

# Potential Implementation of Goods and Services Tax as a Substitute for Value Added Tax in Indonesia

Naufalia Dinar Primacita<sup>1</sup> and Khoirunurrofik<sup>2</sup>

<sup>1</sup>Ministry of Finance, DG Custom, Indonesia

<sup>2</sup>Institute for Economic and Social Research (LPEM), Faculty of Economics and Business, Universitas Indonesia,

**Keywords:** Goods and services tax, gross regional domestic product, surcharge, value added tax.

**Abstract:** This research aims to analyze the feasibility of implementing a goods and services tax as a substitute for value added tax in Indonesia during the period 2005 to 2015. It also estimates the potential revenues made at both central and local government levels. This study uses a panel data method prepared through descriptive and econometric analysis. The unit of analysis is between provinces in Indonesia, with the findings correlated to Stiglitz's theory. The findings show that goods and services tax (GST) has the potential to be feasibly applied in Indonesia as an alternative to value added tax (VAT), and that it would provide a greater potential tax revenue than VAT. Consequently, if GST were to be implemented at a regional level, interprovincial equity could be achieved by empowering fiscal equity through a local surcharge tax system.

## 1 INTRODUCTION

Fiscal strains are occurring in Indonesia and the efficiency and effectiveness of revenues from various taxes implemented are not optimal. The Data from Central Bureau of Statistics (Badan Pusat Statistik or BPS) in 201) confirms that the country's tax ratio to gross domestic product (GDP) is still relatively low in comparison with countries of both the ASEAN bloc and worldwide, at around 11% to 13% (Worldbank). Figure 1 shows the fluctuation in the tax ratio in Indonesia over the period 2010 to 2016, and this is a condition that affects the government's funding sources for carrying out development and achieving welfare objectives for the population. In relation to expansion of the tax base, fiscal policy has an important role to play in the government's plans for sustainability of the economy, and high tax revenues will provide more sources of funding for the country's development.

During the five years to 2016, value added tax (VAT) was the second-highest contributor to tax revenue after income tax, with an increasing trend every year. However, while its contribution was constantly increasing it did not have a significant impact on improving the ratio of tax to GDP. Thus,

as an indirect tax, VAT is not seen to be impacting state tax revenues effectively. In addition, the VAT elasticity value of 0.82 (Nurhidayati, 2013) indicates that VAT is not very elastic with reference to the tax base. Accordingly, the government should review its existing policies both in terms of intensification and intensification.

Taxation of the service sector ("taxable services") as well as taxable goods should be explored as a potential tax revenue source. As a developing country, Indonesia faces structural transformation that causes a transition of production activity from the primary sector to the secondary sector. Agrarian countries such as Indonesia focus on agricultural production in terms of products such as raw materials or processed ingredients consumed in the community. However, with the impact of global competition the agricultural sector has declined in recent years while the manufacturing and services sectors have grown. This may lead to technological improvements and shifting consumer preferences which will bring about structural transformation in Indonesia and transfer attention to the service sector.

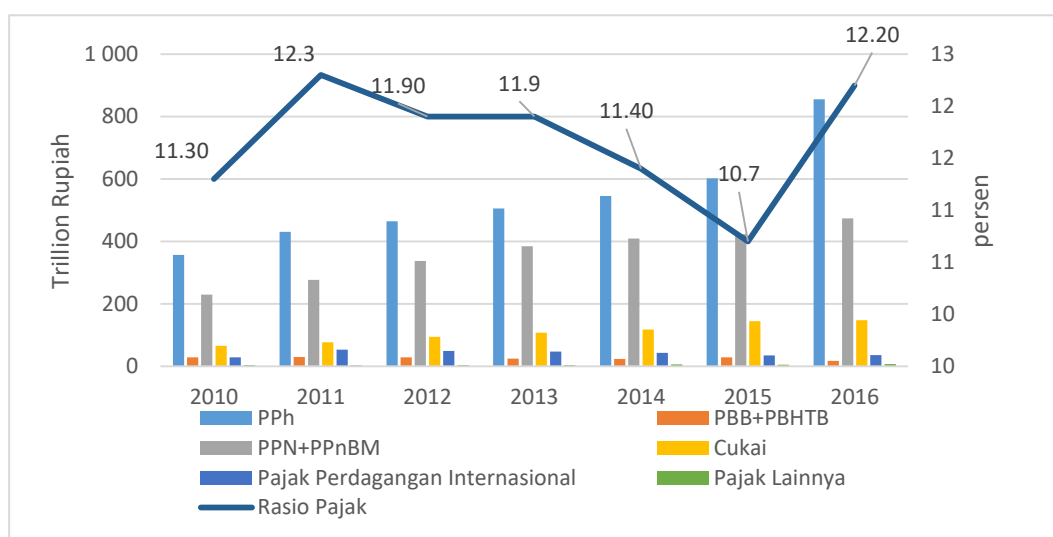


Figure 1. Realization of domestic tax revenue in Indonesia 2010–2016  
Source: BPS, 2017

To tackle this issue, the Indonesian government has begun to review the possibility of changing VAT into a goods and services tax (GST). This tax reform is being analyzed by the Ministry of Finance as a revision aspect of VAT Act No.42 of 2009. This policy aims to expand the tax base and increase the ratio of tax revenue to GDP (the “tax ratio”). Even though GST is more widely implemented in developed countries, Indonesia as a developing country could also apply this type of tax. In previous studies, discussions have related to tax revenues at a national level; the question therefore arises of whether tax revenue at the regional level, such as provinces and cities, can also be similarly analyzed and changed. However, since GST is focused at the central level, it will not have a significant impact on the equitable distribution of income between provinces.

When looked at from the administration aspect, the collection system for GST is more convenient than VAT because the administration of VAT revenues and VAT expenditures creates high accounting costs. In addition, the potential occurrence of “overpayments” and “underpayment” create inefficiency in VAT administration. One of the steps toward developing efficiency in fiscal policy by optimizing tax revenue at both central and provincial level is the use of an surcharge tax (opsen) approach. This can provide potential taxation opportunities that can be used by both central and local governments to increase gross regional domestic product (GRDP). Indeed, it could lead to improvement in the income distribution

between each local government on an aggregate basis. Therefore, the objective of this study is to analyze the feasibility of implementing GST as a substitute for VAT in Indonesia, and to estimate the potential revenues of GST application for central government, and for local governments if a surcharge system is applied.

## 2 LITERATURE REVIEW

GST has been widely implemented in developed countries with a range of objectives. There are at least five countries—Australia, Canada, India, Malaysia and Singapore—presently changing their taxation systems toward GST, and these are the main reference countries for this study.

### 2.1 Goods and services tax (GST)

By definition, GST is one of the indirect tax types which is levied on individuals who engage in consumption activities at each business level. Consequently, there is no need to wait for goods or services to acquire added value before they can be taxed. Based on World Bank information, the tax percentage levied as GST is lower than for VAT, with the standard GST level charged being 6%. Moreover, taxable goods which are taken directly from their sources are also able to be taxed, such as in the mining and extraction sectors. There are, however, tax exemptions for primary goods, such as

for micro, small, and medium (UMKM) units, and for agricultural products, health goods, education sectors, and housing for those with low income. This aims to provide incentives where needed and to protect primary sectors to avoid shocks to the economy.

## 2.2 Stiglitz's theory

Stiglitz's theory (2000) states that a good tax policy achieves at least five principles of taxation: efficiency, administrative simplicity, flexibility, political responsibility, and fairness. In this study, these five principles will be used as evaluation indicators in analyzing the feasibility of potential GST revenues compared to potential VAT revenues.

Efficiency is defined as a tax system that has the potential to improve economic efficiency. Efficiency in the tax system refers to the allocation of economic resources to achieve optimal tax revenue, the minimization of deadweight loss that occurs in tax revenue, and a ratio between tax revenue and the cost of tax officers' salaries of greater than 1.

The second principle is administrative simplicity. Along with the delivery of simple administrative costs and cheap compliance costs, this is also one of the principles which makes it easier for the taxpayer to perform their obligations.

The tax system must also be flexible, enabling it to respond to changes in the state of the economy by being easily adapted to meet changes in economic conditions.

Another principle is the responsibility of stakeholders, in this case the government (political responsibility). A high level of political responsibility will demonstrate transparency between the government and the taxpayer. The applied tax base and the amount of tax rate to be paid should also be clearly known, so that taxpayers can be sure of the exact amount of tax to be levied and can evaluate how accurately the system has been applied.

The last principle is fairness. The tax system should embrace principles that treat individuals fairly. Equity is divided into aspects: horizontal equity and vertical equity. Horizontal equity occurs in a tax imposed on individuals with the same economic circumstances, so that people are treated the same and are subject to the same percentage of tax burden. In contrast, vertical equity is the imposition of taxes with different percentages of tax burden in accordance with the ability to pay of individuals; thus, it can create equality among taxpayers.

Another important element to take into account in analyzing tax effectiveness is the nature of the changes that occur in tax revenue. Rosen and Gayer (2010) state that the tax burden of a taxing unit is affected by the elasticity of demand and supply of the taxed goods and services. This can be used to estimate the productivity of tax revenues. In considering these elements, the principles of Stiglitz will be used as benchmarks of the potential feasibility of the implementation of GST as the transition taxation for VAT. The results will be explained through a descriptive analysis method.

Study of GST has been carried out by previous researchers, some of whom have analyzed the causation and descriptive nature of tax reform through the implementation of GST tax policies. A study by Jenkins and Khadka (1998) investigated how Singapore modified its taxation system to meet changes in the country's economy. The findings of this study are that by using GST Singapore managed to grow its export competitiveness and minimize the transitional and compliance costs that arose from the shift from the previous tax regime to the new one. GST was implemented in Singapore as a transition from a tax policy that previously embraced sales tax to one based on GST. In spite of having the same objectives, the implementation of these two tax types is different. Taking advantage of its strategic business location as the largest cargo-handling port in Asia, Singapore decided to transition its taxation policy from sales taxes to GST, and has been able to maintain its collection of tax during this transition. Likewise to Singapore, India is the first developing country to introduce GST which can be said to be successful in its application. In his study, Ramesh (2015) examines the challenges and opportunities of the implementation of dual GST, namely central GST and state GST. By applying a GST tax rate of 2% gradually increasing to 12% as a first step of implementing GST, India has been able to implement this consumption tax policy. The findings of Ramesh's (2015) study reveal the minimization of cascading effect, the renewal of tax revenues, and increasing economic growth by creating integration between regions through a uniform tax rate.

A study by Valadkhani (2005) examined the impact of GST in Australia on the prices of goods and services including on the consumer price index (CPI) basket. It found that there were no significant changes in the CPI basket. The reason Australia began to implement a GST policy was to increase the competitiveness of its country's exports, given that, as a country producing enough raw materials, the Australian government wanted to optimize its

sectors. The result of the transition proves that Australia was able to keep its inflation level steady as seen from CPI from before to after GST was applied. There was also a study by Grady (1990) into the effects of GST implementation on the distribution of income in Canada. Equal distribution of income can help those with low to middle income. Meanwhile, Palil and Ibrahim (2011) investigated the impact on those with lower middle income in Malaysia of the implementation of GST, using the analysis of variance (ANOVA) method. The results of these findings indicate that exemption taxes were used. A rise in tax credit is used as an incentive for the implementation of the introduction of GST. Furthermore, Mansor and Ilias (2013) provided an argument for the benefit of GST application for Malaysian's people in strengthening the economy and improving the public's quality of life.

The practical base for applying GST in these countries is to impose tax burdens on taxpayers at every level of economic activity with a lower tax rate than the rate for VAT. The strategies undertaken by the five countries in the literature referenced above are relatively similar, such as controlling CPI to avoid inflation, especially during the introduction of GST. In addition, to avoid double taxation, the tax base should be clearly established so as not to cause cascading effects across output tax and income tax, which would lead to high accounting costs. As a result, inefficiency would occur in terms of admissibility. Furthermore, increasing the GST rate gradually and decreasing corporate income tax can be used as an incentive for business actors in the introductory period. Finally, tax exemptions in certain sectors, such as education, health, agricultural products, and non-profit local transportation, can be included. The studies referenced above can strengthen the authors' arguments regarding the implementation of GST as seen from the acceptance and accuracy of the applied taxation principles.

### 3 RESEARCH METHODOLOGY

This paper applies two approaches to the research questions. First, we carry out descriptive analysis to examine the feasibility of GST application. For the comparison of GST and VAT described, this research conducts a calculation model that describes the tax base of the tax-type model-building process. Descriptive analysis is conducted to answer the first research question, that is, an examination of the

feasibility of applying GST in Indonesia. In this case, GST acceptance at the central level is the same as for the existing VAT. Second, we will perform econometric estimation of the potential tax revenue from GST in Indonesia as determined by several tax basis variables, as follows:

#### 3.1 Equity ratio

The level of the equity ratio can be seen by calculating the ratio of tax receipts to acceptance nationally. In this case, the authors compare the potential ratios of VAT and the estimated potential of GST acceptance for domestic revenue and GDP:

$$A = \frac{VAT}{Domestic\ Revenue}; B = \frac{VAT}{GDP} \quad (1)$$

and

$$C = \frac{GST}{Domestic\ Revenue}; D = \frac{GST}{GDP}$$

also

$$E = \frac{GST}{VAT}$$

The greater the value of A, B, C, D, and E the greater the equity. In contrast, the smaller the value of the ratio, the lower the spread equity. To evaluate the feasibility of GST implementation, the authors focus on the value of the E ratio, which identifies the ratio of potential GST revenues to potential VAT revenues. If the value is greater than 1, GST is feasible for implementation in Indonesia, and vice versa.

#### 3.2 Potential GST calculation

Estimated potential GST receipts are based on total consumption expenditures, composed of both household and private sectors, multiplied by a GST rate of 6%. This approach is one of three GST acceptance theories used in India and adapted from previous research (Rao & Chakraborty, 2013). The scale of the analysis used in this case is national and annual, and the estimation equation is therefore as follows:

$$GST_t = \Sigma(\text{consperkapita}_{it} * \text{population}_{it} * 12 * 6\%) + (\text{cons}_{private}_{it} * \text{number of}_{private}_{it} * 6\%) \quad (2)$$

Equation 2 indicates that GST would be affected by total consumption activities in both the individual

household and private sectors, multiplied by a GST standard rate of 6% per year.

### 3.3 VAT potential calculation

The GST value used in the estimation is the potential value. So that like-for-like comparability can be achieved, the VAT calculation also uses the potential rather than the actual value. The potential for VAT revenues is based on the value of GDP by expenditure for household and private consumption at a tax rate of 10%, because by definition VAT and GDP are similarly based on value added.

$$PPN_p = \frac{10}{100} * \Sigma(C_{household} + C_{private})_t \quad (3)$$

Equation 3 indicates the potential VAT value from the sum of value added of goods and services multiplied by the VAT rate implemented.

### 3.4 Empirical estimation

Six variables are used in the model, representing aspects expected to have an effect on potential tax revenue from GST. The first variable (a targeted variable in this study) is GRDP. The amount of regional revenue can be estimated from the value of GRDP and domestic income as a basis for tax collection. Since, the characteristics of provinces in Indonesia are different and making the potential for regional income also different, so this GRDP variable is used to identify the potential for regional revenues, including the potential for GST revenue.

To analyze price changes in goods and services, as well as to identify the difference in inflation before and after GST implementation (transitional condition), the value of the consumer price index is symbolized by CPI and quadratic CPI (SQCPI). This variable is used as an adaptation of the method used in the study by Valadkhani (2005), which analyzed CPI basket changes resulting from the transition to GST in Australia.

Consumption by the government as well as household and private consumption are taxed. This variable is used as a control variable in the model to identify potential tax revenue that can be levied from the consumption activity of economic actors in a country. Not only is government spending referenced in terms of its effect on GST, as symbolized by GOVEXP, but also the total population of a region. A large population living in an area is expected to affect the potential for tax revenues from GST by assuming that each

individual has a consumptive nature, so that buying and selling transactions may increase. Because of this, a population variable is used to identify this factor. This variable was adapted from the study by Grady (2009) on the impact of GST distribution in Canada as seen from demographic factors including population size.

In addition, the level of individual education is also thought to have an effect on tax revenues. In line with this view, Ibrahim (2013) used educational variables as a control in his research into GST practice in Malaysia. Thus, in this present research, educational-level variables are adapted to analyze the effect of education levels on individuals' consumption patterns. In this study, the education of individuals to a minimum of senior high school level is symbolized by senior high school (SHS). As a justification of this choice of variable, individuals who have high school education in Indonesia tend to have job opportunities which are better in terms of income.

The final control variable is the trade sector of the sectoral GDP of each province. Trading activity has relevance for consumption activity, so this variable is considered to be linked closely to the potential for GST implementation.

In this research, the economic model used is ordinary least square (OLS) regression estimation with a panel data method. The analytical unit used is the provincial level, to enable the analysis of the magnitude of potential tax revenues in terms of the GRDP of the various provinces. The reason this model was chosen rather than other models is that it can reduce the occurrence of different specific province errors in each region for constant variables over time, such as cultural and geographic factors. This method is therefore able to describe variable changes over time by minimizing error in estimating the impact of independent variables on dependent variables. In addition, the movement of continuous variables can more easily be illustrated by using the data panel method compared with, for instance, the maximum likelihood method.

Regression is performed by setting a GST rate of 6%, based on the GST standard rate applied worldwide. The determination of this GST rate is based on international regulatory reviews and scientific literature. Also, this study adds control variables related to demographic and economic factors and will compare the results of potential tax revenue between GST and VAT in order to increase tax revenue. The specification model to estimate the potential of GST as follows:



$$\ln GST_{it} = \beta_0 + \beta_1 \ln GDRP_{it} + \beta_2 CPI_{it} + \beta_3 SQCPI_{it} + \beta_4 \ln GOVEXP_{it} + \beta_5 \ln POP_{it} + \beta_6 \ln SHS_{it} + \beta_7 \ln TRADE_{it} + \varepsilon_{it} \quad (4)$$

Equation 4 is log-log model indicator for each 1% change in the independent variable to dependent variables. It is used to examine the hypothesis variables which reference GST revenue, and allows for the possibility that those variables would affect potential GST revenue. A classical assumption test was conducted to evaluate whether the parameters generated by the regression model derived from the OLS method are best linear unbiased estimators. Thus, the classical assumption test used covers three aspects: multicollinearity, heteroscedasticity, and autocorrelation.

## 4 RESULTS AND DISCUSSION

### 4.1 Descriptive analysis

In general, the percentage of the revenue potential of GST in provinces in Indonesia increased from 2005 to 2015. The decrease seen in 2008 was due to the global subprime mortgage crisis that hit the United States, but in the following years, the potential GST acceptance rate shows a positive trend. It can be concluded that, in light of the pattern of increasing consumption activities by both households and the private sector in Indonesia, there is the potential nationally for a positive response to the implementation of GST-type taxation in the country.

Figures 2 and 3 show the changes in the potential distribution of GST in 33 provinces in Indonesia for each year. In viewing this movement, the authors only sampled for 2005 and 2015. To achieve interprovincial equity, equitable distribution of regional income is required.



Figure 2. Geographical distribution of potential GST tax revenues in 33 provinces in 2005

Source: Authors, from information from GEODA



Figure 3. Geographical distribution of potential GST tax revenues in 33 provinces in 2015

Source: Authors, from information from GEODA

Figures 2 and 3 show geographical locations if GST is implemented at a regional level in Indonesia, based on custom breaks. The use of custom breaks is based on the classification of values within the group (province) into five class intervals. The first class contains areas that have potential GST revenue of fewer than Rp30 trillion per year; the second consists of regions with potential GST revenues of between Rp31 and 60 trillion per year; the third is regions with a potential GST revenue of Rp61 to 90 trillion per year; the fourth class interval contains regions with potential tax revenue from GST of Rp91 to 120 trillion and the final class interval includes the regions with potential for annual GST revenues of over Rp120 trillion.

In 2005, the highest GST revenue potential was in West Java while the lowest was in Gorontalo, at 18.83% and 0.26% of total GST revenue potential for the year, respectively. In this year, 97% of provinces in all regions had a potential value of GST revenues of less than Rp30 trillion. However, in 2015 there was a widening of distribution from previously only the centralized West Java province. There was an expansion of potential GST revenues in other provinces, such as Banten, DKI Jakarta, Central Java and East Java, with an average increase of 54%. Although still concentrated in the island of Java, there was an increase in GST acceptance potential outside Java, although still in the same interval class.

Furthermore, there was an increase in the average potential GST acceptance nationally of 57.56%. Although still centered on the island of Java, the study found interesting conditions occurred in the province of North Sumatra that shows significantly increased of GST revenue from 2005 to 2015. This condition is supported by the main economic sector in the area, which is rich in natural resources in the form of natural gas in the area of Binjai and Langkat oilfields. Thus, the distribution of potential GST revenues from 2005 to 2015 has a positive trend, with a national average of Rp6 trillion in 2005 increasing to Rp21 trillion per year by 2015. Therefore, GST in Indonesia has the potential for encouraging tax revenues in terms of both the ratio of taxes and overall domestic revenues, as well as contributing to the improvement of regional income distribution.

#### 4.2 Comparison of the strengths and weaknesses of VAT and GST

Each type of tax has advantages and disadvantages, both administratively and in practice. This comparison aims to identify the efficiency and welfare effects of the differences between the VAT and GST. Table 1 presents a comparison of the advantages and disadvantages of these two taxes.

Table 1. Comparison of the strengths and weaknesses of VAT and GST

TAX TYPE	STRENGTHS	WEAKNESSES
<b>Value added tax (VAT)</b>	<ul style="list-style-type: none"> <li>• Only taxed once, so there is no double taxation</li> <li>• Uses a flat tax</li> <li>• Tax base is based on value added in goods and services</li> </ul>	<ul style="list-style-type: none"> <li>• VAT is charged on any transactions involving the transfer of taxable goods or taxable services in certain regions of the country</li> <li>• VAT input and VAT output requirements increase accounting cost</li> <li>• VAT is implemented at a central level only, so there can be no fiscal decentralization</li> </ul>
<b>Goods and services tax (GST)</b>	<ul style="list-style-type: none"> <li>• An easier administrative system, thus reducing tax avoidance and tax evasion</li> <li>• Reduces lost revenue opportunities by tightening supervision at an early stage in the production and distribution chain</li> <li>• There can be GST refunds for foreign tourists</li> <li>• Minimizes economic distortion</li> </ul>	<ul style="list-style-type: none"> <li>• The potential for double taxation</li> <li>• Reduces people's incentives to consume</li> </ul>

Source: (Le, 2003)

### 4.3 Empirical results

Table 2 shows that, in general, each variable for model 1, model 2, and model 3 has constant value changes with varying significance levels of 1%, 5% and 10%. In general, it can be concluded that every major variable and control variable in the model has been tested in accordance with the theory of robustness with constant value changes and with various control variables added. The best model is model 2, which is the model with the main control variable being the population having an education level of at least SHS. This reflects the majority of workers in Indonesia being SHS graduates. This model has an adjusted R-squared value of 0.9520, which means that the dependent variable in the model can be explained by an independent variable of 95.2%.

For variables related to wealth and income in the regional economy, GRDP for all three models is consistent, suggesting that the value of GRDP based on expenditure has a positive correlation trend and is significant for the percentage of potential GST. This can be seen from the significance value of 5% for the default. It can therefore be concluded that increase in revenue of GRDP of 1% in an area will increase the potential of GST acceptance by 5%, ceteris paribus. This result is in accordance with the theory that the greater the regional income, the greater the tax revenue. In model 2, the percentage of GRDP has the best level of significance, with a p-value of 0.019 from adding a variable related to a demographic factor, in this case, the education level of its population.

For CPI and quadratic CPI (SQCPI) variables, CPI has a positive and significant impact on the percentage of potential GST revenues with a 99% confidence interval. However, this impact does not occur in long-term balance. It indicates that the effect of GST on inflation shows that impacts occur only at the time of the initial introduction of GST and when it has just been implemented, ceteris paribus. This is due to a small shock to the economy and the unfamiliarity of the market with a new type of taxation, known as transitional cost, which increases the price of goods and services. For local government expenditure variables (GOVEXP), it can be seen that all three models show consistent results suggesting that local government expenditure has a positive and significant correlation with the percentage of potential GST acceptance. This is in line with Adolf Wagner's theory which states that the greater the economic income of a country, the

greater the government spending to balance the development of the state and the needs of society.

Table 2. Estimation Result for Fixed Effect Model of potential GST Revenue

Variable	Model 1	Model 2	Model 3
<b>lnGDRP</b>	0.040** (0.018)	0.033*** (0.018)	0.028 (0.019)
<b>CPI</b>	0.043*** (0.003)	0.043*** (0.003)	0.042*** (0.003)
<b>SQCPI</b>	- 0.000*** (0.000)	- 0.000*** (0.000)	-0.000*** (0.000)
<b>lnGOVEXP</b>	0.046** (0.019)	0.039** (0.019)	0.039** (0.019)
<b>lnPOP</b>	0.710*** (0.043)	0.708*** (0.042)	0.708*** (0.042)
<b>lnSHS</b>		0.113*** (0.038)	0.113*** (0.038)
<b>lnTRADE</b>			0.040** (0.023)
<b>Prob&gt;F</b>	0.0000	0.0000	0.0000
<b>N</b>	363	363	363
<b>Within R-square</b>	0.9553	0.9565	0.9569
<b>Adjusted R-square</b>	0.9500	0.9510	0.9520
<i>Note: *** Significant at 1% level; ** Significant at the 5% level; * Significant at the 10% level</i>			

Source: Authors' Calculation.

From Table 2, the results for model 1 indicate that an increase in government spending of 1% will lead to an increase in the potential of GST acceptance of 0.046%, ceteris paribus. In addition, in model 1, local government spending is also significant and has a positive correlation trend with the percentage potential for GST, in which the coefficient value will be smaller with the increase in control variables. This is in line with the theory that revenues and expenditures have a cointegration relationship with each other. Demographic-related variables such as total population deliver constant results with potentially positive relationships with a potential percentage of GST acceptance. With a 99% confidence level, the size of provincial populations is significant for the increasing percentage of potential GST acceptance. Therefore, in model 1, ceteris paribus, for every 1% increase in provincial population, the potential for GST acceptance will increase by 0.710%.

In addition, models 2 and 3 show similar results, with a significance level of 1%. Therefore, by assuming that each individual engages in consumption activity, this is consistent with the



theory that consumption is positively correlated with implementation. Another demographic variable is SHS education level, reflecting the level of education of workers in Indonesia. The justification of this variable is that people who have graduated from high school have income to spend. This is supported by statistics for workers in Indonesia which show that the majority of workers are high-school educated, and it can therefore be assumed that they carry out consumption activities. In the regression estimate, the SHS variable has a potentially positive and significant relation at a 99% confidence interval for potential GST acceptance in provinces in Indonesia. It can therefore be said that for every 1% increase in the population of high school graduates, *ceteris paribus*, the potential of GST acceptance will increase by 0.113%.

Meanwhile, the economic-sector-related variables used as other controls are the trade sectors. Table 2 shows that, with the entry of TRADE variables, the value of GRDP becomes insignificant. This is because this variable only includes trade activities that are highly relevant to the imposition of GST. GRDP covers not only consumption activities but also other components, such as gross domestic fixed capital formation and inventory changes that are less relevant to GST. Consequently, the p-value of GRDP decreases. Therefore, it can be interpreted that for every increase in GDP of the trade sector by 1%, *ceteris paribus*, the potential of GST acceptance will increase by 0.023%. Thus, it can be stated that although each variable used has a different level of significance, for GRDP in each province CPI and quadratic CPI and government spending have met the hypothesis proposed in this study.

Figure 4 describes the potential tax revenue of GST and VAT for domestic product and GDP from 2005 to 2015. Using a GST tax rate of 6% (the world standard), GST revenue potential in Indonesia is almost twice as great as the tax revenue potential for VAT at a 10% rate. If the government plans to implement a GST with value of revenue equal to the potential of VAT revenue as it has been implemented thus far, it should charge a GST rate of at least 5%. Thus, this difference of 1% is a revenue advantage in the potential implementation of GST rather than VAT. The world standard rate of 6% has a larger revenue estimate with an upward trend each year than the potential VAT revenue at the 10% rate as currently applied. As a result, for a GST rate of 6%, the potential for receipts is the same as for VAT at a 10% rate.

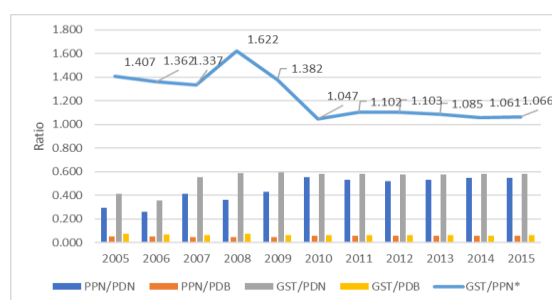


Figure 4. GST and VAT potential revenue ratio in terms of domestic revenue and GDP 2005–2015

Overall, the study can assess feasibility based on Stiglitz’s (2000) tax principles. One of the principles focused on in this research is the comparative efficiency of VAT and GST. This factor can be determined from comparison of the value of the tax revenue ratio for each, supported by empirical analysis of the panel data regression between regions. In summary, the estimated potential GST revenue can be evaluated based on the Stiglitz’s theory of tax principles as described above. Table 3 shows a comparison of VAT and GST for descriptive and econometric analyses performed in accordance with the taxation principles. In short, GST-type tax has met the rules to be considered to be a good tax policy.

Table 3. Evaluation framework for the Stiglitz taxation principles for VAT and GST

Principle	VAT	GST
Efficiency	No	Yes
Administrative simplicity	No	Yes
Flexibility	Yes	Yes
Political responsibility	Yes	Yes
Fairness	Yes	Yes

## 5 CONCLUSION

This research proposes the use of a provincial panel data method with an surcharge (*opsen*) system as a new method to obtain best assignment rules for the distribution of tax revenue collected to strengthen fiscal capacity. Based on the analysis from the OLS panel data model at a regional level, GST can be seen to have a significant potential to increase tax revenues. In summary, GST has potential applicability in Indonesia, evident from the ratio of GST revenue (as compared to that for VAT)

of greater than 1, thus meeting the rules of Stiglitz's theory. Furthermore, the potential GST revenue in Indonesia is greater than the potential for VAT by an average amount of Rp60 trillion each year. As a result, greater efficiency is expected if GST is implemented in Indonesia rather than the current VAT regime. We were aware that this research has some limitations. The variable used to describe consumption level, in this case education level, was not very specifically focused on describing household expenditure levels.

Further research should improve on certain aspects: first, it would be beneficial to conduct more microlevel research to more accurately measure consumer readiness, perceptions, and acceptance of GST and to investigate how it would affect household expenditure and income inequality and poverty level; second, the research should measure the role of regional government in supporting policy.

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## REFERENCES

- Grady, P. (2009). An analysis of the distributional impact of goods and services tax. *Munich Personal RePEc Archive Paper*, 13144. [https://mpra.ub.uni-muenchen.de/13144/1/MPRA\\_paper\\_13144.pdf](https://mpra.ub.uni-muenchen.de/13144/1/MPRA_paper_13144.pdf)
- Ibrahim, M. R. (2013). The impact of goods and services tax on middle-income earners in Malaysia. *International Journal of Economics Business and Management Studies*, 2(1), 12–19.
- Jenkins, G., & Khadka, R. (1998). *Tax reform in Singapore*. (Development Discussion Paper 644). Harvard Institute for International Development. [http://jdintl.econ.queensu.ca/publications/qed\\_dp\\_129.pdf](http://jdintl.econ.queensu.ca/publications/qed_dp_129.pdf)
- Le, T. M. (2003). *Value-added taxation: Mechanism, design, and policy issues*. (World Bank course on Practical Issues of Tax Policy in Developing Countries). Washington DC. <http://siteresources.worldbank.org/INTTPA/Resources/TuanPaper.pdf>
- Mansor, N. H. A., & Ilias, A. (2013). Goods and services tax (GST): A new tax reform in Malaysia. *International Journal of Economics Business and Management Studies*, 2(1), 12–19.
- Nurhidayati. (2013). Estimating elasticity and buoyancy of Value Added Tax (VAT) in Indonesia: Aggregate and Sectoral Basis Analysis Unpublished Tesis, University of Indonesia.
- Palil, M. R., & Ibrahim, M. A. (2011). The impacts of goods and services tax (GST) on middle income earners in Malaysia. *World Review of Business Research*, 1(3), 192–206.
- Ramesh, A. (2015). Gst in India - Challenges and opportunities. *Perquisa Journal*, 1(1). Munich Personal RePEc Archive Paper, 13144.
- Rao, R. K., & Chakraborty, P. (2013). *Revenue Implications of GST and Estimation of Revenue Neutral Rate: A State Wise Analysis*. National Institute of Public Finance and Policy, New Delhi.
- Rosen, H. S., & Gayer, T. (2010). *Public Finance* (9th ed). New York, NY: McGraw-Hill.
- Stiglitz, J. E. (2000). *Economics of the public sector* (3rd ed). New York, NY: W.W. Norton & Company.
- Valadkhani, A. (2005). Goods and services tax effects on goods and services included in the consumer price index basket: Australia. *The Economic Record*, 81, 104–114.
- WorldBank.. Tax Revenue (% of GDP). Retrieved from <http://databank.worldbank.org/data/reports.aspx?source=2&series=GC.TAX.TOTL.GD.ZS&country=IDN,MYS,SGP,AUS,CAN#>