Determinants of Effective Tax Rates in Indonesia

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Abstract: This study examines the determinants of effective tax rates (ETR) in Indonesia. The previous studies of ETR showed inconsistent results in various countries. Politics and economic factors influence the results of tax research especially between developing and developed countries. OLS regression was used to test the determinants of ETR, while two ETR measurements were used based on accrual and cash tax expense for robustness test. The relationship between firm size and ETR is explained by political power theory which shows the negative association. This result indicates that large firms paid lower corporate taxes than the small firms. The government provides more tax incentives to large firms and expects to attract more investment from them. The association between inventory intensity and ETR shows a positive coefficient of a 0.01 significance level when ETR2 is used as dependent variable. However, we have no substantial evidence to support the association between capital intensity and ETR. The industry effect shows a positive coefficient on the media and communication sector; agriculture, forestry, and fishing sector; as well as the manufacturing sector.

Keywords: Capital Intensity, Effective Tax Rates, Firm Size, Inventory Intensity.


Kata kunci: Intensitas Modal, Tarif Pajak Efektif, Ukuran Perusahaan, Intensitas Inventaris.

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1. Introduction

Tax sector is a government major concern to increase state revenue. Various tax-related government policies have been and are in the process to be published in order to improve tax revenues performance, such as Law number 36/2008 concerning Fourth Revision of Law number 7/1983 about income tax; Finance Minister Regulation (PMK) number 191/PMK.10/2015 concerning tax incentives to asset revaluation permanent; PMK number 159/PMK.10/2015 concerning tax relief (tax holiday) for a taxpayer who undertake new investments on pioneer type of industry; Draft Law concerning tax remission (tax amnesty).

Various policies issued by the government above indicate that the potential tax revenue in Indonesia remains high, on the contrary, tax revenue remains low. This is reflected in the Directorate General of Taxation (DGT) policy to increase the tax rate from 12% to 14% (Directorate General of Taxation, 2015). Real data related to the payment of taxes by the taxpayer are confidential. Therefore, this study used tax data reported by the company on annual financial statements. This study contributes to the DGT by analyzing determinants of ETR on companies listed in Indonesia Stock Exchange (BEI).

In the accounting field, many previous researches discussed determinants of tax management or tax avoidance, such as firm value (Chen et al, 2014), the size of the company (Zimmerman, 1983; Porcano, 1986; Gupta and Newberry, 1997), the company ownership (Shackelford and Shevlin, 2001; Chen et al, 2010), foreign-operations companies (Stickney and McGee, 1982; Rego, 2003; Atwood et al, 2012) and leverage (Gupta and Newberry, 1997).

This study modifies a research model that has been developed by Gupta and Newberry (1997). It examined determinant post-implementation ETR Tax Reform Act of 1986 in the US by using a multivariate approach. This is an approach which widely used as a reference model for an ETR research. One of them is used as a reference by Richardson and Lanis (2007), which discussed the determinants of ETR in Australia before and after the Ralph Review of Business Taxation Reform. We have an opinion that these studies are flawed in its ETR measurement. Richardson and Lanis (2007) used
tax burden derived from the income statement as the numerator in the ETR. The tax burden does not represent real terms when tax paid by the company during the year. This can be caused by differences of financial reporting standards of fiscal and the company's financial statements for commercial purposes; and also because the company gets tax company due to losses in the prior year. In this study, we used two methods to calculate the ETR. The first method (ETR1) is tax burden (income tax expense) which used as the numerator and profit before tax (profit before tax) as the denominator, while for the second method (ETR2) as a comparison of the ETR1, tax payment (cash tax paid) was used as numerator and profit before tax (profit before tax) as the denominator.

The objective of this study is to examine factors that affect ETR in Indonesia after Law implementation No. 36 of 2008 on income tax changes. Companies calculate the income tax (VAT) Agency still refers to Act No. 36 of 2008 which sets the rate to 25% effective from the tax year 2010. The determinant ETR that tested in this study is the size, performance, leverage, capital intensity, and inventory intensity. To strengthen the results of the test, two methods of measurement ETR were applied in this study.

2. Theoretical Framework and Hypothesis Development

2.1 Firm Size and ETR

Currently, studies on the relationship between firm size and ETR refer to two theories, each of which has a different view (competing theories). The first is the political power theory (Siegfried, 1972) which explains that firm size and ETR have a negative correlation. By that, it means that large-sized firms have better ability than smaller size firms in two terms: tax planning and political process (lobbying) to the government for getting a lower tax burden.

On the other hand, the political cost theory (Watts and Zimmerman, 1978) explains that firm size and ETR have a positive relationship. Large-scale firms have a political cost that is greater than the smaller companies. This was due to the large scale firm which will be the primary target of the government to increase tax revenues from their sectors. They had to pay more taxes to the government than smaller firms.
The empirical results on the relationship between firm size and ETR also showed contradictory results. Zimmerman (1983) showed a positive relationship between firm size and ETR. On the other hand, Ronen and Aharoni (1989) found a positive relationship between firm size and ETR companies listed in the Fortune 1000. Omer et al., (1993) also found positive results between the two variables related.

The negative relationship between firm size and ETR was demonstrated through several empirical studies such as Porcano (1986) that showed the results on a large scale of an average companies have smaller ETR; Rego (2003) argued that the company scale economies affect the company's ability to make tax savings through tax planning methods; Richardson and Lanis (2007) presented a significant negative relationship between firm size and ETR firms in Australia.

The results of previous empirical studies showed that firm size and ETR do not have a significant correlation which was demonstrated by several researchers. Stickney and McGee (1982) examined whether ETR variability caused due to firm size or characteristics of other companies. Gupta and Newberry (1997) examined the determinants of ETR by using a multivariate approach in the US, and the results showed no correlation between firm size and ETR. Phillips (2003) used firm size as a control variable, and the result still showed no significant relationship with the ETR.

The empirical studies mentioned above discussed the relationship between firm size and ETR by taking a background of developed countries such as United States (US). Kim and Limpaphayom (1998) have argued that developing countries have different political and economic background from the developed countries. In developing countries, governments establish good relations with large-scale companies which aim to support one of the economic development to creating more investment and employment. Zimmerman (1983) explained that in the US, the relationship between large companies and the government is not in harmony which resulted that large-scale companies have to pay for the political cost that is higher than smaller companies.

This study aims to examine the determinants of ETR in developing countries one of which is Indonesia. The political power theory initiated by Siegfried (1972) was implemented in this study to explain the relationship between firm size and ETR in
Indonesia. The Government continues to encourage investment growth, especially the real sector and the labor-intensive types of business. A tax holiday is also given to companies that undertake new investments in industry pioneers such species listed on the PMK number 159 / PMK.10 / 2015. Empirical studies in developing countries showed a negative relationship between firm size and ETR in Malaysia (Derashid and Zhang, 2003); in companies owned by the Chinese government (Wu et al., 2012). Based on the above exposure, we formulate the first hypothesis as follows:

**H1. Firm size and ETR has a negative relationship.**

2.2 **Capital Intensity and ETR**

Investment decisions made by the company are related to ETR variability itself. This is supported by some of the empirical results done by Stickney and McGee (1982); Zimmerman (1983); Gupta and Newberry (1997); Richardson and Lanis (2007). Tax laws allow companies to perform asset depreciation shorter than its economic life so that companies with greater capital intensity are predicted to have a lower ETR (Stickney and McGee, 1982). Based on the above explanation and the previous research, this study has the following hypothesis:

**H2. Capital intensity and ETR has a negative relationship.**

2.3 **Inventory Intensity and ETR**

Zimmerman (1983) argued that the inventory intensity is a substitution of capital intensity, which means that a company with a higher intensity inventory will have an impact on a more substantial ETR. Richardson and Lanis (2007) showed a positive relationship between ETR and inventory intensity, and otherwise, ETR is negatively related to capital intensity. Based on the above explanation and the previous research result, this study has the following hypothesis:

**H3. Inventory intensity and ETR has a positive relationship.**

3. **Research Method**

3.1 **Data**

This study used data from companies listed in Indonesia Stock Exchange (BEI) as the object of observation in the period of 2009-2013. Tax and financial data from the
company's annual financial report were downloaded through the website of BEI. Samples were determined by using purposive sampling method which are all non-financial companies listed on the Stock Exchange with the following criteria: (1) full operation during the observation period; (2) recorded a profit before tax of the observation; (3) has the ETR value between 0 and 1. Companies that do not match these criteria will be eliminated and excluded from further analysis. Table 1 shows the number of samples used in this study amounted 57 companies, with 285 observations.

Table 1
Samples election

<table>
<thead>
<tr>
<th>Listed companies on Indonesian Stock Exchange (Bank and financial companies are excluded)</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Improper criteria:</strong></td>
<td></td>
</tr>
<tr>
<td>Incomplete financial Data</td>
<td>(30)</td>
</tr>
<tr>
<td>Operation Loss</td>
<td>(55)</td>
</tr>
<tr>
<td>ETR is more than 1</td>
<td>(18)</td>
</tr>
<tr>
<td><strong>Total Sample</strong> (number of firms)</td>
<td>57</td>
</tr>
<tr>
<td><strong>Total Sample</strong> (year of firms)</td>
<td>285</td>
</tr>
</tbody>
</table>

*Source: processed data*

### 3.2 Study Model

The model which is used in this study refers to a developed model created by Gupta and Newberry (1997) and also Richardson and Lanis (2007) to examine ETR determinants in Indonesia. The type of industry is grouped into the model to investigate the effect of industry type to ETR. Performance is included into the model to control predictor variable to independent variable.

Research model 1:

\[
ETR_{1,t} = \alpha + \beta_1 \ln \text{Size}_{i,t} + \beta_2 \ln \text{Capint}_{i,t} + \beta_3 \ln \text{Invint}_{i,t} + \beta_4 \ln \text{Performance}_{i,t} + \text{Industry Sectors} + \varepsilon_{i,t}
\]

Research model 2:

\[
ETR_{2,t} = \alpha + \beta_1 \ln \text{Size}_{i,t} + \beta_2 \ln \text{Capint}_{i,t} + \beta_3 \ln \text{Invint}_{i,t} + \beta_4 \ln \text{Performance}_{i,t} + \text{Industry Sectors} + \varepsilon_{i,t}
\]
3.3 ETR Measurement

This study used two methods to calculate the ETR. The first method (ETR1) used tax burden (income tax expense) as the numerator and profit before tax as the denominator. The second method (ETR2) as a comparison of the ETR 1, used tax payment (cash tax paid) as the numerator and profit before tax as the denominator. This ETR2 use tax payments (cash tax paid) which are mentioned on the company's cash flow statement to reduce the accrual bias that arises when using tax burden (income tax expense) as the numerator (ETR1).

3.4 Measurement of Explanatory Variables and Control Variables

Size is proxied by total assets on the balance sheet, whereas capital intensity investment decisions (CAPINT) is proxied by the ratio between net property, plant and equipment, and total assets; inventory variable intensity (INVINT) is proxied by the ratio between the stock (inventory) and total assets. Performance as a control variable is proxied by the ratio between the profit before income tax and total assets. Industry sector is a dummy variable (see Derashid and Zhang, 2003; and Adhikari et al., 2006).

3.5 Classical Assumption Test

The multicollinearity test shows that there is no multicollinearity effect between independent variables. This is shown in the value of Tolerance above which value 0.10 and the values of Variation Inflation Factor (VIF) under the value of 10 (see table 2).

Table 2. Multi-collinearity Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>0.834</td>
<td>1.199</td>
</tr>
<tr>
<td>Performance</td>
<td>0.601</td>
<td>1.664</td>
</tr>
<tr>
<td>Capint</td>
<td>0.673</td>
<td>1.486</td>
</tr>
<tr>
<td>Invint</td>
<td>0.622</td>
<td>1.609</td>
</tr>
<tr>
<td>Communication</td>
<td>0.714</td>
<td>1.400</td>
</tr>
<tr>
<td>Mining</td>
<td>0.906</td>
<td>1.103</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.658</td>
<td>1.520</td>
</tr>
<tr>
<td>Retail</td>
<td>0.743</td>
<td>1.346</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.456</td>
<td>2.191</td>
</tr>
</tbody>
</table>

Source: output SPSS
Kolmogorov-Smirnov test (K-S) is used to test the normality. The test results demonstrate the value of K-S amounted to 1.292 (sig. 0.071). These results indicate that residuals are normally distributed. Glejser test was used to examine symptoms heteroscedasticity with independent variable residual absolute value. Glejser test results suggest that all independent variables are not significant at 0:01, which means there is no heteroscedasticity (see table 3). Durbin-Watson test (DW) indicates the value of 1.683 (> d_u value) so that it can be said there are no symptoms of normality autocorrelation.

Table 3. Heteroscedasticity Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>0.384</td>
</tr>
<tr>
<td>Performance</td>
<td>0.820</td>
</tr>
<tr>
<td>Capint</td>
<td>0.499</td>
</tr>
<tr>
<td>Invint</td>
<td>0.658</td>
</tr>
<tr>
<td>Communication</td>
<td>0.302</td>
</tr>
<tr>
<td>Mining</td>
<td>0.266</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.190</td>
</tr>
<tr>
<td>Retail</td>
<td>0.454</td>
</tr>
<tr>
<td>Manufacture</td>
<td>0.468</td>
</tr>
</tbody>
</table>

Source: output SPSS

4. Results

Table 4 describes the results of the model 1 and model 2 testing by using OLS regression. The results in table 4 show that size has a negative correlation to ETR, t value of -2.366 at the 0.05 significance level when ETR1 is used as the dependent variable. Testing size to ETR 2 also shows a linear result with a t value of -0.808, but it is not significant; therefore, the first hypothesis that stated firm size and ETR has a negative relationship is supported statistically. These results indicate that relationship between firm size and ETR in Indonesia can be explained by using the political power theory (Siegfried, 1972) and is consistent with several previous studies such as Porcano (1986) and Rego (2003) which used the data from companies in the US; Richardson and Lanis (2007) on companies in Australia. Our results support the previous studies on the
relationship between firm size and ETR in developing countries (Kim and Limpaphayom, 1998; Derashid and Zhang, 2003; Adhikari et al., 2006). Indo

This study has a different result on the relationship between firm size and ETR compared to the previous studies conducted by Watts and Zimmerman (1978); Ronen and Aharoni (1989); Omer and friends (1993) which showed a positive relationship between firm size and ETR, as well as Stickney and McGee (1982); whereas Gupta and Newberry (1997) found no significant correlation between firm size and ETR. Our results contribute to filling the gap in ETR research in developing countries, particularly in Asia. Empirical studies related to the corporate tax rate and the corporate tax burden in Asia and the Pacific region remain very limited (Chen and Huang, 2010). Hanlon and Heitzman (2010) explained that research on tax avoidance, which is usually used ETR as the proxy, is still very active since mixed results were primarily found. The mixed results on taxation research are mainly due to different taxation and political-economic system in each country.

Kim and Limpaphayom (1998) argued that developing countries have a political and economic background that different from the developed countries. In developing countries, the large-scale company has a better relationship with the government than in developed countries. The government still takes the role of large-scale companies to increase investment and reduce the number of unemployment and increase export activities. Empirical studies in Asia showed consistent results in the political power theory (Siegfried, 1972) including Derashid and Zhang (2003) and Adhikari et al. (2006) in Malaysia. Our results also indicate that the Indonesian Government provides greater tax incentives to the large size firms.

The relationship between capital intensity with ETR in table 4 shows a positive correlation both when ETR1 and ETR2 used as the dependent variable. The relationship shows t value of 1.904 at a significance level 0.10 (ETR1) while the value of t 0.954 and is not significant (ETR2). These results are inconsistent with the hypothesis 2 which states that the capital intensity negatively related to the ETR. In this study, there isn't enough evidence to support the hypothesis 2. Therefore, the second hypothesis is not supported statistically. These results are contrasted to previous research conducted by
Stickney and McGee (1982); Zimmerman (1983); Gupta and Newberry (1997); Richardson and Lanis (2007) which showed a negative relationship between capital intensity and ETR.

Table 4.
Ordinary Least Square (OLS) Regression

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected</th>
<th>ETR1</th>
<th>ETR2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T value</td>
<td>Sig</td>
</tr>
<tr>
<td>Size</td>
<td>-</td>
<td>**-2.366</td>
<td>0.019</td>
</tr>
<tr>
<td>Capint</td>
<td>-</td>
<td>*1.904</td>
<td>0.059</td>
</tr>
<tr>
<td>Invint</td>
<td>+</td>
<td>1.179</td>
<td>0.240</td>
</tr>
<tr>
<td>Performance</td>
<td>-</td>
<td>***-3.621</td>
<td>0.000</td>
</tr>
<tr>
<td>Industry Sectors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication &amp; Media</td>
<td>***3.129</td>
<td>0.002</td>
<td>***3.549</td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td>0.533</td>
<td>0.595</td>
</tr>
<tr>
<td>agriculture, forestry &amp; fishery</td>
<td>***3.809</td>
<td>0.000</td>
<td>***4.617</td>
</tr>
<tr>
<td>Retail</td>
<td></td>
<td>1.250</td>
<td>0.213</td>
</tr>
<tr>
<td>Manufacture</td>
<td></td>
<td>***4.575</td>
<td>0.000</td>
</tr>
<tr>
<td>Value F</td>
<td></td>
<td>4.029</td>
<td>4.963</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td></td>
<td>0.145</td>
<td>0.185</td>
</tr>
<tr>
<td>Observation</td>
<td></td>
<td>287</td>
<td>287</td>
</tr>
</tbody>
</table>

*, ** and *** show a significance at the level of 10%, 5%, and 1%, respectively. Source: output SPSS.

Intensity inventory shows a positive association with ETR. T value is 1,179 when ETR1 is used as the dependent variable, but the results do not indicate a significant relationship. The correlation between intensity and ETR2 inventory also presents positive results with a t value of 4,131 at the 0.01 level. Lastly, the third hypothesis which states inventory intensity is positively associated with ETR is supported statistically. These results are also consistent with previous studies conducted by Zimmerman (1983) and Richardson and Lanis (2007). In Table 4, it is also presented that the performance shows a negative direction (t value of 3,621) at the 0.01 level in the research model 1 (dependent variable: ETR1), as well as in the research of model 2 (dependent variable: ETR2) performance which indicates negative direction (t value of 2,995) at the 0.01 level. This suggests that the better the performance of the company, the less tax paid and that it is consistent with research conducted by Adhikari et al. (2006) however, it is in contrast to Gupta and Newberry (1997). Companies that have a
good performance in its operations can be interpreted to have a high quality of management and human resources, which leads to an excellent ability in their tax planning.

Industrial effects (see table 4) have the results which are not much different when using a research model 1 and model of research 2. The communications sector and the media; agriculture, forestry, and fisheries; the manufacturing industry showed a positive association with ETR at the 0.01 level. In the first study model, communications and media sectors showed t values of 3,129; agriculture, forestry, and fisheries (3809); while the manufacturing industry is (4,575). The tests using a model of research 2 shows that the communication and media sector has a value of 3,549 t; agriculture, forestry, and fisheries (4617); while the manufacturing industry has (4,807). Based on Table 4, the industrial communication sector and media; agriculture, forestry, and fisheries; the manufacturing sector have corporate taxes burden (corporate tax burden) which is greater compared to other industries.

5. Conclusions, Implications and Limitations

5.1 Conclusion

This study aims to examine the determinants of ETR in Indonesia. The study results indicate that the firm variable size has a negative relationship with ETR, while the inventory variables showed a positive intensity on ETR. However, the relationship between the variable of capital intensity and ETR showed no significant relationship to the ETR either using ETR 1 or 2 as the dependent variable. Furthermore, industry effects show a positive relationship with ETR at the 0.01 level for the communications and media industries; agriculture, forestry, and fisheries; as well as the manufacturing industry.

5.2 Implication

The study results have consequences that large-scale companies showed small ETR, which seen as an incentive for large companies to increase its investment in the real sector (e.g., construction of new plants). Future studies should also consider adding a
leverage variable and cost of research and development into research model. Companies tend to choose the financing decision by the method of debt financing. The method is selected by the company to finance the operations and also benefits from the tax due to interest expense that is tax deductible.

5.3 Limitation

Limitations of this study are the only explanatory variables using quantitative variables at the micro level. Qualitative variables such as foreign-operation and ownership have not been incorporated into our model. Some companies set up branches abroad to support its operations and also there is a possibility to do tax planning through the business establishment in a tax haven country. Share ownership affects the company's policy in managing the tax. The company in which the majority owned by the family has a different view of management related taxes compared to those companies owned by the state or any other individual.

References


Sudibyo and Bawono


PeraturanMenteriKeuangannomor 159/PMK.10/2015 entang keringanan pajak untuk wajib pajak badan yang melakukan penanaman modal baru pada jenis industri pionir.


RancanganUndangUndang (RUU) tentangpengampunanpajak (tax amnesty).


Undang Undang Republik Indonesia Nomor 36 tahun 2008 tentang perubahan keempat atas Undang Undang Nomor 7 tahun 1983 tentang pajak penghasilan.

