

## Empirical Approach of Tax Avoidance Risk Assessment

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### Abstrak

Studi ini melakukan analisis dimensi dan besaran risiko penghindaran pajak dengan menggunakan beberapa variabel baik yang terkait dengan perusahaan maupun otoritas perpajakan, dengan menerapkan analisis yang komprehensif untuk mengkuantifikasi penghindaran pajak dengan model penghindaran pajak yang bersifat “conforming” maupun “non-conforming”. Sebagai perluasan penelitian, studi ini menguji intensitas penghindaran pajak yang dilakukan oleh Wajib Pajak tertentu seperti Bentuk Usaha Tetap dan perusahaan investor asing. Hasil yang diperoleh dalam penelitian ini sangat relevan dengan CRM dan strategi pemeriksaan pajak berbasis risiko yang diterapkan Direktorat Jenderal Pajak. Terkait dengan perumusan kebijakan perpajakan yang optimal, hasil penelitian ini merumuskan bahwa strategi pemerintah untuk meningkatkan kepatuhan pajak seharusnya lebih ditekankan pada tindakan preventif (konseling) dibandingkan tindakan reaktif (pemeriksaan). Lebih lanjut, terkait penelitian akademis, studi ini memberi kontribusi literatur di mana penelitian yang menggunakan model “conforming” dan “non-conforming” secara simultan belum cukup digali pada penelitian sebelumnya.

### Abstract

This study analyzes tax avoidance risk assessment including dimension and magnitude of tax avoidance risk exposure using several enterprise-related and government-related variables. Providing far-reaching analysis and examining a relatively unexplored area of conforming tax avoidance, this study employs two measurements of tax avoidance including non-conforming and conforming tax avoidance. As an extensive analysis, this paper also examines the magnitude of tax avoidance responsiveness with respect to different types of enterprises including Permanent Establishment and foreign-invested enterprises. The results drawn from this study are paramount as the empirical approach to in tax policy formulation. Risk profiles suggested in this research are pertinent to risk engine of Compliance Risk Management (CRM) and also beneficial for Risk-Based Audit strategy formulation. Ensuring the best-fit policy formulation, these results revealed that application of tax authority's strategy to hike tax compliance should be more likely to prevention rather than reaction. Furthermore, in the brain area of academic research, the findings also contribute to the field of tax literature by providing simultaneous empirical models including conforming and non-conforming tax avoidance model, which has been relatively unexplored in prior studies.

## 1. . INTRODUCTION

Tax avoidance and evasion threaten a nation's revenues. Revenue losses from tax avoidance are conservatively estimated at about USD 100-240 billion annually, or 4-10% of global Corporate Income Tax revenues (Organization for Economic Cooperation and Development (OECD), 2015). The average size of tax evasion of OECD countries over the last ten years is 3.2% of official Gross Domestic Product (GDP) (Buehn & Schneider, 2012). It is important to emphasize that the framework of minimizing tax avoidance must include not only the use of methods to legally minimize tax burden for enterprises but also aggressive strategies to exploit loopholes or uncertainty in tax legislation. As a matter of fact, developing countries are generally considered to be more vulnerable to tax avoidance practices, due to the insufficiency of legislative, technology, and administrative resources to capture and provide control over transactions.

The Directorate General of Taxes (DGT) as Indonesia's tax authority recognizes that in the current economy, almost 60 percent of global transactions are carried out by multinational enterprises (MNEs). Moreover, the number of cases involving aggressive tax planning has dramatically increased and it has been considered as the best method for taxpayers to minimize their tax burden. Therefore, as mandated by Indonesia's Income Tax Law, DGT has implemented both General Anti Avoidance Rules (GAARs) and Specific Anti Avoidance Rule (SAARs) to deal with tax avoidance. The current framework of SAARs covers some specific legislation to fight tax avoidance as well as transfer pricing rules, controls foreign company rules, and thin-capitalization rules. As a prevention strategy before engaging in specific cases covered by SAARs, early detection of tax avoidance is required to prevent higher losses. Tax authorities must have sound compliance risk management mechanisms at both the strategic and the operational levels; there also must be a close alignment of the strategic and operational risk management processes.

Research on the measurement of tax avoidance has intensified in recent years, and several appropriate measurement proxies have been identified. For example, to measure tax avoidance, Gupta and Newberry (1997), Rego (2003), and Zimmerman (1983) adopted the effective tax rate (ETR); Frank, Lynch, & Rego (2009) adopted the total book-tax differences (DTAX), whereas Wilson (2009) adopted the discretionary permanent book-tax differences (BTD). However, previous research only focused on non-conforming tax avoidance, no research has been done to explore conforming tax avoidance and simultaneously capture tax avoidance using both enterprises-related determinants and government-related determinants. This is regrettable because learning the combination effect between both enterprise characteristics and government policy is important to provide comprehensive understanding of tax avoidance risk assessment.

To fill this gap, this paper examines both enterprises-related and government-related determinants of tax avoidance and also considers two types of tax avoidance measurement. The first one is non-conforming tax avoidance, which captures tax avoidance practices in terms of reduction of tax income relative to accounting income. This model utilizes ETR, which captures tax avoidance activity that influences financial statement regarding total tax expense. Lower values of ETR reflect an increased level of tax avoidance Rego and Wilson (2012). The second one is conforming tax avoidance, which captures tax avoidance practices in terms of reduction of both accounting and tax incomes. This model uses the ratio of cash tax paid to operate cash flows. To provide a comprehensive analysis, this paper also provides an extended model to capture the magnitude of tax avoidance for so-called *foreign-controlled* enterprises.

## 2. LITERATURE REVIEW

### 2.1. Legal Tax Avoidance and Illegal Tax Evasion

In a study of tax avoidance risk assessment, clear definition of tax avoidance is essential. Hanlon & Heitzman (2010) explained that one of the challenges of empirical studies on tax avoidance is that there are no universally accepted definitions of, or constructs for, tax avoidance or tax aggressiveness. Dyreng, Hanlon, & Maydew (2008) simply defined tax avoidance as the reduction in explicit taxes. However, Hanlon & Heitzman (2010) argued that this definition overrides the distinction between common activities that are tax-favored and those that are tax planning, aiming specifically to reduce taxes and targeted tax benefits from aggressive lobbying activities. Following Hanlon & Heitzman (2010), since ambiguity of whether a transaction is permissible or not, this study does not make a distinction between legal tax avoidance and illegal tax evasion.

## 2.2. Tax Avoidance Measurement

There is abundant literature on tax avoidance measurement. One aspect to define the intention of tax avoidance is aggressiveness. However, aggressiveness is difficult to measure because it is not uniform and depends on variation in dutifulness and honesty (Slemrod, 2007). Therefore, how to quantify tax aggressiveness is still puzzled.

Prior studies have suggested several methods to measure tax aggressiveness, for example, Frank et al. (2009) used the total book-tax differences (DTAX) and Wilson (2009) adopted the discretionary permanent book-tax differences (BTD). Effective tax rate (ETR) was also considered as one of the most effective ways to measure tax avoidance. Dyreng et al. (2008) suggested that the book ETR, formulated as the total tax expense divided by pre-tax income, be broadly used to measure a firm's tax burden. In terms of tax planning measurement, which is captured in the financial performance, Mills, Erickson, and Maydew (1998) suggested that the ETR might be a powerful indicator of the effectiveness of a company's tax planning activities. Robinson, Sikes, & Weaver (2010) emphasized that the value of the ETR represents tax avoidance activities that directly affect net income. According to Gupta and Newberry (1997), Rego (2003), Zimmerman (1983), Omer, Molloy, & Ziebart (1993), Armstrong, Blouin, & Larcker (2011), and Jacob (1996), lower values of the ETR represent higher levels of tax avoidance.

However, Hanlon & Heitzman (2010) argued that these studies captured only non-conforming tax avoidance, in which transaction for tax and accounting purposes would be reported differently; while conforming tax avoidance, in which tax avoidance practices would simultaneously reduce financial accounting income, was not captured in these studies. Frank et al. (2009) developed a model of ETR differential, occupying the gap between statutory tax rate and ETR, and used permanent difference measurement. Afresh, Hanlon & Heitzman (2010) argued that this model also captured only non-confirming tax avoidance because permanent difference was a function of ETR<sup>1</sup>.

Providing empirical evidence of conforming tax avoidance, Salihu, Obid, & Annuar (2013) used the ratio of cash taxes paid to the operating cash flow as tax avoidance proxy, which captures the reduction in both financial accounting, tax incomes and accruals simultaneously. They replicated the findings of Hanlon & Heitzman (2010) showing that this ratio provided measurement of conforming tax avoidance.

## 2.3. Determinants of Tax Avoidance

### 2.3.1. Size of Enterprise

Several studies revealed a unique correlation between size of enterprise and tax avoidance. Markle & Shackelford (2012) provided evidence that the impact of enterprises' size on ETR's has been unconvincing. Other studies by Rego (2003), Omer et al. (1993), and Zimmerman (1983) revealed a negative correlation between size of an enterprise and ETRs. Conversely, using size of an enterprise as a single function of total sales, Noor, Fadzillah, & Mastuki (2010) found a positive correlation. Noor et al (2010) measured tax avoidance under the Official Assessment System (OAS) and the Self-Assessment System (SAS). The result suggested that ETR was positively correlated with size during both the OAS and SAS regimes. In the other hand, studies by Gupta and Newberry (1997), Armstrong et al. (2011) and Mills et al. (1998) concluded that there was no relation. Moreover, Slemrod (2007) suggested that according to the U.S. General Accounting Office, the IRS estimated that big enterprises tended to have lower non-compliance rates than smaller enterprises<sup>2</sup>.

### 2.3.2. Audit Penalty

Audit intensity, penalties, and risk aversion are closely related to reduction of tax aggressiveness. Slemrod (2007) pointed out that optimal tax evasion leans on the probability of getting caught, amount of penalty and level of risk aversion. He also emphasized Becker's (1968) model of economics of crime, how

<sup>1</sup> Permanent difference, denoted as PERMDIFF by Frank et al (2009), is essentially the difference between the effective and statutory tax rates multiplied by pre-tax accounting income for the estimation.

<sup>2</sup> Performing the estimation, IRS used Taxpayer Compliance Measurement Program (TCMP) data for small enterprises. For medium enterprises, IRS used estimation based on operational audit result. Whereas for a large corporation, IRS used examination result as basis of estimation of tax gap. The result suggested that for larger companies (assets larger than \$25 billion), non-compliance rate was smaller (14%) than smaller companies (assets smaller than \$25 billion).

enterprises maximized their expected utilities by considering possible penalties in the equal way as other contingent costs. Similarly, in the context of tax compliance decision made by an enterprise, Alm & McKee (1998) provided an argument that tax aggressiveness under uncertain circumstances was rigorously correlated with the fear of the possibility of being caught and penalized.

Broadly identical with Becker's (1968) model, Allingham & Sandmo (1972) established a model under the assumption of Von Neumann – Morgenstern<sup>3</sup> axiom for behavior under uncertainty<sup>4</sup>. As an extension of this research, Yitzhaki (1974) specified that if the penalty rate was proportional with the tax understated (rather than income understated), the tax rate would provide no effect on the speculation to carry out avoidances since *reward-to-risk* was unchanged. Here, if the marginal benefit of evasion as the function of income understated and tax rate is smaller than the marginal cost of detection (function of penalty rate, tax rate and audit intensity), the optimum level of tax evasion will be zero<sup>5</sup>.

Another literature about the impact of penalties on tax avoidance demonstrated different results. Beck, Davis, & Jung (1991) and Park & Hyun (2003) provided evidence of positive correlation between penalty and tax compliance. Conversely, Alm, Jackson, & McKee (1992) provided evidence of negative correlation. Other studies suggested that the result is fluctuated according to taxpayer's characteristics; for instance, Witte & Woodbury (1985) acknowledged high tendency of negative correlation between penalty and tax avoidance for small and medium taxpayers, but positive correlation for large taxpayers.

### 2.3.3. Tax Rate Differentials

Prior studies indicated that ETR was closely related to strategy as a response to tax differentials, especially for multinational enterprises. Rego (2003) provided an evidence that the magnitude of multinational operations was negatively correlated to book ETR, he suggested that the multinational enterprises tend to avoid taxes. From the managerial accounting point of view, multinational enterprises are able to allocate profits, losses, and expenses based on geographical strategy. In this strategy, profit-center companies usually located in a country with low or no tax jurisdictions. Conversely, cost-center companies usually located in high tax countries.

Robinson et al. (2010) empirically examine the relationship between profits-pooling strategy and tax avoidance measurement. They concluded that enterprise's segments that were arranged as a profit center tend to have lower book ETR rather than enterprise's segments as a cost center. Intuitively, due to tax rate differentials, multinational enterprises are encouraged to report higher costs (and lower profits) in high rate countries.

According to the profit-shifting responsiveness of tax rate differentials across countries, OECD (2015) suggested that the amount of profits shifted to countries depends on corporate tax rates. MNE in high tax rate countries would shift their profits to lower tax countries and vice versa. However, OECD (2015) pointed out that to be more comprehensive, the evidence should acknowledge other variables such as company's size, company's age and also non-linear fashion (e.g. whether marginal tax rate differentials correlated with marginal tax avoidance).

Applying the analogy that profit shifting is similar to investment flow affected by tax differentials, another research conducted by Bénassy-Quéré, Fontagné, & Lahrière-Révil (2005) found that there was an asymmetry in the impact of tax differentials on investment: lower tax rates in the recipient countries fail to significantly attract foreign investment, while higher taxes in the recipient countries tend to discourage new FDI inflows. They also found that the impact of positive tax differentials is not homogeneous regarding the double-taxation arrangement in operation in the capital-exporting countries. In this brain area, they estimated

<sup>3</sup> Neumann-Morgenstern utility theorem suggested that based on certain axiom of rational behavior, risky choices will be responded with maximizing higher utilities in the future.

<sup>4</sup> In this model, Allingham & Sandmo (1972) emphasized that total contingency cost if the taxpayers were caught was the undeclared amount (gap between actual income  $W$  and declared income  $X$ ), at a penalty rate  $\pi$  and larger than tax rate  $\theta$ .

<sup>5</sup> Harvey S Rosen and Ted Gayer (2014) suggested that the model also predicts that evasion decreases when marginal tax rates reduced, since a lower value of  $t$  decreases the marginal benefit of evasion, and when there is no intersection between marginal cost curve of detection and the marginal benefit curve for evasion, the effective dollars of underreporting will be zero.

corporate tax differentials as simple differences between the corporate-tax rates in the host country and in the investing country<sup>6</sup>.

#### 2.3.4. Assistance

The optimum tax system requires the combination of tax enforcements and tax services (OECD, 2013). The main purpose of tax audit is to tackle deliberately underreporting income which potentially leads to tax avoidance practices. Dissimilar to the purpose of tax audit to promote enforced compliance, the tax assistance objective is to promote voluntary compliance and tax awareness.

In the context of correlation between tax compliance and tax services, a number of studies suggested a strong and positive correlation. Sarker (2003) pointed out that rather than enforced compliance, voluntarily compliance through the willingness to pay tax was very important, hence government should provide *tax services* as a factor that influences the willingness of citizens to pay tax, such as advice on interpretation and application of tax laws and knowledge of procedures for tax administration. Ola (2001) as cited by Ebimobowei & Peter (2012) demonstrated a fact that assistance and publication were strongly related to taxpayer's compliance; in the matter of fact that taxpayers could not adhere to the laws unless they understood the aim of the tax regulation.

Experimental and theoretical social studies about the impact of social characteristics such as morale and culture on tax avoidance also have been broadly developed. Torgler & Schneider (2006) acquitted a common model of traditional economics-of-crime approach to tax compliance. They argued that when enforcement efforts only partially explained degree of tax compliance, attitudes toward paying taxes provided the complementary explanation. The attitudes toward paying taxes explain why a number of people pay their taxes, despite low penalty and audit intensity. Torgler & Schneider (2006) revealed their findings that a majority of respondents confirmed that tax knowledge influences the willingness to pay tax.

#### 2.3.5. Age of Enterprise

The studies about the correlation of performance, expertise and company's age has been largely developed, but specific influence of company's age and tax aggressiveness is relatively unexplored. Even not directly related to firm's age, a few prior studies examined the correlation between company's age and ability to provide better tax planning strategies<sup>7</sup>.

Dyreng et al. (2008) have observed that some firms are able to avoid or defer tax payments over long periods of time. In the context of company's performance, Arrow (1962), Jovanovic (1982) and Ericson & Pakes (1995) found that company's age could actually affect to achieve higher efficiency, since company discovers and improves the strategies over time. In this case, companies specialize and acquire ways to standardize, coordinate and speed up their production processes, and also their managerial expertise including tax expertise.

Another prior study also revealed that aging company, may also made knowledge, abilities and skills obsolete and induce organizational decay (Agarwal & Gort, 1996, 2002). Loderer & Waelchli (2009) demonstrated an evidence that older enterprises were less efficient compared to their industry peers, as manifested by lower margins, higher costs, slower growth, and reduced R&D activities.

### 3. DATA AND METHODOLOGY

This paper employs ordinary least squares multiple regression analysis to investigate and demonstrate evidence of tax avoidance's determinants as an empirical model of tax avoidance risk assessment. This empirical model employs firm-level data for five financial periods from 2008 through 2012. This analysis employs a fixed-effect model (taxpayer's fixed-effect and year fixed-effect) to control omitted variable bias (OVB) and adopts heteroscedasticity and autocorrelation-consistent standard errors (HAC/clustered SE) to ensure the robustness of the model.

<sup>6</sup> To be more precise, their calculation included four tax variables: statutory tax rates, average effective tax rates, marginal effective tax rates and apparent effective tax rates.

<sup>7</sup> Since the targeted population on this research is homogeneous upper-middle-taxpayers, size of company is not mandatory relevant with age of company. This issue was already addressed in OLS assumption model (iid: independently, identically distributed) by several multicollinearity tests, suggest value less than 0.75.

### 3.1. Data

This empirical model combines three major data segments: tax-related data, financial statement data, and other data, which are identified using similar single encrypted ID. The tax-related data is mainly obtained from DGT with blank taxpayers' names and encrypted taxpayers' ID due to data secrecy consideration. The financial statement data is obtained from various downloadable sources combined with tax return's attachment (Form 1771 Special Annex 8A-1) and Form 1771 Annex 3A and 3A-2. To maintain the data comparability and consistency, encrypted taxpayers' ID is grouped from one specific regional tax office as an aggregate data from respective tax offices. Other data including the data on world wide's statutory tax rate data is obtained from OECD release, Statistics Indonesia, and other various publication.

From the stratified observations that consisted of 8.187 IDs, this study selects observations included in the sample based on these conditions: 1) No missing value of turnover; 2) No missing value of both ETR and cash tax over operating cash flows ratio; and 3) Merging dataset from tax-related data, financial statement data, and other data. Based on these criteria, the sample size is 6.002 observations from unbalanced panel of 1.201 encrypted IDs. The descriptive statistics for tax-related data, financial statement data, and other data are illustrated in Table 1.

Table-1: Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
<i>ETR</i>	6,005	0.0788601	0.1129502	0	0.7295448
<i>TAXOCF</i>	6,005	0.017248	0.05281	0.0260271	0.8118303
<i>LSIZE</i>	6,005	16.55634	4.329987	5.955837	30.24675
<i>LAUDITRESULT</i>	6,005	15.43308	2.877961	10.12663	28.57112
<i>TAXRATEGAP</i>	6,005	0.5830015	3.816124	-23	25
<i>ASSISTANCE</i>	6,005	0.0639467	0.2446784	0	1
<i>AGE</i>	6,005	5526.866	3069.122	1371	42136
<i>LCSTOCK</i>	6,005	20.29319	7.299635	12.61154	68.38441
<i>STATUS</i>	6,005	4.951707	0.5765797	1	6
<i>STRUCTURE</i>	6,005	4.186511	0.7861971	1	6
<i>_FOREIGNINVEST</i>	6,005	.1706911	.3762701	0	1
<i>_PERMANENTEST</i>	6,005	.1115737	.3148674	0	1
<i>DGT_NOTICE</i>	6,005	.6749376	.4684372	0	1

Note: The table was based on STATA output

### 3.2. Tax Avoidance Measurement Methodology

To provide comprehensive tax avoidance measurement, this paper employs both non-conforming and conforming measurement: (1) effective tax rate (ETR) and (2) cash tax over operating cash flows ratio (TAXOCF). As described in the literature review, the adoption of these two models both conforming and non-conforming measurement is essential to capture both accounting and tax symptom as a result of tax avoidance and to provide comprehensive conclusion.

### 3.3. Empirical Model for Non-Conforming Tax Avoidance Determinants

To investigate the determinants of non-conforming tax avoidance, this paper employs ETR as tax avoidance measurement. This model estimates the significance of determinants correlated to changes (reduction) of tax income as a ratio of accounting income using the following regression equation:

$$ETR_{it} = \beta_0 + \beta_1 LSIZE_{it} + \beta_2 AGE_{it} + \beta_3 LCSTOCK_{it} + \beta_4 LAUDITRESULT_{it-1} + \beta_5 ASSISTANCE_{it} + \beta_6 TAXRATEGAP_{it} + \beta_7 STATUS_{it} + \beta_8 STRUCTURE_{it} + \beta_9 Z_i + \beta_9 T_t + u_{it} \quad (1)$$

Where

*i* : taxpayers' ID

$t$  : year  
 $Z_i$  : taxpayers' ID fixed-effects  
 $T_t$  : year fixed-effects

#### Dependent Variable

ETR is effective tax rate, formulated as total tax expense divided by pre-tax income. This study estimates the value of ETR using tax return's main data (form 1771).

#### Independent Variables

*LSIZE* is the size of company, measured by total assets (in natural log)<sup>8</sup>. To provide precise estimation, this study compares the amount of total assets according to tax return's attachment (Form 1771 Special Annex 8A-1) and total assets according to financial statement transcript. To calculate total assets, this study uses taxpayers encrypted ID as the lookup key.

*LAUDITRESULT* is the amount of underpayment assessment letters issued to respective taxpayers at a period before respective years including principal, fines and additional penalties (in natural log) as a result of tax examination process. The amount of underpayment assessment letter includes tax assessment for all taxes, but limited to tax underpayment assessment (SKPKB), tax additional underpayment assessment (SKPKBT) and notice of tax collection (STP)<sup>9</sup>. By way of illustration, *LAUDITRESULT* is derived from Audit Assignment (SP2) data which categorized as "special audit", not "routine audit" of the relatively homogeneous upper-middle-taxpayers. It is reasonable since the special audit assignments are conducted based on preliminary risk analysis and indication of non-compliance, meaning that the samples of audit results are closely related to indication of tax avoidance. Interestingly, this research finds no observation of overpayment audit result (SKPLB).

*TAXRATEGAP* is the difference between Indonesia's statutory tax rates and counterpart's tax rate. The counterpart is a country where the related party of Indonesia taxpayer is located<sup>10</sup>. Information that captured in tax return summary is the largest related party (scale 1) based on Form 1771 Annex 3A and 3A-2. *ASSISTANCE* is a dummy variable, which is equal to 1 if the record appeared on the assistance summary in respective year, and zero otherwise. Assistances are provided by DGT after the issuance of invoke letter as a result of preliminary examination to clarify the data on the invoke letter<sup>11</sup>. *LCSTOCK* is the value of capital stock (in natural log). To provide precise estimation, this study compares the amount of capital stock according to balance sheet data and tax return's attachment. *AGE* is the value of enterprise's age (in days). To estimate the age, this study uses the taxpayer's registration date based on DGT's master file data (MFWP), and calculate the days until December 31 of the respective year.

### 3.4. Empirical Model for Conforming Tax Avoidance.

To provide different measurement of tax avoidance, this paper employs TAXOCF (cash tax payment over operating cash flows ratio) as dependent variable. This model estimates the tax aggressiveness in terms of conforming tax avoidance, which means reduction both accounting and tax incomes. In this model, the estimation will capture tax avoidance practices using the following regression equation:

<sup>8</sup> A number of literature occupied definition of size of enterprises as a function of enterprises' total assets, revenues and value of equities. However, since ETR is closely related to income statement, hence to minimize simultaneous causality bias, this paper adopts a function of enterprise's size from balance sheet item.

<sup>9</sup> As regulated by Indonesian Law Number 16 of 2000 concerning General Provision and Tax Procedures, DGT authorized to issue tax assessment letter including tax underpayment assessment (SKPKB), additional tax underpayment assessment (SKPKBT), tax overpayment assessment (SKPLB), nil tax assessment (SKPN), and collection letter (STP). Avoiding misinterpretation, the sample selection for this variable is limited to *non-zero* and positive assessment letters, due to difficulty to distinguish between "no audit" or "no findings" if the value is zero. However, the number of excluded *zero-value* observations are relatively small (97 observations), hence it might not alter the overall estimation.

<sup>10</sup> In corporate tax return, tax payers are required to fulfil the appendix 3A of Tax Return 1771. The information covers the name of affiliated party, addresses, and transfer pricing methodology applied to that taxpayers. The affiliated party is not always a foreign company. For local company *TAXRATEGAP* will be equal to zero.

<sup>11</sup> Based on DGT Rule Number 170/PJ/2007 concerning Counseling Procedure, as a result of preliminary examination by account representative, DGT issues invoke the letter which should be responded by taxpayer. Assistance will conducted in 14 days after the issuance of the invoke letter.

$$TAXOCF_{it} = \beta_0 + \beta_1 LSIZE_{it} + \beta_2 AGE_{it} + \beta_3 LCSTOCK_{it} + \beta_4 LAUDITRESULT_{it-1} + \beta_5 ASSISTANCE_{it} + \beta_6 TAXRATEGAP_{it} + \beta_7 STATUS_{it} + \beta_8 STRUCTURE_{it} + \beta_9 Z_i + \beta_9 T_t + u_{it} \quad (2)$$

Where

$i$  : taxpayers' ID

$t$  : year

$Z_i$  : taxpayers' ID fixed-effects

$T_t$  : year fixed-effects

Dependent Variable

TAXOCF is the ratio of cash tax payment over operating cash flows. To calculate operating cash flows this paper employs tax return data (Form 1771, 1771 annex I and annex II). The operating cash flows is calculated by adding depreciation and subtracting taxes and changes on working capital from earnings before interest and taxes (EBIT). To calculate the cash tax payment this paper uses the Tax Payment Module (MPN)<sup>12</sup>, with manual sorting for tax payment account code: 411126 (KJS 100, 200, 500)<sup>13</sup>.

Independent Variables

Independent variables in this model are identical to the previous model.

### 3.5. Extended Model: Tax Avoidance Risk Measurement for Specific Enterprises.

This study develops an extended model to demonstrate evidences of tax avoidance magnitude for specific enterprises. This model stratifies a so-called *foreign-controlled* enterprises which consists of two groups: (1) Permanent Establishments (PE) and (2) Foreign-invested enterprises. This stratification is important to pursue the tax avoidance risks for specific groups of enterprises. Slemrod (2007) distinguished sample based on taxpayers' opportunity to evade taxes. This model also stratifies two groups based on their opportunity to avoid taxes. The *high opportunity* group is considered as *foreign-controlled* enterprises (foreign-invested companies and PE). Taxpayers who are not in the *high opportunity* category are referred as *low opportunity*. The strongest consideration of this stratification is because of the nature of the *foreign-controlled* enterprise that may be affected by worldwide tax avoidance strategies.

To quantify these specific enterprises, this paper employs new variables as follows: (1) \_PERMANENTEST: a dummy variable, which is equal to 1 if the taxpayer is a PE<sup>14</sup>, zero otherwise. (2) \_FOREIGNINVEST: a dummy variable, which is equal to 1 if the taxpayer is funded by foreign investment, zero otherwise. This model employs identical equation with equation (1) for non-conforming tax avoidance and equation (2) for conforming tax avoidance measurement, then run additional regressions separately: Regression Ext.1 is specified only for sample if \_FOREIGNINVEST = 1; and Regression Ext.2 is uses only observation with \_PERMANENTEST = 1.

## 4. RESULT AND DISCUSSION

### 4.1. Non-Conforming Tax Avoidance

As a result of the empirical model, Table 2 provides the main regression results of non-conforming tax avoidance. In this model, ETR is a measurement of tax aggressiveness in terms of reduction of tax incomes relative to accounting incomes. The first column demonstrates the simplest regression model without time fixed-effects and entity fixed-effects. Columns (2) – (4) show the result of non-conforming tax avoidance model using entity fixed-effects, time fixed-effects and clustered standard error.

<sup>12</sup> Tax Payment Module provides tax payment data which retrieved from bank or financial institution through Electronic Data Interchange (EDI).

<sup>13</sup> Payment account code 411126 (KJS 100, 200, 500) is the payment code for corporate tax, including monthly taxes, yearly taxes, etc.

<sup>14</sup> Related to the concept of permanent establishment in tax treaties, OECD Model Tax Convention includes the additional definition of permanent establishment which is primarily used for the purpose of the allocation of taxing right of an enterprise when conducted a business in other country.



Table-2: Non-Conforming Tax Avoidance (Main Regression Result)

	(1)	(2)	(3)	(4)
	ETR	ETR	ETR	ETR
<i>LSIZE</i>	0.0129*** (0.000300)	0.0131*** (0.000330)	0.0132*** (0.000331)	0.0132*** (0.000578)
<i>LAUDITRESULT</i>	0.0113*** (0.000407)	0.0100*** (0.000503)	0.0103*** (0.000504)	0.0103*** (0.000710)
<i>TAXRATEGAP</i>	-0.000762** (0.000296)	-0.000259 (0.000343)	-0.000257 (0.000342)	-0.000257 (0.000640)
<i>ASSISTANCE</i>	0.0441*** (0.00470)	0.0408*** (0.00569)	0.0402*** (0.00567)	0.0402*** (0.00869)
<i>AGE</i>	1.12e-06*** (3.47e-07)	-0.0144*** (0.000643)	-0.0132*** (0.000720)	-0.0132*** (0.000688)
<i>LCSTOCK</i>	-0.000231 (0.000163)	-0.000147 (0.000172)	-5.80e-05 (0.000177)	-5.80e-05 (0.000245)
<i>STATUS</i>	-0.00326 (0.00198)	-	-	-
<i>STRUCTURE</i>	0.00105 (0.00150)	-	-	-
Constant	-0.302*** (0.0119)	79.52*** (3.554)	72.54*** (3.980)	72.54*** (3.804)
ID Fixed-Effect	No	Yes	Yes	Yes
Year Fixed-Effect	No	No	Yes	Yes
Clustered SE	No	No	No	Yes
Observations	6,002	6,002	6,002	6,002
R-squared	0.487	0.545	0.548	0.548

Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ *STATUS* and *STRUCTURE* in Regression (2) - (4) are omitted due to collinearity

#### 4.1.1. Simple OLS Regression of Non-Conforming Tax Avoidance

Using the simple OLS model, Regression 1 reveals that size of company has a positive significant correlation to ETR. Intuitively, it implies that the bigger company has a weaker tendency of avoiding taxes. Audit penalty from the previous period also has a positive significant correlation with ETR, which means a higher audit penalty provides a deterrent effect on taxpayers; hence taxpayers tend to avoid less taxes in the next period.

From the point of view of preventive strategy, tax assistance has positive significant correlation with ETR, which means that assistance will increase tax compliance, or in other words, taxpayers tend to avoid less taxes. The similar positive significant correlation with ETR is also demonstrated by the age variable, which suggests that the older companies tend to avoid less taxes. However, the tax rate differences between host country and related party's country has negative significant correlation with ETR, which suggests that if the tax rate gap is positive and larger (tax rate on the related party's country is higher than the host country), taxpayers tend to avoid less taxes. Conversely, if the tax rate gap is negative (tax rate on the related party's country is lower than the host country), taxpayers tend to avoid taxes in the host country. However, the result on Regression 1 may be suffered by omitted variable bias. To overcome this problem and to ensure the robustness of the model, this study gradually adds the entity fixed-effects and time fixed-effects with clustered standard error for Regression (2) - (4).

#### 4.1.2. Size of Enterprise and Non-Conforming Tax Aggressiveness

Providing more rigorous result and minimizing omitted variable bias, Regression 4 reveals that size of company has a positive significant correlation with ETR. According to previous research conducted by Gupta & Newberry (1997), Rego (2003), Zimmerman (1983), Omer et al. (1993) and Armstrong et al. (2011) the lower value of ETR represents the higher level of tax avoidance. Hence, it suggests that company with a bigger size has a weaker tendency of avoiding taxes. This result is consistent with Noor et al. (2010), who found a positive significant correlation between company's size (as single function of total assets) and ETR. Moreover, this result is also persistent with Slemrod (2007).

The possible explanation why a bigger enterprise in this study tends to more comply than smaller enterprises is that the long-run business conducted by companies as operating subsidiary in Indonesia. Operating company is a part of multinational company which operates in a *resource country* to exploit inputs (raw materials, labors, etc.). Mostly, the operating companies are *fully fledged* manufacturers<sup>15</sup>. OECD (2010) explained that *fully fledged* manufacturers will assume a larger range of business functions and risks, including production, R&D and intangible management, so they will develop a well-managed company and conduct a long-run business. Therefore, big company mitigates their risk by taking long-term strategies including tax-compliance strategies. In the opposite way, non-operating company such as a *paper company* mostly has zero assets, which conducts no business but properly constituted and incorporated in one country only for registration certificate to access tax benefits.

#### 4.1.3. Audit Penalties and Non-Conforming Tax Aggressiveness

Regression 4 also demonstrates that penalty has a positive significant correlation with ETR. It implies that higher penalty will stimulate taxpayers to be less tax aggressive. This result is consistent with Slemrod's (2007) emphasizes on Becker's (1968) study about how an enterprise established their strategy related to tax aggressiveness decision to maximize their utility by considering possible penalties (as contingent costs). This result, to some extent, is also consistent with Beck et al. (1991) and Park & Hyun (2003), who provided evidence of the positive correlation between size of penalty and tax compliance. Investigating the size of enterprise or individual as one of the taxpayer's characteristic, and taking into account that the sample is taken from medium-large taxpayers, the result is also consistent with Witte & Woodbury (1985) who acknowledged the positive correlation between penalty and tax compliance for large taxpayers.

Prior studies provided evidence of a correlation between audit probability and tax aggressiveness. Generally, audit probability is also considered as one of the deterrent factors that changes taxpayer's compliance behavior. Some studies demonstrated a negative correlation between audit probabilities and tax aggressiveness. In accordance with this explanation, in some extent, Fischer, Wartick, & Mark (1992) as cited by Chau & Leung (2009) revealed a positive correlation between audit probability and compliance.

However, this paper assumes that audit probability in all samples area is equal since the sample is taken from relatively homogenous taxpayers. This assumption is relevant with Hasseldine (1993), who suggested that targeted tax audit for homogeneous taxpayers seem to be more effective in increasing tax compliance rather than random audit. This explanation is supported by Witte & Woodbury's (1985) argument that explained that the influence of audit probabilities on tax compliance varied depending on the group of taxpayers: strong influences demonstrated by sole proprietors (large taxpayers), and weak influences demonstrated by salaried taxpayers (small taxpayers).

#### 4.1.4. Tax Rate Differential and Non-Conforming Tax Aggressiveness

Regression 1 demonstrates that tax rate differential has a significant negative correlation with ETR. It implies that if the gap between Indonesia's statutory tax rates and counterpart's tax rate is negative (meaning that counterpart's tax rate is higher), the reported ETR in Indonesia should be higher, and vice versa. This result, to some extent, can be analogized with the profit or cost-pooling strategy to minimize worldwide tax burden. Profits will be shifted to the lower tax rate countries, and costs will be dumped to higher tax rate countries. This scheme will result in lower profitability for high tax rate countries and higher profitability for lower tax rate countries.

Adopting fixed effects and clustered standard error, Regression 4 demonstrates insufficient evidence to conclude significant correlation between the tax rate differential and ETR. Empirically, possible reason why adoption of fixed effects results in insignificant correlation is because of tax rates in many countries are almost time invariant. It means that tax rates are relatively constant, so that fixed effects cannot capture the data variation over the observation period.

Conceptually, the insufficient evidence of correlation between tax differentials and ETR also can be explained by using the same analogy of capital inflow or outflow as an impact of tax differentials as suggested by Bénassy-Quéré et al. (2005). They explained asymmetry in the impact of tax differentials on investment:

<sup>15</sup> *Fully fledge* manufacturing is responsible for sourcing materials, undertaking production and potentially selling to third parties at its own risk as well as to related party distributors. Moreover, they also possible to establish intangible properties by Research and Development (R&D) activities.

lower tax rates in the recipient countries fail to significantly attract foreign investment, while higher taxes tend to discourage new FDI inflows. They also suggested that the impact of positive tax differentials is not homogeneous regarding the tax treaty arrangement in countries. Another possible reason can be explained by using Hybrid Mismatch Arrangement concept as suggested by OECD. Due to *hybrid entity* arrangement, it is possible if profits shifted from a country is not subject to tax in another country. Therefore, reduction in profitability in higher tax rate country not always related to increase profitability in lower tax rate country. However, to examine this phenomenon, individual level country-by-country data is required.

#### 4.1.5. Assistance and Non-Conforming Tax Aggressiveness

Using similar model with the previous variables, Regression 4 displays a positive significant correlation between assistance and ETR. Logically, higher effort of tax assistance in current period will stimulate taxpayers to be less tax aggressive. Rather than deterrent effect as produced by audit penalties, tax assistance provides preventive and educative approach for taxpayers. This result is consistent with Ola (2001) as cited by Ebimobowei & Peter (2012) who provided evidence that tax assistance was strongly related to taxpayer's compliance, also Torgler & Schneider (2006) who revealed that majority of their respondent confirmed that tax knowledge assistance would influences the willingness to pay taxes.

DGT (2016) explained two major strategies to inflate the taxpayers' compliance. First, prevention strategy by adopting counseling and tax education for taxpayers. Second, reaction strategy by conducting tax examination. Comparing the responsiveness of those two variables in this model, Regression 4 presents an evidence that based on empirical analysis, tax assistance has higher responsiveness (coefficient value: 0.0402) rather than audit penalty (coefficient value: 0.0103). Intuitively, it demonstrates that the application of tax authority's strategy to hike tax compliance should be more likely to prevention rather than reaction.

#### 4.1.6. Age of Enterprise and Non-Conforming Tax Aggressiveness

Regression 4 provides an evidence of negative significant correlation between enterprise's age and ETR, it means that the older enterprises tend to have lower ETR or they are more tax aggressive. Taking into account that tax aggressiveness is closely related to managerial expertise, this result is consistent with Arrow (1962), Jovanovic (1982) and Ericson & Pakes (1995) who demonstrated that company's age could actually affect efficient management, with discovery and improvement of management including tax management. Moreover, from the point of view of tax avoidance accumulation, this result supports Dyreng et al's (2008) observation that some firms are able to defer tax payments or even avoid tax payments over long period of time.

## 4.2. Conforming Tax Avoidance

In the context of conforming tax avoidance, Table 3 provides the main regression result. In this model, TAXOCF is employed as the measurement of tax aggressiveness in terms of reductions of both accounting and tax incomes. Providing the similar data analysis, the first column of regression result demonstrates the simplest regression model without time fixed-effect and entity fixed-effect. Columns (2) – (4) show the result of non-conforming tax avoidance model using entity fixed-effect, time fixed-effect and clustered standard error.

Comparing the overall regression result between non-conforming and conforming tax avoidance, all variables demonstrate broadly identical patterns. Generally, the coefficient value on each variable in Table 3 is higher than the value in Table 2. It intuitively means that non-conforming tax avoidance measurement (using ETR) is more responsive to variables' fluctuation. Practically, since TAXOCF measures tax avoidance in terms of reduction of both accounting and tax incomes, this reduction cannot be easily captured by explanatory variables.

#### 4.2.1. Simple OLS Regression of Non-Conforming Tax Avoidance

Regression 1 shows that the size of company has a positive significant correlation with TAXOCF, which intuitively means the bigger company has tendency to be more comply or avoid less taxes. Similar to the result from non-conforming tax avoidance, audit penalty also has a positive significant correlation with TAXOCF, which means higher audit penalty provides a deterrent effect on taxpayers, hence taxpayers tend

to avoid less taxes in the next period. Tax assistance variable also has a positive significant correlation with TAXOCF, which means that assistance in the respective year will increase compliance.

The positive significant correlation with TAXOCF is also demonstrated by the age variable. Intuitively, it shows that the older company tend to avoid less taxes. However, the tax rate difference between the host country and the related party's country has a negative significant correlation with TAXOCF, it means that if tax rate difference is positive (tax rate on the related party's country is higher than host country), taxpayers tend to avoid less taxes in the host country. Conversely, if the tax rate difference is negative (tax rate on the related party's country is lower than the host country), taxpayers tend to avoid more taxes in the host country.

The result on Regression 1 may be suffered by omitted variable bias. To overcome this problem and to ensure the robustness of the model, this study gradually adds the entity fixed-effects and time fixed-effects with clustered standard error in Regression 2 to 4. The result is relatively consistent except for *TAXATEGAP* and *LCSTOCK*.

Table-3: Conforming Tax Avoidance (Main Regression Result)

	(1) TAXOCF	(2) TAXOCF	(3) TAXOCF	(4) TAXOCF
<i>LSIZE</i>	0.00429*** (0.000178)	0.00433*** (0.000203)	0.00438*** (0.000204)	0.00438*** (0.000352)
<i>LAUDITRESULT</i>	0.00170*** (0.000242)	0.00146*** (0.000309)	0.00160*** (0.000311)	0.00160*** (0.000406)
<i>TAXATEGAP</i>	-0.000293* (0.000176)	-0.000153 (0.000211)	-0.000153 (0.000211)	-0.000153 (0.000302)
<i>ASSISTANCE</i>	0.0122*** (0.00279)	0.0163*** (0.00350)	0.0160*** (0.00349)	0.0160*** (0.00667)
<i>AGE</i>	1.42e-06*** (2.06e-07)	-0.00402*** (0.000396)	-0.00368*** (0.000444)	-0.00368*** (0.000422)
<i>LCSTOCK</i>	-0.000922*** (9.67e-05)	-0.000765*** (0.000106)	-0.000692*** (0.000109)	-0.000692*** (0.000129)
<i>STATUS</i>	0.00551*** (0.00118)	-	-	-
<i>STRUCTURE</i>	-0.00324*** (0.000892)	-	-	-
Constant	-0.0837*** (0.00708)	22.18*** (2.186)	20.26*** (2.452)	20.26*** (2.335)
ID Fixed-Effect	No	Yes	Yes	Yes
Year Fixed-Effect	No	No	Yes	Yes
Clustered SE	No	No	No	Yes
Observations	6,002	6,002	6,002	6,002
R-squared	0.173	0.187	0.190	0.190

Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*STATUS* and *STRUCTURE* in Regression (2) - (4) are omitted due to collinearity

#### 4.2.2. Size of Enterprise and Conforming Tax Aggressiveness

Providing more rigorous result and minimizing omitted variable bias, this model also employs both entity fixed-effects and time fixed-effects with clustered standard error as demonstrated by Regression 4. Examining the result on Regression 4, it is rigorously demonstrated that size of company has positive significant correlation with TAXOCF. It suggests that the bigger company's size (in terms of total assets) the lower tendency avoiding taxes. It is difficult to compare and analyze the consistency of this result with prior studies, since to the author's best knowledge, conforming tax avoidance is relatively unexplored rather than non-conforming tax avoidance and only a few literature explore the measurement of conforming tax-avoidance. However, to some extent, this result is consistent with Slemrod (2007), which relied on the U.S General Accounting Office data, estimated that big enterprises tend to more comply than the smaller one.

Similar explanation with non-conforming tax avoidance subsection, the operating enterprise will assume a larger range of business functions and risks, and in the long-run business cycle they will develop a well-managed company. Therefore, big company mitigates their risk by taking long-term strategy including tax-compliance strategy. In opposite way, non-operating enterprise such as a paper company which conduct no business but properly constituted and incorporated only for registration certificate to access tax benefits such as treaty shopping and profit shifting, usually has zero asset.

#### 4.2.3. Audit Penalties and Conforming Tax Aggressiveness

Rigorous result using both entity fixed-effects and time fixed-effects with clustered standard error as summarized in Regression 4 demonstrates that penalty as a product of audit on previous period also has positive significant correlation with TAXOCF in current period. It can be interpreted that higher penalty in previous period will stimulate taxpayers to be less tax aggressive in terms of both of tax and accounting reporting.

Different with ETR, TAXOCF model captures reduction of both accounting and tax incomes. Comparing the coefficient value of AUDITRESULT between non-conforming and conforming tax avoidance, generally non-conforming tax avoidance (ETR) provides higher value coefficient rather than conforming tax avoidance (TAXOCF). Intuitively, it means that in the context of tax avoidance measurement, audit penalty is more responsive to non-conforming tax avoidance, which is reduction of tax income relative to accounting income.

Applying similar logic with non-conforming tax avoidance, tax penalty can reduce the tax aggressiveness in terms of tax and accounting incomes. However, as suggested by Becker (1968) and emphasized by Allingham and Sandmo (1972), the taxpayer's compliance also depends on audit probability and tax rate. This model does not take into account these factors.

#### 4.2.4. Tax Rate Differential and Conforming Tax Aggressiveness

Using similar to estimation of both entity fixed-effects and time fixed-effects, Regression 4 provides insufficient evidence to conclude significant correlation between tax rate differential and TAXOCF. As discussed in the previous subsection, a possible reason why adoption of fixed effects result in insignificant correlation is because of tax rates in many countries are almost time invariant, so that fixed effects cannot capture the variation of data over the observation period. As explained before, the insufficient evidence of correlation between tax rate differential and TAXOCF also might be caused by several reasons including enterprises' model and typologies, nature of investment in Indonesia and hybrid mismatch arrangement.

#### 4.2.5. Assistance and Conforming Tax Aggressiveness

As showed in Regression 4 on Table 3, conforming tax avoidance measurement captures a positive significant correlation between assistance and TAXOCF. This result is broadly consistent with non-conforming tax avoidance measurement as shown in Table 2. The positive significant correlation implies that higher intensity of assistances or tax education efforts will stimulate taxpayers to be less aggressive.

DGT (2016) explained two major strategies to increase taxpayer's compliance. The first one is prevention strategies by adopting assistance and tax education for taxpayers. The second one is reaction strategies by conducting tax audit. This study finds that both tax assistance and tax audit have effective impact in reducing tax aggressiveness. DGT can formulate prevention or reaction strategies prior to addressing specific cases to minimize losses from tax avoidance. However, further examination on individual cases should be taken into account to determine the comparative effectiveness of both strategies<sup>16</sup>.

#### 4.2.6. Age of Enterprise and Conforming Tax Aggressiveness

Broadly similar to ETR analysis as shown in Table 2, Regression 4 on Table 3 provides an evidence of negative significant correlation between enterprise's age and TAXOCF. Intuitively, it means that older enterprises tend to have lower TAXOCF or more tax aggressive in terms of both reduction of tax and accounting incomes. The previous analysis also suggested that the older company, the more efficient management will be. In this case management efficiency including tax management efficiency (tax planning).

<sup>16</sup> It is still difficult to confidently suggest the comparative effectiveness of both strategies in this model, because of different specification data between audit penalties and assistance.

In the similar vein, Arrow (1962), Jovanovic (1982) and Ericson and Pakes (1995) suggested that company's age could actually affects to efficient management, with discovery and improvement of management including tax management.

#### 4.3. Extended Model Result: Tax Avoidance Measurement for Specific Enterprises

Providing evidences of tax avoidance responsiveness for specific enterprises, this model stratifies a so-called *foreign-controlled* enterprise, which consists of two groups: (1) Permanent Establishments (PE) and (2) Foreign-invested enterprises. This stratification is important to pursue the tax avoidance risks for specific groups of enterprises.

Table 4 provides the regression result of both non-conforming and conforming tax avoidance for all sample and *foreign-controlled* enterprises. Broadly similar to the previous model, ETR is employed for non-conforming tax avoidance, while TAXOCF is employed for conforming tax avoidance model. Providing rigorous analysis, Table 4 also employs fixed-effects model and adopts autocorrelation-consistent standard errors (HAC/clustered SE).

Regression Ext.1 demonstrates the correlation and responsiveness of each variable in terms of non-conforming tax avoidance (ETR variable). Regression Ext.2 demonstrates the analysis of each variable in terms of conforming tax avoidance (TAXOCF variable). Generally, by dividing sample into *high-opportunity* or *foreign-controlled* company, Regression Ext.1 on Table 4 shows that *foreign-controlled* companies (foreign-invested companies and PE) have higher coefficients rather than full sample. Broadly identical results are obtained for conforming tax avoidance measurement as shown in Regression Ext.2.

Both Regression Ext.1 and Ext.2 on Table 4 demonstrate that size of company, age, and capital stocks are more responsive to tax avoidance for PE. Another evidence shows that tax assistance is more responsive to tax avoidance for foreign-invested companies, it suggests that the impact of tax assistance is relatively higher for *foreign-invested* companies than full sample.

Analyzing the second variable, audit penalty has a less impact on tax avoidance for *foreign-controlled* enterprises. There are two possible reasons for this phenomenon, the first one is related to marginal cost and benefit of tax avoidance. If the taxpayer considers marginal penalty as marginal cost of detection, the marginal cost of detection may much higher than the marginal benefit. The second reason is related to risk aversion. The *foreign-controlled* enterprises may consider that audit penalty is less risk-significant to their tax avoidance decision so that the tax aggressiveness decision is relatively irrelevant to the amount of audit penalty.

Table-4: Extended Model for Non-Conforming and Conforming Tax Avoidance

	ETR (Ext.1)			TAXOCF (Ext.2)		
	All Sample	Permanent Establishment	Foreign Invested	All Sample	Permanent Establishment	Foreign Invested
<i>LSIZE</i>	0.0132*** (0.000578)	0.0200*** (0.00183)	0.0160*** (0.00131)	0.00438*** (0.000352)	0.00994*** (0.00167)	0.00470*** (0.000665)
<i>LAUDITRESULT</i>	0.0103*** (0.000710)	0.00488 (0.00335)	0.00292 (0.00237)	0.00160*** (0.000406)	-7.21e-05 (0.00278)	0.00159 (0.00128)
<i>TAXRATEGAP</i>	-0.000257 (0.000640)	-0.00145 (0.00119)	-0.00156 (0.000752)	-0.000153 (0.000302)	0.000602 (0.000739)	-0.000247 (0.000381)
<i>ASSISTANCE</i>	0.0402*** (0.00869)	0.0523* (0.0282)	0.0533*** (0.0198)	0.0160** (0.00667)	0.0416 (0.0306)	0.0199* (0.0104)
<i>AGE</i>	-0.0132*** (0.000688)	-0.0140*** (0.00268)	-0.0120*** (0.00162)	-0.00368*** (0.000422)	-0.00701*** (0.00210)	-0.00391*** (0.00114)
<i>LCSTOCK</i>	-5.80e-05 (0.000245)	-0.00197** (0.000929)	-0.00163*** (0.000573)	-0.000692*** (0.000129)	-0.00136** (0.000597)	-0.000819*** (0.000284)
<i>constant</i>	72.54*** (3.804)	88.33*** (16.99)	71.29*** (9.691)	20.26*** (2.335)	44.37*** (13.36)	23.31*** (6.792)
Observations	6,002	670	1,025	6,002	670	1,025
R-squared	0.548	0.656	0.591	0.190	0.356	0.283

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

#### 4.4. Robustness Checks

##### 4.4.1. Autocorrelation-consistent Standard Errors

The robustness of the findings is tested by comparing the estimated coefficient and significance of all variables with alternative models including simple OLS regression, fixed-effect model and autocorrelation-consistent standard errors (HAC/clustered SE). Such alternative specifications do not alter the overall results and indicate the robustness of the findings.

#### 4.4.2. Instrumental Variable Estimation for Tax Assistance Variable

As explained earlier, assistances are provided by DGT after the issuance of invoke letter as a result of preliminary examination. Based on DGT Rule Number 170/PJ/2007 concerning Counseling Procedure, DGT issues invoke letter and conducts assistance within 14 days. Regarding this assumption, the assistance variable should be exogenous.

However, it is difficult to confidently state that all assistance records are conducted by DGT due to complication in identifying them on empirical data. Addressing this problem, this study performs instrumental variable estimation. In this estimation, this study employs DGT\_NOTICE as an instrument variable, which is essentially defined as the notice issued by DGT as a result of external data examination. Confirming instrument validity, this study also performs post-estimation tests including the endogeneity test and the weak identification test. Since the estimator is exactly identified ( $m = k$ ), this study cannot perform the over-identification test. Therefore, to ensure the exogeneity condition, this study employs DGT\_NOTICE which contains 100% administrative sanction, meaning that the notice is mainly revealed and calculated by DGT (completely exogenous), not voluntarily disclosed by taxpayer.

Table 5 demonstrates the results for both non-conforming and conforming tax avoidance using fixed-effects model, autocorrelation-consistent standard errors and instrumental variable estimation. This paper reports only the variables of interest, meanwhile, id and year dummies are included but not reported for the sake of brevity. The results are broadly consistent and indicate the robustness of the findings for all different specifications.

Table-5: Robustness Checks

	ETR			TAXOCF		
	1	2	3	1	2	3
<i>LSIZE</i>	0.0132*** (0.000331)	0.0132*** (0.000578)	0.0256*** (0.00275)	0.00438*** (0.000204)	0.00438*** (0.000352)	0.00429*** (0.000656)
<i>LAUDITRESULT</i>	0.0103*** (0.000504)	0.0103*** (0.000710)	0.0111*** (0.00161)	0.00160*** (0.000311)	0.00160*** (0.000406)	0.00159*** (0.000408)
<i>TAXRATEGAP</i>	-0.000257 (0.000342)	-0.000257 (0.000640)	-0.00176 (0.00131)	-0.000153 (0.000211)	-0.000153 (0.000302)	-0.000141 (0.000302)
<i>ASSISTANCE</i>	0.0402*** (0.00567)	0.0402*** (0.00869)	0.671*** (0.147)	0.0160*** (0.00349)	0.0160*** (0.00667)	0.0216* (0.0368)
<i>AGE</i>	-0.0132*** (0.000720)	-0.0132*** (0.000688)	-0.0142*** (0.00142)	-0.00368*** (0.000444)	-0.00368*** (0.000422)	-0.00367*** (0.000425)
<i>LCSTOCK</i>	-5.80e-05 (0.000177)	-5.80e-05 (0.000245)	0.000587 (0.000525)	-0.000692*** (0.000109)	-0.000692*** (0.000129)	-0.000697*** (0.000134)
Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	No	Yes	Yes	No	Yes	Yes
Instrumented	No	No	Yes	No	No	Yes
Weak idt test	-	-	32.22	-	-	32.22
Observations	6,002	6,002	6,002	6,002	6,002	6,002
R-squared	0.548	0.548	0.040	0.190	0.190	0.0450

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## 5. CONCLUSION AND RECOMMENDATION

The conclusion to be drawn from this study is about the empirical model of tax avoidance risk measurement. It is essential for tax authorities to analyze the determinant and magnitude of tax avoidance in order to formulate policy strategies that minimize tax avoidance risk exposure. Providing far-reaching analysis by examining a relatively unexplored area of conforming tax avoidance and exploring risk exposure of so-called foreign-controlled enterprises, this study suggests a distinctive result about the responsiveness and magnitude of tax avoidance for each determinant.

Rigorous empirical models suggest that the size of enterprise has a negative correlation with tax aggressiveness. With respect to companies' expertise, the result presents that age of enterprise has a positive correlation with tax aggressiveness. More striking result to emerge from the analysis is the impact of audit

penalty and tax assistance on tax aggressiveness, which suggests a higher responsiveness of tax assistance rather than audit penalty in terms of the taxpayers' response regarding tax aggressiveness. As an extensive analysis, this study also concludes that the magnitude of tax avoidance risks varies depending on the characteristic of taxpayers. Higher risk exposure was occurred in so-called foreign-controlled enterprises, in this case, PE and foreign-invested enterprises.

Taken together, these results are paramount as the empirical approach in tax policy formulation. Tax avoidance profiles as presented in this research in relevant with the risk engine core of Compliance Risk Management (CRM) adopted by DGT. Another important practical implication is the relevance of these results to Risk-Based Audit in order to pursue the efficient audit coverage. Ensuring the best-fit policy formulation, these results also pertinent with prevention or reaction strategies to minimize losses from tax avoidance. In this sense, revealed that application of tax authority's strategy to hike tax compliance should be more likely to prevention rather than reaction. Furthermore, in the brain area of academic research, the findings also contribute to the field of tax literature by providing simultaneous empirical models including conforming and non-conforming tax avoidance, which has been relatively unexplored in prior studies.

### **Limitations and Future Research**

This paper does not distinguish between legal tax avoidance and illegal tax evasion, because of practical complication to categorize them on empirical data. This paper also uses limited variables and employs relatively homogeneous upper-middle-taxpayers due to data access limitations. Related to penalties, this paper assumes that probability of audit is constant for all taxpayers due to the difficulty to measure the audit rate during observation period.

Future study can investigate tax avoidance behavior for a larger range of taxpayers and employ more relevant variables. Furthermore, using various measurements for both non-conforming and conforming tax avoidance is also beneficial for the development of tax literature in the future.

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*Audentis Fortuna Iuvat – Fortune Favors the Brave.*

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