WHO AVOIDS TAXES? AN EMPIRICAL EVIDENCE FROM THE CASE OF INDONESIA

Agung Endika Satyadini[a], Restu Rea Erlangga[b], Brigitta Steffi VDKG[c]

a Directorate General of Taxation, Jakarta. Email: agung.satyadini@gmail.com
b Directorate General of Taxation, Jakarta. Email: rea.erlangga@gmail.com
c Directorate General of Taxation, Jakarta. Email: brigittagani@gmail.com

ABSTRACT

This paper investigated the propensity and the magnitude of tax avoidance risk exposure among different taxpayers by analyzing both 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. In the brain area of empirical analysis, this paper combined a fixed-effect model to control omitted variable bias together with adoption of adopts heteroskedasticity and autocorrelation-consistent standard errors (HAC/clustered SE). The results depict that the magnitude of tax avoidance risks varies depending on the characteristics of taxpayers. Higher risks were found in so-called foreign-controlled enterprises and foreign invested enterprises. With respect to entities' sector, this study also demonstrates that the propensity of higher risk exposure was depicted in financial and mining sector relative to full sample taxpayers.

Keywords: tax avoidance, risk assessment, evasion

ABSTRAK

Paper ini meneliti kecenderungan dan besarnya risiko penghindaran pajak atas beberapa tipe Wajib Pajak dengan menggunakan data terkait perusahaan dan terkait pemerintah. Analisis yang lebih menyeluruh menggunakan pendekatan penghindaran pajak conforming dan non-conforming. Paper ini menggunakan fixed effect model untuk mengkontrol variable yang tidak dimasukkan dalam model dengan mengadopsi heteroskedasticity dan autocorrelation-consistent SE. hasil penelitian ini menunjukkan bahwa besarnya risiko penghindaran pajak bervariasi tergantung tipe Wajib Pajak. Risiko terbesar ditemukan pada perusahaan investasi luar negeri dan perusahaan yang dikontrol oleh entitas di luar negeri. Terkait analisis risiko penghindaran pajak sektoral, studi ini menkonfirmasi kecenderungan risiko yang lebih besar muncul pada sector keuangan dan pertambangan.

Kata kunci: penghindaran pajak, penilaian risiko, penggelapan

1. INTRODUCTION

Tax avoidance and evasion threaten a nation's revenues. 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, technological, 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.

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 to capture tax avoidance using both enterprise-related and government-related determinants. This is regrettable because learning the combination effects from both enterprise characteristics and government policy is important to provide a comprehensive understanding of tax avoidance risk assessment.

In this brain area, this research examines both enterprise-related and government-related determinants of tax avoidance and considers two types of tax avoidance measurement. This study focuses on a comprehensive analysis to capture the magnitude of tax avoidance for different types of taxpayers and sectors. In this context, the targeted samples will be mapped as foreign-controlled enterprises, in this case Permanent Establishment (PE), foreign invested enterprises, financial sector and mining sector.

2. LITERATURE REVIEW

2.1 Legal Tax Avoidance and Illegal Tax Evasion

In a study of tax avoidance risk assessment, a 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[1]. From the context of relation between avoidance risk and client behavior, Satyadini et al (2019) emphasized that affecting client behavior and actively steering the population towards low risk will allow customs authorities to concentrate more on controlling resources on high risks.

2.2 Tax Avoidance Measurement

As suggested by Satyadini (2018), 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-conforming tax avoidance because permanent difference was a function of ETR[2].

---

[1]Several related literatures are borrowed from Satyadini (2018).
[2]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.

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 Low or No Tax Jurisdiction

The term 'tax haven' has been widely used since the 1950s, yet there is no consensus as to what it means (Palan, 2009). According to OECD (2018), tax haven in the "classical" sense refers to a country which imposes a low or no tax and is used by corporations to avoid tax which otherwise would be payable in a high-tax country. According to OECD report in 1998 and 2001, tax havens have the following key characteristics including (1) No or only nominal taxes; (2) Lack of effective exchange of information; and (3) Lack of transparency in the operation of the legislative, legal or administrative provisions. However, Dharmapala & Hines (2009) argued that tax havens are typically small, well-governed states that impose low or zero tax rates on foreign investors. Moreover, Dharmapala & Hines calculated that for a country with a population under one million, the likelihood of becoming a tax haven rises from 24 percent to 63 percent. Another characteristic from tax havens is that they often offer secrecy, in various forms, including but not limited to financial secrecy, combined with varying degrees of refusal to co-operate with other jurisdictions in exchanging information (Shaxson, 2011).

2.4 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. IOn 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[3].

---

[3]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.

2.5 Avoidance Risk on Specific Sector

In the light of tax avoidance discussion, literature suggested the involvement of several segments. The practice of tax avoidance is aided by a very lucrative tax avoidance industry, staffed by professional accountants, lawyers and finance experts (Sikka and Willmott, 2010). The International Consortium of Investigative Journalists (2016) on their report "Panama Papers" stated how major banks have driven and helped the creation of hard-to-trace companies in offshore havens. More than 500 banks, their subsidiaries, and their branches created more than 15,000 offshore companies for their customers through Mossack Fonseca. This has come to a conclusion i.e. financial industry has played a big part in tax avoidance.

On the other hand, the 2014 Global Financial Integrity (GFI) Report entitled "Illicit Financial Flows from Developing Countries: 2003-2012", puts Indonesia as the seventhplace country in the world with the highest illicit financial flows. The report estimates that the total illicit financial flows in Indonesia for 2003-2012 reached $187,844 million (IDR 1,690 trillion, average exchange rate IDR 9,000/US$) or reached $18,784 million per year. Using the data, PWYP Indonesia (2015) estimated illicit financial flows in Indonesia for 2014 reached IDR 227.7 trillion or equal to 11.7%. While the Mining sector in Indonesia accounted for 10.5% of the total illicit financial flows in Indonesia, which was estimated to reach IDR 23.89 trillion in 2014 (PWYP Indonesia, 2015).

Therefore, it is necessary to look deep into mining industry regarding tax avoidance measurement.

2.6 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 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 Vonn Neumann – Morgenstern[4] axiom for behavior under uncertainty[5] . 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[6].

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.

2.7 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 are usually located in low or no tax jurisdictions. Conversely, cost-center companies are usually located in high tax countries.

Tax gap may be defined from the institutional perspective of tax authorities as "the difference between tax collected and the tax that should be collected" (HMRC 2012, p. 3). That the amount of tax collected is in practice less than it should be if all taxpayers were fully compliant with their tax obligations, i.e. if they filed complete and accurate tax returns and paid all due taxes is often referred to as the 'tax gap'. Tax evasion, depending on the country, accounts for 80%-90% of the total tax gap, which also increases as a result of tax avoidance, excessive corruption or low effectiveness of tax administration (Harremi 2014, p. 365). Fisman and Wei (2004) stated, one particularly important issue is understanding the relationship between tax rates and tax evasion. The relationship between tax rates and evasion is positive, but this depends on assumptions of risk aversion and the punishment for evasion (Allingham and Sandmo, 1972). In this brain area, tax gap may be caused by numerous elements including (1) unclear legislation, negligent omissions, differences in interpretation, lack of knowledge, and non-deliberate errors leading to differences between the tax intended to be collected and the amount actually collected; (2) insolvencies, whose consequence is the impossibility for tax authorities to collect the taxes on bankrupt companies, even though there is a tax liability; and (3) taxpayers' deliberate actions such as tax fraud, tax evasion and tax avoidance.

[4] 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.

[5] 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 π and larger than tax rate θ.

[6] 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.

Robinson et al. (2010) empirically examined 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, & Lahrèche-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 corporate tax differentials as simple differences between the corporate-tax rates in the host country and in the investing country.[7]

2.8 Tax 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 under-reporting 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, voluntary 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 regulations.

---

[7]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.

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 several 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.

2.9 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.[8]

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 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 their managerial expertise including tax expertise.

Another prior study also revealed that aging company, may also make 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 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.

---

[8]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 distribut-

Table-1: Descriptive Statistics

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

Source: STATA Output

3.1 Age of Enterprise

This empirical model combines three major data segments: tax-related data, financial statement data, and other data, which are identified by 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 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. The merged panel contains 8.320 observations in the respective years. Several observations have missing values, and thus are not available for our analysis. Systematic data sampling and analysis result in 6.002 observations from imbalancedpanel of 1.201 encrypted IDs. The descriptive statistics for tax-related data, financial statement data, and other data are illustrated in Table 1.

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 a 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 a tax avoidance measurement. This model estimates the significance of determinants correlated to changes (reduction) of tax income as a ratio of accounting income by using the following regression equation:

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

Where
i : taxpayers' ID
t : year
Zi: taxpayers' ID fixed-effects
Tt: 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)[9]. To provide precise estimation, this study compares the amount of total assets according to tax return 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)[10]. By way of illustration, LAUDITRESULT is derived from Audit Assignment (SP2) data which is 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 an Indonesian taxpayer is located[11]. Information captured in tax return summary is the largest related party (scale 1) based on Form 1771 Annex 3A and 3A-2.

---

[9] 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.

[10] 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.

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 because of preliminary examination to clarify the data on the invoke letter . 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 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 calculates 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:

Where
i	*: taxpayers' ID*
t	*: year*
Zi	*: taxpayers' ID fixed-effects*
Tt	*: 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 are calculated by adding depreciation and subtracting taxes and changes on working capital from earnings before interest and taxes (EBIT).

3.5 Extended Model 1: 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 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. Slemrod (2007) distinguished sample based on taxpayers' opportunity to evade taxes. This model also stratifies two groups based on their opportunity to avoid taxes.

$$TAXOCF_{it} = \beta_0 + \beta_1 LSIZE_{it} + \beta_2 AGE_{it} + \beta_3 LCSTOCK_{it} + \beta_4 LAUDITRESULT_{it-1} +$$

$$\beta_5 ASSISTANCE_{it} + \beta_6 TAXRATEGAP_{it} + \beta_7 STATUS_{it} + \beta_8 STRUCTURE_{it} + \beta_9 Z_i + \beta_9 T_t + u_{it}$$

[11]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.

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 to 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[13], 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 runs additional regressions separately: Regression Ext.1 is specified only for sample if _FOREIGNINVEST = 1; and Regression Ext.2 is used only for observation with _PERMANENTEST = 1.

3.6 Extended Model 2: Tax Avoidance Risk Measurement for Specific Sectors.

To the strength of research design, this study also examined the validity of main model by performing data set classification. It is essential to understand that, in certain ways, corporate tax avoidance is influenced by specific manner of government's regulation. Providing a comprehensive investigation and demonstrating empirical evidence in accordance with specific government's regulation, this model reclassifies the targeted population by clustering the financial sector population, due to the potential impact of high regulation in financial sector.

Utilizing the similar approach, it is also essential to investigate the potential impact of government's regulation on mining sector. It is reasonable since mining company conducted business strictly based on exclusive contract between government and firm such as "contract of work" or "production sharing contract". This model rearranges the targeted population by clustering the mining sector population.

It is hoped that, by excluding uncommon sectors, the effect of including these companies within the sector in the observations could bias the result. In this sense, it is highly possible that effective tax rates of companies in the financial and mining sectors are affected differently by government regulations from other firms.

Further, to quantify these sectors, this study adopts new variables as follows: (1) _FINSECT: a dummy variable, which is equal to one if the entity entitled to Financial Sector and zero otherwise; (2) _MININGSECT: a dummy variable, equal to 1 if entity worked in Mining Sector, and zero otherwise. Regression Ext.3 is specified only for sample if _FINSECT= 1; and Regression Ext.3 is used only for observation with _MININGSECT= 1

[13]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 allocation of taxing right of an enterprise when conducted a business in other country.

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.

4.1 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 bigger companies have 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.

Table-2: Non-Conforming Tax Avoidance

	(1) ETR	(2) ETR	(3) ETR	(4) ETR
LSIZE	0.0129***	0.0131***	0.0132***	0.0132***
	(0.000300)	(0.000330)	(0.000331)	(0.000578)
LAUDITRESULT	0.0113***	0.0100***	0.0103***	0.0103***
	(0.000407)	(0.000503)	(0.000504)	(0.000710)
TAXRATEGAP	-0.000762**	-0.000259	-0.000257	-0.000257
	(0.000296)	(0.000343)	(0.000342)	(0.000640)
ASSISTANCE	0.0441***	0.0408***	0.0402***	0.0402***
	(0.00470)	(0.00569)	(0.00567)	(0.00869)
AGE	1.12e-06***	-0.0144***	-0.0132***	-0.0132***
	(3.47e-07)	(0.000643)	(0.000720)	(0.000688)
LCSTOCK	-0.000231	-0.000147	-5.80e-05	-5.80e-05
	(0.000163)	(0.000172)	(0.000177)	(0.000245)
STATUS	-0.00326			
	(0.00198)			
STRUCTURE	0.00105			
	(0.00150)			
Constant	-0.302***	79.52***	72.54***	72.54***
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

*** $p<0.01$, ** $p<0.05$, *$p<0.1$
status and *structure* in Regression (2) - (4) are omitted due to collinearity
Source: STATA Output

From the point of view of preventive strategy, tax assistance has a 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 older companies tend to avoid less taxes. However, the tax rate differences between host country and related party's country have a 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 subsidiaries 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[14]. 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 companies mitigate their risks 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 is properly constituted and incorporated in one country only for registration certificate to access tax benefits.

[14]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.

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) emphasiing on Becker's (1968) study about how an enterprise established its strategy related to tax aggressiveness decision to maximize its 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, to 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 seems 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: 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 is 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 influence 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 on 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 older enterprises tend to have lower ETR or they are more tax aggressive. Considering 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 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 a 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 Conforming Tax Avoidance

Regression 1 shows that the size of company has a positive significant correlation with TAXOCF, which intuitively means bigger companies have tendency to be more compliant 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.

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

	(1) TAXOCF	(2) TAXOCF	(3) TAXOCF	(4) TAXOCF
LSIZE	0.00429***	0.00433***	0.00438***	0.00438***
	(0.000178)	(0.000203)	(0.000204)	(0.000352)
LAUDITRESULT	0.00170***	0.00146***	0.00160***	0.00160***
	(0.000242)	(0.000309)	(0.000311)	(0.000406)
TAXRATEGAP	-0.000293*	-0.000153	-0.000153	-0.000153
	(0.000176)	(0.000211)	(0.000211)	(0.000302)
ASSISTANCE	0.0122***	0.0163***	0.0160***	0.0160**
	(0.00279)	(0.00350)	(0.00349)	(0.00667)
AGE	1.42e-06***	-0.00402***	-0.00368***	-0.00368***
	(2.06e-07)	(0.000396)	(0.000444)	(0.000422)
LCSTOCK	-0.000922***	-0.000765***	-0.000692***	-0.000692***
	(9.67e-05)	(0.000106)	(0.000109)	(0.000129)
STATUS	0.00551***			
	(0.00118)			
STRUCTURE	-0.00324***			
	(0.000892)			
Constant	-0.0837***	22.18***	20.26***	20.26***
	(0.00708)	(2.186)	(2.452)	(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
Source: STATA Output

The positive significant correlation with TAXOCF is also demonstrated by the age variable. Intuitively, it shows that older companies 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.

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 a positive significant correlation with TAXOCF. It suggests that the bigger company's size (in terms of total assets), the lower tendency of 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 literatures explore the measurement of conforming tax-avoidance. However, to some extent, this result is consistent with Slemrod (2007), who relied on the U.S General Accounting Office data, estimating 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 companiesmitigate their risks by taking long-term strategy including tax-compliance strategy. In opposite way, non-operating enterprise such as a paper company which conducts no business but is 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 a 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 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.

4.2.4 Tax Rate Differential and Conforming Tax Aggressiveness

Using similar estimation of both entities fixed-effects and time fixed-effects, Regression 4 provides insufficient evidence to conclude a significant correlation between tax rate differential and TAXOCF. As discussed in the previous subsection, a possible reason why adoption of fixed effects resulted 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 considered to determine the comparative effectiveness of both strategies[15].

4.2.6 Age of Enterprise and Conforming Tax Aggressiveness

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

---

[15] 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.

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 be 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.

4.2.5 Assistance and Conforming Tax Aggressiveness

Providing evidences of tax avoidance responsiveness for specific sectors, this model stratifies two groups of panel data: (1) Financial Sector and (2) Mining Sector. This stratification is paramount to demonstrate tax avoidance risks for specific sectors in Indonesia.

Table-4: Extended Model 1 for Non-Conforming and Conforming Tax Avoidance

	ETR (Ext.3)			TAXOCF (Ext.4)		
	All Sample	Financial Sector	Mining Sector	All Sample	Financial Sector	Mining Sector
LSIZE	0.0132***	0.0940***	0.0324***	0.00438***	0.00653***	0.00344***
	(0.000578)	(0.03783)	(0.00430)	(0.000352)	(0.03467)	(0.0365)
LAUDITRESULT	0.0103***	0.0300**	0.02235*	0.00160***	-6.21e-06	0.02359
	(0.000710)	(0.05745)	(0.050937)	(0.000406)	(0.95678)	(0.0438)
TAXRATEGAP	-0.000257	-0.00738	-0.00989	-0.000153	0.04402	-0.05537
	(0.000640)	(0.00119)	(0.000752)	(0.000302)	(0.09349)	(0.43481)
ASSISTANCE	0.0402***	0.07889*	0.0499***	0.0160**	0.0432*	0.04365*
	(0.00869)	(0.0382)	(0.0358)	(0.00667)	(0.03326)	(0.43204)
AGE	-0.0132***	-0.0434***	-0.0323***	-0.00368***	-0.00441***	-0.00346***
	(0.000688)	(0.04268)	(0.00962)	(0.000422)	(0.04610)	(0.05414)
LCSTOCK	-5.80e-05	-0.00997**	-0.00363***	-0.000692***	-0.04326**	-0.04239***
	(0.000245)	(0.009229)	(0.035573)	(0.000129)	(0.04397)	(0.50284)
constant	72.54***	34.33***	56.29***	20.26***	23.37**	55.21***
	(3.804)	(19.33)	(8.900)	(2.335)	(33.46)	(7.343)
Observations	6,002	1,989	893	6,002	1,989	893
R-squared	0.548	0.436	0.771	0.190	0.746	0.334

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: STATA Output

Table 5 provides the regression result of both non-conforming and conforming tax avoidance for all sample, financial sector and mining sector. In this brain area, the result depicts that those in financial sector embodied a higher coefficient compared to full sample and mining sector.

Both Regression Ext.3 and Ext.4 on Table 5 illustrates that size of company, age, and capital stocks are more responsive to tax avoidance for financial sector. In the same vein, tax assistance also embodied a propensity to be more responsive to tax avoidance for financial sector, it implies that the impact of tax assistance is relatively higher for financial sector entities than full sample.

4.5 ROBUSTNESS CHECKS

4.5.1 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.

4.5.2 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-4: Extended Model 1 for Non-Conforming and Conforming Tax Avoidance

	ETR (Ext.3)			TAXOCF (Ext.4)		
	All Sample	Financial Sector	Mining Sector	All Sample	Financial Sector	Mining Sector
LSIZE	0.0132***	0.0940***	0.0324***	0.00438***	0.00653***	0.00344***
	(0.000578)	(0.03783)	(0.00430)	(0.000352)	(0.03467)	(0.0365)
LAUDITRESULT	0.0103***	0.0300**	0.02235*	0.00160***	-6.21e-06	0.02359
	(0.000710)	(0.05745)	(0.050937)	(0.000406)	(0.95678)	(0.0438)
TAXRATEGAP	-0.000257	-0.00738	-0.00989	-0.000153	0.04402	-0.05537
	(0.000640)	(0.00119)	(0.000752)	(0.000302)	(0.09349)	(0.43481)
ASSISTANCE	0.0402***	0.07889*	0.0499***	0.0160**	0.0432*	0.04365*
	(0.00869)	(0.0382)	(0.0358)	(0.00667)	(0.03326)	(0.43204)
AGE	-0.0132***	-0.0434***	-0.0323***	-0.00368***	-0.00441***	-0.00346***
	(0.000688)	(0.04268)	(0.00962)	(0.000422)	(0.04610)	(0.05414)
LCSTOCK	-5.80e-05	-0.00997**	-0.00363***	-0.000692***	-0.04326**	-0.04239***
	(0.000245)	(0.009229)	(0.035573)	(0.000129)	(0.04397)	(0.50284)
constant	72.54***	34.33***	56.29***	20.26***	23.37**	55.21***
	(3.804)	(19.33)	(8.900)	(2.335)	(33.46)	(7.343)
Observations	6,002	1,989	893	6,002	1,989	893
R-squared	0.548	0.436	0.771	0.190	0.746	0.334

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Source: STATA Output

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 and sectors. Higher risk exposure was occurred in so-called foreign-controlled enterprises, in this case, PE and foreign-invested enterprises. With respect to entities' sector, the propensity of higher risk exposure was depicted in financial and mining sector relative to full sample taxpayers. Figure 1 demonstrated the tax avoidance risk mapping with respect to the empirical result.

Figure-1: Tax Avoidance Risk Mapping
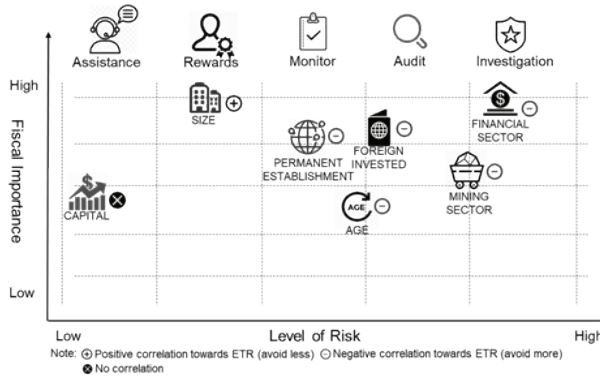
Source: Authors' Elaboration

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 to pursue the efficient audit coverage as depicted in Figure 1. Ensuring the best-fit policy formulation, these results are 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 have been relatively unexplored in prior studies.

5.1 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 may 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.

6. REFERENCES

[1] Agarwal, R., & Gort, M. (1996). The Evolution of Markets and Entry, Exit and Survival of Firms. The Review of Economics and Statistics, Vol. 78, No. 3, 489–498.

[2] Agarwal, R., & Gort, M. (2002). Firm and Product Life Cycles and Firm Survival. The American Economic Review, Vol. 92, No. 2, 184–190.

[3] Alm, J., & Mckee, M. (1998). Extending the Lessons of Laboratory Experiments on Tax Compliance to Managerial and Decision Economics. Managerial and Decision Economics.

[4] Alm, J., Jackson, B. R., & Mckee, M. (1992). Estimating The Determinants of Taxpayer Compliance with Experimental Data. National Tax Joural Vol 45 No.1, 107-114.

[5] Beck, P. J., Davis, J., & Jung, W.-O. (1991). Experimental Evidence on Taxpayer Reporting under Uncertainty. Accounting Review 66(3), 535-558.

[6] Becker, G. S. (1968). Crime and Punishment: An Economic Approach. Journal of Political Economy, 169–217.

[7] Bénassy-Quéré, A., Fontagné, L., & Lahrèche-Révil, A. (2005). How Does FDI React to Corporate Taxation? International Tax and Public Finance Vol.12 Issue 5, 583-603.

[8] Buehn, A., & Schneider, F. (2012). Size and Development of Tax Evasion in 38 OECD Countries. CESIFO Working Paper.

[9] C, A., Blouin, J., & Larcker, D. (2012). The Incentives for Tax Planning. Journal of Accounting and Economics (Vol. 53), 391-411.

[10] Chau, G., & Leung, P. (2009). A critical review of Fischer tax compliance model: A Research Syntesis. Journal of Accounting and Taxation Vol.1 (2), 34-40.

[11] Chen, S., Chen, X., Ceng, Q., & Shevlin, T. (2010). Are Family Firms more Tax Aggressive than Nonfamily Firms? Journal of Financial Economics. , 91(1) , 41.

[12] Corporate Tax Planning: A Study On Corporate Effective Tax Rates of Malaysian Listed Companies. (2010). International Journal of Trade, Economics and Finance, Vol. 1, No. 2, 189-193.

[13] CTPA-OECD. (2004). Compliance Risk Management: Managing and Improving Tax Compliance. OECD Publishing.

[14] Directorate General of Taxes - Indonesia. (2004). DGT Strategy and Report.

[15] Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2009). Long-Run Corporate Tax Avoidance. The Accounting Review Vol.83 No.1, 61-82.

[16] Ebimobowei, A. (2013). A Causality Analysis between Tax Audit and Tax Compliance in Nigeria. European Journal of Business and Management Vol.5 No.2, 107-120.

[17] Ericson, R., & Ariel, P. (1995). Markov-perfect industry dynamics: A framework for Empirical Work. Review of Economic Studies 62, 53-82.

[18] Fischer, W. M. (1992). Detection probability and taxpayer compliance: A review of the literature. Journal of Accounting Literature 11(1), 1-46.

[19] Frank, M. M., Lynch, L. J., & Rego, S. O. (2009). Tax Reporting Aggressiveness and Its Relation to Aggressive Financial Reporting. The Accounting Review, Vol. 84, No. 2, 467-496.

[20] Freedman, J., Loomer, G., & Vella, J. (2009). Corporate Tax Risk and Tax Avoidance: New Approaches. BTR No.1.

[21] Graham, J. R., & Tucker, A. L. (2006). Tax Shelters and Corporate Debt Policy. Journal of Financial Economics, Volume 81 Issue 3, 563–594.

[22] Gupta, S., & Newberry, K. (1997). Determinants of the variability in corporate effective tax rates: Evidence from longitudinal data. Journal of Accounting and Public Policy vol. 16, issue 1, 1-34.

[23] Hanlon, M., & Heitzman, S. (2010). A Review of Tax Research. Journal of Accounting and Economics, 127-178.

[24] Hasseldine, J. (1993). How do revenue audits affect taxpayers compliance? Bulletin for International Fiscal Documentation, 424-435. Jovanovic, B. (1982). Selection and the evolution of industry. Econometrica 50, 649-670.

[25] Kar, D., & Spanjers, J. (2014). Global Financial Integrity. "Illicit Financial Flows from Developing Countries: 2003-2012.

[26] Kenneth J, A. (1962). The Economic Implications of Learning by Doing. American Economic Review 29, 155-173.

[27] Lisowsky, P. (2010). "Seeking Shelter": Empirically Modeling Tax Shelters and Examining Their Link to the Contingent Tax Liability Reserve. The Accounting Review Vol. 85, 1693-1720.

[28] Loderer, C., & Waelchli, U. (2009). Firm Age and Performance. SSRN.

[28] Markle, K. S., & Shackelford, D. A. (2012). Cross-Country-Comparisons of Corporate Income Taxes. National Tax Journal, 493–528.

[29] Mills, L., Erickson, M. M., & Maydew, E. L. (1998). Investment in Tax Planning. Journal of the American Taxation Association, 1.

[30] Mohdalia, R., Isab, K., & Yusoffb, S. H. (2014). The impact of threat of punishment on tax compliance and noncompliance attitudes in Malaysia. Procedia - Social and Behavioral Sciences 164, 291-297.

[31] OECD. (2015). Reforms to the International Tax System for Curbing Avoidance by Multinational Enterprises. OECD Publishing.

[32] Omer, T. C., Molloy, K. H., & Ziebart, D. A. (1993). An Investigation of The Firm Size - Effective Tax Rate Relation In The 1980s. Journal of accounting, auditing & finance.-Thousand Oaks Vol. 8., 167-182.

[33] Palan, R. (2009, October 01). History of tax havens. Retrieved from historyandpolicy: http://www.historyandpolicy.org/policy-papers/papers/history-of-tax-havens

[34] Park, C. G., & Hyun, J. K. (2003). Examining the determinants of tax compliance by experimental data: a case of Korea. Journal of Policy Modeling, 673-684.

[35] Publish What You Pay Indonesia. (2015). Illicit Financial Flows And Tax Crime In Mining Sector.

[36] Rego, S. O. (2003). Tax-Avoidance Activities of U.S. Multinational Corporations. Contemporary Accounting Research Vol. 20 Issue 4, 805.

[37] Rego, S., & Wilson, R. (2012). Equity Risk Incentives and Corporate Tax Aggressiveness. Journal of Accounting Research 50, 775-810.

[38] Robinson, J. R., Sikes, S. A., & Weaver, C. D. (2010). Performance Measurement of Corporate Tax Department. The Accounting Review Vol 83 No.3, 1035–1064.

[39] Salihu, I. A., Obid, S. N., & Annuar, H. A. (2013). Measures of Corporate Tax Audit:

Empirical Evidence from An Emerging Economy. International Journal of Business and Society, Vol. 14 No. 3, 412 - 427.

[40] Sandmo, M. G. (1982). Income Tax Evasion: A Theoretical Analysis. Journal of Public Economics 1, 323-338.

[41] Sarker, T. K. (2003). Improving Tax Compliance in Developing Countries via Self-Assessment Systems - What Could Bangladesh Learn from Japan? Asia-Pasific Tax Bulletin Vol. 9, No. 6.

[42] Satyadini, A. E. (2018). Empirical Model of Tax Avoidance In Indonesia. Journal of Economy and Finance Studies, 52-69.

[43] Satyadini, A. E., Basir, A., & Barata, A. (2019). Modern Customs Risk Management Framework: Improvement towards Institutional Reform. International Journal of Innovative Science and Research Technology , 60-69.

[44] Shaxson, N. (2011, January 9). Explainer: what is a tax haven? Retrieved from The Guardian: https://www.theguardian.com/business/2011/jan/09/explainer-what-is-tax-haven Sikka, P., & Willmott, H. (2010). The Dark Side of Transfer Pricing: It's Role in Tax Avoidance and Wealth Retentiveness. Critical Perspectives on Accounting. Critical Perspectives on Accounting, 42-56.

[45] Slemrod, J. (2007). Cheating Ourselves: The Economics of Tax Evasion. Journal of Economic Perspectives Volume 21, Number 1, 25-48. The International Consortium of Investigative Journalists. (2016). The Panama Papers. The International Consortium of Investigative Journalists.

[46] Torgler, B., & Schneider, F. (2006). What Shapes Attitudes Toward Paying Taxes? Evidence from Multicultural European Countries. IZA Discussion Paper No. 2117.

[47] Wilson, R. (2009). An Examination of Corporate Tax Shelter Participants. Accounting Review 84, 969-99.

[48] Witte, A. D., & Woodbury, D. F. (1985). The Effect of Tax Laws and Tax Administration on Tax Compliance: The Case of The U.S Individual Income Tax. National Tax Journal Vo. 38 No.1, 1-13.

[49] Yitzhaki, S. (1972). A Note on Income Tax Evasion: A Theoretical Analysis. Journal of Public Economics, 323-338.

[50] Zimmerman, J. L. (1983). Taxes and firm size. Journal of Accounting and Economics, Vol. 5, Issue 1, 119-149.