Does goods and services tax stimulate economic growth? International evidence

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Abstract

This paper examines the impact of goods and services tax (GST) on economic growth in developing and developed countries using the Arellano-Bond dynamic panel GMM estimation. The empirical results reveal that GST is negatively correlated with economic growth in developing countries, while statistically significant and positively correlated with economic growth in developed countries. Therefore, we conclude that the implementation of the current flat rate of GST is least efficient in collecting the higher revenue and stimulate growth in developing countries. Hence, the implementation of the current GST should be revised to generate higher revenue and economic growth without burdening the consumption and real per capita income in developing countries.

1. Introduction

GST or Value Added Tax (VAT) was introduced in 1950s which firstly adopted in France and followed by more than 160 countries around the world. This kind of tax is an indirect tax and can be considered as one of the regressive tax in the countries that implemented flat-rate of GST for all productions. A study conducted by Palil and Ibrahim (2011) summarized the standard rates of GST in several high income or developed countries range from 5% (Singapore) to 42.58% (Argentina). According to statistical report provided by Royal Malaysian Customs Department (2015), the average rate of GST in developing and developed countries is 12% and 21% respectively.

The first study that investigates the relationship between tax structure and economic indicators has conducted by Gober and Burns (1997) mentioned that any changes in each type of taxes may lead to different impact on a country's economy. Moreover, a study done by Gold (1991) concluded that an economic growth of a country is relies on the changes on each of tax structure. These studies proved that, any single component of tax structure like GST will lead to give the different impact on economic growth for each country. It is important for a country to predict and find the optimum rate of each tax structure before the implementation of any kind of tax especially GST to make sure it will not burden the consumption as well as economic growth. Palil and Ibrahim (2011) who investigated the impacts of GST on middle income earners mentioned the flow of GST in Australia which found that GST had a significant impact on inflation only in the quarter to September 2000 (the implementation of GST at 10% in July 2000) as resulted an average increase of 2.6% on inflation rate. The domestic consumption of Australia has dramatically increased in the months leading to GST implementation and economic growth declined during the first quarter of 2001.

A study of the impact of the GST on international trade has conducted by Desai and Hines (2005) found that openness and export performance are significantly and negatively related on the presence of GST. Moreover, according to Palil and Ibrahim (2011), the

implementation of GST has some potential weaknesses and actually can contribute to the negative impact on the level of efficiency in developing countries. Furthermore, Keen and Smith (2006) proved that GST can be exposed with the carousel fraud, which relates with the case in United Kingdom that exploits arrangements for the taxation of intra-community trade (amounted 1.5% - 2.5% of net revenue) within the European Union. Consumption tax is believed can increase the level of inefficiency of informal production which contribute for the reducing of welfare (Piggott and Whalley, 2001) while in the presence of an informal sector, GST might cannot compete with the efficiency of tariffs (Emran and Stiglitz, 2005).

Using the dynamic panel data analysis and divided the countries into five groups of countries (low, lower middle, upper middle, high income and OECD countries), Hakim *et al.* (2013) argued that there is a mixed results between GST on economic growth in all groups of countries. They concluded that GST have significant and negatively correlated with the movement of economic growth in low, lower middle and upper middle income (developing) countries. Conversely, they find an evidence of strong positive correlation between GST and economic growth in high income and OECD countries. Furthermore, a study by Bolton and Dollery (2004) concluded that the GST was highly successful in generating the tax revenue and economic growth in developed countries such as Australia, Canada and New Zealand.

A recent study by Nantob (2014) who implemented the dynamic panel data GMM estimator revealed that tax structure including GST had negative impact on the level of economic growth in developing countries. On the other hand, McNabb and LeMay-Boucher (2014) who adopted the Common Correlated Effects Mean Group (CMG) estimator found that an increase in trade or consumption taxes followed by reductions in personal income taxes can stimulate growth in developing and developed countries. Moreover, Miki (2011) studied the effect of VAT on aggregate consumption and economic growth in 14 developed nations showed that an increase in VAT lead to generate the economic growth. Arnold *et al.* (2011) investigated further the impact of taxation on economic growth suggest that consumption taxes can be considered the least harmful to growth compared with the personal income taxes (PIT) and corporate income taxes (CIT). They conclude that higher GST does not necessary discourage investment and saving, while higher PIT and CIT are believed discourage investment and reduce the incentive to save as well as economic growth.

The effect of GST is actually influenced by the level of income, in which higher income earners will bear lower proportion of their income to pay GST compared with the lower income earners. Thus, this situation arise an important issue as the government intends to implement GST. Such as (1) Can GST stimulate economic growth without burdening the consumption of lower and middle income earners? (2) Does the flat-rate of GST is an efficient way in stimulating revenue and economic growth for developing and developed countries?

The objective of this study to examines the mixed effects of GST on economic growth in developing and developed countries. In this study, we use a panel data set comprising annual data from 47 developing countries and 23 developed countries over the period 2005-2012. In order to generate efficient and unbiased results, this study employs the Arellano-Bond dynamic panel GMM estimation in the model regression.

The paper is organized as follow. The next section presents our empirical strategy and explanation of the Arellano-Bond dynamic panel data estimation. Section 3 describes the measurement of the data employed in the analysis, while the discussion of the result in developing and developed countries is reported in section 4. Finally section 5 focused on conclusion.

2. Materials and Methods

2.1 Empirical model

Our empirical specification is aimed at investigating the impact of taxes on goods and services (GST) on economic growth in developing and developed countries. In this study, we follow the studies conducted by Nantob (2014) and Miki (2011) which relates several important tax structure especially GST, several of control variables (economic indicators) and economic growth. Thus, this study specifies the dynamic linear equation model to estimate the effect of GST as follows:

$$GDPPC_{it} = \alpha + \phi GDPPC_{it-1} + \beta_1 POP_{it} + \beta_2 INF_{it} + \beta_3 INVEST_{it} + \beta_4 GOV_{it} + \beta_5 TRADE_{it} + \beta_6 PIT_{it} + \beta_7 INTERT_{it} + \beta_8 GST_{it} + \varepsilon_{it} \quad (1)$$

Where $GDPPC$ is gross domestic product (GDP) per capita growth, three important tax structure which are PIT (taxes on income, profits and capital gains/revenue), $INTERT$ (taxes on international trade/revenue) and GST (taxes on goods and services/revenue). The other variables also included as control variables namely population growth(POP), inflation(INF), foreign direct investment/GDP$(INVEST)$, government expenditure/GDP(GOV) and trade openness/GDP$(TRADE)$. ε is an error term which contain of country and time specific fixed effects:

$$\varepsilon_{it} = \upsilon_i + \mu_t + u_{it} \quad (2)$$

Where the u_{it} are assumed to be independent and identically distributed with zero mean and variance equal to σ_u^2.

2.2 The Arellano-Bond Dynamic Panel Data Estimation

In this study, we employ the Arellano-Bond Dynamic GMM estimation which introduced by Arellano and Bond (1991) to provide unbiased and efficient results. Moreover, Mileva (2007) expresses that the GMM is designed for micro panel data which consists large sample size (*N)* but small period of time (*T*). According to Arellano and Bond (1991), there have several econometrics problems (heteroscedasticity, autocorrelation and endogeneity) arise in the static panel data models namely Random Effects and Fixed Effects estimators. These models are assumed tend to be bias and not efficient due to the presence of econometrics problems. In this case, the dynamic GMM estimation eliminates simultaneity bias by using the lagged level of independent variables (regressors) as instruments in the model regression. Baum *et al.* (2003) conducted a study of Instrumental Variables (IV) and GMM estimation pondered whether to adopt the GMM or not based on the presence of heteroscedasticity and endogeneity in the model regression. If the model regression suffer from heteroscedasticity and endogeneity, the GMM estimation is more efficient than IV. Furthermore, the GMM estimator has ensured all regressors are stationary by differencing the regressors (Baltagi *et al.,* 2009).

The properties of GMM estimation can be specified into three categories which are under identified, just-identified and over identified. Under identified occur when the number of moments (*q*) is less than the number of unknown parameter (*p*), while just-identified have *q* = *p.* In order to implement the GMM estimator, the model regression must have *q* > *p* which can be considered as over identified. Thus, to test for the over identifying restrictions, we employ the Sargan test that proposed by Sargan (1958). Therefore, the null hypothesis of over identifying restrictions are valid cannot be rejected in all cases. In order to measure the validity of

instruments in the model regression, we conduct the test for first order and second order autocorrelation. The null hypothesis of the absence of first order autocorrelation can be rejected but not for the second order autocorrelation. If the model reject the null hypothesis of the second order autocorrelation, the instruments variables must be modified or reconstruct the model is necessary (Arellano and Bond, 1991).

2.3 Measurement of Data

To estimate the model, this study utilizes three data sets which consist of 43 developing countries, 23 developed countries and dataset that includes both developing and developed countries, totalling 70 countries over the period 2005 – 2012 (8 years). All the data are gathered from World Bank Development Indicators (WBDI). Our model of choice is based on the works of Nantob (2014) and Miki (2011). The annual percentage growth rate of gross domestic product (GDP) per capita is selected as dependent variable to measure the economic growth in both developing and developed countries. The explanatory variables of model regression include the several important tax structure and the control variables. Three important tax structures include in this study are taxes on goods and services (*GST*), taxes on income, profit and capital gains (*PIT*) and taxes on international trade *(INTERT*). All these taxes employed in the analysis are proxied by total amount of taxes over revenue collected.

We selected the economic indicators as the control variables namely the annual population growth rate (*POP*) and inflation rates (*INF)* as measured by the consumer price index annual percentage change. Theoretically, the higher inflation rates may lead to discourage the purchasing power and consumption as well as economic growth. Elder (2004) revealed that real economic activity tend to has negative correlation with the inflation. On the other hand, Dotsey and Sarte (2000) concluded that higher inflation may generate investment caused by people tend to use their money for saving and investment during the real value of money are decreasing. In the case of population growth, the higher population in a country (*ceteris paribus*) may lead to reduce the GDP per capita.

GOV is the government expenditure variable that is proxied by the general government final consumption expenditure over GDP. The literature has witnessed that government expenditure also effect the economic growth. Avila and Strauch (2008) and Bergh and Karlsson (2010) revealed that government expenditure led to slowdown the economic growth. An early study conducted by Gwartney *et al.* (1998) who investigated the relationship between government expenditure on growth in OECD countries argued that there is a significant inverse relationship between government expenditure and the level of investment as well as real GDP growth. Moreover, Dackehag and Hansson (2012) investigated the effect of corporate income tax and personal income tax find a negative effect of government expenditure on economic growth in 25 high-income OECD countries. Thus, this study expects to find a negative correlation of government expenditure and economic growth especially in developed countries.

The other control variables are foreign direct investment (*INVEST*) is proxied by the net inflows of investment from foreign investors over GDP and lastly trade openness (*TRADE*) is proxied by the sum of exports and imports of goods and services measured as a share of GDP. The relationship between investment and economic growth is assumed to be positive, in which the higher investment is expected to boost the economic growth in a country. An early study conducted by Lucas (1988) proved that one of the important factors of economic growth is capital accumulation that can be related to investment. The evidence of positive relationship among these variables are supported by De Long and summers (1991), Mankiw *et al.* (1992), Oju and Oshikoya (1995) and Ghura and Hadjimichael (1996). Unlike the past studies, Carkovic and

Levince (2003) who adopted the GMM panel estimator did not support the positive relationship between investment and economic growth. They found that both foreign direct investment and portfolio inflows did not have a positive relationship with economic growth. Thus, we expect to find the mix results of investment and economic growth among different group of countries. For the case of trade openness, we assume that it will generate the economic growth based on studies that investigated the relationship between trade openness and economic growth (Sach and Warner, 1995; Frankel and Romer, 1999; Irwin and Tervio; 2002; Noguer and Siscart, 2005; Andersen and Babula; 2008).

The data sets are summarized in Tables 1a and 1b. For instance, the average value of GDP per capita growth rate is 3.20 percent per annum, with the standard deviation of 3.98 in developing countries, while the GDP per capita growth and standard deviation in developed countries are 1.57 percent per annum and 4.16. For developing countries, the maximum growth rate (18.49) was reported in Angola, while the lowest growth rate (-14.42) was suffered by Ukraine. Among three different types of taxes, goods and services tax (GST) can be considered as the highest contributor which the mean value reported between 29 to 33 percent of revenue in both developing and developed countries. The highest percentage of GST in developing countries was collected by Guatemala (58.54), while GST in Uruguay (developed countries) was contributed more than 50 percent of its revenue. Trade openness has contributed more than 80 percent of GDP for both developing and developed countries. However, the percentage of international trade tax was stated different among these groups of countries, where 14.48 percent of revenue in developing countries compared with only 4.87 percent of revenue in developed countries. It shows that revenue in developing countries is also depend on the import and exports duties.

Table 1a: Summary statistics of tax structure and economic indicators in 47 developing countries (2005 -2012 Observation = 376).

Variable	Unit of Measurement	Mean	Standard Deviation	Minimum	Maximum
GDP per capita growth	Annual percentage growth rate of GDP per capita based on constant 2005 U.S. dollars.	3.20	3.98	-14.42	18.49
Population growth	Annual population growth rate.	1.48	1.14	-2.63	4.18
Inflation	Inflation as measured by the consumer price index (annual percentage change).	7.61	6.95	-2.40	59.22
Foreign direct investment	% of GDP	5.94	7.57	-5.98	84.95
Government expenditure	% of GDP	14.61	5.09	3.46	39.45
Trade openness	% of GDP	87.06	38.33	22.14	225.02
Taxes on income, profits and capital gains	% of revenue	23.16	11.71	0.87	75.24
Taxes on international trade	% of revenue	14.48	12.88	0.11	59.77
Taxes on goods and services	% of revenue	32.85	11.80	1.14	58.54

Source: World Development Indicators, World Bank.

Table 1b: Summary statistics of tax structure and economic indicators in 23 developed countries (2005 -2012 Observation = 184).

Variable	Unit of Measurement	Mean	Standard Deviation	Minimum	Maximum
GDP per capita growth	Annual percentage growth rate of GDP per capita based on constant 2005 U.S. dollars.	1.57	4.16	-13.00	12.65
Population growth	Annual population growth rate.	0.48	0.69	-2.08	2.53
Inflation	Inflation as measured by the consumer price index (annual percentage change).	3.27	2.79	-135	15.40
Foreign direct investment	% of GDP	4.54	5.52	-5.65	31.61
Government expenditure	% of GDP	18.48	3.09	10.18	24.89
Trade openness	% of GDP	80.86	33.76	24.77	179.90
Taxes on income, profits and capital gains	% of revenue	25.67	16.41	1.38	66.48
Taxes on international trade	% of revenue	4.87	10.18	-0.03	47.91
Taxes on goods and services	% of revenue	28.55	10.17	2.45	50.19

Source: World Development Indicators, World Bank.

Table 2a: Correlations matrix for developing countries

	GDPPC	POP	INF	INVEST	GOV	TRADE	PIT	INTERT	GST
GDPPC	1.0000								
POP	-0.0612	1.0000							
INF	0.1069	0.0984	1.0000						
INVEST	0.0586	-0.0467	0.0925	1.0000					
GOV	-0.0013	-0.1978	-0.0201	0.1994	1.0000				
TRADE	0.0731	-0.2350	0.0434	0.3165	0.3457	1.0000			
PIT	-0.0505	0.1576	-0.1333	-0.1566	-0.0344	-0.0134	1.0000		
INTERT	-0.0895	0.2247	0.0130	0.2393	-0.1672	-0.0229	-0.1262	1.0000	
GST	**-0.0334**	-0.2942	-0.1754	-0.1673	0.0094	-0.0146	-0.1713	-0.4853	1.0000

Notes: GDPPC = GDP per capita growth; POP = population growth; INF = inflation; INVEST = Foreign direct investment; GOV = government expenditure; TRADE = trade openness; PIT = taxes on income, profits and capital gains; INTERT = international trade tax; GST = goods and services tax. N = 47. List of countries; Angola, Armenia, Bangladesh, Belarus, Benin, Brazil, Bulgaria, Burkina Faso, Cambodia, Cote d'Ivoire, Dominica, Egypt Arab Rep, Ethiopia, Georgia, Ghana, Grenada, Guatemala, Honduras, India, Jamaica, Jordan, Kenya, Liberia, Madagascar, Malaysia, Mali, Macedonia, Moldova, Morocco, Namibia, Nepal, Nicaragua, Pakistan, Paraguay, Peru, Philippines, Sao Tome and Principe, Seychelles, South Africa, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Thailand, Togo, Tunisia, Uganda, Ukraine.

Table2b: Correlations matrix for developed countries

	GDPPC	POP	INF	INVEST	GOV	TRADE	PIT	INTERT	GST
GDPPC	1.0000								
POP	-0.1044	1.0000							
INF	0.2414	-0.1375	1.0000						
INVEST	0.2489	0.2968	0.0733	1.0000					
GOV	-0.3184	-0.0857	-0.0402	-0.1769	1.0000				
TRADE	0.1597	-0.1519	-0.0134	0.2097	-0.0768	1.0000			
PIT	-0.1211	0.5227	-0.2689	-0.1993	0.0217	-0.5448	1.0000		

INTERT	0.0490	0.2050	0.2538	0.5769	-0.1904	0.0443	-0.2678	1.0000	
GST	**0.1189**	-0.3778	0.1721	-0.0105	0.0135	0.3163	-0.5209	-0.1367	1.0000

Notes: GDPPC = GDP per capita growth; POP = population growth; INF = inflation; INVEST = Foreign direct investment; GOV = government expenditure; TRADE = trade openness; PIT = taxes on income, profits and capital gains; INTERT = international trade tax; GST = goods and services tax. N = 23. List of countries; Antigua and Barbuda, Australia, Austria, Canada, Czech Rep, France, Greece, Iceland, Japan, Korea Rep, Latvia, New Zealand, Norway, Poland, Portugal, Russian Fed, Slovak Rep, Slovenia, St. Kitts and Nevis, Switzerland, United States, Uruguay.

Tables 2a and 2b present the correlation among the variables in developing and developed countries. As shown in both tables, the correlations between taxes on income, profits and capital gains are negatively correlated with GDP per capita growth, inflation, investment and trade openness in both developing and developed countries. However, there have an inconsistent results regarding the correlations between taxes on goods and services, taxes on international trade and GDP per capita growth in both groups of countries. For example, the goods and services tax is negatively correlated with all variables except the government expenditure in developing countries, while in developed countries, GST is positively correlated with GDP per capita growth, inflation, government expenditure as well as trade openness. Thus, this study adopts the dynamic panel GMM estimator to support the findings of the correlation matrix.

3. Results and Discussion

This study estimates the effects of GST on economic growth in developing and developed countries by including the other economic indicators as regressors. We adopt the Arellano-Bond dynamic panel data analysis in Equation (1) to control the statistical problems (endogeneity, heteroscedasticity, autocorrelation and country-specific effects) and potential biases that usually occur in the panel data analysis. The main results of this study are presented in Table 3 which consists of developing countries, developed countries and combination of developing and developed countries data set. In all models, the results of Sargan test fails to reject the null hypothesis of the over identifying restrictions are valid. Moreover, the Arellano-Bond test fails to reject the null hypothesis of no second order autocorrelation in the differenced residuals AR (2). Thus, the Sargan and Arellano-Bond tests have confirmed that all instruments uses in the models are valid and support no model misspecification.

Table 3: Results of the Arellano-Bond dynamic panel data estimations. Dependent variable: GDP per capita growth (2005-2012)

	Developing Countries	Developed countries	Developing and Developed countries
Lagged GDPPC	-0.1583*	-0.1946	-0.0660
	(0.0878)	(0.1593)	(0.0714)
POP	0.1645	-0.2044	-0.0905
	(0.3434)	(0.1769)	(0.2124)
INF	-0.0652	-0.0634	-0.1323*
	(0.0854)	(0.2611)	(0.0751)
INVEST	-0.0145	0.5505***	0.0805
	(0.0535)	(0.1759)	(0.1072)
GOV	0.5958	-11.0777**	0.0032
	(0.4641)	(4.9225)	(0.5251)
TRADE	1.289**	-0.8226	1.2897**
	(0.5241)	2.2228	(0.5041)
PIT	-0.8402**	3.3088**	-0.6661*

	(0.4215)	(1.4327)	0.3607
INTERT	0.6020*	-0.1067	0.1335
	(0.3298)	(0.1450)	(0.1091)
GST	**-0.3155**	**1.2993***	**-0.0743**
	(0.3607)	**(0.7684)**	**(0.4393)**
Constant	-3.2801	20.2937***	-2.1452
	(2.7085)	(7.0306)	(1.8036)
Mean VIF Test	1.22	1.81	1.32
Sargan Test (p-value)	0.2116	0.1812	0.2647
2nd order Autocorrelation (p-value)	0.4943	0.3211	0.3265
Number of Time Periods (*T*)	8	8	8
Number of Countries (*N*)	47	23	70
Number of Observations	376	184	560

Notes: All regressions are estimated using the Arellano-Bond dynamic panel data estimations. Values in the parentheses are standard errors. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Empirical results reveal that all these taxes are statistically significant and affect differently on economic growth in developing and developed countries. Taxes on income, profits and capital gains are found significantly negatively correlated with economic growth in developing countries and combination of developing and developed countries. The result is consistent with the finding by Nantob (2014) who investigated the impact of taxes on economic growth in developing countries. An increase 1 percent point of taxes on income, profits and capital gains will leads to reduce 0.8 percent on growth in developing countries. Surprisingly, we find that taxes on income, profit and capital gains are significant at 5 percent significance level and positively correlated with the economic growth in developed countries. The different findings among developing and developed countries may be due to the different optimum level of taxes. According to the theory of Laffer curve by Laffer (2004), if the tax rates are still under optimum, an increase in taxes will lead to generate more revenue which a country can utilize higher revenue to improve productivity, employment and income as well as growth. However, if the tax rates are over optimum, an increase in taxes may discourage employment, reduce income and productivity in a country. Thus, this study assumes that the higher taxes on income, profits and capital gains in developed countries are still under optimum which not burdening the employees and the governments have utilized the higher revenue by increasing the personal income to encourage productivity. As a result, higher productivity has boosted economic growth in developed countries.

As expected, we find the mixed results of the impact of GST on growth in developing and developed countries. The coefficient of GST is statistically significant at the 10 percent level and positively correlated with GDP per capita growth in developed countries, while not significant even at 10 percent level and negatively correlated in developing countries. The negative (positive) effect of GST on growth was not influenced by the higher (lower) GST tax rates implemented by developing (developed) countries. A statistical report provided by Royal Malaysian Customs Department (2015) revealed that the average GST rate in developing countries was 12% which is lower than developed countries (21%). Moreover, Miki (2011) studied the effect of value added tax (VAT/GST) rate on consumption and economic growth found that change of VAT rate was significant and positively correlated with both consumption and GDP per capita growth in developed countries. In this case, GST can be considered as least effective and inefficient in developing countries compared with developed countries.

Even the rate of GST in developing countries is lower than developed countries, it still burdens the personal income, purchasing power and consumption for lower and middle income earners. However, the higher GST rate implemented in developed countries were not burdened the purchasing power, personal income and consumption for high income earners. This proven with the positive sign generated from the results of the Arellano-Bond dynamic panel data estimation and correlation matrix. With the higher revenue generated from GST, the government in developed countries were utilized it properly to boost productivity, economic growth and reduce national's debt successfully as mentioned by Bolton and Dollery (2004). Moreover, the presence of informal economy also has contributed to the inefficiency of GST especially in developing countries (Emran and Stiglitz, 2005). A summary report conducted by Gerxhani (2004) showed that the average share of informal economy was 35% of GDP in developing countries compared with only 14.5% of GDP in developed countries. Thus, we assume that the higher share of informal economy but not contribute to the collection of GST may lead to inefficiency in collecting the revenue especially revenue collected from GST in developing countries.

4. Conclusion

This study examines the effects of goods and services tax (GST) on economic growth among developing and developed countries. The main objective of this study is to investigate the mixed effects of GST on growth in these two groups of countries. The empirical results adopting the dynamic panel Arellano-Bond GMM estimation suggest that GST has burdened economic growth in developing countries, while significant and positively correlated with economic growth in developed countries. Our results suggest that the current flat rate of GST is least efficient in collecting the higher revenue, stimulate growth and reduce government debt due to the presence of many informal economies in developing countries. We also conclude that, the GST in developing countries has burdened the per capita income growth for lower and middle income earners, which automatically lower down the purchasing power as well as consumption even the average rate of GST by which is lower than developed countries.

In addition, for the practical implications, we suggest that the flat rate of GST is not appropriate solution to generate growth and reduce national's debt without burdening the personal income and consumption in developing countries. Specifically, the developing countries may implement the different rates of GST on the different productions. For example, a country may implement higher rate of GST for the productions of liquor and expensive goods and services, while lower rate for necessity goods. It may generate greater amount of GST without burdening the consumption for low and middle income earners in developing countries. Moreover, in order to boost consumption as well as aggregate expenditure, a country may reduce the rate of personal income tax (progressive tax) for middle income earners so it can generate higher purchasing power, real personal income and consumption as well as economic growth in developing countries.

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