EUROPEAN ACADEMIC RESEARCH
Vol. IV, Issue 8/ November 2016

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Modelling Regression Economic Variable GDP and Gov. Expenditure. Evidence from Indonesia

AHMAD SUBAGYO
Lecturer in Management, GICI Business School
Jakarta, Indonesia

Abstract:

The focus of this study aimed to see how the application of regression modeling analysis, using economic variables GDP and Gov. Expenditure. Data analysis technique used is multiple regression analysis model to perform Ln, Log, Abs, Diff, SQR and lag. From the results of the modeling that has been done, it can be concluded that, regression modeling techniques provide different results to a significant degree and R squared.

Key words: Multiple Regression, GDP, Gov. expenditure, Modelling

PRELIMINARY

Regression analysis studied the shape of the relationship between one or more independent variables (X) with one dependent variable (Y). research independent variable (X) is usually defined variables enumerated by researchers freely eg drug dose, duration of storage, the levels of preservatives, and animal age. Besides, it can also be a free variable not independent variables, for example in the measurement of the length and weight of the cow, since the length of the body is easier to measure the length of the body inserted into the independent variable (X), while the weight is inserted

dependent variable (Y). while the dependent variable (Y) in the research is a response to the measured result of the treatment / free variable (X). for example, the number of red blood cells due to treatment with certain doses, the number of microbes stored meat after a few days, heavy chicken on umu tertent and so on.

The relationship between the independent variable (X) to the dependent variable (Y) can be in the form of a polynomial of degree one (linear) second-degree polynomial (quadratic). Polinim third-degree (cubic), and so on. Besides, it can also in other forms, eg exponential, logarithmic, sigmoid and so forth. These forms in regression-correlation analysis is usually transformed into a form in order polynomial.

In its simplest form is a free eubah (X) with one dependent variable (Y) has the equation:

$$Y = a + bx$$

Here, a so-called intercept and the b coefficient directionsv. In terms of function equation Y + a + bx is only one that can be formed from two different points denagn coordinates are (X1, Y1) and X2, Y2). This means we can make a lot of line equation in another form through two create a different point coordinates.

THEORY OF REGRESSION

Determine the independent variable (X) and the dependent variable (Y).θ The independent variable (X) is typically a variable that is easily¬ obtainable or available, for analysis of independent variables declared with X1, X2, X3, ..., Xk, $(k \geq 1)$, dependent variable or response variable (Y).¬ Example: To fonemena between sediment debit debit streams, DPS and extensive forest cover, should be taken dependent variable debit sediment = Y and independent variable debit streams = X1, X2 and spacious DPS = forest = X3. But for two variables of

rainfall compared to that observed river discharge data from a DPS, then one could DSI download as independent variables.

Create a regression model for the general population:θ

$$Y = f\left(X_1, X_2, ..., X_k / \theta_1, \theta_2, ..., \theta_m\right)$$

Where the parameters contained in the regression. Simple regression to the population with an independent variable known as linear regression model:, $Y = \theta_1 + \theta_2 X$, θ_1 and θ_2 its parameters.

To one independent variable (regersi linear): θ_1 and θ_2 and from a random sample can be estimated by a and b, then the regression equation is $Y = a + bX$

To fonemena two independent variables (regersi non linear): where $\theta_1, \theta_2, ..., \theta_m$ parameters-parameters θ_1, θ_2 and θ_3, and from a random sample can be estimated by¬ a, b and c, then the regression equation in the form of a parabola that is $Y = \theta_1 + \theta_2 X + \theta_3 x^2$

Determine the regression equation, can be done with the free hand method and the least squares method.θ Here, just as described by the least squares method.

RESEARCH METHODS

Time and Data Research

The research was conducted by the author during the month of December 2016 by using economic variables GDP and Gov. Expenditure in 194 countries.

Data analysis

The data used is usually an interval or ratio scale.
Multiple linear regression equation as follows:

$$Y' = a + b1x1 + b2X2 + ... + bnXn$$

Information:
Y '= dependent variable (the predicted value)
X1 and X2 = independent variable
a = constant (Y value 'if X1, X2 ... ..Xn = 0)
b = regression coefficient (value increase or decrease)

From the above regression model, the authors do modeling on regression models were created in between, the model log, Ln, Abs, Diff, SQR and lag.

RESULTS AND DISCUSSION

Here are the results of the regression are made, presented in Table 1 below:

Table 1 : result regression analysis

Dependent Variable: GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-195882.6	367707.8	-0.532713	0.5948
GOV_EXPEND_	37613.38	22190.23	1.695042	0.0917
R-squared	0.014744	Akaike info criterion		31.35831
Adjusted R-squared	0.009612	Schwarz criterion		31.39199
F-statistic	2.873167	Hannan-Quinn criter.		31.37195
Prob(F-statistic)	0.091689	Durbin-Watson stat		0.203242

Dependent Variable: D(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-89848.32	47515.03	-1.890945	0.0601
D(GOV_EXPEND_)	4861.053	7080.263	0.686564	0.4932
R-squared	0.002462	Akaike info criterion		29.64832
Adjusted R-squared	-0.002761	Schwarz criterion		29.68213
F-statistic	0.471370	Hannan-Quinn criter.		29.66202
Prob(F-statistic)	0.493190	Durbin-Watson stat		0.342757

Dependent Variable: LOG(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.945767	1.300728	5.339908	0.0000
LOG(GOV_EXPEND_)	1.290009	0.477270	2.702894	0.0075
R-squared	0.036655	Akaike info criterion		4.551828
Adjusted R-squared	0.031638	Schwarz criterion		4.585517
F-statistic	7.305637	Hannan-Quinn criter.		4.565469
Prob(F-statistic)	0.007490	Durbin-Watson stat		0.066570

Dependent Variable: GDP(-1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-194633.1	373112.8	-0.521647	0.6025
GOV_EXPEND_(-1)	37545.44	22466.15	1.671200	0.0963
R-squared	0.014412	Akaike info criterion		31.36358
Adjusted R-squared	0.009252	Schwarz criterion		31.39739
F-statistic	2.792911	Hannan-Quinn criter.		31.37727
Prob(F-statistic)	0.096320	Durbin-Watson stat		0.203159

Dependent Variable: ABS(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-195882.6	367707.8	-0.532713	0.5948
ABS(GOV_EXPEND_)	37613.38	22190.23	1.695042	0.0917
R-squared	0.014744	Akaike info criterion		31.35831
Adjusted R-squared	0.009612	Schwarz criterion		31.39199
F-statistic	2.873167	Hannan-Quinn criter.		31.37195
Prob(F-statistic)	0.091689	Durbin-Watson stat		0.203242

Dependent Variable: SQR(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-150.6888	224.2222	-0.672051	0.5024
SQR(GOV_EXPEND_)	130.8270	56.42439	2.318625	0.0215
R-squared	0.027237	Akaike info criterion		15.32562
Adjusted R-squared	0.022171	Schwarz criterion		15.35931
F-statistic	5.376021	Hannan-Quinn criter.		15.33927
Prob(F-statistic)	0.021468	Durbin-Watson stat		0.090022

Source : Proceed by author

Interpretation of the equation is also relatively the same, as an illustration, the effect of GDP (X1) and Gov. expenditure (Y) produces the following equation for the model sqr:

$$Y = -150.6888 + 130.8270\ X1$$

If the variable GDP decreased by 150, assuming the variable Gov. expenditure will increase by 130.

Interpretation of the constants (0,027) also must be done carefully. If the measurement variables using a Likert scale of 1 to 5 then it should not be interpreted that if the variable motivation, compensation and leadership are zero, because these three variables may not be zero as the lowest Likert scale used is 1. And so on to the regression model other as presented below:

Substituted Coefficients:
==========
GDP = -195882.638892 + 37613.3769873*GOV_EXPEND_

Substituted Coefficients:
==========
D(GDP) = -89848.3238324 + 4861.05257244*D(GOV_EXPEND_)

Substituted Coefficients:
==========
LOG(GDP) = 6.94576681027 + 1.29000921575*LOG(GOV_EXPEND_)

Substituted Coefficients:
==========
GDP(-1) = -194633.051251 + 37545.4385154*GOV_EXPEND_(-1)

Substituted Coefficients:
==========
ABS(GDP) = -195882.638892 + 37613.3769873*ABS(GOV_EXPEND_)

Substituted Coefficients:
==========
SQR(GDP) = -150.688817444 + 130.826999866*SQR(GOV_EXPEND_)

CONCLUSION

From the research that is done it can be concluded that the model that created regrsi will produce figures for R squared and Constanta are different, as well as a significant probability levels are also different.

BIBLIOGRAPHY

1. A.S. Fotheringham, C. Brunsdon, and M. Charlton and Sandt Damanik Witwicky. (2002) Geographically weighted regression: the analysis of spatially varying relationships. Wiley.
2. Birkes, David and Yadolah Dodge, *Alternative Methods of Regression*. ISBN 0-471-56881-3
3. Chatfield, C. (1993) "Calculating Interval Forecasts," *Journal of Business and Economic Statistics,* **11**. pp. 121–135.
4. Corder, G.W. and Foreman, D.I. (2009).*Nonparametric Statistics for Non-Statisticians: A Step-by-Step Approach* Wiley, ISBN 978-0-470-45461-9
5. Draper, N.R. and Smith, H. (1998).*Applied Regression Analysis* Wiley Series in Probability and Statistics
6. Evan J. Williams, "I. Regression," pp. 523–41. Julian C. Stanley, "II. Analysis of Variance," pp. 541–554.
7. Fox, J. (1997). *Applied Regression Analysis, Linear Models and Related Methods*. Sage
8. Hardle, W., *Applied Nonparametric Regression* (1990), ISBN 0-521-42950-1
9. Lindley, D.V. (1987). "Regression and correlation analysis," New Palgrave: A Dictionary of Economics, v. 4, pp. 120–23.
10. Meade, N. and T. Islam (1995) "Prediction Intervals for Growth Curve Forecasts," *Journal of Forecasting,* **14**, pp. 413–430.
11. N. Cressie (1996) Change of Support and the Modiable Areal Unit Problem. Geographical Systems 3:159–180.
12. William H. Kruskal and Judith M. Tanur, ed. (1978), "Linear Hypotheses," *International Encyclopedia of Statistics*. Free Press, v. 1,