (0.0001)		144.44 (0.001)		85.15 (0.0001)		69.40 (0.0001)		2.93 (0.0872)		164.33 (0.000	
Hausman Test	28.61 (0.01)		40.64 (0.001)		37.61 (0.0001)		13.10 (0.0696)		20.54 (0.0085)		21.62 (0.0057)		0.22 (1.0000)		74.22 (0.0001)		43.82 (0.0001	
A. Bond Test																		
order 1			-2.34 (0.019)		0.22 (0.828)		-2.49 (0.013)		-2.31 (0.021)		-0.27 (0.787)		0.32 (0.747)		-2.01 (0.038)		-2.11 (0.035	
order 2			-0.76 (0.450)		-1.63 (0.102)		1.18 (0.239)		-0.17 (0.861)		-1.22 (0.224)		-1.08 (0.281)		-1.59 (0.113)		-0.30 (0.761	
Sargan Test			7.51 (1.000)		4.90 (1.000)		9.48 (1.000)		30.03 (0.223)		7.37 (1.000)		3.12 (1.000)		6.10 (1.000)		8.45 (0.999	
M. Wald Test	730.54 (0.01)		71.92 (0.001)		10466.6 (0.01)		240.92 (0.001)		76.56 (0.001)		42.33 (0.001)		1445.0 (0.001)		218.21 (0.001)		108.14 (0.001	

Notes: (1), (2) and (3) represents three different estimators which are Arellano-Bond system or different GMM, Fixed or Random Effects Instrumental Variables (FE/RE-IV) and Panel OLS. Sargan/Hansen test for

over-identifying restrictions with the null hypothesis of instrument validity. Values in parentheses are p-value. ***, **, * indicate statistical significance at the 1, 5 and 10% level, respectively.

In Table 3, most of economic indicators such as GDP, FDI, M2, X, M and urban population (URBANP) are correlated and significant with total tax revenue (TAXES) in lower middle income countries. Change 10% point in marginal tax rates (DUMMY) will contribute 2.65% on GDP. It means that the tax policy that was conducted by lower middle income countries actually succeed to boost economic growth (GDP). However, increase in marginal tax rates (MTR) still burden for economic growth and many economic indicators such as gross saving, international trade activities, urban population and unemployment rate. This result supports traditional schools of thought that mentioned higher tax rates will reduce growth. Taxes on income, profit and capital gain (INCOMET) also have highly significant and negative correlation with all indicators exclude urban population (URBANP) and unemployment rate (UNEMPLYMNT). It is because; higher INCOMET leads to reduce the real income per capita and profit after tax which is discourage growth, saving and investment activities and demand for exported and imported goods and services. However, population in an urban area still increase even though it has the highest MTR (31.34%) compared with the other group of countries.

Table 4: Results of upper middle income countries

	GDP		SAVING		FDI		M2		X		M		URBANP		INFLN	UNEMPLYMNT	
Variable	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(3)	(1)	(2)
y_{it-1}	1.052***	1.078***	-0.175	-0.330	0.223	0.037	0.601*	0.992***	0.338	0.234	0.425*	0.160	0.909***	0.925***	-0.106	0.151	0.365
	(0.001)	(0.001)	(0.501)	(0.179)	(0.240)	(0.867)	(0.053)	(0.001)	(0.140)	(0.143)	(0.078)	(0.370)	(0.001)	(0.001)	(0.506)	(0.654)	(0.218)
TAXES	-0.012	0.335***	-0.126*	-0.110**	0.206***	0.160**	-0.241*	-0.021	0.267***	0.082	0.670***	0.395***	0.028*	0.025*	0.022	-0.134***	-0.090**
	(0.255)	(0.001)	(0.085)	(0.035)	(0.004)	(0.026)	(0.068	(0.805)	(0.006)	(0.272)	(0.001)	(0.001)	(0.090)	(0.077)	(0.202)	(0.004)	(0.016)
GOODT	-0.011	0.023	-0.020*	-0.022**	0.002	0.018	-0.010	0.039**	0.067	-0.051	0.030	0.054**	-0.014	0.029	-0.010*	0.037	0.018
	(0.826)	(0.268)	(0.080)	(0.046)	(0.836)	(0.234)	(0.841)	(0.045)	(0.677)	(0.747)	(0.192)	(0.017)	(0.654)	(0.316)	(0.076)	(0.561)	(0.982)
INCOMET	0.024	-0.034	0.040*	0.040**	-0.040*	-0.040	0.024	-0.060**	-0.022	0.012	-0.122**	-0.081**	-0.038	0.039	-0.013**	0.023	0.009
	(0.592)	(0.308)	(0.056)	(0.022)	(0.075)	(0.106)	(0.591)	(0.033)	(0.471)	(0.635)	(0.010)	(0.022)	(0.434)	(0.938)	(0.022)	(0.182)	(0.479)
INTERT	0.034	-0.089	0.088**	0.101**	-0.030	-0.121	0.019	-0.067	-0.063	0.137**	-0.117	-0.087	0.036	-0.018	0.043**	0.040	0.242
	(0.807)	(0.244)	(0.018)	(0.012)	(0.253)	(0.821)	(0.601)	(0.333)	(0.835)	(0.020)	(0.126)	(0.288)	(0.712)	(0.871)	(0.021)	(0.105)	(0.386)
MTR	-0.050	0.046	0.041	-0.020	-0.003	0.030	-0.151**	-0.098**	0.106**	0.106***	0.053	0.087	0.011	0.012	-0.055	0.044*	0.020
	(0.938)	(0.349)	(0.196)	(0.541)	(0.939)	(0.412)	(0.047)	(0.028)	(0.014)	(0.004)	(0.455)	(0.107)	(0.231)	(0.104)	(0.947)	(0.077)	(0.297)
DUMMY	-0.300***	-0.184	0.054	-0.133	0.327*	0.204	-0.347	-0.341	0.166	-0.026	-0.272	-0.287	0.063**	0.045	-0.064	0.051	0.072
	(0.007)	(0.408)	(0.772)	(0.248)	(0.066)	(0.199)	(0.358)	(0.100)	(0.499)	(0.876)	(0.484)	(0.232)	(0.015)	(0.152)	(0.575)	(0.671)	(0.380)
OTHERT	0.029**	-0.124**	0.068	0.074**	-0.063	-0.043	0.111	0.010	-0.097	-0.029	-0.256**	-0.126*	-0.012	-0.064	-0.055***	0.071**	0.040*
	(0.037)	(0.045)	(0.141)	(0.022)	(0.009)	(0.321)	(0.213)	(0.854)	(0.147)	(0.528)	(0.010)	(0.058)	(0.271)	(0.462)	(0.002)	(0.034)	(0.076)
Common C		-5.390***		4.480***		-2.176		9.910***		-1.172		-3.903*		-4.381*	1.002*		1.063
		(0.006)		(0.001)		(0.123)		(0.001)		(0.500)		(0.093)		(0.063)	(0.070)		(0.135)
F Test	1.89 (0.0497)		4.02 (0.0009)		4.66 (0.0001)				4.43 (0.0004)		3.38 (0.0031)		11.34 (0.0001)		3.92 (0.0479)	6.39 (0.0001)	
W. Chi Square	70.38 (0.001)		4274.95 (0.001)		225.27 (0.001)		19.42 (0.0070)		7453.9 (0.0001)		3884.2 (0.0001)		4847.5 (0.0001)		22.59 (0.004)	1127.4 (0.0001)	
R-squared	0.4235		0.3191		0.2931		0.3824		0.4619		0.4638		0.9709		0.3008	0.3573	
BP LM Test	5.89 (0.0152)		90.86 (0.0001)		40.63 (0.0001)		181.08 (0.0001)		176.38 (0.0001)		169.16 (0.0001)		98.81 (0.0001)		2.25 (0.133)	26.67 (0.0001)	
Hausman Test	17.36 (0.015)		44.62 (0.0001)		27.09 (0.0007)		1.96 (0.9618)		44.10 (0.0001)		64.76 (0.0001)		23.70 (0.0001)		12.05 (0.098)	40.14 (0.0001)	
A. Bond Test																	
order 1	0.23 (0.816)		-1.74 (0.082)		-1.62 (0.104)		-1.54 (0.124)		-2.43 (0.015)		-2.34 (0.019)		4.90 (0.001)			-0.72 (0.470)	
order 2	-1.44 (0.151)		-0.05 (0.962)		-0.86 (0.388)		0.02 (0.981)		0.90 (0.369)		0.76 (0.447)		1.53 (0.125)			-0.22 (0.825)	
Sargan Test	11.34 (1.000)		7.82 (1.000)		6.09 (1.000)		5.90 (1.000)		5.25 (1.000)		5.58 (0.995)		4.22 (1.000)			6.27 (0.936)	
M. Wald Test	216.21 (0.001)		3763.78 (0.001)		4006.93 (0.001)		117.65 (0.001)		1157.52 (0.001)		409.14 (0.001)		421.25 (0.001)		2999.4 (0.01)	856.02 (0.001)	

Notes: (1), (2) and (3) represents three different estimators which are Arellano-Bond system or different GMM, Fixed or Random Effects Instrumental Variables (FE/RE-IV) and Panel OLS. Sargan/Hansen test for over-identifying restrictions with the null hypothesis of instrument validity. Values in parentheses are p-value. ***, **, * indicate statistical significance at the 1, 5 and 10% level, respectively.

Table 4 shows the results for upper middle income countries that consists developing countries. This group of countries has total tax revenue more than 16% of GDP, in which both of GOODT and INCOMET were contributed the most in total revenue. For the highest amount of tax revenue, GOODT displays a significant and negative sign on saving and inflation rate. This result is consistent with a study by Peter and Kerr (2001) that found rise in taxes was reduced the private saving. Increase in GOODT was followed by rise in price of final goods that force the citizen to reduce their saving in the banks. Based on statistical coefficient, marginal tax rate (MTR), total tax revenue (TAXES) and taxes on goods and services (GOODT) will burden the movement of growth. It follows the theory of taxes stated by Bonu and Pedro (2009) that mentioned low income tax rates will promote growth in a country. The other tax (OTHERT) is one of tax structures that was contribute for the movement of economic growth, in which will increase around 0.29% on growth for every 10% increase in this type of tax. We can measure the elasticity of changes in MTR

through statistical coefficient on DUMMY. The result suggests that change 10% in tax policy (change in MTR) leads to discourage 0.3% to 3.5% on growth and the other economic indicators. It means that citizen in lower middle and upper middle income countries are very sensitive (elastic) with the change in tax rates.

Table 5: Results of high income countries

	GDP		SAVING		FDI	M2		X		M		URBANP		INFLN	UNEMPLYMN	
Variable	(1)	(2)	(1)	(2)	(3)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(3)	(1)	(2)
y_{it-1}	1.048***	1.126***	0.301*	0.346	0.312**	1.162***	1.103***	-0.338	-0.839**	-0.776***	- 0.779***	0.994***	0.937***	-0.203	0.676***	0.987**
	(0.001)	(0.001)	(0.084)	(0.294)	(0.029)	(0.001)	(0.001)	(0.190)	(0.010)	(0.001)	(0.001)	(0.001)	(0.001)	(0.237)	(0.004)	(0.001)
TAXES	-0.044	-0.020	0.175***	0.147***	0.036	-0.060	-0.120	0.373**	0.398***	-0.124	0.048	0.026**	-0.092	-0.025	-0.071**	-0.062**
	(0.618)	(0.738)	(0.009)	(0.035)	(0.244)	(0.997)	(0.334)	(0.026)	(0.001)	(0.404)	(0.693)	(0.012)	(0.161)	(0.658)	(0.014)	(0.025)
GOODT	0.103**	0.081***	-0.024	-0.010	-0.035	-0.051	-0.014	-0.249***	-0.192**	-0.028	-0.069	0.012***	-0.102***	0.016	-0.015	-0.025*
	(0.049)	(0.004)	(0.358)	(0.973)	(0.148)	(0.585)	(0.816)	(0.001)	(0.022)	(0.636)	(0.262)	(0.001)	(0.002)	(0.699)	(0.180)	(0.072)
INCOMET	0.041	0.024	-0.074**	-0.073**	-0.021	0.048	0.100	-0.029	-0.210***	0.252***	0.033	0.023***	0.045	-0.025	0.052	0.066
	(0.469)	(0.470)	(0.027)	(0.014)	(0.119)	(0.558)	(0.112)	(0.717)	(0.001)	(0.003)	(0.625)	(0.001)	(0.219)	(0.916)	(0.709)	(0.683)
INTERT	0.060*	0.035	-0.032	-0.007	0.016	-0.036	-0.059	-0.034	0.583**	0.048	0.054	0.012**	-0.100***	0.052*	-0.047***	-0.063**
	(0.096)	(0.256)	(0.214)	(0.839)	(0.292)	(0.565)	(0.338)	(0.719)	(0.018)	(0.435)	(0.414)	(0.015)	(0.004)	(0.081)	(0.001)	(0.001)
MTR	0.104**	0.062***	0.044*	0.052**	-0.079***	-0.178**	-0.132***	0.062	0.035	-0.105*	-0.095	0.055***	-0.047*	-0.016***	-0.023*	-0.022*
	(0.014)	(0.009)	(0.058)	(0.023)	(0.005)	(0.031)	(0.004)	(0.992)	(0.469)	(0.088)	(0.851)	(0.001)	(0.085)	(0.001)	(0.075)	(0.095)
DUMMY	-0.062	0.063	0.061	0.144	-0.403	-0.122	0.037	-0.621*	0.525*	-0.685**	0.439	-0.018**	0.010	-0.028	-0.040	-0.083
	(0.740)	(0.692)	(0.665)	(0.337)	(0.195)	(0.634)	(0.991)	(0.092)	(0.074)	(0.048)	(0.215)	(0.049)	(0.956)	(0.636)	(0.549)	(0.278)
OTHERT	0.104***	0.087***	0.043*	0.069*	-0.049*	-0.032	-0.038	-0.146***	-0.134**	-0.013	0.035	0.090***	-0.068**	-0.012**	-0.028***	-0.042*
	(0.001)	(0.001)	(0.082)	(0.086)	(0.099)	(0.554)	(0.468)	(0.009)	(0.043)	(0.816)	(0.581)	(0.001)	(0.023)	(0.001)	(0.003)	(0.001)
Common C		-5.119***		-1.078	3.912***		3.760		11.13***		9.709***		83.58***	0.860***		2.897**
		(0.001)		(0.461)	(0.006)		(0.352)		(0.001)		(0.002)		(0.001)	(0.001)		(0.001)
F Test	2.82 (0.003)		3.28 (0.0038)		2.97 (0.0922)	4.00 (0.0009)		7.00 (0.0001)		6.62 (0.0001)				3.78 (0.05)	3.72 (0.0016)	
W. Chi Square	51.92 (0.01)		5117.30 (0.001)		45.17 (0.001)	2547.11 (0.001)		7645.79 (0.0001)		5609.69 (0.0001)		21.06 (0.0037)		17.60 (0.02)	47.07 (0.0001)	
R-squared	0.5894		0.4593		0.4593	0.8826		0.6625		0.3978		0.309		0.2501	0.6147	
BP LM Test	3.08 (0.079)		106.66 (0.0001)		2.36 (0.1248)	60.58 (0.0001)		166.77 (0.0001)		4.89 (0.0270)		219.68 (0.0001)		0.02 (0.880)	26.42 (0.0001)	
Hausman Test	25.66 (0.01)		80.97 (0.0001)		9.40 (0.3095)	13.13 (0.0689)		59.19 (0.0001)		106.48 (0.0001)		3.46 (0.8396)		21.25 (0.03)	34.98 (0.0001)	
A. Bond Test																
order 1	-1.93 (0.053)		-1.42 (0.157)			0.89 (0.371)		-1.08 (0.280)		0.18 (0.856)		0.69 (0.489)			-0.54 (0.589)	
order 2	1.49 (0.137)		1.06 (0.291)			-0.52 (0.603)		-0.12 (0.908)		-0.94 (0.345)		0.93 (0.352)			1.06 (0.291)	
Sargan Test	5.21 (0.999)		5.97 (1.000)			3.34 (1.000)		7.37 (0.882)		8.30 (0.983)		6.30 (1.000)			3.11 (1.000)	
M. Wald Test	346.11 (0.01)		421.73 (0.001)		3579.1 (0.01)	650.73 (0.001)		3509.15 (0.001)		2165.5 (0.001)		3255.5 (0.001)		51.59 (0.01)	885.73 (0.001)	

Notes: (1), (2) and (3) represents three different estimators which are Arellano-Bond system or different GMM, Fixed or Random Effects Instrumental Variables (FE/RE-IV) and Panel OLS. Sargan/Hansen test for over-identifying restrictions with the null hypothesis of instrument validity. Values in parentheses are p-value. ***, **, * indicate statistical significance at the 1, 5 and 10% level, respectively.

In order to compare the results among the countries, this study also involve with 13 high income countries and 24 OECD countries that shown in Table 5 and 6. We found that tax structures in both of these groups of countries shows highly significant on all economic indicators compared with the other group of countries. It shows the tax structures are actively adopted in high income countries, in which will influence for the movement of most important economic activities. Surprisingly, we found that all components of tax have positive impact of growth (GDP) including MTR. This opposite result support modern schools of thought that propagated higher tax rates will promote economic development especially in high income or developed countries. Based on both Table 5 and 6, increase 10% on MTR will generate around 0.6% to 1.0% on economic growth (GDP) and gross saving. The coefficient for DUMMY variable shows that adjustment for every 10% on tax rates will respond to 0.6% to 1.3% change in GDP which is lower than lower middle and upper middle income countries. This finding indicates that citizen in lower income countries have higher sensitivity (elastic) on the changes in tax policy or tax rate than high income and OECD countries. It is caused by citizen in high income countries has highest income per capita that leads to the large purchasing power than citizen in lower income countries. With that, changes or increase a little bit on tax rate (MTR) will not give a large impact on the income and purchasing power in high income countries.

Table 6: Results of OECD countries

	GDP		SAVING		FDI		M2		X		M		URBANP		INFLN		UNEMPLYMNT	
Variable	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
y_{it-1}	0.876**	1.126***	0.195	0.121	0.979***	0.867***	1.072***	0.753***	0.487***	0.203	0.478**	-0.179	0.998***	0.761	-0.286	0.787	0.861**	0.739***
	(0.012)	(0.001)	(0.529)	(0.405)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.126)	(0.023)	(0.215)	(0.001)	(0.318)	(0.185)	(0.145)	(0.012)	(0.001)
TAXES	-0.013	-0.020	0.013	0.034**	0.081	0.109	0.498**	0.046	-0.204**	-0.160***	-0.274***	-0.134**	-0.011***	-0.015	-0.090**	-0.063**	0.048	0.010
	(0.908)	(0.738)	(0.890)	(0.016)	(0.447)	(0.246)	(0.018)	(0.764)	(0.015)	(0.008)	(0.003)	(0.025)	(0.001)	(0.978)	(0.044)	(0.025)	(0.301)	(0.672)
GOODT	0.172*	0.081***	0.094	0.484*	-0.022	-0.043	-0.077	-0.101	0.162	0.023	0.185**	0.154***	-0.048**	-0.110***	0.031	0.028	-0.096***	-0.067***
	(0.051)	(0.004)	(0.149)	(0.063)	(0.538)	(0.542)	(0.611)	(0.412)	(0.756)	(0.609)	(0.024)	(0.001)	(0.017)	(0.005)	(0.328)	(0.893)	(0.002)	(0.001)
INCOMET	0.040	0.024	0.041	0.022	-0.011	-0.032	-0.296**	-0.086	0.191***	0.109***	0.256***	0.138***	0.010***	-0.013	0.119***	0.066***	-0.091**	-0.053***
	(0.592)	(0.470)	(0.512)	(0.921)	(0.612)	(0.466)	(0.036)	(0.395)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)	(0.711)	(0.001)	(0.001)	(0.014)	(0.001)
INTERT	0.092	0.035	0.322*	0.026**	0.115	0.665	-0.361	-0.537	0.349***	0.551***	0.459**	0.467**	-0.320***	0.015	0.031	0.141	0.093*	0.053
	(0.615)	(0.256)	(0.051)	(0.024)	(0.647)	(0.146)	(0.393)	(0.293)	(0.003)	(0.006)	(0.012)	(0.020)	(0.003)	(0.934)	(0.756)	(0.135)	(0.078)	(0.472)
MTR	0.087**	0.062***	0.040	0.052***	-0.075	-0.025	-0.237***	-0.127*	0.067**	0.029	0.063*	0.036	0.033***	-0.022	-0.032*	-0.003	-0.009	-0.024*
	(0.012)	(0.009)	(0.218)	(0.001)	(0.964)	(0.678)	(0.004)	(0.065)	(0.043)	(0.306)	(0.076)	(0.001)	(0.009)	(0.349)	(0.095)	(0.806)	(0.677)	(0.080)
DUMMY	0.125	0.063	-0.277*	-0.040	0.316	1.312	-0.181	-0.165	-0.025	0.042	0.239	0.166	-0.160***	-0.009	0.071	0.077	-0.143**	-0.165***
	(0.484)	(0.692)	(0.058)	(0.576)	(0.699)	(0.134)	(0.644)	(0.593)	(0.862)	(0.729)	(0.332)	(0.166)	(0.001)	(0.934)	(0.399)	(0.171)	(0.037)	(0.001)
OTHERT	0.351*	0.087***	0.386***	0.0163***	-0.283	-0.138	-0.177	-0.072	0.132*	0.075	0.179	0.064	0.029***	-0.023	-0.004	0.097***	-0.076*	-0.079**
	(0.064)	(0.001)	(0.002)	(0.001)	(0.399)	(0.509)	(0.493)	(0.714)	(0.083)	(0.337)	(0.199)	(0.423)	(0.001)	(0.735)	(0.948)	(0.001)	(0.085)	(0.015)
Common C		-5.119***		3.269***		0.348		12.254**		2.099		-2.980		78.117***		-0.751		4.25***
		(0.001)		(0.001)		(0.915)		(0.016)		(0.259)		(0.103)		(0.001)		(0.249)		(0.001)
F Test	2.82 (0.0033)		4.06 (0.0001)				2.73 (0.0447)		3.62 (0.0001)		4.42 (0.0001)				3.00 (0.0003)		4.80 (0.0001)	
W. Chi Square	51.92 (0.0001)		10478.58 (0.001)		250.96 (0.0001)		19124.9 (0.0001)		20069.9 (0.0001)		18858.9 (0.0001)		15.44 (0.0308)		305.98 (0.0001)		2315.77 (0.0001)	
R-squared	0.5894		0.6115		0.4930		0.5663		0.6625		0.3978		0.2013		0.3504		0.7081	
BP LM Test	3.08 (0.0792)		297.63 (0.0001)		370.54 (0.0001)		452.23 (0.0001)		362.11 (0.0001)		4.89 (0.0270)		435.94 (0.0001)		3.69 (0.0548)		122.20 (0.0001)	
Hausman Test	25.66 (0.0012)		35.61 (0.0001)		3.49 (0.8362)		13.56 (0.0941)		103.72 (0.0001)		106.48 (0.0001)		3.52 (0.7452)		14.73 (0.0396)		43.40 (0.0001)	
A. Bond Test																		
order 1	-2.39 (0.017)		-2.05 (0.041)		-1.06 (0.288)		0.18 (0.854)		-1.77 (0.077)		-1.79 (0.074)		-3.39 (0.001)		-0.92 (0.357)		-2.48 (0.013)	
order 2	-0.01 (0.988)		0.26 (0.796)		1.04 (0.298)		-1.61 (0.107)		0.01 (0.998)		0.72 (0.470)		0.34 (0.733)		0.88 (0.380)		1.28 (0.201)	
Sargan Test	12.32 (0.501)		20.68 (0.355)		14.48 (1.000)		14.82 (0.734)		21.65 (0.656)		20.97 (0.338)		15.36 (1.000)		17.43 (0.561)		20.77 (0.324)	
M. Wald Test	2263.1 (0.001)		3121.73 (0.001)		106.36 (0.001)		4691.31 (0.001)		6419.81 (0.001)		2165.5 (0.001)		16647.27 (0.001)		609.25 (0.001)		1207.05 (0.001)	

Notes: (1) and (2) represents two different estimators which are Arellano-Bond system or different GMM and Fixed or Random Effects Instrumental Variables (FE/RE-IV). Sargan/Hansen test for over-identifying restrictions with the null hypothesis of instrument validity. N/A indicates the data is not available (omitted) in World Bank Data (2012).Values in parentheses are p-value. ***, **, * indicate statistical significance at the 1, 5 and 10% level, respectively.

Similar with upper middle income countries, taxes on income, profit and capital gain (INCOMET) have significantly negatively correlated with SAVING and FDI. The inverse relationship shows that higher income tax will reduce the amount of disposable income and discourage people to save their money more in the commercial banks. One of dependent variables that have high significant and correlated with tax structures in high income and OECD countries is population in urban area (URBANP). The previous studies such as Thompson (2011) and Young and Varner (2011) found that taxes do not impact people to move (migration) from the other area to the other area (urban area). However, we found that all components of tax are highly significant and positive correlated with URBANP in high income countries while negative relationship in OECD countries. It means that, a country actually can use the tax policy due to stabilize the large population in an urban area.

Conclusion

In this study, we were investigated further the recent impact of taxes on economic indicators using panel data of the different group of countries. We intend to relate both theories of taxes by traditional and modern schools of thought as mentioned by Bonu and Pedro (2009). We found the mix relationship between tax rates (MTR) and economic growth among the group of countries, in which can be solved the problem of why there have different theory of taxes. Based on the statistical evidence that shown in this study, we conclude that the inconsistent impact of taxes that leads to the different theory of taxes is caused by the different optimum level of tax rates, elasticity (sensitivity) of change in taxes on personal income and purchasing power among the group of countries. We found that, MTR in lower middle and upper middle income countries around 25% to 31% can be considered as over optimum level of tax rates, while in high income and OECD countries, it is still considered under optimum level of tax. With that, increase in tax rates leads to discourage economic development and tax revenue in lower and middle income (developing) countries. However, in the case of high income countries, increase in tax rates a little bit especially to the wealthier would not affect their disposable income and large purchasing power. Increase in tax rates (MTR) is still not burdening economic activities. It has increased the amount of tax revenue. The higher tax revenue

(tax-GDP ratio) collected in high income countries can be utilized to improve the economic development. With that, we suggest a country to adopt "two ways tax policy", in which we can increase tax rate for wealthier, while reduce tax rate on middle income's people due to stimulate revenue and growth. Moreover, we also conclude that a tax actually has significant impact on the other important indicators such as movement of international trade activities, money supply, population in urban area, inflation and unemployment rates. With that, a country can control many of economic activities due to improve economic development and minimize the economic downturn in the future.

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