

**AGENCY, LEVERAGE POLICY and TAX AGGRESSIVENESS DURING  
TRANSITION PERIOD: EVIDENCE FROM INDONESIA**

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## Abstract

This study is aimed (1) to evaluate whether decreasing corporate income tax rates will drive towards tax payment compliance; and (2) to investigate the appropriateness of tax rate using evidence from Indonesia an example of a developing country. Aggressive tax policy occurs as a tax payment is seen to be a burden for companies (Chen et al 2010) where corporate income tax is primarily seen as the process of transferring wealth from the company to the government. Aggressive tax policy of the company exists where tax payers prepare different reports between tax and mandatory financial reports (Frank et al 2009).

This study discusses tax aggressiveness, agency problems and leverage in a setting of developing country during a transition period related to the changes in corporate income tax. A quantitative approach is applied; the study uses Indonesian listed manufacturing companies as the sample. Independent variables will be agency and leverage policy; while tax aggressiveness is the dependent variable; and lastly control variables related to tax sheltering activities were also included.

Increasing managerial ownership of agency theory exhibits higher level of tax aggressiveness while increasing debt financing of leverage policy triggers decreasing level of aggressiveness. Decreasing corporate income tax rates has driven toward lower level of tax aggressiveness, meaning that Government's objective in increasing tax compliance was accomplished. It is found out that accruals quality makes a significant contribution to tax sheltering activity. Significant changes related to corporate income tax rate have been made though at the same time tax revenue is still vital in generating country revenue.

**Keywords:** *Agency and leverage policy; tax aggressiveness; managerial ownership, Indonesian manufacturers, publicly listed company; Indonesia*

# AGENCY, LEVERAGE POLICY and TAX AGGRESSIVENESS DURING TRANSITION PERIOD: EVIDENCE FROM INDONESIA

## 1. Introduction

The 1986 *US Tax Reform Act* has an impact on corporate saving as the component of National Income (NI) calculation (Poterba et al 1987). Higher corporate tax affects lower corporate and private saving, furthermore reductions in corporate tax rates tends to result in increasing corporate tax payers' compliance as corporate income tax is mostly considered by the taxpayers as the process of transferring wealth from the company to the government. Tax payment is seen as a burden for companies (Chen et al 2010), therefore, it is commonly believed that management conducts an aggressive tax policy in fulfilling the mandatory requirements. "Tax aggressiveness" is defined as an aggressive tax act is aimed to reduce taxable income with appropriate tax planning classified or non-classified tax evasion (Frank et al, 2009). An aggressive tax *act* occurs when tax payers are believed to prepare different financial reports between tax and mandatory financial reports purposes (Frank et al, 2009).

Indonesia experienced gradual changes to corporate income tax rates during 2008 to 2010, the tax rate applied to the Indonesian companies were 30%, 28% and 25% consecutively (as per Article 17 of the *Income Tax Act*). In 2009, public companies listed in the Indonesia Stock Exchange (ISX) (listed companies) receive tax incentives 5% lower from than the active or applied rates applied by the Indonesian tax authority (Directorate General of Taxation) in cooperation with the Indonesia Stock Exchange, meaning that applicable effective income tax rate for listed companies in 2009 is equal to 23% and 20% in 2010. This gradual process of corporate income tax changes is expected to provide an opportunity for companies to take positive actions related to tax payment. It is expected that the declining corporate income tax rates applied by the authority would increase tax compliance. This is consistent with a previous study by Allingham and Sandmo (1972). This study discusses agency problems associated with leverage and related tax aggressiveness in the Indonesian listed companies, a case for a developing country, during two consecutive transition periods (between 2008 and 2010).

As Chen et al 2010 has described earlier that there is an association between tax rate changes and the compliance evidence, this study has two different objectives: (1) it is aimed to evaluate whether there is a relationship between reduction corporate in corporate income tax with tax payer compliance; and (2) using taxpayer compliance evidence, this study will assess the appropriateness of corporate income tax rate changes evidence from the Indonesian listed companies during the transition period occurred between 2008 and 2010. In order to do this, three research questions are asked: (1) whether applicable tax rates could increase tax compliance?; (2) whether agency factors influence corporate tax policy during the transition period; and (3) whether leverage affect corporate tax policy as a way to gain tax benefit?

Ownership structure of companies listed in the Indonesia Stock Exchange (IDX) is dissimilar to listed companies in the developed country where most of the research on agency theory and tax aggressiveness has been conducted, e.g. listed company in the New York Stock Exchange (NYSE) have clear limitations on the task separation between owners and managers, in the contrary Tandelilin and Wilberforce (2002) find that Indonesia does not have a clear separation of duties between shareholders or owners and managers though regulations on corporate governance for the Indonesian listed companies have stated this task

separation clearly (the 2006 Indonesia's Code of Good Corporate Governance). In addition, ownership structures of the Indonesian listed companies have not changed significantly since the Initial Public Offerings (IPO), as the majority are still held by institutional or block holders that are affiliated with the founders or major shareholders while general public holds the remaining stocks (Tandelilin & Wilberforce, 2002).

Demsetz (1983) distinguishes company's characteristics into the two following classifications: (1) dispersed ownership; and (2) closely held ownership. The agency problem of a company with dispersed ownership often arises between management and shareholders (such as in the case of a listed company in the US). By contrast, the agency problem of a company with closely held ownership tends to be restricted to stockholders (i.e. between controlling and minority shareholders). Such characteristics are found in Indonesian listed companies and are known as conglomerates (*konglomerasi*).

This study uses manufacturing companies listed on the IDX for the period between 2008 and 2010. The selection of manufacturing companies is in line with a study conducted by Zimmerman (1983) where it proposes that oil and gas companies and manufacturing firms have significantly higher worldwide tax rates than other firms. Listed companies are chosen based on where such companies obtain tax incentives (5% lower corporate income tax rate as compared with non-listed companies), as outlined in Article 17, paragraph 2b *Income Tax Act 7, 1983* and as amended by *Income Tax Act 36, 2008*.

## **2. Literature Review and Hypothesis Development**

Siegfried (1974), Zimmerman (1983), Scholes (1990), and Manzon-Plesko (2001) observe tax aggressiveness mostly in developed countries where both public and non-public listed companies were observed. In a case of opportunistic behaviour (manager interests), previous studies indicate that private firms are less aggressive than listed companies (Cloyd et al, 1996). On the other hand, in a case of shareholders' long term investment motivation. Chen et al. (2010) state that dominant family owned listed firms are less aggressive than non-family listed company This study discusses an agency problem in line with leverage policy associated with tax aggressiveness in a setting of developing country applied to listed companies during transition period (corporate income tax rate changes within two consecutive periods).

### **2.1. Agency Theory**

When companies are getting bigger and more open (transparent) to public, separation of owners and corporation management will be more visible. Shareholders delegate management of the company's assets to a manager such as a Chief Executive Officer. Jensen (1986) explains that agency theory is concerned with the relationship between the owners (principal) and management (agent). Both parties are bound by a contract stating the rights and obligations of each party. In reality, managers, who normally are considered risk averse do not always maximize owners' wealth and this behaviour is referred to rational limitation or bounded rationality (Jensen, 1986). Limited by human nature, principals and agents look for opportunities to benefit themselves at the expense of the agency relationship.

If an indication of opportunistic behaviour exists then conflict between management and shareholders will emerge. Separate functioning of the ownership and management is often referred to as the separation of the decision making and risk functions of the firm (Jensen &

Meckling 1976). Managers who represent the company bear relatively no risk resulting from errors in decision making and the risk is entirely borne by the shareholders. As a result, managers, as decision makers, tend to perform opportunistically on their behalf (called as *management compensation plan* or *bonus plan hypothesis*). Furthermore, companies that have constraint tend to increase the use of debt financing to mitigate agency conflicts ((Jensen & Meckling, 1976); (Jensen, 1986); (Crutchley & Hansen, 1989); (Chen & Steiner, 1999)). Jensen (1986) also states that the existence of debt will be able to control the overuse of free cash flow by the managers (as they might use the free cash flow for unnecessary expenditures). Debt financing also plays an important role in agency conflict, where increasing managerial ownership is used as a way to mitigate agency conflict (Jensen et al, 1992). Companies increase managerial ownership in order to align managers' actions in accordance with shareholder expectations. This action could motivate, improve and promote the prosperity of shareholders performance better.

## **2.2. Tax Aggressiveness**

The definition of tax aggressiveness (Frank et al. (2009), is an action which is aimed to reduce corporate taxable income through tax planning methods whether they are classified or unclassified as tax evasion. Though not all of the actions taken by the companies in reducing corporate taxable income indicates a violation of the rules, all actions (related to the reduction in taxable income) taken by the company are assumed to be aggressive. Hite and McGill (1992) and Murphy (2004) state that aggressiveness in tax reporting is a situation where a company runs a particular tax policy (with the expectation to be missed or not to be audited by the authority body) where the companies run some potential risks related to their actions.

When deciding to undertake tax aggressiveness, a manager will make a calculation on cost and benefit analysis. Chen, et al, 2010 note that there are at least three benefits for tax aggressiveness:

1. The less tax paid by the company, the higher cash benefits provided to the owners or shareholders;
2. Direct or indirect benefits will be obtained by the managers in terms of compensation from the principal (owners and shareholders) for taking aggressive tax action; and
3. The benefits of the opportunity for managers to do rent extraction such as earning management.

However, tax aggressiveness incurs some loses such as the chance or probability of sanctions or penalties from the tax authorities which could bring down the company's stock price as market responds to this opportunistic actions and where market might think that they are set by the manager for the purpose of rent extraction (Desai & Dharmapala, 2006).

## **2.3. The Problem of Rational Behavior**

Von Neumann and Morgenstern (2007) mention the "Robinson Crusoe" as "economy" and "social exchange economy". "Robinson Crusoe" Economy is an isolated single person driven by a 'single will' or 'single want'. It is related to given quantities of available commodities and wants. The problem of this is how to get an optimum satisfaction where personal duty is included. Some elements are common to both with a maximum problem occurs in the social exchange economy. The challenge is to obtain an optimum result as this becomes harder as each participant makes optimal efforts to optimize his/her benefits.

Allingham and Sandmo (1972) describe a tax policy decision as a decision which is taken under uncertainty, and where loop-holes are a tool in determining tax planning. In most of the cases (especially in the developing country scenario) audit from the tax authorities was unable to give direct penalty. The opportunity then becomes a way in determining tax policy where management and shareholders take a risk to maximize this loop hole. Furthermore, this can potentially drive toward bribery to tax officials as culture of tax evasion will be shaped when it becomes commonplace (Joulfaian, 2009). All is axiom as based on the rational behavior problem.

#### **2.4. Hypothesis Development**

Gradual change of corporate income tax rate is by the market to be a wise decision as it provides an opportunity for companies to take corporate action. It is expected that a decline corporate income tax rates could increase tax compliance. This is consistent with the problem of rational behaviour discussed earlier (Allingham and Sandmo (1972) and Clotfelter (1983)) in supporting econometric evidence where level of aggressiveness is sensitive to changes in tax rate. Taxpayers are less aggressive as tax rates go down. The first hypothesis proposed from this study is where lower tax rates will lower level of aggressiveness.

***Hypothesis 1: Decreasing of tax rates applied to the Indonesian listed companies drive lower levels of tax aggressiveness***

Crocker and Slemrod (2005) describe that reducing tax evasion will be effective through the penalties imposed on tax managers rather than the shareholders. It becomes an indication that managers play an important role in tax aggressive activity. Chen et al.(2010) indicates that non-family company have a higher level of tax aggressiveness than a family owned company. This condition may occur due to agency issues which occur more in non-family companies. Incentives policy is not effective in the agency problem as this requires additional policy through increasing managerial ownership. Hypothesis 2 is where increasing managerial ownership will lower level of tax aggressiveness.

***Hypothesis 2: Increasing of managerial ownership exhibits lower the level of tax aggressiveness***

Jensen (1986) state that the existence of debt will be able to control the overuse of the excess of free cash flow by the management. In addition to this Graham (2002) state that debt provides tax benefit as a result from deducting interest from taxable earnings. By deducting a single dollar of interest paid by the company, a firm reduces its tax liability (defined as being tax aggressive), therefore company will use this strategy as long as optimum solution is achieved. Furthermore Graham (2002) mentions that a firm will use debt aggressively until it expects to reduce the tax benefits that they gain for. Hypothesis 3 is developed where debt financing will decrease/increase level of aggressiveness depending on marginal benefits of a company.

***Hypothesis 3: Increasing/decreasing of debt financing trigger to increase level of aggressiveness***

#### **3. Sample and Research Design**

This study uses a quantitative approach where ordinary least square (OLS) and logistic regression are used for the purpose of data analysis. Unit analysis is the Indonesian

companies listed in the Indonesia Stock Exchange (IDX). These listed companies receive tax incentives 5% lower from its active or applied rates meaning that applicable effective tax rate in 2009 is equal to 23% and 20% in 2010. The OLS model was chosen in estimating parametric variables that are not explained in the regression model (Gujarati & Porter, 1992). Agency and leverage policy were chosen as the independent variables while tax aggressiveness was chosen as the dependent variable. The model uses control variables which are related to tax sheltering activities in the company.

### 3.1. Sample Selection

Data collected for this study were taken from OSIRIS database with its recent update published in June 2012. Number of data selected with search code of 479 which is “Indonesian companies”. Then, it specifies to manufacturing company with additional search code in Industry “manufactur\*” in order to accommodate certain type of classification such as manufacture or manufacturing. As a result there are 222 companies taken out from this database.

The selection of manufacturing company as an object of study options is in line with the conclusion of the research made by Zimmerman (1983). The suitable sample figures out the effect of tax policy. Manufacturing has significant number of fixed assets where it produces significant of book tax different policy between commercial and tax report. Though, OSIRIS accommodates delisting and just recent listing companies but for the purpose of this study, both criteria were excluded from the sample. In order to get balanced-panel data, incomplete data between years 2008 and 2010 were omitted. This will reduce number of sampling companies from 222 companies to 139 companies or 417 data panel within 3 years. Data was selected as based on positive net income within 3 consecutive years (2008, 2009 and 2010), therefore it is also important to notify tax expenses in the company. Due to these 42 companies were excluded during this process. This has made final result of the sample becomes 97 companies or 291 data panel within 3 years’ time frame. Final stage of data collection is to ensure that the data get ticked for all of the criteria needed. 1 company was excluded from this process “Astra International Tbk. PT (ASII)” as it has miscellaneous credit institution business. Total number of sample is equal to 96 companies or 288 panel data (within 3 consecutive years). The information provided in OSIRIS database is supported with additional data collected using the following websites: (1) Indonesia Stock Exchange (IDX) website; and (2) Company’s websites.

**Table 1: Sample Determination  
Indonesian Listed Companies  
In the period between 2009 and 2010**

Criteria		Number
Manufacturing Company	222 companies x 3 years	666
Less: Data Availability (2008,2009,2010)	83 companies x 3 years	(249)
Balance	139 companies x 3 years	417
Less: Positive Net Income within 3 years (2008,2009,2010)	42 companies x 3 years	(126)
Balance	97 companies x 3 years	291
Less: Error	1 companies x 3 years	(3)
Total	96 companies x 3 years	288

### 3.2. Research Development

This research applies a quantitative approach using ordinary least square (OLS). The model was chosen to estimate parametric variables that are not yet clear in the regression model (Gujarati & Porter, 1992). Agency and debt level were chosen as the independent variables while tax aggressiveness was chosen as a dependent variable, control variables related to certain aspects of the company were also under investigation. Many company that affect different reporting between tax and financial report becomes proxies related to variations in tax sheltering activity in the company but in this research, not to be main topic (Desai & Dharmapala, 2006). Using some control variables have a consequence in isolating the effect of changing transition period instead (Jimenez-Angueira, 2008).

#### 3.2.1. Dependent Variable: Level of Tax Aggressiveness

From tax policy purposes, level of tax aggressiveness notifies the result of tax book differences. Although tax sheltering activity is hard to quantify but book tax gap could become an indicator of level of aggressiveness (Frank, et al, 2009). At the same time, it uses for earnings management measurement (Plesko, 2004). Desai and Dharmapala (2006) offer proxy to focus on accruals for tax sheltering activity measurement. It develops from Manzon Jr and Plesko model (2001). Calculation for the book tax different element is shown below:

$$BTD\_MP_{i,t} = \beta_1 TA_{i,t} + \mu_i + \epsilon_{i,t}$$

$BTD\_MP_{i,t}$  is book tax gap for company  $i$  in year  $t$  scaled by the lagged total assets;  $TA_{i,t}$  is total accruals for company  $i$  in year  $t$  scaled by the lagged total assets;  $\mu_i$  is the average value for company  $i$  within sample period 2008-2010; and  $\epsilon_{i,t}$  is the deviation of residual in year  $t$  from company  $i$ 's average residual. Desai and Dharmapala (2006) exclude total accrual as an indication of earnings management. The result can be interpreted as tax sheltering activity measurement. This could be exhibited as follows:

$$BTD\_DD_{i,t} = \mu_i + \epsilon_{i,t}$$

$BTD\_DD_{i,t}$  was chosen as a measurement as this indicates tax sheltering activity better. Higher result of  $BTD\_DD_{i,t}$  indicates higher level of tax aggressiveness.

#### 3.2.2. Independent Variables: Agency and Debt

Listed company that has agency problem could reduce the problem through managerial ownership and debt financing (Jensen, 1986); (Jensen, et al, 1992). Debt financing is seen as a standing theme as Graham (2002) state that debt provides tax benefit where a company will use this strategy as long as optimum solution is achieved. Concentration of ownership in many cases is a good subject to test agency theory (Jensen & Meckling, 1976).  $MO_{i,t}$  = percentage of shares owned by management for company  $i$  in year  $t$ .

$$MO_{i,t} = \frac{\text{Total shares of managers}_{i,t}}{\text{Total outstanding stocks}_{i,t}}$$



This study uses leverage ratio to measure debt financing. Graham (2002) includes this variable for his study.  $Lev_{i,t}$  = total debt for the company  $i$  in year  $t$  to total of equity for company  $i$  in year  $t$ .

$$Lev_{i,t} = \frac{\text{Total of debt}_{i,t}}{\text{Total of equity}_{i,t}}$$

### 3.2.3. Control Variables: Attributes related to the Company

Several attributes related to the Company affect different reporting outcome between tax and financial report becomes proxies related to tax sheltering activity in the company (Desai & Dharmapala, 2006). Below are the suggested components:

#### a. Size of the Firm (Size)

Size of the company is related to the amount of total assets of the company (Brigham & Houston, 2011). The model uses the natural logarithm of total assets for company  $i$  in year  $t$  in its calculation.

$$Size_{i,t} = \ln(\text{Total assets}_{i,t})$$

#### b. Profitability (ROA)

Profitability of the company could be used as an indicator in how well management uses total asset in generating profit (Brigham & Houston, 2011).  $ROA_{i,t}$  = it compares earnings before tax (EBT) for company  $i$  in year  $t$  to total assets for company  $i$  in year  $t-1$ .

$$ROA_{i,t} = \frac{\text{Earnings before tax}_{i,t}}{\text{Total assets}_{i,(t-1)}}$$

#### c. Fixed Assets (PPE)

Total value of fixed assets both tangible and intangible indicates company's business nature as compared to total assets (Brigham & Houston, 2011). PPE Ratio  $_{i,t}$  = total fixed assets for company  $i$  in year  $t$  to total assets for company  $i$  in year  $t-1$  using "PPE Ratio" or property, plant, equipment, intangibles and others fixed assets ratio.

$$PPE\ Ratio_{i,t} = \frac{\text{Total fixed assets}_{i,t}}{\text{Total assets}_{i,(t-1)}}$$

d. Business Growth (Growth)

Potential business growth of a company as defined as “Growth Ratio” is measured using the gap between market value and book value of equity (Brigham & Houston, 2011). It was formulated as total market value of equity for company *i* in year *t* to total book value of equity for company *i* in year *t*.

$$\text{Growth Ratio}_{i,t} = \frac{\text{Total market value of equity}_{i,t}}{\text{Total book value of equity}_{i,t}}$$

e. Audit Quality (Audit)

Francis et al (1999) state that reputable auditor constrains aggressive and potentially opportunistic reporting of accruals. This study gives label over accounting firm provided audit service toward company. It classify as dummy variable with the following category:

0 = audited other than “the big four” (PwC, E&Y, KPMG, Deloitte); while 1 = audited “the big four” (PwC, E&Y, KPMG, Deloitte).

f. Corporate Governance (CG)

John and Senbet (1998) state that board effectiveness manages interaction between internal and external mechanisms which are measured using independence, size and composition of board. This study uses number of independent commissioner to capture the association between the variables. It is formulated as number of independent commissioner for company *i* in year *t* to total number of board of commissioner for company *i* in year *t*. It uses the sign of “CG” or corporate governance.

$$\text{CG}_{i,t} = \frac{\text{Total number of independent commissioner}_{i,t}}{\text{Total number of board of commissioner}_{i,t}}$$

g. Cash Flow (CF)

Cash flow arrangement is used mostly by policy makers including tax policy makers. Timing in transaction could provide different effects in tax as transaction, essentially providing taxpayers with the opportunity to elect the most favourable tax treatment for any particular asset (Auerbach & Bradford, 2004). Therefore, it is needed to determine cash flow in this study as control variable. This study uses CF of company *i* in year *t* as provided in the OSIRIS database.

h. Accruals Quality (AQ)

Francis et al (2005) state that accruals represent management choices in managing company, this could reflect opportunistic and efficiency (performance measurement) behaviours of the managers as the change in sales revenue and PPE are important in forming expectations about

current accruals.  $TCA_{i,t}$  = total current accruals for company  $i$  in year  $t$  scaled by total sales for company  $i$  in year  $t$  to notify current accruals. It uses TCA for total current assets.

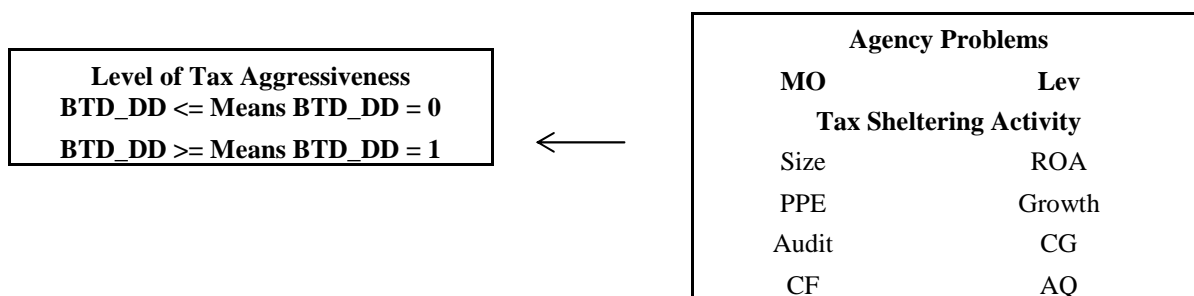
$$TCA_{i,t} = \frac{\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} - \Delta STDEBT_{i,t}}{\text{Total Sales}_{i,t}}$$

### 3.3. Research Model

The two models that were constructed for this study are expected to accommodate a change in tax rate during the transition period. It includes year to notify the first hypothesis with lower tax rates is expected to affect lower level of aggressiveness. The models were run in two steps to ensure that the hypotheses were tested properly. Firstly, logistic regression is conducted by including control variables; this is done so by including proxy for variations in tax sheltering activity. All of the selected components will be tested for representativeness and whether related factors significantly influencing the dependent variable. Logistic regression is conducted in three different ways in capturing the three logistic regression transition years. These are during period 2008-2009, period 2009-2010 and all of the years during 2008-2010.

It is expected that this model will capture specific feature in each change and all changes.  $BTD\_DD_{i,t}$  is categorized based on level of tax aggressiveness.

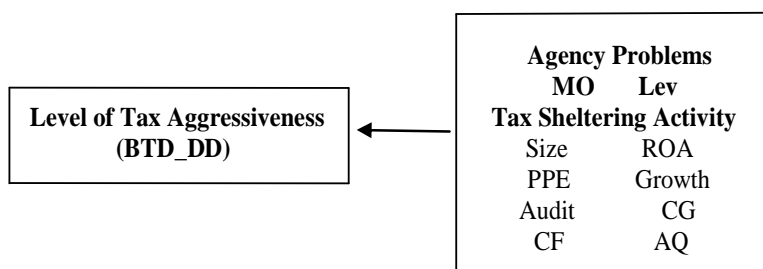
**Figure 1: Regression Logistic Model (Model 1)**



Company with high profitability is assumed to be more aggressive in tax payment as compared to those who have less profitability. Those who have  $BTD\_DD_{i,t}$  scores below means are classified as 0 (low level of tax aggressiveness), whereas those who have  $BTD\_DD_{i,t}$  higher than mean scores are classified as 1 (high level of tax aggressiveness). The model was run in hierarchical order using logistic regression with control variables were included earlier and then the independent variables later. It is aimed to test proxy related to variations in tax sheltering activity which were selected from the company with the purpose in strengthening the independent variables.

$$P(0/1)BTD\_DD_{i,t} = \beta_0 + \beta_1 MO_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Size_{i,t} + \beta_4 ROA_{i,t} + \beta_5 PPE\ Ratio_{i,t} + \beta_6 Growth\ Ratio_{i,t} + \beta_7 Audit\ Quality_{i,t} + \beta_8 CG_{i,t} + \beta_9 Cash\ Flow_{i,t} + \beta_{10} TCA_{i,t} + Year\ Dummies + \epsilon_{i,t}$$

**Figure 2: OLS Research Model (Model 2)**



Secondly, this study is aimed to test theoretical justification where lower tax rates are expected to have an influence in lowering level of aggressiveness. Similar to the previous model, the second model uses a hierarchical regression approach where the regressions are broken down into two different levels in line with tax rate changes. The regression was run separately for changing rates in 2008 and 2009 then 2009 and 2010. Model 1 figures out for year between 2008 and 2009. It notifies rate change from 30% to 28%. Year will be categorized as follows:

0 = 2008 before rate change (BC); and 1 = 2009 after rate change (AC)

Model 2 figures out for year 2009 and 2010. It notifies rate change from 28% to 25%. Year will be categorized as seen below:

0 = 2009 before rate change (BC); and 1 = 2010 after rate change (AC)

The next step is where hierarchical linear models were compared to each other with the purpose in notifying significant changes which might occur. Then, the last model is where all of the components of variables were tested for level of robustness change using Ordinary Least Square for all years (2008-2010). The model used for this study is outlined as follow:

$$\begin{aligned}
 \text{BTD\_DD}_{i,t} = & \beta_0 + \beta_1 \text{MO}_{i,t} + \beta_2 \text{Lev}_{i,t} + \beta_3 \text{Size}_{i,t} + \beta_4 \text{ROA}_{i,t} + \beta_5 \text{PPE Ratio}_{i,t} \\
 & + \beta_6 \text{Growth Ratio}_{i,t} + \beta_7 \text{Audit Quality}_{i,t} + \beta_8 \text{CG}_{i,t} + \beta_9 \text{Cash Flow}_{i,t} \\
 & + \beta_{10} \text{TCA}_{i,t} + \text{Year Dummies} + \epsilon_{i,t}
 \end{aligned}$$

#### **4. Results and Findings**

Logistic regression was conducted in ensuring tax sheltering activity in the company. High and low categorical of tax aggressiveness was conducted earlier. It is based on interaction means between profitability of company and its tax policy. The result shows an average score of DD\_BT D id equal to 0.08045, for DD\_BT D which are less than the average score is classified as low tax aggressiveness and those which are higher than the average figure are classified as high tax aggressiveness. As seen in Table 2, all of selected variables were found to be significantly predict tax sheltering activity,  $\chi^2=212.504, p<.001$ . The result shows that 62.8% of the variance related to tax sheltering activity (Nagelkerke's  $R^2$ ) where the model correctly classified 91% of highly predicted score and low level of tax aggressiveness.

It is found out in Table 2 that accruals quality has significant contribution to tax sheltering activity; however this could underestimate the results when B-value and standard error (SE) is

large. Increase in accruals quality score was associated with a decreased probability of a tax sheltering activity,  $\exp(B) = 0.000$  (less than 1). Permanent and temporary enclosures related to tax differences (tax sheltering activity) are more detail as differences in reporting methods between financial accounting standard and tax reporting standard have indicated being less aggressive in its tax policy. All factors such as: size, ROA, growth, and CF show significant results. Larger companies indicate less aggressive in tax policy as there is availability of expert teams on taxation. Profitable company becomes more aggressive in tax policy as this related to tax payment burden for the company. More potentially, growth of the company indicates more aggressive in tax policy. Higher cash flow of the company shows more aggressive in tax payment with the reason of being tax cost efficient.

**Table 2: Results of Logistic Regression of Tax Sheltering Activity**

	B	SE	Wald	exp(B)	B	SE	Wald	exp(B)
Size	<b>-1.634***</b>	.337	23.545	.195	-.511	.372	1.891	.600
ROA	<b>.820*</b>	.361	5.167	2.271	<b>1.400***</b>	.370	14.343	4.056
PPE	-.674	.518	1.692	.510	-.871	.556	2.450	.419
Growth	<b>.183*</b>	.092	3.975	1.201	<b>.541***</b>	.122	19.668	1.718
Audit	-.137	.405	.114	.872	-.317	.464	.468	.728
CG	.472	1.354	.121	1.603	-.141	1.698	.007	.869
CF	<b>1.799***</b>	.322	31.305	6.046	<b>.855**</b>	.315	7.365	2.353
AQ	<b>-28.887***</b>	4.171	47.968	.000	<b>-36.351***</b>	5.347	46.213	.000
Year					-.084	.240	.122	.919
MS					-.475	1.003	.224	.622
Lev					<b>-7.754***</b>	1.517	26.134	.000
Constant	.416	2.744	.023	1.516	166.830	481.720	.120	2.841E+072
Nagelkerke's R Square	.628				.706			
-2LL $\chi^2$	<b>212.504***</b>				<b>179.176***</b>			
% Correct	91.0				88.9			

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 2 shows the model is correctly classified with 88.9% predicted high and low level of tax aggressiveness. All of the selected variables were found to predict high and low level of tax aggressiveness significantly,  $\chi^2 = 179.176$ ,  $p < .001$  with variance of 70.6%. All of the significant factors are with ROA, growth, CF and accruals quality while audit quality, size, CG and PPE provide insignificant results. The other significant factor which was not detected in the first model is leverage and not managerial ownership and year as an indication of tax rate change. The significant negative relationship for leverage indicates that more debt financing predicts less level of tax aggressiveness as taxable income is lower than it should be. Another possibility is with the existence of creditor participating to monitor company capital structure. The results show that lower level of corporate tax rate predicts lower level of tax aggressiveness, as the result provides insignificant relationship, this needs to be applied together with others types of tax instruments. In line with the agency theory, increase in managerial shareholders predicts decrease level of tax aggressiveness though it gives insignificant results; it indicates that managers have more responsibility related to company's reputation mainly for their interests.

Table 3 shows the comparison results between two consecutive years (2008-2009 and 2009-2010), it shows that tax rate change within two consecutive years provides stronger results than when it is run for the whole period. Period 1 notifies tax rate change from 30% to 28% for year 2008 and 2009, while Period 2 notifies rate change from 28% to 25% for year 2009 and 2010. The two models (as differentiated by the periods) show tax rate change in 2009 has stronger relationship than in 2010, despite insignificant results for changes in year for both models. With regard to tax rate change between 2008-2009 and 2009-2010, both models

indicate that decrease in tax rate increase tax compliance. This is also supported by the fact that six variables provide significant results in Model 1 but not in Model 2. The reverse change occurs in size and corporate governance. Larger companies are more stable in facing the tax rate change in 2009 and it is supported through an increase in tax compliance though it is insignificant. But, they do reversely responding to tax rate change in 2010 though with insignificant result. The independent commissioners as the expert team in the company give a way in an increase in tax compliance related to the phenomenon of tax rate change in 2009, reverse results found in 2010 though both are insignificant. It is related to corporate planning in managing tax rate change as no company has willingness to be investigated further due to restitution as this will be time consuming and involving many resources.

**Table 3: Results of Logistic Regression of Tax Sheltering Activity**

	Period 2008-2009						Period 2009-2010					
	B	SE	exp(B)	B	SE	exp(B)	B	SE	exp(B)	B	SE	exp(B)
Size	<b>-2.307***</b>	.469	.100	<b>-1.385*</b>	.557	.250	.287	.431	1.332	.618	.786	1.855
ROA	.616	.335	1.852	<b>1.122**</b>	.383	3.070	<b>68.772***</b>	16.391	15E14	<b>64.153***</b>	17.391	7.3E25
PPE	-.632	.597	.532	-.716	.635	.489	1.681	2.020	5.371	.846	2.144	2.329
Growth	-.074	.123	.929	.346	.184	1.413	-.247	.350	.781	.023	.413	1.023
Audit	-.378	.533	.685	-.284	.607	.753	.873	.902	2.393	.410	1.213	1.506
CG	.434	1.642	1.544	-.011	2.082	.989	-.291	3.524	.748	<b>-3.323*</b>	5.786	.036
CF	<b>2.538***</b>	.460	12.652	<b>1.636**</b>	.499	5.133	-.033	.258	.968	.004	.390	1.004
AQ	-	5.481	.000	-	6.792	.000	-	22.969	.000	-	24.734	.000
	<b>29.479***</b>			<b>35.723***</b>			<b>100.600***</b>			<b>103.083***</b>		
Year				-.154	.524	.857				-1.225	.925	.294
MS				-1.338	1.293	.262				.513	3.828	1.670
Lev				<b>-6.813**</b>	1.978	.001				-5.341	3.818	.005
Constant	1.235	3.590	3.440	312.395	1051.604	4.691E+135	-15.540**	7.119	.000	2443.222	1856.566	.000
Nagelkerke's R Square	.686			.737			.918			.926		
-2LL $\chi^2$	<b>124.122***</b>			<b>108.631***</b>			41.460			37.697		
% Correct	94.3			94.8			96.9			96.9		

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

**Table 4: OLS Model results (2008-2009 and 2009-2010)**

	2008-2009						2009-2010					
	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$
Constant	.067	.140		28.676	33.896		-.057	.037		3.827	8.793	
Year				-.014	.017	-.039				-.002	.004	-.007
MS				.009	.040	.012				.006	.011	.011
Lev				<b>-.185***</b>	.047	-.209				<b>-.029*</b>	.013	-.046
Size	<b>-.028**</b>	.009	-.217	-.014	.010	-.107	.000	.002	.005	.003	.003	.029
ROA	<b>.080***</b>	.016	.257	<b>.085***</b>	.016	.270	<b>.607***</b>	.022	.634	<b>.586***</b>	.024	.612
PPE	<b>-.086**</b>	.027	-.169	<b>-.092**</b>	.026	-.179	<b>-.026**</b>	.007	-.063	<b>-.027***</b>	.007	-.064
Growth	.003	.002	.056	<b>.007**</b>	.003	.141	.000	.001	.004	.001	.001	.027
Audit	.040*	.019	.110	.018	.020	.050	.009	.005	.033	.005	.005	.020
CG	.067	.067	.047	.009	.067	.006	.006	.018	.006	-.001	.018	-.001
CF	<b>.032***</b>	.006	.376	<b>.025***</b>	.006	.289	<b>.003*</b>	.002	.056	.003	.002	.043
AQ	<b>-.935***</b>	.068	-.663	<b>-.954***</b>	.068	-.677	<b>-1.010***</b>	.024	-.694	<b>-1.005***</b>	.025	-.691
R <sup>2</sup>	.624			.654			.950			.951		
F	<b>(df 8,183) 37.947***</b>			<b>(df 11,180) 30.994***</b>			<b>(df 8,183) 430.843***</b>			<b>(df 11,180) 317.144***</b>		

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Tables 4 and 5 outline the OLS Model results where Durbin-Watson's overall score for the model is equal to 1,637; this indicates that there is no autocorrelation with previous year data and linearity of the model. It has Variance Inflation Factor (VIF) lower than 10 which indicate that no serious multicollinearity problems occurred. The residual plot does not figure dispersed out which indicates there is no heteroscedasticity related to the variables. All of the variable components explain 68% of the tax aggressiveness reasons. Result of the model is significant with F (regression 11; residual 276) = 53,422 and t statistics in parentheses  $p < 0,001$ . Consistent with Model 1 (logistic regression), leverage provides significant negative relationship with tax aggressiveness, and insignificant results were found for managerial ownership and year as an indication of tax rate change.

**Table 5: OLS Model results (2008-2010)**

	B	SE	$\beta$	VIF	B	SE	$\beta$	VIF
Constant	.046	.101			11.196	14.364		
Year					-.006	.007	-.027	1.051
MS					.015	.028	.021	1.330
Lev					<b>-.176***</b>	.033	-.217	1.410
Size	<b>-.023***</b>	.006	-.198	2.421	-.009	.007	-.077	3.416
ROA	<b>.087***</b>	.014	.250	1.231	<b>.088***</b>	.013	.255	1.239
PPE	<b>-.065**</b>	.018	-.140	1.267	<b>-.067***</b>	.018	-.146	1.280
Growth	<b>.005**</b>	.002	.103	1.214	<b>.008***</b>	.002	.175	1.410
Audit	<b>.037**</b>	.014	.110	1.323	.014	.014	.042	1.555
CG	.065	.049	.050	1.106	.015	.048	.012	1.153
CF	<b>.027***</b>	.004	.350	2.136	<b>.020***</b>	.004	.251	2.465
AQ	<b>-.988***</b>	.053	-.698	1.091	<b>-.980***</b>	.051	-.692	1.110
R <sup>2</sup>	.647				.680			
F	<b>(df 8;279) 63.909***</b>				<b>(df 11;276) 53.422***</b>			
Durbin-Watson	1.637							

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Out of eight control variables, five of them have significant influence towards tax aggressiveness (ROA, growth, PPE, CF and accruals quality), while size, audit quality and



corporate governance provide insignificant results to tax aggressiveness. Different from Model 1, PPE provides significant negative result towards tax aggressiveness when all of the tax payers were combined (between more aggressive and less aggressive tax payers) PPE is more sensitive and it is not the case with when tax payers were separated (between more and less aggressive). Significant negative result of PPE means that the larger the amount of PPE of the company, the larger the amount of depreciation burden and the less aggressive the company.

## 5. Conclusion

This study is aimed to evaluate the appropriateness of corporate income tax rate changes in accordance with tax payer compliance, evidence from Indonesia. There were two period of tax rate changes covered in this study, period 1 notifies tax rate change from 30% to 28% between 2008 and 2009, while period 2 notifies rate change from 28% to 25% between 2009 and 2010. Based on the two models that have been presented earlier (logistic regression and ordinary least square models) applied to the Indonesian listed manufacturing companies, the following points are the summary of the study:

- (1) Based on Model 1 (logistic regression model), aggressive firms are more sensitive to leverage, size, ROA, growth, cash flow, and accruals quality. Leverage, size and accruals quality have significant negative relationship with the level of tax aggressiveness. Conducting Earnings Management and being tax aggressive has a close link, both are aimed to match company's pre-determined target. Companies who have high growth, ROA and CF tend to be more tax aggressive as they tend to reduce their tax burdens.
- (2) When differentiating tax rate changes into two periods (2008 and 2009, and 2009 and 2010), it is found out that aggressive firms are more sensitive with size of the company and cash flow during the first period (2008-2009). Having higher cash flow during the period of 2008-2009 is crucial (due to high uncertainty the company faces during the Global Financial crisis), therefore company needs to be more cautious in managing their tax payment. When the uncertainty is lifted, cash flow became insensitive with tax policy.
- (3) By combining the whole sample of companies as outlined in Model 2, it is found out that leverage, size, ROA, PPE, cash flow, and accruals quality significantly influence level of tax aggressiveness in the period between 2008 and 2009. Similar factor contribute significantly to the level of tax aggressiveness except for PPE in the period between 2008 and 2009.
- (4) Combining the two periods, it can be concluded that leverage, ROA, growth, cash flows and accruals quality have significant influence towards company's level of tax aggressiveness.

A final conclusion could be drawn from the study that accruals quality has significant negative contribution to tax sheltering activity. Decreasing corporate income tax rates has driven toward lower level of tax aggressiveness meaning that main objectives of Government's initiatives to increase tax compliance was accomplished. This must be seen in line with law enforcement, tax simplicity and better organization toward socialization to all tax payers. Increasing managerial ownership, better audit quality and corporate governance consistently do not provide significant influence towards higher level of tax aggressiveness meaning that manager motivation is still related with manager's self- interest for rent seeking.

Different results between Logistic Regression and OLS indicate that sensitivity between more and less aggressive tax payers does matter. However, it is also found out that increasing debt financing triggers decreasing level of aggressiveness meaning that creditor participation is important and needed in monitoring company's capital structure.

This study contributes to the current debate and business practices related to tax aggressiveness using Indonesia as an example of developing country where reducing corporate income tax rate is crucial where tax revenue is quite vital for the state revenue. The study provides additional findings related to researches on tax aggressiveness using developing country as a setting. This study is desirable due to the fact that previous studies were mostly using developed countries where background; and the development of society awareness on tax system are different.

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