

CARBON EMISSION TAX AND ITS IMPACT TO OPERATIONAL PROFITS, EQUITY COST AND ECONOMIC PRESSURE IN INDUSTRIAL ERA 4.0

Arya Darmawan
Etty Murwaningsari

ABSTRACT

The aim of this study is to prove empirically the carbon emission tax model and its impact to operational profits, equity and economic pressure years 2016 – 2018 years. The research method is quantitative descriptive. The sample of this study is the listed in Indonesian Exchange for annual report years 2016 to 2018. Analysis of data using multiple linear regression. This study will utilize the software of SPSS version 21. The result of the study indicates that equity cost and economic pressure and environmental accounting have positive, significant and simultaneously influence to the carbon emission tax model

Key words: carbon emission, operational profit, equity cost, economic pressure

INTRODUCTION

Global warming and the industrial revolution accelerated along with the times in the 4.0 era. The negative impacts of global warming and industrial development are driving the destruction of the environment, climate change, damage to the earth's atmosphere, greenhouse emissions, air pollution and hazardous and toxic waste. It is human activity as an industry actor that has a negative impact on the surrounding environment that has long-term effects. Regulation of the Minister of Environment and Forestry of Indonesia number: P.73/MENLHK/SETJEN/KUM.1/12/2017 concerning the Guidelines for the Implementation and Reporting of the National Greenhouse Gas Inventory explained that, "Climate change mitigation is a control effort to reduce the risk of climate change through activities that can reduce emissions or increase the absorption of greenhouse gases from various emission sources".

The regulation emphasizes all industry players as well as accounting and management practices to work hand in hand to reduce the potential for climate change. One of the government's activities in helping to deal with the phenomenon of environmental damage through the application of taxes for industry players that produce carbon dioxide emissions. The efforts made by the government are to be able to encourage the industrial world to pay attention to the impacts caused to the surrounding environment. Carbon dioxide emissions in general will cause air pollution.

The Regulation of the Minister of Environment and Forestry of Indonesia number P.15/MENHLK/SETJEN/KUM.1/4/2019 explain that, "Air pollution is the entry or insertion of substances, energy, and / or other components into ambient air by human activities, so that the quality of ambient air drops to a certain level that causes ambient air cannot fulfill its function". The ambient air that is meant by the regulation is the condition of the surrounding air that we breathe everyday. Based on data obtained from the DKI Jakarta government website, DKI Jakarta's carbon dioxide emissions alone have reached 206 million tons per year. The largest contribution based on transportation sector emissions reached 182.5 tons, the household and industrial sectors contributed 23.9 and 350.3 thousand tons per year. This phenomenon is a whip for the government, the community and industry players to better appreciate the air around us, if not cared for in the long run will cause air pollution which is harmful to the body.

In addition to the negative impact of the large amount of carbon dioxide emissions in the era of the industrial revolution as it is now, the positive impact obtained from the industrial revolution is very rapid economic growth. Rapid economic growth and the enactment of the Asian Economic Community (AEC) make industry players benefit and increase sales rapidly. This is the case for many new companies to emerge so that it is certain to add to the effect of increasing carbon dioxide emissions. Economic pressure or economic impact for companies in terms of profitability will bring companies to assist the government in implementing carbon emissions tax policies, because in terms of both the initial capital formation of the company, the operating profit of production and profitability which is assessed from ROA will run well. Therefore researchers are interested in conducting research in the era of globalization, MEA and the era of the industrial revolution.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Jensen and Meckling (1976:5) say that, "*We define an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent*". The foundation of agency theory as explained by the theory of Jensen and Meckling (1976) helps the relationship between the principal party, namely the holder of shares with the agent, namely the company. The problem of this research as a company is that industry players must be transparent not only related to the contents of financial statements, but are demanded by investors, shareholders and consumers so that companies are also transparent about the impact of products on environmental conditions, the level of use of raw materials for the environment.

In practice, information about GHG emissions does not always contain positive statements. However, with this disclosure, companies are considered to be more transparent in providing information to the public (Rahman et al. 2014). This publication

can also minimize agency problems because Hill and Jones (1992) state that agency theory is a collection of contracts that exist within a company. Based on this paradigm, Tauringana and Chithambo (2015) say that as the business world develops, management is implicitly not only accountable to shareholders, but also to other stakeholders such as creditors, governments, analysts, the public, nature, and the environment. Therefore, stakeholders have the same rights as shareholders in obtaining information about the company.

Connelly *et al* (2011) say that, "*Signaling theory is useful for describing behavior when two parties (individual or organizations) have access to different information*". Signal theory will help to overcome the distortion received by the parties concerned. The signal in this research in the form of a company will send a signal to the parties in a transparent and open manner to the public if there is important information that must be delivered, for example giving signals in the form of hazardous and toxic waste to the public or when it can increase sales.

Signal theory says that entities will reveal credible information and positive responsibility as a sign of their success in doing business (Luo and Tang 2014; Rahman *et al.* 2014; Bouten and Hoozee 2013; Luo *et al.* 2013). This theory assumes that managers have more information when compared to other outsiders to predict future performance even in an efficient market, and managers can improve company performance through disclosure of information deemed voluntarily relevant, to build a corporate image (Healy and Palepu 2001). Luo and Tang (2014) say that sometimes information about GHG emissions revealed has gone through a cosmetic process, which is providing information about their efforts to tackle global warming, but with sentences that do not reflect their actual efforts. They did this to build a good reputation for investors. This condition is often referred to as the "green-washing" phenomenon. Therefore, accurate and accountable information is very important for the public in assessing the sustainability of the company. One source of that information is in the company's annual report.

The legitimacy theory has been extensively used to explain the motivation of voluntary environmental disclosure by organizations (Pellegrino in Jannah, 2012). The legitimacy theory focuses on the interaction between companies and the community environment (Ghozali and Chariri, 2007). The legitimacy theory states that there is social contact between a company and the environment in which it operates.

Based on the theory of legitimacy, organizations will continue to strive to ensure that they are considered operating within the boundaries and norms of society. They seek to ensure that stakeholders perceive their activities as legitimacy (Deegan, 2004). Environmental disclosure is one way for organizations to obtain this legitimacy (Berthelot and Robert, 2011).

Legality can be interpreted that the company's activities in addition to getting support from the laws in force in the country, also get support from the surrounding community in the form of community participation and not inhibited the company in operating, to achieve this the company is advised to meet what is expected by the community environment. The basic thing in meeting people's expectations is to act in accordance with the rules and social values in the community environment (Freedman and Jaggi, 2005). this is in accordance with Dowling's thoughts and preffer (in Ghozali and Chariri, 2007) which states that: Organizations try to create harmony between social values inherent in their activities with norms of behavior that exist in the social system of society where the organization is part of the system that. As long as the two value systems are in harmony, we can see this as the company's legitimacy. When actual or potential inconsistencies occur between the two value systems, there will be a threat to the company's legitimacy. Uyar, *et al* (2013) states that a company tries to justify its existence in the community by legitimizing its activities.

Legitimacy is seen as something given by the community to the company and something that the community wants from the company (Ghozali and Chariri, 2007). Lindblom in Choi, *et al* (2013) argues that the theory of legitimacy is a dynamic concept which can change in different times and places. Changes in public expectations can be seen as one of the causes of fading legitimacy. In the community environment, social values always develop over time, therefore companies are expected to always adjust their values with the values of the community's environment so that there is no legitimate gap between the two. Legitimacy gaps can occur for three reasons. First: there is a change in company performance but public expectations of company performance do not change, second: company performance changes but community expectations do not change, third: company performance and community expectations of company performance change in different directions (Wartici and Mahon in Ghozali and Chariri, 2007). To continue to gain legitimacy, corporate organizations must communicate environmental activities by disclosing social environments (Berthelot and Robert, 2011). Environmental disclosure is considered beneficial to restore, enhance and maintain the legitimacy that has been received (Hadjoh and Sukartha, 2013).

The stakeholder concept was first developed by Freeman to explain corporate behavior and social performance (Ghomi and Leung, 2013). Freeman in Rich (2008) added that stakeholders are groups or individuals who can influence or be influenced by organizational goals. This theory states that companies are not entities that operate for their own interests but must provide benefits to their stakeholders (Ghozali and Chariri, 2007). Stakeholders have the right to be given information about how the company's activities affect them even if they do not use the information, or do not play a significant role in the company. Stakeholders consist of various parties, namely shareholders, suppliers, consumers, government and others. Stakeholders have the ability to control the company in carrying out its activities including disclosure. Ghomi and Leung (2013) argue that stakeholders have different expectations of the company, to pursue these expectations stakeholders can put pressure on the company directly or indirectly in making environmental disclosures. To deal with this, companies are demanded to always work together with their stakeholders so that the company's vision is in line with them.

Ullman in Ghozali and Chariri (2007) said that organizations will choose stakeholders that are considered important, and take actions that can produce a harmonious relationship between the company and its stakeholders. Stakeholders have different

interests and views on how an organization should operate, so various social contracts will be "negotiated" with stakeholders who have different interests. Companies are more likely to disclose environmental information in an effort to increase stakeholder knowledge about the company's environment.

Carbon dioxide emissions are generally in the form of daily air pollution that is a result of the activities of industry players. The government as a policymaker is obliged to make regulations to reduce excessive air pollution. In particular, the government in Indonesia will only impose a tax on industrial players which is categorized as issuing substantial carbon dioxide emissions. The aim is to encourage and make industry players aware of the effects on the surrounding environment. Its purpose was to provide pressure and incentives for emission reductions. Energy prices increased, but compensation for private consumers was made (Kumarasiri and Jubb, 2016; 140). *Global warming* is a result of carbon dioxide emissions, in the form of a buildup of gas in the earth's atmosphere and trapping heat, causing environmental and economic damage. Anastasiadis *et al* (2018;77) say that, "Second and most importantly, the carbon content of the energy is highly dependent on the production mix present in each country".

Carbon dioxide emissions are indeed a long-term problem for the whole world, because it involves a large audience. Therefore, the industrial world in order to help reduce air pollution and environmental damage by following and implementing the rules set by the government. Efforts that can be done by industry players in reducing the level of air pollution and environmental damage are activities such as reducing the use of greenhouses, producing environmentally friendly vehicles, reducing the use of excess raw materials, treating hazardous and toxic waste. All of these efforts are indeed not easy to do, but if they continue to be pursued in a sustainable manner, long-term benefits will be obtained.

President Xi and President Obama issue the joint announcement on climate change in Beijing on November 12, 2014. This announcement mentioned that the two countries have played a critical role in combating global climate change, and pointed out that the two sides should work constructively for the common good, and listed their own action for global climate change after year 2020 (Yang and Yu, 2016;114). The impact of global warming is very influential in a very long period of time which can damage ecosystems and human activities.

The business world will always look for optimal profits and significant sales increases. Industry players will take into account operational activities in order to produce quality products. Good quality products will certainly attract consumers and have a superior market share. *Our net operating income growth rate also is assumed to be the consensus estimate of market participants regarding the combined rent and operating expense growth rates in light of the one year forward market equilibrium condition* (Lee *et al*, 2014;69) Therefore industry players will continue to create profits or profits from the company's operational activities.

The main activities of the company will generate operational profit on a production operation. Fluctuations in the main activity will certainly create profits but certainly will also create negative impacts if not pay attention. The results of the production processing will naturally produce production waste in the form of solid, liquid and gas waste. Waste in the form of gas produced by industry players in certain fields must pay close attention to the impact on the surrounding environment. Therefore the government will apply for industry players who produce hazardous and toxic waste for the condition of the human body to pay taxes on the carbon dioxide emissions produced. The company should not mind because it is in accordance with the expectations of the industry players to get the maximum profit so that they are able to pay taxes on the production. Efforts are made so that companies do not only think about profits or profits but the condition of the surrounding environment.

This study is in accordance with the results studied by Nelson *et al* (2012: 1) who examined about *improving Australian greenhouse gas reporting and financial analysis of carbon risk associated with investments. Findings, most importantly, like any significant tax reform, the paper concludes that it is impossible to create simple metrics that can be use across all industries and companies.*

H₁ : Operational profit have positive and significant to implementation carbon emission tax model.

Nhelo and Musingwini (2016;215) say that, "*The cost of equity is defined as the expected return on asset's common stock in capital markets*". Equity costs arise due to the investment by the company for long-term investment. Companies that are just starting out need a capital cost to fund the company's operations in the long run.

The cost of capital is very meaningful for investors in seeing returns on the issuance of shares owned. Investors will pay attention to the company's operations and the development of the company's product sales to get optimal profits. Companies must be able to attract investors to invest their shares in the company by taking the extreme step of including environmental maintenance costs as an investment in the future. The purpose of future investments to improve high quality and environmentally friendly products will certainly help investors invest their capital. This research is in accordance with research conducted by Dita and Murtaqi (2014: 1).

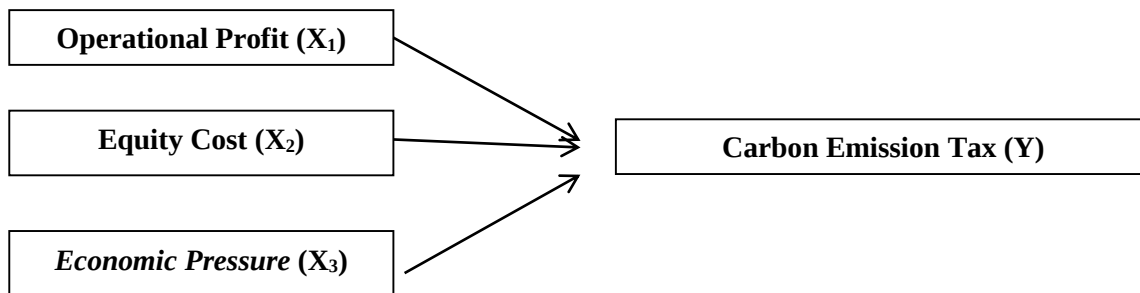
H₂ : Equity cost have positive and significant to implementation carbon emission tax model.

Industry players in carrying out an accounting practice will certainly always think about the company's economic conditions. The economic condition of the company will help the company in maintaining its sustainability in financial terms. Financial planning is indeed very important in budgeting income and expenditure in a more mature and accurate period. The company management will always emphasize to all employees to help achieve the budgeted targets. This pressure is called economic pressure.

One of the company's economic pressures is caused by the demand of investors and consumers. Demand in the form of increased sales and large profits becomes a polemic for companies to retain and attract new investors and consumers. In the 4.0 era as now there have begun to emerge companies that budgeted in one period to create environmentally friendly products to reduce environmental damage and emissions. Environmentally friendly products will be able to attract new consumers to buy and investors to invest capital for the sustainability of the company. All economic conditions of the company will be helped by an increase in sales. *The tipping point created by the present financial environment and the changing economic environment has led many agents to discuss work life balance* (Pasamar and Cabrera, 2014:966).

H₃ : *Economic pressure have positive and significant to implementation carbon emission tax model.*

Figure 1. Research Framework



METHOD

This type of research is descriptive verification with a quantitative approach. This method is useful to solve a problem by giving a description or a complete description of the carbon emissions tax model and its impact on operating profit, equity costs and economic pressure in the industrial era 4.0.

This research was conducted at automotive sector companies listed on the Indonesia Stock Exchange (IDX) with a research period of 3 years, namely from 2016 to 2018. Researchers research in automotive sector companies for several reasons, including:

1. Previous studies only in the manufacturing and non-financial sectors have no specific specifications.
2. Research related to carbon dioxide emissions is very harmonious if it is investigated in the automotive sector because the disposal substances are carbon dioxide smoke, hazardous and toxic waste.
3. The automotive sector companies are chosen based on the amount of nitrogen oxides released in the air as air pollution is greatly increased which causes depletion of the atmospheric layer.
4. Automotive sector companies accounted for 80% of carbon dioxide emissions based on data from the Ministry of Environment.

The population in this study is a financial company for a period of 3 years. The sampling technique is using purposive sampling technique with consideration criteria, namely:

1. Annual reports published on the IDX complete from 2016 to 2018.
2. Attach financial statements and notes to the financial statements.
3. The company has audited the financial statements.

The type of data based on its nature used in this study is quantitative data as the main focus in data management, while qualitative data is supporting data in the form of scientific literature and reference sources.

The data source in this study is secondary. Secondary data collection in this study is the financial statements of financial companies listed on the Indonesia Stock Exchange (IDX) during 2016 to 2018.

This research will be analyzed based on quantitative methods using the following methods:

1. Descriptive Statistics
Descriptive statistics are used to assess each variable. The descriptive statistics table explains the minimum value, maximum value, mean value and standard deviation. It aims to describe the whole sample in order to be eligible to become a representative sample.
2. Hypothesis Test

Testing the hypothesis in this study using a multivariate test with logistic regression analysis. Logistic regression analysis is used to determine whether the variable company size, KAP size, audit costs, financial difficulties and the percentage change in ROA on auditor turnover. Assumption of multivariate normal distribution cannot be done, because there is a mixture of variables between metric and non-metric variables. According to Ghazali (2001) said that in this case it can be analyzed with Logistic Regression because it does not require the normality test of the data on the independent variables.

3. Overall Model Rating (overall model fit)

The next step is to test the entire regression model (overall model fit). Testing is done by comparing the value between -2 Log Likelihood (-2LL) at the beginning (Block Number = 0) with the value of -2 Log Likelihood (-2LL) at the end (Block Number = 1). The reduction in value between the initial -2LL and -2LL in the next step indicates that the hypothesized model is fit with the data (Ghozali, 2001).

Model Match Test

Model fit test is used to evaluate whether a model is suitable or not with data, the observed values obtained are the same or close to what is expected in the model. The suitability of whether or not the logistic regression model in this study was assessed using the Hosmer and Lemeshow test because there are continuous predictor variables. The Hosmer and Lemeshow test can be used when the same covariate pattern of the predictor variable appears in the observation or not. The covariate pattern is the occurrence of the values of the predictor variables.

If the value of Hosmer and Lemeshow's Goodness of Fit Test is equal to or less than 0.05, then the null hypothesis is rejected, which means there is a significant difference between the model and its observation value so that the Goodness fit of the model is not good because the model cannot predict its observational value. If the statistical value of Hosmer and Lemeshow Goodness-of-fit is greater than 0.005, then the null hypothesis cannot be rejected and means that the model is able to predict its observational value or the model can be said to be acceptable because it matches the observational data.

Test the Significance of Parameters

Significance test consists of two stages, namely the test of the significance of the model parameters together and the test of the significance of the model parameters separately. The significance test of the model parameters is carried out together with the likelihood ratio test. L_0 is the log-likelihood of a model without predictor variables, while L_1 is the log-likelihood of a model with predictor variables. The log likelihood value is calculated based on equation (2.7). The null hypothesis is $k\beta = 0$, for all $k = 1, 2, \dots, p$, which means that all predictor variables are not significant to the model. The null hypothesis is rejected if $G > \chi^2_{(a;p)}$. If the predicted value when the predictor variable in the model is better than when the variable is not included in the model, then it can be said that the variable is significant in the model.

Classic Assumption Test

Before the data is processed to test hypotheses, the data need to be tested on classical assumptions beforehand including multicollinearity tests. Normality, autocorrelation and heteroscedasticity tests were not carried out because the dependent variable used a dummy proxy so that the multicollinearity test was sufficient to represent.

Multicollinearity test aims to test whether the regression model found a correlation between independent variables (Ghozali, 2001). Multicollinearity occurs in logistic regression analysis if the independent variables are correlated. In Ghazali (2006) multicollinearity can be seen from: Tolerance values and their opponents and Variance Inflation Factor (VIF)

Both measures indicate which independent variables are explained by the other independent variables. In simple terms, each independent variable becomes a dependent variable (dependent) and to other independent variables. Tolerance measures the variability of selected independent variables that are not explained by other independent variables. So a low tolerance value equals a high VIF value (because $VIF = 1 / \text{Tolerance}$). The cut off value commonly used to indicate multicollinearity is a Tolerance value < 0.10 or equal to a VIF value > 10 (Ghozali, 2001).

Logistic Regression Analysis

Furthermore, in this study multiple linear regression equations are performed as follows:

$$\frac{\text{Carbon Emission}}{1 - \hat{p}} = \beta_0 + \beta_1 * X_{1i} + \beta_2 * X_{2i} + \beta_3 * X_{3i} + \beta_4 * X_{4i} + e$$

Variable Definition

Carbon Emission = Auditor Substitution Dummy (category 1 for companies that estimate carbon taxes and category 0 for those who do not estimate).

β_0 = Konstanta

$\beta_1 - \beta_5$ = Regression coefficient

X_{1i} = Operational Profit

X_{2i} = Equity Cost

X_{3i} = Economic pressure
e = Residual error

RESULT

Tabel 1: Descriptive Statistic Test

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
LO	30	3969936660.000	3499500000000	3552665791682.	8827603968302.91
		0	0.0000	173000	20000
BE	30	51595020389.00	1743630000000	1895212771621	47104072322326.0
		00	00.0000	3.125000	860000
EP	30	-.1340	.7127	.066951	.1437259
EC	30	0	1	.30	.466
Valid N (listwise)	30				

Source: Data processed by SPSS V.21, 2019

Descriptive statistics test table explains how many descriptive statistics consist of minimum, maximum, average and standard deviation values for free and bound variables, the following is an explanation:

1. Operating profit variable (LO) minimum value of 3,969,936,660.00 is owned by PT Prima Alloy Steel Tbk company in 2016. While the maximum value of 34,995,000,000,000 is owned by large companies, namely PT Astra International Tbk in 2018.
2. Variable cost of equity (BE) minimum value of 51,595,020,389 is owned by PT Multi Prima Sejahtera Tbk company in 2016. While the maximum value of 174,363,000,000,000 is owned by large companies namely PT Astra International Tbk
3. The variable economic pressure (EP) minimum value of 3,969,936,660.00 is owned by PT Multi Prima Sejahtera Tbk company in 2016. While the maximum value of 0.7127 is owned by PT Multi Prima Sejahtera company in 2017.
4. The variable carbon emission (EC) obtains a minimum value of 0 and a maximum of 1 because the measurement proxy uses a dummy variable.

Tabel 2: Test of Multicollinearity

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	.231	.089		2.597	.015		
1 LO	-1.157E-013	.000	-.298	-.333	.742	.034	9.637
BE	1.081E-013	.000	.819	.915	.368	.034	9.637
EP	-.427	.533	-.132	-.801	.431	1.000	1.000

a. Dependent Variable: EC

Source: Data processed by SPSS V.21, 2019

The multicollinearity test can be seen and explained as follows:

1. LO, ISO where tolerance value is 0.698 and variance inflation factor (VIF) is 1.433 which means that $0.034 > 1$ and $9.637 < 10$, it can be concluded that there is no multicollinearity.
2. BE, GA where the tolerance value is 0.698 and the variance inflation factor (VIF) is 1.433 which means that $0.034 > 1$ and $9.637 < 10$, it can be concluded that there is no multicollinearity.

3. EP, GA where the tolerance value is 0.698 and the variance inflation factor (VIF) is 1.433 which means that $1,000 > 1$ and $1,000 < 10$, it can be concluded that there is no multicollinearity.

Tabel 3: Test of Coefficient Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.545 ^a	.297	.216	.413

a. Predictors: (Constant), EP, BE, LO

Source : Data processed by SPSS V.21, 2019

Based on table 3 can be seen the R value of 0.545 or 54.5%, which can indicate that the independent variable is able to explain the dependent variable of 54.5%.

Tabel 4: Clarification Matriks

Classification Table ^a					
	Observed	Predicted			
		EC		Percentage Correct	
		Tidak adanya estimasi PEC	Adanya Estimasi PEC		
Step 1	EC	Tidak adanya estimasi PEC	20	1	95.2
		Adanya Estimasi PEC	6	3	33.3
	Overall Percentage				76.7

a. The cut value is .500

Source: Data processed by SPSS V.21, 2019

In the table above shows the classification matrix to show the predictive power of a regression model in predicting the implementation of a tax on carbon dioxide emissions. The strength of these predictions in assessing the application of carbon emission taxes is 33.3%. Where it shows that with the regression model used, there are as many as 3 automotive companies that are predicted to implement and approve the carbon emission tax of a total of 10 companies that make auditor changes. It can be concluded that the predictive power of the regression model is 76.7%.

Tabel 5: Hosmer and Lemeshow Test

Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	6.051	8	.642

Source : Data processed by SPSS V.21, 2019

To assess the feasibility of a regression model can use Hosmer and Lemeshow's Goodness of Fit Test. Tests in the table above show a Chi-square value of 6.051 with a significance (p) of 0.642. Based on these results, because the significance value is greater than 0.05. From these results it can be concluded able to predict the value of the observation, namely the application of the carbon emissions tax model.

Table 6: Logistic Regression Analysis

Variables in the Equation						
	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a						
LO	.000	.000	.052	1	.819	1.000
BE	.000	.000	2.043	1	.050	1.000
EP	-4.827	7.436	.421	1	.046	.008
Constant	-1.892	.845	5.015	1	.025	.151

a. Variable(s) entered on step 1: LO, BE, EP.

Source: Data processed SPSS V.21, 2019

$$\text{Emission Carbon} = \frac{\hat{p}}{1 - \hat{p}} = \frac{-1,892 + 0,000 * X_{1i} + 0,000 * X_{2i} - 4,827 * X_{3i}}{1 - (-1,892 + 0,000 * X_{1i} + 0,000 * X_{2i} - 4,827 * X_{3i})} + e$$

From the regression equation, it can be analyzed as follows:

- Constant of -1,892 states that if an independent variable is considered constant then the value of the switch is -1,892.
- Operating profit variable has a regression coefficient of 0,000. The regression coefficient is positive. This can be interpreted every increase in LO by 1 unit will estimate a carbon emissions tax of 0,000 assuming if other independent variables are considered constant.
- The variable cost of equity has a regression coefficient of 0,000. The regression coefficient is positive. This can be interpreted every increase in equity costs by 1 unit will lead to an opportunity for a carbon emission tax of 0,000 with the assumption that other independent variables are considered constant.
- The economic pressure variable has a regression coefficient of -4,827. The regression coefficient is negative. This can be interpreted as any reduction in economic pressure by 1 unit will result in a decrease in the application of carbon emissions tax of 0,000 with the assumption that other independent variables are considered constant.

Based on the results of tests that have been done before, the researcher will describe the results of the research contained first, operating profit variable shows a positive coefficient (b) of 0,000 with a significance level (p) of 0.819. Because the significance level (p) is greater than $\alpha = 5\%$, the first hypothesis is unsuccessful. This first variable research did not succeed in proving that operational profit had an effect on carbon emissions tax. The results of this study do not support previous research conducted by Kelvin et al (2017) and Suhardi and Purwanto (2015). Nevertheless this research supports research conducted by Pratiwi (2018) and Pratiwi and Sari (2016). Based on these results it can be seen that the results of the study show that the operating profit variable has no effect on the carbon emissions tax and the regression coefficient has a positive value.

These results can be explained that, operational profit which is part of a unified goal of management is profit oriented solely aimed at generating large profits and overriding the responsibility of the results of the production process to the environment. The operating profit obtained by the company is only used to finance the operational activities of the company's sustainability and is not used as financial assistance to deal with environmental problems due to the waste created. Companies that have high or low operating profits should make an effort to contribute to environmental policies, namely through carbon emission disclosures because everything is stipulated in Presidential Regulation No. 61/2011 that businesses must also contribute to reducing carbon dioxide and home gas emissions glass.

Second, the variable cost of equity shows a positive (b) coefficient of 0,000 with a significance level (p) of 0.050. Because the significance level (p) is smaller than $\alpha = 5\%$, the second hypothesis is successful in supporting the disclosure of carbon dioxide emission taxes. This second variable research succeeded in proving that the cost of equity affected the carbon dioxide emission tax. The results of this study are supported by previous research conducted by Kelvin et al (2017) and Irwhantoko (2016).

Based on these results it can be seen that the results of the study indicate the variable cost of equity affects the carbon emissions tax and the regression coefficient has a positive value. The results of this study have a positive and significant impact on the disclosure of carbon emissions tax, where companies that carry out environmental and social practices through the disclosure and payment of taxes on carbon dioxide emissions produced will help attract investors and customers to buy their products. As for the benefits to be gained by industry players related to the use of equity costs, if the company enhances the environmental policy aspect there will certainly be a decrease in terms of the equity costs that will be incurred by the company. This means that the cost of low equity as an implementation of disclosure of carbon emissions that has an extraordinary value for the value of a company in the eyes of the public.

Field facts that occur especially companies in Indonesia, where Indonesia as the third largest contributor of carbon emissions per capita in the world (Koran Sindo.com October 2015). If industry players in Indonesia do not care about the environmental

problems caused by the waste, investors will withdraw their funds from companies categorized as environmental destroyers. The impact will make the cost of equity become high so that it will reduce the value of the company's financial and operational performance, because the backers of the fund are investors who do not want to invest their capital in companies that do not care about the safety of the surrounding environment.

Finally, economic pressure variable shows a coefficient (b) negative of -4.827 with a significance level (p) of 0.046. Because the significance level (p) is smaller than $\alpha = 5\%$, the third hypothesis successfully supports the disclosure of carbon dioxide emission taxes. The research of this third variable succeeded in proving that economic pressure affects the carbon dioxide emission tax. The results of this study are supported by previous research conducted by Irwhantoko (2016), Pratiwi and Sari (2016)

Based on these results it can be seen that the results of the study indicate that economic pressure variables affect the carbon emissions tax and the regression coefficient has a negative value. The results of the study of the impact of economic pressure through the disclosure of carbon emissions tax is a very important issue. In the era of the global economy where there is a lot of economic pressure that is obtained by companies in developing their industrial business, especially social factors. Investors and customers are the main target market in supporting the company's going concern going forward.

This is a condition where investors and customers have high economic pressure that must always be followed by the company, usually a large economic pressure in the form of a company's concern for its environment, so the company does not only think about market targets and profits alone. Economic pressure like this must be done and is mandatory for the company if it does not want investors to withdraw funds and customers do not want to buy their products so that the company's sales decline. Industry players must be able to follow the economic pressure that occurs by contributing to the disclosure of carbon emissions and following government regulations.

CONCLUSION

Based on the results of the above research description related to the carbon emissions tax model and its impact on operating income, equity costs and economic pressure, as follows:

1. The results of the study of operating profit variables have no effect on the application of the carbon emissions tax model, because the significance level > 0.05 is 0.819.
2. The variable cost of equity has a positive and significant effect on the application of the carbon emissions tax model, because the level of significance is < 0.05 , which is 0.050.
3. The economic pressure variable has a positive and significant effect on the application of the carbon emissions tax model, because the level of significance is < 0.05 which is 0.046.

The research can still be explored in more depth, so researchers have the following suggestions:

1. Future studies are expected to be able to formulate a model related to carbon dioxide emissions.
2. The next research is expected to explore in terms of transportation companies.
3. Further research should broaden the research time span again.

REFERENCES

- Anastasiadis., Anestis, Stavros Konstantinopoulos, Georgios Kondylis, Georgios A.Vokas and Maya Julien Salame. (2018). *Carbon Tax, System Marginal Price and Environmental Policies on Smart Microgrid Operation*. Management of Environmental Quality: An International Journal, Vol. 29, No.1, pp. 76-88.
- Barthelot, Sylvie dan Anne-Marie Robert. 2011. Climate Change Disclosure : An examination of Canadian Oil and Gas Firms. Vol. 5 pp 106-123.
- Choi, Bo Bae, Doowon Lee dan Jim Psaros. 2013. An analysis of Australian Company Carbon Emission Disclosures. Pacific Accounting Review Vol. 25 No. 1, 2013 pp. 58-79.
- Conelly., Brian, R. Duane Ireland and Trevis Certo. (2011). *Signaling Theory: A Review and Assesment*. Journal of Management, Vol. 37, No.2, pp. 39-67.
- Freedman, Martin dan Bikki Jaggi. 2005. "Global warming, commitment to the Kyoto Protocol, and accounting disclosures by the largest global public firms from polluting industries." *The International Journal of Accounting*, Vol. 40 No. 3, pp. 215-232.
- Ghozali, Imam dan Anis Chariri. 2007. Teori Akuntansi. Semarang: Badan Penerbit Universitas Diponegoro.
- Ghozali, Imam. (2001). *Model Persamaan Struktural, Konsep dan Aplikasi dengan Program AMOS Ver. 5.0*, Semarang: Badan Penerbit Universitas Diponegoro.
- Ghozali, Imam. (2011). *"Aplikasi Analisis Multivariate dengan Program IBM SPSS 19"*. Edisi Kelima, Badan Penerbit Universitas Diponegoro, Semarang.
- Irwhantoko. (2016). *Carbon Emission Disclosure: Studi Pada* . Journal of Chinese Economic and Foreign Trade Studies, Vol. 9, No.2, pp. 113-130.
- Jensen and Meckling. (1976). The Theory of The Firm: Manajerial Behaviour, Agency Cost and Ownership Structure. *Journal of Financial and Economics*, Vol.3, pp. 305-360.
- Kelvin., Chen, Fransiskus E.Daromes dan Suwandi Ng. (2017). *Low-Carbonization Game Analysis and Optimization in a Two Echelon Supply Chain Under The Carbon Tax Policy*. Jurnal Dinamika, Akuntansi dan Keuangan, hlm 1-18, ISSN 1979-4878.

- Kumarasiri., Jayanthi and Christine Jubb. (2016). *Carbon Emission Risks and Management Accounting: Australian Evidence*, Vol. 29, ,No.1, pp. 137-153.
- Lee., Hyun Seo, John B. Corgel and Seungwoo Shin. (2014). *Estimating Net Operating Income Growth for Modeling U.S Apartment Property*, Journal of Real Estate Portfolio Management, Vol. 20, ,No.1, pp. 67-78.
- Nelson., Tim, Elizabeth Wood, James Hunt and Cathlin Thurbon. (2011). *Improving Australian Greenhouse Gas Reporting and Financial Analysis of Carbon Risk Associated with Investment*, Sustainability Accounting, Management and Policy Journal, Vol. 2, ,No.1, pp. 147-157.
- Nhelko., A.S and C. Musingwini. (2016). *Estimating Cost of Equity in Project Discount Rates: Comparison of The Capital Asset Pricing Model and Gordon's Wealth Growth Model*, The Journal of The Southern African Institute of Mining and Metallurgy, Vol. 116.
- Pasamar., Susana and Ramon Valle Cabrera. (2013). *Work-Life Balance Under Challenging Financial and Economic Conditions*, Vol. 34, No.8, pp. 961-974.
- Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.73/MENLHK/SETJEN/KUM.1/12/2017.
- Peraturan Menteri Lingkungan Hidup dan Kehutanan Republik Indonesia Nomor P.15/MENLHK/SETJEN/KUM.1/4/2019.
- Pratiwi., Desy Nur. (2018). *Implementasi Carbon Emission Disclosure di Indonesia* . Jurnal Ilmiah Akuntansi dan Bisnis, Vol. 13 ,No.2.
- Pratiwi., Putri Citra dan Vita Fitria Sari. (2016). *Pengaruh Tipe Industri, Media Eexposure ddan Profitabilitas Terhadap Carbon Emission Disclosure*. Jurnal WRA, Vol. 4, ,No.2.
- Putri, Ika Fiana. (2016). *Pengaruh Emisi Karbon Terhadap Cost of Equity Capital pada Perusahaan di Indonesia*. Tesis, Universitas Diponegoro.
- Shodiq., Muhammad dan Yogi Trisita Febri. (2015). *Sistem Akuntansi dan Pelaporan Emisi Karbon: Dasar Pengembangan Standar Akuntansi Karbon*. Universitas Islam Agung.
- Suhardi., Robby Priyambada dan Agus Purwanto. (2015). *Analisis Faktor-Faktor yang Mempengaruhi Pengungkapan Emisi Karbon di Indonesia*. Diponegoro Journal of Accounting, Vol. 4, No.2, Hlm 1-13.
- Utama., Dana Marsetiya. (2019). *Model EOQ dengan Mempertimbangkan Karbon Emisi dan Batasan Model*. Seminar Nnasional Teknologi dan Rekayasa , ISSN 2527-6042.
- Yang., Shihui and Jun Yu. (2016). *Low-Carbonization Game Analysis and Optimization in a Two Echelon Supply Chain Under The Carbon Tax Policy*. Journal of Chinese Economic and Foreign Trade Studies, Vol. 9, ,No.2, pp. 113-130.

Arya Darmawan
Faculty of Economics Trisakti University Jakarta Indonesia
Email: aryadarmawan@gmail.com

Etty Murwaningsari
Faculty of Economics Trisakti University Jakarta Indonesia