

Analyst Coverage and Corporate Tax Aggressiveness in Indonesia Stock Exchange

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ABSTRACT

This research aimed to examine the effects of analyst coverage on corporate tax aggressiveness in emerging markets that stock prices did not reflect available information in the capital market. The samples were 537 companies listed on the Indonesia Stock Exchange from 2015-2016. The samples were taken based on the criterion set by the researcher. The data were obtained from financial statements and fact books published by the Indonesia Stock Exchange. Abnormal Book-Tax Differences (ABTD) was used as a proxy of tax aggressiveness. Analyst coverage was measured by average income predicted from the year (t-1). The equation model showed the effects of analyst coverage on tax aggressiveness using the logistic regression. The findings show that, in a weak form of market, analyst coverage has a positive effect on tax aggressiveness. It means analyst coverage encourages management to carry out tax aggressiveness. The impact is that after-tax income becomes higher, it also results in higher earnings per share, but the tax burden paid to the government is decreased.

Keywords: analyst coverage, corporate tax aggressiveness, Indonesia Stock Exchange

INTRODUCTION

In general, tax aggressiveness is a notorious effort done by corporate taxpayers to minimize their tax liabilities. It is by reducing income and incurring expenses without violating corporate taxation provisions at the risk of paying the penalty or suffering loss of reputation if the tax authority can reveal the fraud. There are some loopholes in the tax regulations which can be exploited by taxpayers to evade payment of taxes and minimize their liquidity problems (Wang, 2015). In addition to the liquidity problem, tax aggressiveness is also commonly associated with corporate capital structure and transfer pricing.

Tax aggressiveness, a common unscrupulous practice performed by corporate taxpayers to reduce tax liability, is generally carried out in three forms. First, it is performed by exploiting the loopholes in tax regulations. For example, they make use of events or transactions which have not been regulated by the

tax authorities. Second, it is performed by holding the revenue recognition of the current period in the open book past the end of the accounting period. It enables the company to accumulate more revenues from the next period. Third, the taxable income is estimated by deducting certain expenses which are not allowed by the tax regulation (Allen, Francis, Wu, & Zhao, 2016).

There are two types of tax aggressiveness. The first type is tax avoidance. It happens when the tax aggressiveness is done without violating the provisions of taxation. The second type is tax evasion. It occurs if the tax aggressiveness violates the provisions of taxation (Kurniawan & Nuryanah, 2017). In Brazil, tax avoidance is considered as a legal act. Meanwhile, tax evasion is regarded as an illegal act (Martinez & Ramalho, 2017). In China, taxpayers who evade tax payment or pay less than the stated tax amount due to miscalculation or other reasons can be imprisoned by the tax authorities for 3–5 years in certain cases. In general, it is believed that taxpayers can save

money from their tax evasion. Meanwhile, taxpayers committing tax avoidance face the potential risk of tax penalties, which, eventually, can increase their tax liabilities if the fraud is detected by the tax authorities (Wang, 2015).

Allen *et al.* (2016) defined tax aggressiveness as a kind of manipulation of taxable income through the management's aggressive tax planning. For example, it could be planning and doctoring lower tax liability than the actual tax amount that should be reported. This strategy could be considered tax evasion. Shareholders did not value tax aggressiveness because it could decrease the value of the company.

Moreover, since the management is taking the risk of violating tax provisions, the company may not be only penalized by the tax authorities. However, it can also more likely lose its reputation if the tax aggressiveness practices are exposed to the public (Hanlon & Slemrod, 2009). Nevertheless, the implementation of highly complex tax aggressiveness is frequently used by the company management to cover up the real conditions (Yee, Sapiei, & Abdullah, 2018).

To a certain extent, tax aggressiveness is beneficial for both the management and the shareholders (Halioui, Neifar, & Abdelaziz, 2016). The benefits obtained from tax savings can be transferred to the shareholders by the management (Kurniawan & Nuryanah, 2017). Conformity between accounting income and tax income forces the company to determine the size of income that is more important to manage by sacrificing other management business affairs.

Tax aggressiveness practices can lead to uncertainty in financial information, such as delaying the recognition of incomes or expenses. Thus, there is an asymmetric information relation that exists between the management and the investors. The published asymmetric information compels the management to be very careful in committing tax aggressiveness (Allen *et al.*, 2016).

Tax aggressiveness can raise company problems because shareholders and directors have their differences regarding the tax risks. Generally, shareholders can approve the directors' risky actions if they focus on maximizing profits and reducing tax payable. Thus, the actions satisfy the shareholders. However, based on company perspectives, the separation of ownership and control can lead to corporate tax decisions that reflect the directors' interests rather than those of the shareholders (Wahab, Ariff, Marzuki, & Sanusi, 2017).

Tax aggressiveness is also a management action that decreases taxable income through illegal tax planning activities. For example, taxpayers remove their earnings or profits overseas. Another example is when taxpayers claim excessive tax cuts and losses even though they are not entitled to them (Richardson, Taylor, & Lanis, 2016).

Financial analysts have a significant role in building the confidence of consumers (investors) in

the company's shares because not all investors have access to information about the company's stocks. The analyst coverage is often positively associated with a decline of the future share price, especially for companies with poor liquidity like stock price crash risk. This is because analyst coverage reveals relevant and quality financial information, as well as a build-up of bad information for readers of financial statements. As an intermediary for information and capital market monitoring, disclosure of the information is useful for investors to make decisions. On the other hand, the evidence shows that analysts tend to issue biased estimates and recommendations. It is in the hope of getting management support to gain access to personal information (He, Bai, & Ren, 2019).

Lee and So (2017) stated that the analyst coverage contained important information on the expected returns. It could be analyzed in terms of their abnormal and expected components. The results of their study showed that the increase of abnormal coverage followed the exogenous shock to underpriced stock. The increase could be a sign of future advancement in the company's fundamental performance. Furthermore, they suggested that return predictability was the result of analysts' work. It gave more coverage on underpriced stocks. In short, the analyst actions were very useful for estimating the expected returns. There was a potential inference problem when coverage proxies were used to study information asymmetry and dissemination.

Currently, there are three different views regarding the effect of analyst coverage on tax aggressiveness. Those are investor recognition view, information demand view, and market pressure view (Allen *et al.*, 2016). Within all these views, analyst coverage is used by the investors as the basis to determine the company values. To increase their awareness of the company's underlying financial statements, it may contain some acts of tax aggressiveness. In the investor recognition view, a more extensive disclosure done by financial analysts will constrain tax aggressive strategies performed by the management.

Similarly, in the information demand view, the investors want more certain financial information. However, the market pressure view has a different notion. It suggests that analyst coverage raises certain external market pressure. It forces the management to take necessary measures to avoid earnings disappointment. Therefore, it is suggested that when the investors want higher analyst coverage, they should request an explanation from the company's management particularly. It is because the analyst coverage proxies contain important information about expected returns (Lee & So, 2017). Besides, companies that are not adequately covered by the analysts may result in an information asymmetry relation (Nakazono, Koga, & Sugo, 2018).

In general, the financial analysts review the stocks and publish information about the condition of the company to the public. The information makes

the public becomes more aware of the company's practices, including its activities, which can be put under tax aggressiveness strategies. Based on investor recognition and information demand views, companies that practice tax aggressiveness may get a negative label, such as losing the company's reputation. Then, it constrains the company's decision to implement tax aggressive strategies. The more extensive the scope of the analyst coverage is, the more necessary the managers must explain their tax aggressiveness strategies, which are often too complicated to explain like to the shareholders. Therefore, to avoid information demands about tax aggressiveness, the management limits their tax aggressiveness actions (Allen *et al.*, 2016).

In contrast with investor recognition and information demand views, the market pressure view sees tax aggressiveness practices as the results of external pressure from the published analyst coverage. It forces the management to achieve the target (earnings) as presented by the analysts according to market expectations and avoid earnings disappointments (Kubick & Lockhart, 2017). However, analyst coverage does not always have a positive impact on a company. He and Tian (2013) examined the negative effect of analyst coverage on company innovation. They referred to it as "the dark side of analyst coverage". Their results showed that companies with a large number of analysts produce fewer patents with lower impact. This fact supported the idea that analyst coverage had a negative influence on company innovation. Besides, analysts impeded the innovation when the company faced a disappointing income (below the earnings target) and difficulty in conducting accrual-based earnings management.

Based on the market pressure view, higher analyst coverage compels the management to inflate the reported earnings. This view suggests that managers who are under pressure are more likely to use aggressive tax strategies for inflating income by exploiting their discretion in tax-related accounts (Allen *et al.*, 2016). Furthermore, corporate tax planning is a real economic activity that has implications for cash flow. This tax planning is another crucial tool that facilitates upward earnings strategy.

Non-transparency of the company's financial statements can be used to detect tax aggressiveness. However, the readability of financial statements is used by the management to disclose complicated financial policies as well as to cover their tax aggressiveness planning (Beuselinck, Blanco, Dhole, & Lobo, 2018). Furthermore, it is common to acknowledge the shareholders' intention to maximize the value of the company by minimizing tax payments (Ifurueze, John-Akamelu, & Iyidiobi, 2018). In other words, they somehow encourage companies to optimize tax aggressiveness.

In the weak form of the Efficient Market Hypothesis (EHM), it is suggested that the information reflected in the current stock prices is historical information. For example, there are past prices,

past trading volumes, and any other market-related information. It is further suggested that no form of technical analysis can be effectively used to help investors in making trading decisions (Kofarbai & Zubairu, 2016). In this capital market situation, analyst coverage will put pressure on the management to conduct tax aggressiveness to boost earnings (Allen *et al.*, 2016).

Although there is the considerable number of research on determinants of tax aggressiveness, it is still unclear whether analyst coverage made by financial analysts (the key information mediators between companies and investors) should encourage or constrain corporate tax aggressiveness (Hanlon & Heitzman, 2010; Graham, Hanlon, Shevlin, & Shroff, 2014). Analyst coverage, one of the determinants of tax aggressiveness, actively tracks, observes and publishes expert opinions, or analyses about a company and its stocks based on public data. The data includes the company's financial statements, tax returns disclosures, and other necessary data for the company and its shareholders (Hanlon & Heitzman, 2010; Chun & Shin, 2018). As mentioned earlier, analyst coverage can serve as the restrainer or the encourager of corporate tax aggressiveness (Graham *et al.*, 2014). Previous researchers on this topic indicate the analyst coverage has constraining effects on tax aggressiveness (Allen *et al.*, 2016).

One of the interesting residual problems is whether analyst coverage encourages tax aggressiveness in an emerging capital market with restricted information. In emerging stock markets, the current stock price is believed to reflect only the related historical information (Tıtan, 2015). If the analysts only use the fundamental analysis, stock prices can be determined as undervalued or overvalued. Applying the fundamental analysis ideas, an investor generally employs two strategies. It is to buy when the stock price is below its intrinsic value and to sell when the stock price is above its intrinsic value to obtain trading profits when the disparity is eliminated (Kofarbai & Zubairu, 2016). Within the research of the financial analyst practices, empirical evidence shows that the available information is efficient in emerging stock markets. The stock price manipulation by financial analysts (and other intermediaries) is a common issue (Shamshir & Mustafa, 2014).

In Indonesia, this topic has triggered many researchers. Ady (2017) mentioned that the Indonesian capital market was still at a weak efficiency level after they examined the level of Indonesian capital market efficiency to analyze stocks and generate profits based on individual investor behaviors. Similarly, Budihargono, Samuel, and Basana (2017) concluded that the Indonesia Stock Exchange was efficient in the weak form. This means the movement of stock prices in the Indonesia Stock Exchange was not random. The historical information about stock prices in the past could be used to predict their future movements.

A different conclusion is reported by Nasution (2015). The researcher suggested that the Indonesian

capital market was already efficient at a semi-strong form hypothesis. After analyzing company profits from published financial statements, the researcher concluded that efficiency was reflected in the availability of relevant information for investors that might affect stock prices.

In contrast, Kusumayanti and Suarjaya (2018) related the movement of stock prices with a major political event, such as the announcement of Trump's victory in the 2016 U.S. presidential election. They found significant abnormal returns on the Indonesia Stock Exchange, which occurred on the event day and after the event day. It indicated that the market was inefficient because of the prolonged market reaction.

Next, Graham *et al.* (2014) stated that media disclosure had a negative effect on management to carry out tax aggressiveness. Meanwhile, Beuselinck *et al.* (2018) agreed that the readability of financial statements had a positive effect on tax aggressiveness. To cope with the differences on this topic, Allen *et al.* (2016) proposed two hypotheses. First, analyst coverage negatively affected tax aggressiveness from investor recognition and information demand views. Second, from the market pressure view, the analyst coverage positively influenced tax aggressiveness. Their results confirmed that the first hypothesis was accepted, and the second hypothesis was rejected. Furthermore, based on observations, the stock market in Indonesia had not been categorized as a strong form, so that stock trading decisions still used technical and fundamental analyses.

From the aforementioned previous research related to the efficient-market hypothesis, it is generally perceived that the Indonesia Stock Exchange is not in the strong form category. In the weak form, stock prices are reflected from past information so that stock prices can be predicted from previous price fluctuations. In this case, analyst coverage cannot influence stock prices. However, in the semi-strong form, stock prices are not only reflected from past information, but also the available public information such as the financial statements on the market. In this form, coverage analysts can put pressure on the management to report high earnings. Thus, it may have positive effects on stock prices. This pressure, eventually, can encourage the management to carry out tax aggressiveness, which results in a lower tax burden and higher after-tax income. This kind of information certainly pleases shareholders.

The researcher aims to examine the relationship between analyst coverage and tax aggressiveness in the Indonesia Stock Exchange. It is also to ascertain whether analyst coverage inhibits or encourages the management to implement tax aggressiveness. Furthermore, the researcher also wants to explore whether this research draws similar conclusions with those previous research as it is carried out on markets with different efficiency levels. One of the previous studies on the market form is the one by Allen *et al.* (2016), who strongly concluded that analyst coverage limited tax aggressiveness. Thus, the hypothesis of

this present research is as follows:

H1 : Analyst coverage has positive effects on tax aggressiveness

METHODS

This present research analyzes the reports and notes stated in the financial statements of 578 companies listed on the Indonesia Stock Exchange in 2015-2016. The data are obtained from financial statements and fact books published by the Indonesia Stock Exchange. The samples are taken based on the criterion that the companies have complete data needed in the research. The results show that 41 companies do not have complete data. So, the total samples are 537 companies, representing all industrial sectors listed on the Indonesia Stock Exchange.

To identify the practice of tax aggressiveness within a company, the researcher measures its book-tax differences. For example, it can be the disparity between taxable profits and accounting profits. It can be considered as abnormal when its value exceeds the book-tax differences allowed by tax regulations. Furthermore, this Abnormal Book-Tax Differences (ABTD) is used as a proxy for tax aggressiveness. Thus, tax aggressiveness is measured by ABTD (Koubaa & Jarboui, 2017). The value of ABTD is an error (ϵ) as shown in Equation (1).

$$BTD = \beta_0 + \Delta REV + PROFIT + \Delta INV + Lag BTD + \epsilon \quad (1)$$

It means:

- BTD = Total book-tax differences for the company *i* in year obtained from the differences between pretax book income and taxable income
- ΔREV = the change in revenue from year *t-1* to year *t*
- PROFIT = a binary variable, positive pretax income and zero otherwise
- ΔINV = the change in investment in gross property, plant, and equipment from year *t-1* to year *t*
- Lag BTD = reported book-tax differences in year *t-1*
- ϵ = residual

Analyst coverage is measured based on an estimated average of the 12 monthly numbers of earnings. The results are considered as raw data from the analyst coverage (He & Tian, 2013). The analyst coverage is influenced by the firm size, trading volume, liquidity, and company beta (Lo, 2017). In this present study, the analyst coverage is measured by Earning per Share (EPS), which is the average income predicted from the year (*t-1*). An estimated average yearly income is obtained through Equation (2).

$$AC = \beta_1 + \beta_2 MZ_{(t-1)} + \beta_3 TV_{(t-1)} + \beta_3 CR \quad (2)$$

It means:

AC = Analyst Coverage

MZ = Market Size

TV = Trading Volume

CR = Corporate Risk

Then, the corporate risk is measured by the equation developed by Sharpe (1964). The equation is as follows:

$$CAPM: r = r_f + \beta (r_m - r_f) \quad (3)$$

It means:

CAPM = Capital Asset Pricing Model

r = return

r_f = risk free

r_m = risk market

β = coefficient that affects (r_m - r_f) to r

The effects of analyst coverage (AC) and control variables on tax aggressiveness (TA) are measured by using a logistic regression model. It is similar to the linear regression model. The main difference between the two is that the dependent variable used in logistic regression is binary (dichotomous) in nature. Meanwhile, the dependent variable in linear regression is continuous, and the regression line is linear. Logistic regression is the basic method to analyze response data of more than two categories using the ordinal scale (Hosmer & Lemeshow, 1989). The logistic regression model has the following three components (Agresti, 2010). First, it is a random component, which identifies the probability distribution function of response f(y). It can be stated that fy explains the opportunity distribution function of the response. The opportunity function is y = 0 or y = 1

Second, it is the systematic component. It is the linear estimator L, including the explanatory variables of X₁, X₂, X₃, ... X_p in the form of an equation (L = β₀ + β₁X₁ + β₂X₂ + β₃X₃ + ... + β_pX_p). Third, it is the link function. It connects the expectation value of a random component with a systematic component that can be written as L = g(μ). Then, the logistic regression model can be written as follows:

$$\ln\left(\frac{pi}{1-pi}\right) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_p X_{pi} \quad (4)$$

or

$$Y = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \dots + \beta_p X_{pi} \quad (5)$$

In this present research, the TA is a variable in which it is Y = 1. It is a company with a negative TA value (< 0) or a company that is inclined more toward

TA. Meanwhile, Y = 0 is a company with a positive TA value (≥ 0) or a company that is not in favor of doing TA. The research setting and empirical models are formulated in Equation (6).

$$TA = \beta_0 + \beta_1 AC + \beta_2 MBV + \beta_3 ROA + \beta_4 CASHOLD + \beta_5 PPE + \beta_6 INTASSET + \beta_7 DER \quad (6)$$

It means:

TA = Tax aggressiveness

AC = Analyst coverage

MBV = Market book value

ROA = Return on asset

Cashold = Cash holding

PPE = Plant, property, equipment

INTASSET = Intangible asset

DER = Debt equity ratio

TA is proxied by the abnormal ABTD. The value of ABTD is an error (ε) as shown in Equation (7).

$$BTD = \beta_0 + \Delta REV + PROFIT + \Delta INV + lag BTD + \varepsilon \quad (7)$$

RESULTS AND DISCUSSIONS

Four independent variables influence BTD value. Those are Δ revenue from year t-1 to year t, Δ investment in property, plant, and equipment from year t-1 to year t, profit, and BTD Lag which is the book-tax difference in year t-1. Based on the results of data retrieval (see Table 1), BTD is significantly affected by profit and lagged variables with a significance value of 0,000. Meanwhile, the other variables have no significant effects on BTD. VIF value at < 10 indicates that the independent variables are independent. There is no multicollinearity. In Table 2, R² at 23,4% indicates that the independent variables can explain the dependent variable BTD by 23,4%, and the rest of the data by other factors are not included in the model.

Tax aggressiveness is measured using the ABTD. It is the residual value of Equation 1. Using Equation (1), the residual value (ε) is obtained as ABTD. From the ABTD measurement, it can be concluded that 187 companies performed tax aggressiveness with an average tax avoidance of 0,02614 or 2,614%. About 350 companies are categorized as the ones which comply with the tax provisions in determining their tax burden. Companies identified as being tax-aggressived are scattered in all industrial sectors.

The F-test value (see Table 2) is 40,655 which is greater than F-table (0,05; 4; 532) = 2,389. So, it can be concluded that all independent variables have a jointly significant influence on the BTD. For variables ΔREV and ΔINV, the coefficient is negative. The calculation of ΔREV and ΔINV is 2016 minus 2015. Moreover, if

the calculation is reversed (2015 is reduced in 2016), the coefficient and signification values do not change. However, the regression coefficient is changed to positive. When the profit is declared at 1 and 0, and if the coding is reversed, the coefficient sign will change to positive.

Equation 2 is used to measure AC, which is an estimated average of the 12 monthly numbers of EPS.

The AC value is obtained through the AC estimator model and regression analysis model of the AC estimator. The analyst coverage is estimated by using Equation (8).

$$EPS = \beta_0 + \beta_1 MBV_{t-1} + \beta_2 Trade Value_{t-1} + \varepsilon \quad (8)$$

Table 1 Descriptive Statistics Regression of Book-Tax Differences

Variable	N	Minimum	Maximum	Mean	Std. Deviation
BTD	537	-0,1738	0,4881	-0,002292	0,0433663
LAG_BTD	537	-0,2330	0,3174	-0,003130	0,0331669
DELTA_REV	537	-9,2326	3,1000	-0,002108	0,6624906
DELTA_INV	537	-0,4944	0,6164	0,010676	0,0878527
PROFIT	537	0,0	1,0	0,75	0,434

Table 2 Regression Analysis Result

Model	Coefficients	Std. Error	t	Sig.
(Constant)	0,011	0,003	3,182	0,002**
Lag_BTD	0,555	0,051	10,890	0,000**
Delta_REV	-0,003	0,002	-1,051	0,294
Delta_INV	-0,001	0,019	-0,045	0,964
Profit	-0,015	0,004	-3,764	0,000**
R ² = 23,4%				
F = 40,655				
Sig. = 0,000**				

Note: a. Predictors: (Constant), LAG_BTD, DELTA_REV, DELTA_INV, PROFIT

b. Dependent Variable: BTD

*) Significant at 5%

***) Significant at 1%

Table 3 Data Description

Variables	N	Minimum	Maximum	Mean	Std. Deviation
EPS 2015	500	-779	154534	529,95	7177,307
MBV 2015g	493	4	437356	8985,15	35581,697
Trade Value 2015	482	0	92492	2681,77	8789,822
Valid N (listwise)	480				

Dependent Variables: AC

*) Significant at 5%

***) Significant at 1%

Based on the data described in Table 3 with N of 537 companies, the EPS in 2015 has 37 missing data. In the 2015 MBV variable, it has 44 missing data, and the 2015 trade value has 55 missing data. The EPS variable has an average of 529,95 trillion with a standard deviation of 7.177,307 trillion. Meanwhile, the MBV variable has an average of 8.985,15 trillion with a standard deviation of 35.581,697 trillion. Then, the trade value variable has an average of 2.681,77 trillion with a standard deviation of 8.789,822 trillion. The high standard deviation rate, which is far above the average, indicates that EPS, MBV, and trade value have very high diversity between companies. Furthermore, for the AC estimator regression analysis, the missing data for each variable are estimated using the average of each variable.

Based on the model and the results shown in Table 4, EPS regression equation is obtained by $533,738 + 0,003 \text{ MBV} - 0,011 \text{ trade value}$. The testing of the partial regression coefficients of the MBV and trade value in influencing EPS shows that the MBV has the value of t-count of 0,189 with a significance value of 0,851 (above 0,05). It implies that the MBV

does not significantly influence the EPS. Likewise, the trade value obtains the value of t-count of -0,174 with a significance value of 0,862 (above 0,05). The trade value does not significantly influence the EPS. Because the model is not significant, the MBV and trade value data are transformed into natural logarithmic. In addition, regression analysis is done by transforming the data into normal score data, with an average value of 0 and a standard deviation of 1.

Based on Table 3, the dependent variable and the independent variable to predict the value of AC has a very high standard deviation. High standard deviation values for both dependent and independent variables tend to have variances of errors. In regression analysis, they tend to be inhomogeneous (heterogeneous). An assumption in the regression analysis is that the diversity of errors must be homogeneous. Therefore, before carrying out a regression analysis, a transformation of the original data is made by performing a Natural Logarithmic transformation. Description of the data after the Natural Logarithmic transformation is shown in Table 5.

Table 4 Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	533,738	314,574		1,697	0,090
	MBV 2015	0,003	0,015	0,014	0,189	0,851
	Trade Value 2015	-0,011	0,063	-0,013	-0,174	0,862

Dependent Variables: EPS 2015.

Table 5 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EPS2015origin_ln	537	-3,9120	11,9482	3,702223	1,6456010
MBV2015origin_ln	537	1,3863	12,9885	7,133932	1,8857805
TradeValue2015origin_ln	537	-9,2103	11,4349	4,387825	3,3987333
Valid N (listwise)	537				

Table 6 Regression Analysis Result

Model	Coefficients	Std. Error	t	Sig.
(Constant)	1,513	0,282	5,373	0,000
MBV2015origin_ln	0,343	0,047	7,367	0,000
TradeValue2015origin_ln	-0,059	0,026	-2,287	0,023
R ² = 10,8%				
F = 32,62				
Sig. = 0,000				

Based on the description of the data in Table 5 with the N of 537 companies, EPS logarithm, after being transformed into natural Logarithmic (ln), has an average value of 3,7022. Then, MBV is 7,1339, and the trade value is 4,3878. As shown in Table 6, the R² value of the model is 10,8%. It means that the MBV and trade value can explain the EPS diversity at 10,8. The R² result of logarithmic transformation looks much better than the original data. Then, the test result of the MBV and trade value in influencing EPS obtains the F-value of 32,262 with a significance value of 0,000 (below 0,05). It means that the MBV and trade value significantly influence the EPS. The result of regression analysis with original data is not significant. Meanwhile, the model using transformed data becomes significant.

Based on Table 6, EPS regression equation is obtained from $1,513 + 0,343 \text{ MBV} - 0,059 \text{ trade value}$. The testing of the partial regression coefficients of the MBV and trade value in influencing EPS shows that the MBV has the value of t-arithmetic at 7,367 with a significance value of 0,000 (below 0,05). It means that MBV affects the EPS significantly. Meanwhile, the trade value is obtained by the value of t count at -2,287 with a significance value of 0,023 (below 0,05). The trade value has a significant effect on the EPS. Based on the results, the intercept value is obtained at 1,513 with t-count of 5,373 and a significance of 0,000 (significant). In conclusion, the overall modeling by transforming data into logarithms is better than the normal score transformation or original data. Tables 7–11 are the results of data processing using the logistic regression model.

Table 7 Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	36,435	8	0,000
	Block	36,435	8	0,000
	Model	36,435	8	0,000

Table 8 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	657,740(a)	0,066	0,090

a. Estimation is terminated at iteration number 5 because parameter estimates are changed by less than 0,001.

Table 9 Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	4,446	8	0,815

From the results of a joint test of the model in Table 7, the Chi-Square value is at 36,435 with a significance value of 0,000. So, it can be concluded that there is at least one independent variable that affects a company's option to be more tax aggressive or not. Based on the results of the logistic regression analysis in Table 8, the value of R² is still quite low at 9%. It implies that the predictor variables (independent) in the model can explain the company's behavior towards tax aggressiveness by only 9%. The rest is explained by other factors that have not been included in the model.

The goodness-of-fit logistic regression analysis model is formulated based on the Chi-Square test (Hosmer and Lemeshow test) in Table 9. The hypotheses are as follows:

- H0 : Fit model
H1 : Model not accepted (not fit)

Based on the results of the Hosmer-Lemeshow test, Chi-Square is valued at 4,446 with a significance value of 0,815 (> 0,05). Thus, it can be said that H₀ is accepted (the model is acceptable). It means the model can predict the value of the ABTD response at 65,5% in the ABTD category with a value of 1 and 0, as seen in Table 10. Then, the multiple regression uses Equation (6). The equation is used to test the hypothesis that analyst coverage has positive effects on tax aggressiveness. It is formulated as follows.

$$TA = - 2,130 + 0,387 AC + 0,007 MBV + 4,275 ROA + 0,259 CASHOLD + 0,212PPE - 1,716 INTASSET - 0,100 DER$$

The interpretation of coefficients on logistic regression analysis is not the same as the linear regression analysis, such as the β value. However, the interpretation of logistic regression is taken from the value of the odds ratio obtained from the model with nothing but the exponent value of β (odds ratio = $\exp(\beta)$). In Table 11, AC has a coefficient of 0,387, and the value of the odds ratio is 1,473. It means that the higher the AC variable is, the better the chance it has to become a company with a tax aggressiveness (1,473 times). The ROA has a coefficient of 4.275 with an odds ratio of 71,906. It shows that the higher the ROA of the company is, the bigger the opportunity for a company to conduct a tax aggressiveness (71,906 times) will be. The DER is the only variable with a coefficient of -0,100 with an odds ratio of 0,905, meaning that the company has less opportunity to commit tax aggressiveness (0,905 times). Based on the model, it also shows that the variables which affect the ABTD are AC, ROA, and DER with a significance value of < 0,05. The AC has a significance value of 0,047. Then, the ROA variable has a significance value of 0,001, and the DER variable is 0,037. The three variables have a significance value < 0,05, which means that the three variables have a significant effect

Table 10 Classification Table

Observed		Predicted			Percentage Correct
		ABTD			
		0	1	0	
Step 1	ABTD	0	324	26	92,6
		1	159	28	15,0
Overall Percentage					65,5

The cut value is 0,500

Table 11 Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1(a)	PRE_AC_In	0,387	0,195	3,954	1	0,047	1,473
	MBV	0,007	0,046	0,023	1	0,878	1,007
	ROA	4,275	1,270	11,338	1	0,001	71,906
	CASHOLD	0,259	0,350	0,546	1	0,460	1,295
	PPE	0,212	0,348	0,371	1	0,542	1,236
	INTASSET	-1,716	3,011	0,325	1	0,569	0,180
	DER	-0,100	0,047	4,481	1	0,034	0,905
	Constant	-2,130	0,719	8,772	1	0,003	0,119

(a) Variable(s) entered on step 1: PRE_AC_In, MBV, ROA, CASHOLD, PPE, INTASSET, & DER

on tax aggressiveness. It can be seen that the effect of AC on TA is significant at 0,047, and the AC coefficient is positive. Thus, H1 is accepted. It means that analyst coverage has a positive effect on tax aggressiveness.

The results of this research are different from Allen *et al.* (2016). They stated that analyst coverage had a negative effect on tax aggressiveness. In other words, the tax planning strategies revealed in analyst coverage could make investors react negatively by showing disapproval of a company's shares. It could be an indicator that the company had lost its reputation because of its tax planning strategies. Thus, from the investor recognition and information demand views, analyst coverage constrains corporate tax aggressiveness.

The positive effect on tax aggressiveness is reflected in the findings showing that analyst coverage encourages companies to implement tax aggressiveness. This result is in line with the market pressure view. In this view, the investors expect the company to report revenues as expected and seen from the analyst coverage. Furthermore, stock market prices tend to react negatively when the management fails to reach the estimated target income (earnings). Moreover, it put pressure on the management to take necessary actions to inflate profits like by manipulating the accrual transaction based on costs and benefits analysis (Armstrong, Blouin, & Larcker, 2015).

Referring to the logistic regression model, there are only two control variables that have significant effects on AT. Those are ROA and DER (see Table 11). ROA has a positive effect on tax aggressiveness, while DER has a negative effect on tax aggressiveness. This means that higher returns encourage companies to carry out tax aggressiveness. Then, higher DER can reduce tax aggressiveness. The results confirm the validity of the logistic regression model in this research. Both ROA and DER influence the size of the company's tax burden. ROA, which is a part of the profits obtained by the company, becomes the main part in determining the size of the company's tax burden. Meanwhile, the source of debt funding has a consequent interest expense that can reduce profits, and subsequently, the company's tax burden further. The mechanism explains how returns and debts become the instruments that companies can use in tax aggressiveness practices.

CONCLUSIONS

The results of this research show that the hypothesis (analysis coverage has a positive effect on tax aggressiveness in a market that is not categorized as a strong form) is accepted. It can also be interpreted that analyst coverage encourages the management to carry out tax aggressiveness. The results also support

the view of market pressure stating that analyst coverage has a positive effect on tax aggressiveness. The impact of the research is that after-tax income is higher, it means shareholders receive higher earnings per share, but the tax burden paid to the government is decreased.

There are several limitations of this research. The researcher only uses predictor variables (independent) of analyst coverage with MBV, ROA, CASHOLD, PPE, INTASSET, and DER. The results show that independent variables only contribute 9% to the dependent variable. To improve the model, it can be indicated by a higher R² value. Another limitation is the difficulty in getting the data needed in the measurement of CAPM as a proxy for company risk. Then, in the measurement of AC, it does not use corporate risk variables. Future researchers need to explore the existing theories of other variables that can influence the behavior of companies to carry out tax aggressiveness.

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