# Does the Progressive Personal Income Tax Drives Tax Evasion in Indonesia?

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## Abstract

The aim of this research was to determine whether progressive personal income tax had impact on the tax evasion behavior in Indonesia. The research sample used was the tax audit result data of Personal Taxpayer in the whole Indonesia for twelve years. The result of Tobit Model regression analysis with pooled data showed that the application of progressive tariff system was influential on the tax evasion behavior in Indonesia. The change of tax rates policy enforced through the Law of Income Tax No. 36 of 2008 also contributed on the level of tax evasion in Indonesia. Moreover, the socio-economic and demographic factors were also included in the analysis of identified tax evasion.

Keywords: Tax Evasion, Personal Income Tax, Progressive Tax Rates

## Introduction

Tax evasion behavior was first studied by Allingham & Sandmo (1972) by adapting the concept of The Economic of Crime which was originally developed by Becker (1968). The analysis framework of personal income tax evasion in the concept of Allingham-Sandmo-Model (1972) emphasized more on the economic or external factor and it was not adhered to the taxpayer. Allingham & Sandmo (1972) described taxpayer from the side of how the taxpayers maximized their utility when they had an opportunity to commit tax evasion by calculating the benefit-loss from the possibility of sanction imposition. The taxpayer would choose to commit tax evasion if the benefit acquired was greater than the possibility of sanction imposition. One of the factors influencing the disobedient behavior according to Allingham-Sandmo-Model (1972) was tax rates.

A research related to the influence of tax rates on tax evasion behavior which had been conducted by Allingham-Sandmo (1972) showed that the correlation between tax rates and tax evasion behavior was ambiguous. It meant that tax rates could be positively or negatively influential on the level of tax evasion, depending on the risk preference possessed by the taxpayer. Moreover, Yitzhaki (1974) developed the theory of Allingham-Sandmo (1972) by emphasizing on the substitution effect which emerged in the form of penalty/sanction as the risk of unreported whole income. Yitzhaki (1974) stated that the ambiguity of the influence of tax rates on tax evasion did not occur if the substitution effect existing in Allingham-Sandmo Model (1972) was removed.

According to Yitzhaki (1974), if the penalty on tax evasion detected was equivalent with the scaled down tax liability, the marginal benefit from the tax evasion would be lowered. Furthermore, the result of the research conducted by Clotfelter (1983), Feinstein (1991), Gahramanov (2009) and Yaniv (2013) empirically proved once again that there was an ambiguity of the influence of tax rates on tax evasion activity as stated by the theory of Allingham-Sandmo (1972). In other words, the impact of tax rates change applied would probably produce different conditions. Therefore, a further review was required to determine the response of taxpayer in responding to the changes on tax rates which finally would have implications on the decision in committing tax evasion.

By using the primary data in the form of survey result, several academic studies about the influence of personal tax rates on the behavior of tax evasion conducted in Indonesia produced two different conclusions. The research conducted by Permatasari & Laksito (2013) in Pekanbaru, Kurniawati & Toly (2014) in Western Surabaya, and Ciptaningtyas & Setyawati (2018) at KPP

Pratama ex-Residency Surakarta, showed that personal tax rates had significant positive influence on the perception of tax evasion.

Meanwhile, the result of the research conducted by Ardyaksa & Kiswanto (2014) in Pati showed that income tax rates did not have any influence on the perception of tax evasion. The result of the existing research had not been able to represent the behavior of tax evasion in Indonesia because the research scope only covered only one certain area of tax office (partial). Moreover, the validity of the survey result data was highly dependent on the level of respondents' honesty in filling the questionnaire and tendency of subjectivity.

## Literature Review

### Tax Evasion Theory

The aim of tax evasion was to reduce the amount of tax liability deposited to the country. Reviewed from its legal aspect, tax evasion could be categorized into two, namely tax avoidance and tax evasion. Tax avoidance is a term referring to embezzlement of tax committed through the utilization of existing gap in the tax conditions/regulations, while the practice of tax evasion conducted through any means violating the law (illegal) was referred as tax evasion (Stiglitz, 2000; Rosen & Gayer, 2008; Hyman, 2010). The act of tax evasion could be in the form of lower income report than the actual amount (understated of income) or greater cost/responsibility report than the actual amount (overstated of deductions) or even not reporting one's tax liability (unreported).

According to Mardiasmo (2009), tax evasion is an attempt to reduce the tax burden conducted by taxpayers by violating the law. Since the act was conducted through the means violating the law, tax evasion act was categorized as illegal act. The taxpayers tended to ignore the formal regulation in the implementation of their tax liability, namely by fabricating the document or filling the data incompletely or incorrectly.

### Tax Rates, Marginal Tax Rates (MTR) and Tax Evasion

Allingham-Sandmo (1972) perceived tax evasion as an embodiment of taxpayers' behavior in maximizing their utility which depended on detection/captivity parameter and sanction parameter. Sanction/penalty parameter was a form of tax authority's direct control on evasion act, while detection probability was a form of indirect control on tax evasion act with the consideration of efficiency and amount of resources used.

In the model of Allingham-Sandomo, both policies (improving sanction or lowering audit probability) gave substitution effect by assuming that the penalty was charged based on the amount of unreported income. Thus, the result of the research conducted by Allingham-Sandmo (1972) showed that tax rates had ambiguous influence on tax evasion, while penalty/sanction tariff had negative influence on tax evasion.

By using the concept of Allingham-Sandmo Model, Yitzhaki (1974) attempted to remove the ambiguity of tax rates influence on tax evasion. Yitzhaki (1974) stated that effectivity lowered Marginal Tax Rates (MTR) in reducing tax evasion, such as depending on the penalty structure applied, by assuming that the penalty changed as the amount of unpaid tax (along with the tax rates). If the sanction on tax evasion detected was equivalent with the scaled down tax liability, then the marginal benefit of the taxpayer was lowered through Marginal Tax Rates (MTR) followed with proportional sanction reduction, there would not be any more substitution effect. Therefore, it would lead to the incline of tax evasion. Unfortunately, this opinion is often criticized because it was contradictive with the economic institution and empirical proof leading to the conclusion that tax rates had positive correlation with tax evasion. However, the concept of penalty imposition according to Yitzhaki (1974), as stated previously until currently, was often used in tax regulations in order to determine the amount of penalty which was calculated based on the unreported tax amount.

Afterwards, Clotfelter (1983) developed a model illustrating the correlation between Marginal Tax Rates (MTR) and unreported income. The result of the research conducted by Clotfelter (1983) showed that MTR had a significant impact on income rate after tax on individual

reporting his/her income less than the real amount. Clotfelter (1983) proved that the reduction of 10% tax rates would lower 5-8% of reported income amount.

To empirically explain how tax evasion was through a theoretical construction was not something easy to be done (Clotfelter, 1983). It was due to the fact that basically, risk-averse individuals would not tend to commit tax evasion by themselves, without considering sanction imposition on their unreported income or scaled down tax (cateris paribus). Besides, since tax evasion itself is an illegal act, it would always be associated with the incentive for the taxpayer to conceal the real condition.

Tax evasion according to Skinner and Slemrod (1985) was a result of the interaction among Demand-Supply Side of Tax Evasion. Skinner and Slemrod (1985) stated that the application of Marginal Tax Rates (MTR) was considered as a tax system which nourished the scheme of tax evasion. Therefore, one of the efforts which could be done in order to lower the level of tax evasion was reducing marginal rates.

Besides the results of the research conducted by Clotfelter (1983) and Slemrod and Skinner (1985), those showing significant influence between Marginal Tax Rates (MTR) on tax evasion were conducted by: Gruber and Saez (2000), Sillamaa (2001) and Chen (2012). The behavioral response of individuals having high income was greater on the change of tax rates bracket. Therefore, it tended to encourage tax evasion in the United States of America (Gruber and Saez, 2000).

Meanwhile, the study by Sillamaa (2001) related to tax price elasticity (the response of taxable income to changes in tax rates) showed that changes in the Marginal Tax Rates (MTR) were elastic to the entrepreneurial income class because the entrepreneurial group had a greater chance of avoiding taxes or making inter-time tax transfers (tax planning). While the class of labour, especially the elderly labour, were inelastic. The research (Chen, 2012) in Malaysia showed that the application of progressive tax system on personal income had an impact in the form of greater tax saving for high-income taxpayer group and also encouraged tax evasion. Moreover, Grundmann (2017) also stated that the high-income taxpayer group tended to do more tax evasion. This was related to the length of working time and also a higher effort to make money.

**Socio-economy, Demography and Tax Evasion Behaviour**

Other factors that also influence tax evasion behaviour include socio-economic and demographic factors. By using indirect data, Clotfelter (1983) analyzed the relationship between marital status, age, and type/sector of taxpayer income in influencing the decision to carry out tax evasion. Clotfelter (1983) proved that married taxpayer and the source of income obtained from the non-business sector tended to be more likely to report the income below their proper value. While for taxpayers that earned income from business and agriculture sectors, marital status did not show a significant effect. In term of age, the number of taxpayers reporting the income below the actual value increased significantly in the group of young taxpayers (30-65 years old) obtaining income from the business sector. While the taxpayers earning income from non-business sector had the highest level of tax compliance in all age groups. This also confirmed the opinion that taxpayers having income from business activity had higher tax evasion level than that having income from wages (Skinner & Slemrod 1985).

The socio-demographic factor that also influenced the tax evasion was gender. There was a significant difference in the level of deception between men and women (Grundmann, 2017). Meanwhile, Frey & Torgler (2007) showed that women had higher tax morale than that the men did. That was in line with the empirical evidence in the research conducted by Giese & Hoffmann (2000) dan Kogler & Kirchler (2016).

**Research Methods**

**Samples**

The data used in this research were secondary data obtained from the audit data from the Directorate General of Taxes (DGT) for individual taxpayers for tax years 2001 to 2012. There are 14.105 observation of individual taxpayers include 9.890 taxpayers committing tax evasion.

**Analysis Method, Variables and Measurements**

The analysis method used in this research was the Tobit Maximum Likelihood Regression Model. The choice of using the Tobit Regression Model was because there was a DGT audit result that had a zero value (0), which meant that there was no difference between the net income reported by the taxpayer in the Annual Tax Return and the DGT's audit results. The Tobit Regression Model was a regression analysis used to describe the relationship between the dependent variable and the independent variable, where the dependent variable was mixed data (Gujarati, 2003). The research variables used were as follows:

- Variable EVA: the amount of tax evasion (difference between the net income reported by the taxpayer in the Annual Tax Return and the DGT's audit results)
- Variable MTR: dummy taxpayer groups committing tax evasion and get in higher income layer bracket,
- Variable CTR: dummy changes in Personal Income Tax rates and taxable income layer bracket,
- Variable TR: the tax rate of each taxable income bracket,
- Variable INC: total net income from DGT's tax audit results,
- Variable SOU: dummy income by source category,
- Variable SEX: dummy gender,
- Variable AGE: taxpayer's age when doing tax evasion,
- Variable MARR: dummy marital status,
- Variable SEC: dummy type of business/industrial sector of individual taxpayers,
- Variable YEAR: dummy tax year according to research observations.

**Data Testing Techniques**

This research used Estimation Tobit Maximum Likelihood Estimation type II method with pooled data. The Tobit Model was chosen because from the number of taxpayers that were observed, there were many taxpayers whose net income difference was censored. In other words, the tax evasion was zero (not doing tax evasion). Also, there was a chance that the actual value of tax evasion was not detected correctly in the sample dataset of the audit conducted by the Directorate General of Taxes (DGT). The use of this method for large samples would produce consistent and efficient estimators (Hosmer & Lemeshow, 2000). Additional variable Inverse Mills Ratio/IMR notated with lambda used to correct the sample selection bias possibility of the dataset. The regression model used in this study was as follows:

$$EVA_{it} = \alpha + \beta_1 MTR_{it} + \beta_2 CTR_{it} + \beta_3 TR_{it} + \beta_4 INC_{it} + \beta_5 SOU_i + \beta_6 SEX_i + \beta_7 AGE_{it}$$
$$+ \beta_8 MARR_i + \beta_9 SEC_i + \beta_{10} YEAR_t + lambda + \varepsilon it \qquad (1)$$

## Results and Discussion

The results of the pooled Tobit Model regression analysis were listed in Table 1. The table presents two Tobit estimation models, namely: (I) the basic Tobit Model and (II) the Tobit Model which added several control variables to obtain a potential permanent effect. The interpretation of the results of the Tobit Model was done by using the results of the Tobit Model included other additional variables because the model had taken into account the fixed effects which were not observed in this study.

The main independent variable in this study was the dummy Marginal Tax Rates (MTR). This variable showed how the influence of MTR on tax evasion behaviour was detected. The existence of the Marginal Tax Rate contained in the application of progressive tax rates turned out to be a significantly positive correlation at the 1% confidence level to the level of tax evasion.

Regression coefficient showed that the taxpayer groups committing tax evasion caused by the presence of MTR was increasing the tax evasion be the form of understated net income amounted to predictive value Rp 242,73 million. The estimated result of dummy MTR variable on

the level of tax evasion was in line with the research expectations that the MTR which contained in the application of progressive tariffs tended to encourage taxpayers to carry out tax evasion, as shown in the results of research conducted by Clotfelter (1983), Slemrod & Skinner (1985), Gruber & Saez (2000), Sillamaa (2001) and Chen (2012).

**Table 1.** Regression Coefficient Value

| VARIABLES | (1) Model I | (2) Model II |
|---|---|---|
| Dummy taxpayer groups get in higher income layer bracket (MTR) | 264.968*** | 242.726*** |
| | (6.431) | (6.365) |
| Dummy the implementation of policy changes in Personal Income Tax Rates and taxable income layer bracket (CTR) | 116.967*** | 179.096*** |
| | (7.137) | (24.512) |
| Tax Rates (TR) | -7.181*** | -16.679*** |
| | (0.370) | (1.066) |
| Total net income from DGT's tax audit results (INC) | 0.486*** | 0.628*** |
| | (0.00491) | (0.0138) |
| Dummy income by source category (SOU) | | 834.275*** |
| | | (68.402) |
| Dummy gender (SEX) | | -83.602*** |
| | | (9.882) |
| Taxpayer's age when doing tax evasion (AGE) | | -0.481* |
| | | (0.267) |
| Dummy marital status (MARR) | | 24.433** |
| | | (9.896) |
| Dummy type of business/industrial sector of individual taxpayers (SEC) | | |
| Service Sector = 1 | | -79.754*** |
| | | (11.420) |
| Trade Sector = 2 | | -1.565 |
| | | (10.609) |
| Dummy tax year according to research observations (YEAR) | | |
| 2002 | | 95.633*** |
| | | (18.493) |
| 2003 | | 77.463*** |
| | | (18.494) |
| 2004 | | 62.364** |
| | | (20.152) |
| 2005 | | 50.229** |
| | | (20.484) |
| 2006 | | -9.213 |
| | | (27.255) |
| 2007 | | 284.129*** |
| | | (29.457) |
| 2008 | | 232.954*** |
| | | (24.224) |
| 2009 | | 19.030 |
| | | (22.094) |
| 2010 | | 14.118 |
| | | (19.603) |
| 2011 | | 27.428 |
| | | (19.569) |
| 2012, omitted | | - |
| lambda | | 2029.996*** |
| | | (186.288) |
| var(e.EVA) | | |
| Constant | -137.934*** | -1596.905*** |
| | (7.111) | (126.496) |
| Observations | 14.105 | 14.105 |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The second independent variable was the change in tariffs and taxable bracket income as stipulate in the Income Tax Law Number 36 Year 2008. Changes in tariffs and bracket income caused changes of bracket class income for certain individuals. Although the new taxable bracket income had a lower tax rate than the previous period, a wider range of bracket income encouraged certain income taxpayers to carry out tax evasion. This was possible because there were quite high differences in tax rates between brackets income. The change in tax ratess and the range of the taxable bracket income was proven to correlate significantly and positively with tax evasion. After the change in tariffs and bracket income (2009-2012), taxpayers committed tax evasion be the form of understated net income amounted to predictive value Rp 179,09 million higher than taxpayers in the period before the enactment of the Income Tax Law Number 36 of 2008.

Furthermore, tax rate showed a significant negative correlation to the predictive value of tax evasion at the 1% confidence level.  Recently, the results of existing studies had concluded that the correlation of tax rate on tax evasion is ambiguous (Allingham-Sandmo, 1972; Clotfelter, 1983; Feinstein, 1991; Gahramanov, 2009; and Yaniv, 2013). Therefore, the correlation between tax rates with tax evasion was more case by case. In this research, every 1% increase of tax rate would reduce the value of tax evasion indication about Rp 16,67 million.

Meanwhile, the correlation between an individual net income and tax evasion had significant and positive correlation. Every increase of net income of 1 million rupiahs, will increase the predictive value of tax evasion be the form of understated net income by Rp 627.814,60. Allingham-Sandmo (1972) stated that an individual net income was one of the factors that influence one's tax evasion behavior. This opinion was also confirmed in the research of Slemrod & Yitzhaki (2002) proving that someone with high income tends to higher tax embezzled.

Aside from net income, the source of a person's income also had a positive and significant correlation to the predictive value of tax evasion. Taxpayers having income from entrepreneurs (non-employees) had the level of tax evasion be the form of understated net income amounted to predictive value Rp 834,27 million higher than that of employed taxpayers. This result was in line with the results of Clotfelter's research (1983) proving that individuals earning from non-entrepreneurial had the highest compliance. Moreover, individuals earning income from salaries and wages (employees) had level of compliance around 97-98%.

The socio-economic and demographic factors having a significant correlation with tax evasion behavior included: gender, age, marital status and the business sector of taxpayers. In this research, male taxpayers had around Rp 83,60 million less tax evasion number than women did. This result of this research was not convenient to the prediction, in which based on existing theories stating that women had a higher moral tax (tax morale) than men. Higher tax morals would encourage someone to have higher tax compliance (Frey & Torgler, 2007; Hofman et.al., 2017; Grundmann, 2017).

One explanation that might be a clue why Indonesian women committed higher amount of tax evasion than men did was the result of Fallan's (1999) research. He stated that women tended to consider tax evasion behavior occurring in their environment in making tax evasion decisions, while men tended to emphasize their personal attitudes in making tax evasion decisions. Unsurprisingly, it was easy for the women to commit tax evasion by looking at Indonesian condition.

Age is being one of the factors that influenced tax evasion behavior. The older taxpayers tended to be less evasion than younger taxpayers. One year additional of taxpayers age, decrease the level of tax evasion be the form of understated net income amounted to predictive value Rp 481.214,00. Marital status and business sector were the next socio-economic and demographic factors. Marital status had positive significant correlation with tax evasion behavior in which married taxpayers had a tendency to commit tax evasion be the form of understated net income amounted to predictive value Rp 24,43 million higher than those who were not married. Clotfelter (1983) proved that the greatest taxpayers committing tax evasion were those earning income from entrepreneur and those who were married. Meanwhile, the highest tax evasion having correlation with business sector was Industrial Sectors and others. Significantly, Service Sector had number of

tax evasion Rp 79,75 million lower than reference sector (Industrial Sectors and others) did. Then, tax evasion of Trade Sector was lower than Industrial Sectors and others, but it did not have significant value.

The estimation results of control variables in the form of categorical factors in tax year showed varying correlation on both significance level and its direction of correlation to tax evasion in the base year (tax year 2001). Meanwhile, the 2012 tax year was omitted because it was perfectly correlated with the dependent variable. The correlation level measurement could not be estimated.

## Conclusions and Limitations

### Conclusions

Based on the result of the analysis, it could be concluded that the use of a progressive tariff system on personal income tax had a positive and significant influence on the tax evasion level in Indonesia. Changes of tax rate and taxable income brackets also contributed to Indonesian tax evasion. Whereas, each income bracket group tended to decrease in tax rates compared to the previous period. The wider income bracket drives individual committing tax evasion to avoid the higher tax rates on the next up level.

Likewise, socio-economic and demographic factors such as: gender, age, marital status and business sector played a role in influencing tax evasion behavior. This research giving empirical evidence that women has the higher level of tax evasion than man in Indonesia. Young taxpayers tended to evade tax more than the old age taxpayers. Furthermore, married taxpayers inclined to commit tax evasion higher than those who were not married. Meanwhile, Industrial and others Sector had been the most vulnerable sector tends to evade tax.

### Limitations

This study only used data from individual tax audits where downward biased was possible due to the non-detection of all tax evasion committed by taxpayers in the audit process (Feinstein, 1990). In addition, there was a possibility that there were unaudited tax evasions carried out by individual taxpayers. Therefore, we could not measure the indication of tax evasion.

The research samples were different taxpayers before and after the enactment of policy changes related to tax rates and the taxable income bracket (unbalance data). Thus, there was a possibility of bias in the estimation results.

The data used were the result of tax audit. They were focused on items of net income amount and taxable income. Therefore, biased estimation results still possibly occurred.

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