CHAPTER III

RESEARCH METHODOLOGY

A. Type Of Research

The goal of this research is to give an explaination how the effect and the contribution from export (Ex), hotel and restaurant tax (HART), employement (EMP) and Gross domestic product of Region (GRDP) on the local original revenue or PAD in D. I. Yogyakarta. From the goal of this research, so the type or research plan that will use in this research is Quantitative research which is accomodated secondary data as the main source of data and give the explanation to know the real contribution and influence from the fluctuation of income result from the data that used in this research.

B. Data and Source Of Data

Data that used in this research are : 1) Data on the number of Export, 2) Data on the number of the amount of income which come from Hotel and Restaurant Tax, 3) Data on the number of Employement, 4) Data on the number of Gross Domestic Product of Region, 5) Data on the number of Local Original Revenue/PAD. All of data calculated per year in four Regencies and one City in D. I. Yogyakarta.

This data obtained from Central Bureau of Statistics (BPS) Province of D. I. Yogyakarta and Government Tourism Office, journal or article and book printing which can give any informations that have relation with export,

tourism sector, general allocation fund, gross domestic product of Region and local original revenue in D. I. Yogyakarta.

Data collection was carried out with the technical archive or documentation from Central Bureau of Statistic and the year of research start from 2010 until 2016.

C. The Definition of Operational Variable

The definition of operational variable is one of definition that given to the one of variable by giving the meaning or give specific activity or give and implement one of operational to measure the variable or construct (Nasir 1999). The definition of Operational Variable in this research are:

1. **Independent Variable (X) :**

    a). Export (X_1), is all of amount of export value which has been calculated from all amount of goods and services which sale in the outside Regency in the D. I. Yogyakarta through district area which exist in DIY and the total amount taken during the research time (USD).

    b). Hotel and Restaurant Tax (X_2), is the total amount of income which calculated by Tourism Government which come from tourism sector in D. I. Yogyakarta (RP).

    c). Employement (X_3), is the total amount of population or people who work and have age around 15 years old and more then live in D. I. Yogyakarta Province.

d). Gross Domestic Product of Region (X_4), is all of amount which calculated from additional value of goods and services in all economic activity in D. I. Yogyakarta (RP).

2. Dependent Variable (Y)

Local Original Revenue (PAD) is the amount of original revenue that Government collect from some sources of fund which measure by the law and amount of revenue taken during research time.

D. Analysis Methods

Technique regression that will use in this research is Data Panel because in this research the regression will do in different times but still series and also different regions but still in one area (Province) or covers by one object. Data panel is a combination of time series and cross-sectional data. According to Agus Widarjono 2009, using data panel in one of observation have some profits obtained. First, data panel is the combination of two data are : First, time series and cross section capable to prepare more data so more produce the bigger degree of freedom. Second, combination information from time series data and cross section can overcome the problem that appear when there is an omitted-variable.

1. Regression Model Of Data Panel

This research use combination of time series start from 2010 – 2016 it means the time observations around 7 years and cross section around 5 which come from each regencies and city in D. I. Yogyakarta.

So, The regression model of Data Panel can be in shape base on the title that used in this research is :

$$LOR_{it} = \alpha + \beta_1 EX_{it} + \beta_3 TS_{it} + \beta_2 GAF_{it} + \beta_4 GDRP_{it} + \varepsilon$$

Information:

α : Constant

β : Coefficient Regression Variable Free

LOR : Local Original Revenue

EX : Export

HART : Hotel and Restaurant Tax

EMP : Employement

GDRP : Gross Domestic Product of Region

ε : Error Term

2. Estimation Method of Data Panel

This research use some analysis methods to answer the goals of research. According to the book entitled Electronic Data Processing written by (Agus Tri Basuki Edisi Pertama 2014), the tools analysis that will used for Estimation Method of Data Panel are:

a. Common Effect Model

Common Effect Model is the data panel approach which use simple model. This model only combine time series data cross section in pool model, and the estimation use pooled least square. So for the regression of common effect model can written such as:

$$Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$$

Where :

i : Kulonprogo, Bantul, Gunungkidul, Sleman and Yogyakarta City

t : 2010, 2011, 2012, 2013, 2014, 2015, 2016

Which is i show the individual cross section and t show the time priod.

b. Fixed Effect Model

The assumption from Fixed Effect Model, there is an effect which has different between individuals. The differences can accomodate base on intercept, because of that in the fixed effect model if there is unknown parameter and will do estimate use dummy variable tehnique which can written such as :

$$Y_{it} = \alpha + i\alpha_{it} + X'_{it}\beta + \varepsilon_{it}$$

The tehnique above named Least Square Dummy Variable (LSDV). Beside applied for effect each individual , LSDV also can accomodate time effect which have systemic characteristic. This model can do by increasing dummy variable model.

c. Random Effect Model

This model different from fixed effect model, Specific effect that appear from individual treated as the part of component error which have random characteristic and not correlate with explainer variable. This model named Random Effect Model (REM) or Error Component Model (ECM). The formula can be arranged such as :

$$Y_{it} = \alpha + X'_{it}\beta + W_{it}$$

I = Kulonprogo, Bantul, Gunungkidul, Sleman and Yogyakarta City

t = 2010, 2011, 2012, 2013, 2014, 2015 ,2016

Where :

$$W_{it} = \varepsilon_{it} + u_1 \; ; \; E(w_{it}) = 0; \; E(w_{it}^2) = \alpha^2 + \alpha_u^2;$$

$$E(w_{it}, w_{jt-1}) = 0; \; i + j; \; E(u_i, \varepsilon_{jt}) = 0;$$

$$E(\varepsilon_{it}, \varepsilon_{js}) = E(\varepsilon_{it}, \varepsilon_{jt}) = E(\varepsilon_{it}, \varepsilon_{js}) = 0$$

Although the component of error w_t have homoscedasticity characteristic but in the realita there are correlation between w_t and w_{it-s} (equicorrelation), is :

$$\text{Corr}(w_{it}, w_{i(t-1)}) = \alpha_u^2 / (\alpha^2 + \alpha_u^2)$$

3. The Election Model

Meanwhile, to election the regression model of Data Panel can do by three tests :

a. F Test (Chow Test)

This test used to determine the election method of PLS or FE. This test will compare the value of F calculate by F table using hyphotesis :

H_0 : Pooled Least Square method (PLS)

H_1 : Fixed Effect Method (FE)

If the value of F calculated > F table so H_0 wiil rejected, it means the certain test model will used is Fixed Effect Model. So the opposite , If F calculate higher (>) than F table it means H0 accepted and the model will used is Common Effect Model (Widarjono Edisi Kedua 2007).

The calculation of F statistics taken from Chow test with the formulation:

$$F = \frac{\dfrac{(SSE_1 - SSE_2)}{(n-1)}}{\dfrac{SSE_2}{(nt - n - k)}}$$

Where :

SSE1 : Sum Square Error from Common Effect Model

SSE2 : Sum Square Error from Fixed Effect Model

n : The amount of area (Cross Section)

nt : The amount of Cross Section x The amount of Time Series

k : The amount of Independent Variable

Meanwhile F table get from :

$$\text{F-table} = \{\ \alpha : df(n - 1, nt - n - k)\}$$

Where :

α : Significant level that used (alfa)

n : The amount of area (Cross Section)

nt : The amount of Cross Section x The amount of Time Series

k : The amount of independent variable

To know the result we used Common Effect and Random Effect.

b. Hausman Test

This method will used to determine the election between Fixed Effect (FE) or random Effect (RE) by used the hyphotesis:

H_0: Random Effect Method (RE)

H_1: Fixed Effect Method (FE)

1. Classic Assumption Test

There are two steps to do Classic Assumption Test in linear regression with Ordinary Least Squared (OLS) approach which used in this research, are:

a. Multicollinearity Test, This test need to do when linear regression use more than one variable. If the freedom variable only one so it will impossible to appear the multicollinearity.

b. Heteroscedasticity Test, This test need to do on the cross section data, where data panel nearer to the characteristic of cross section data than time series.

2. Hypothesis Test

Hypothesis testing in this study can be measured from the goodness of fit regression function. Statistically, this analysis can be measured from statistical value t, F statistic value, and coefficient of determination (Kuncoro, 2011). This regression analysis aims to determine the partial or simultaneous influence of independent variables to the dependent variable and to know the proportion of independent variables in explaining the change of dependent variable.

a. F-statistic test

The statistical test F basically shows whether all independent variables in the model have a mutual influence on the dependent variable (Kuncoro, 2011). This test is done to see the effect of simultaneously independent variable to dependent variable. This test is conducted with a degree of confidence of 5% by using the following formula (Kuncoro, 2011).

Where :

SSR: sum of squares due to regression

SSE: sum of squares error

N : number of observations

K : number of parameters (including intercept) in the model

This test is done in two ways. First, if the probability of the F statistic value > 0.05 then H0 is accepted or reject H1, otherwise if the probability of F statistic value < 0.05 then H0 is rejected or accepting H1. Second, compare the value of F-statistic with value F according to table, if F statistic > F table then H0 rejected or accept H1. H0 is rejected means all independent variables simultaneously affect the independent variable.

b. **Determination Coefficient Test**

Test of coefficient of determination (R^2) is used to explain how big the proportion of variation of dependent variable can be explained by independent variable (Widarjono, 2009). This test essentially measures how far the independent variable describes the dependent varabel variations. According to Kuncoro (2011) the coefficient of determination (R^2) ranges between zero and one ($0 < R^2 < 1$). The value of R^2 is small or close to zero meaning the ability of independent variables in

explaining the dependent variable is very limited. The value of R2 which is large or close to one means that the independent variable is able to provide almost all the information needed in explaining the change of the dependent variable.

c. **T-statistic test**

The t-statistic test is done to know the influence of the significance of each independent variable to the dependent variable. According Kuncoro (2011) the formula used is as follows:

Where S is the standard deviation calculated through the root variance. Hypotheses in t-statistic testing are:

H0: partially no significant effect on the dependent variable

H1: partially significant effect on the dependent variable

If the probability of t count $>$ 0.05 then H0 is accepted or reject H1, otherwise if the probability of t value $<$ 0.05 then H0 is rejected or accepting H1. The significance level used in this test is 5%. T-statistic testing can also be done by comparing the statistical value t with the critical point according to the table (Widarjono, 2009).

There are another argument about t test, The function t (Partial) test is to determine the significance an independent variable individually within affect the dependent variable.

In this case applied the hypothesis as follows:

$H_0: \beta_1 = 0$

$H_1: \beta_1 \neq 0$

If < then the null hypothesis (H) is accepted and the alternative hypothesis (H) is denied to mean the model used less well, in other words free variable can not explain variable bound or influential is not significant. Instead if > then it means free variable can explain dependent or influential variables significant (Soekarnoto 2014) .