Jurnal
Ekonomi dan Kebijakan Publik Indonesia
Address: Gedung EKP, FEB Unsyiah, KOPELMA Darussalam, Banda Aceh
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BLOCK GRANT (DAU) AND POVERTY ALLEVIATION IN INDONESIA

Abstract

Dana Alokasi Umum (DAU) is the block grant allocated by central government to fill in the Fiscal gap as Indonesia implementing decentralization. The local government as mandated in the decentralization act can implement development program with the fund. Therefore, the fund can improve local economic activities and alleviate poverty in general. This study exercise econometrics model of regression to investigate the relationship between the DAU and poverty alleviation in Indonesia during 2000 to 2018. The result show that the fund only help to reduce poverty in lag time. Therefore, it implies the local government depend on the fund to activate the program in the region.

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Keywords:
Fiscal Decentralization, Block Grand, DAU, Public economics

INFORMASI ARTIKEL
Dikirim:1 Maret 2020
Diterima setelah revisi:1 April 2020
Diterima: 3 April 2020
Dipublikasi: Mei 2020

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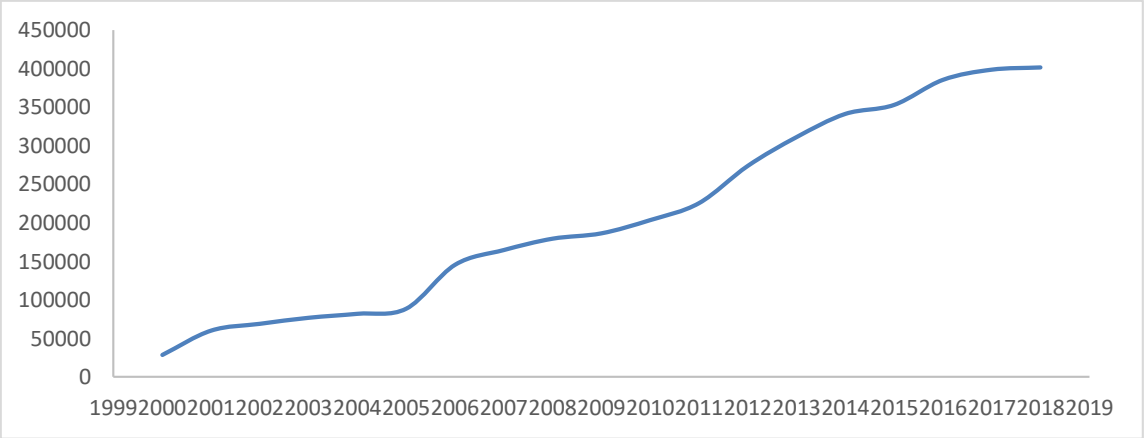
1. Introduction

Indonesia has applied autonomy and fiscal decentralization through UU No 22/1999 about Local Government and UU No 25/1999 about Local Budget. These two laws are upgraded being UU No 32/2004 about Local Government and UU No 33/2004 about Local Budget. The implication of the policy is the exist sharing between central government and local government about the government authority. It is followed by budget transfer from central government to finance the authority delegation in the autonomy era.

The purpose of autonomy is to push a district giving good and efficient services. Budget that has been transferred should be allocated to increase the availability of public facility for society's welfare. The budget transfer which lies under the intergovernmental transfer theory in Indonesia has three formats namely Dana Alokasi Umum (DAU), Dana Alokasi Khusus (DAK) and Dana Bagi Hasil. The DAU is a block grant, so that the local government has a freedom in implementing the fund to various program. This grant is given to reduce fiscal gap among districts so that district able to finance government expenditure in conducting development program, particularly for community development program, such as education, health, infrastructure, and economic development program. The block grant that has delivered through out Indonesia can be shown in the graphic below.

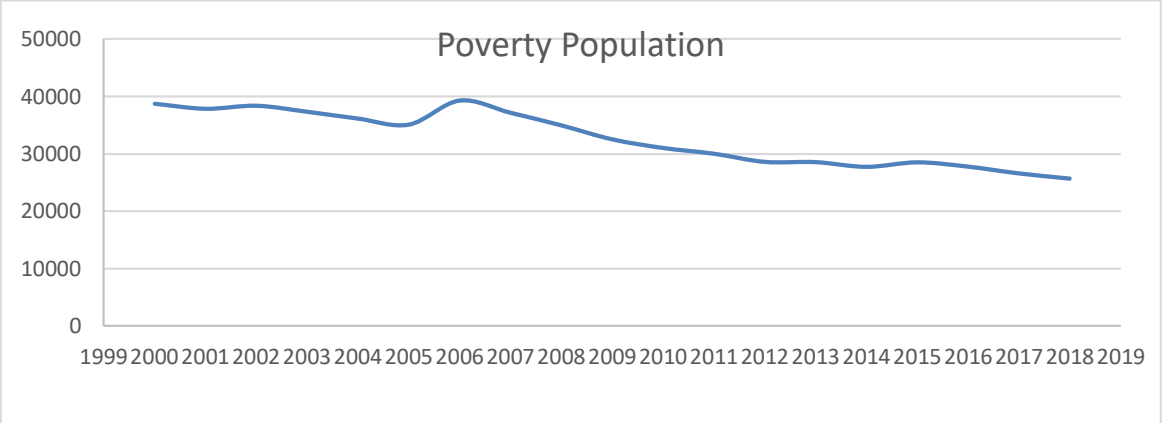


Graph 1. DAU Disbursement over 2000-2018

The graph showed an upward trend over the years. This grant is expected can push economy development and reduce fiscal gap to make a better social welfare. The increasing amount of the grant reflect the increasing need of fund in sub governmental level. As Rosen (2005) mention that the services provided by local government over time spread out and increasing especially

during the decentralization. The service then expected to improve local economic condition such as reducing the poverty.

The poverty alleviation become one of the target of the government in developing the country. Recent poverty level in Indonesia is 440,538 IDR per September 2019 and number of population in poverty is 24.79 million. The trend of population in poverty in Indonesia can be seen in the graph below



Graph 2. Poverty population over 2000-2018

The trend is downward reflecting the decreasing number of poverty in population. In 2000, the number was 38.74 million people with level of poverty as much as 91,632 IDR. The condition improve and the poverty population became 25,67 million people with poverty level of 410,670 IDR in 2018 (BPS website publication).

The opposite direction of the DAU grant and poverty population has intrigued an interesting subject of study. Theoretically, the grant should improve the local condition as the source of revenue for local government increase. Therefore this paper investigate the relationship of these variable to enrich the empirical sight of intergovernmental transfer practice in the case of Indonesia.

2. Literature Review

2.1 Local Autonomy and Decentralization

Autonomy is the right, authority, and obligation in one district to arrange and manage government function and community essential based on the law. Autonomy or decentralization is an instrument that has applied in developed country to make easier in decision making. The

effectiveness of autonomy depends on three variables, the authority of local government, the availability of revenue sources, and applied policy in government function and budget allocation.

The implementation of decentralization in the regional autonomy in the city / countydepend on on the performance of managerial aspects, Human Resources organization, as well as the aspects of bureaucratic culture, and ethics of public service (Habibi, 2015). Meanwhile, in generally, decentralization includes three aspect, they are political, administrative, and fiscal aspect. (Litvack et,al., 1998). Political aspect is the distribution of bigger authority from central government to local government in providing public facility. Administrative aspect is the distribution from central government to local government in authority, responsibility, and revenue sources among regions. Fiscal aspect is the distribution from central government to local government in exploring own source revenue, accepting transfer fund, and determining routine and investment expenses.

Furthermore, De Mello (2001), emphasized that decentralization is necessary to progress service delivery, implement and monitor poverty alleviation programs, strengthen the budget, as well as enhance the management of public affairs. Finally, the decentralization also enable local government and community to create their own desired development.

Some of research has done about this topic. Skira (2006) conducted the research about fiscal decentralization on poverty in 165 countries with 5 years interval data, 1965-2000. The result is there is a positive relationship between fiscal decentralization and poverty reduction through education empowerment. Rodríguez-Pose and Ezcurra (2010) studied decentralization effect on regional unbalanced. By using 26 countries data from 1990-2005, they found that in high income country decentralization reduced the regional disparities whereas in low income country the disparity increase. In Indonesia, Sasana (2018) proved that fiscal decentralization have significant impact on reducing the poverty in Central Java. Meanwhile, Khanal (2018) also found the fiscal decentralization impact in alleviating poverty especially human poverty in Nepal. However, Sepulveda and Martinez-Vazquez (2011) argument mention that the impact of decentralization on poverty on poverty was ambiguous depend on the characteristics of each fiscal decentralization process.

2.2 Block Grant -Dana Alokasi Umum (DAU)

Block grant is the grant from national budget to local government. Its purpose is smoothing financial ability among districts in autonomy application. Local government can determine the

allocation of block grant based on the priority. Block grant should be used to provide basic public services to society.

The determination of block grant is assembled in UU No. 33/2004, which is minimum allocation is 26% from net national revenue in national budget. Then 10% is allocated to all provinces and 90% is allocated to all municipalities in Indonesia. The basic principle of block grant is:

a. Adequacy

The first basic principle is adequacy. The indicator of adequacy should be related to government function. The financial burden in government function is not static but tends to increase because of some factors. As the function is increase, the block grant is also increase to have adequacy is fulfill**.**

b. Neutrality and Efficiency

These mean the allocation system must be good and can restore the distortion in relative price or input price for local economy. Therefore, the allocation system should apply many kinds of alternative financial instruments which relevant.

c. Accountability

It means that the usage of this grant must be accountable and determined by local's policy for its allocation. The legislative, government, and community's role is very important to determine the program priority.

d. Relevance

The block grant allocation system should refer to government task running and priority program to achieve national target. It is for the relevance through decentralization program.

e. Equity

It means that the allocation of block grant should give smoothing income distribution among districts.

f. Transparency

The good system in allocating block grant must minimize the manipulation possibility. It should be made a clear system and good formula. The best system is if the formula can be understood for public. The indicators are clear and transparent so that didn't have ambivalent interpretation.

g. Simplicity

The block grant formula must be simple not complicated.

The main obstacle facing by local government in autonomy enforcement is lack of own source revenue. This implies that local government has low independency in managing the budget. The majority of government expenditure whether routine or development is funded from block grant. In the short run, the way to increase own source revenue is increasing tax and levy. But in the long run, these can make economic situation down and decreasing own source revenue finally.

Generally, the block grant formula can be counted as follow:

Block Grant = Fiscal gap (FG) + Basic allocation (BA)

Fiscal gap = fiscal need – fiscal capacity

Fiscal need = Average of local expenditure x (Population index, Area index, construction cost index, human development index, gross domestic ragional product per capita.

$$\text{Fiscal need} = \text{Average local expenditure } x \begin{bmatrix} \text{Population index} \\ \text{Area index} \\ \text{Construction cost index} \\ \text{Human development index} \\ \text{Gross domestic regional product per capita} \end{bmatrix}$$

$$\text{Average local expenditure} = \frac{\text{Employment expense} + \text{Capital expense} + \text{barang expense}}{\text{Number of municipalities}}$$

Fiscal capacity = Own source revenue + Revenue Sharing Fund

Basic allocation = The amount of all local employment expenses

Block Grant = 26% x Revenue in National Budget

Block grant for provinces = 10% x 26 % of Revenue in National Budget

Block grant for municipalities = 90% x 26% of Revenue in National Budget

The block grant for each province and municipality is counted as follow:

$$\text{Block grant for province (i)} = \frac{\text{FG of Province (i)}}{\sum \text{FG of all provinces}} x \text{ Block grant allocation for provinces}$$

$$\text{Block grant for municipali ty (i)} = \frac{\text{FG of municipali ty (i)}}{\sum \text{FG of all municipali ties}} x \text{ Block grant allocation for municipali ties}$$

The impact of DAU in Indonesia have been studied by many scholars with various result. Prakosa (2004) mention that DAU support the local government operational activities especially those with limited natural resource regions. Moreover, Lestari et.al. (2018) found that DAU influence the direct spending of local government in Bali while Tuasikal (2008), the earlier study found the increase in DAU has increased the capital spending in kabupaten/kota through out Indonesia. Based on these studies where DAU able to increase local government spending, supposed to have the impact on reducing the poverty.

3. Research Method

This study use secondary data from the Bank Indonesia and Statistics Indonesia website publication. It is a quarterly time series data from 2000 to 2018. However, only annually data is available. Therefore, this study exercise the Chow-Lin interpolation method embodied in Eviews 9.0 to get the quarterly data so that statistical requirement of data distribution for the regression model is fulfilled.

To achieve the objectives of the study in observing the relationship between block grand (DAU) and poverty elimination in the region the study employ the multiple regression model using ordinary least squares method. The basic regression model as followed:

$$Y_t = \beta_1 + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_t$$

Where Yt is dependent variable (number of population under poverty line) and Xs are dependent variables that are bloc grand (DAU) as the observed variable and gross domestic product (GDP) as the control variable. Therefore, the model becomes:

$$Povpop_t = \beta_1 + \beta_2 DAU_t + \beta_3 GDP_t + \varepsilon_t$$

The relationship between dependent and independent variables then reflected in the parameters (βs) and the robustness of the model analyzed using the classical assumption and model selection criterion.

4. Empirical result and discussion

This paper exercises three types of data that are level, ratio and logarithm data transformation to get the best βs estimations[2]. For model with ratio, dependent variable is ratio of number of poverty population to total population while independent variables are ratio of DAU to total government expenditure and income (GDP) per capita.

Selecting the best model the study uses some criterions. First, model selection criterion such as HQ, SC, and AIC shows that the ratio model has the lowest value. Second, the R squares shows that independent variables in basic model explain more than 90% of dependent variable. Lastly, the criterion is from classical assumption test that is autocorrelation and heteroscedasticity. Autocorrelation test is applying Durbin-Watson test while heteroscedasticity in this study use ARCH test. The result as follows:

Table 1. Model selection criterion

	Model 1	**Model 2**	**Model 3**
Model Selection			
Hannan-Quinn criterion.	14.15521	-1.442120	-7.430296
Schwarz criterion	14.30747	-1.289863	-7.278038
Akaike info criterion	14.05451	-1.542825	-7.531001
Serial correlation Test			
DW	1.898108	1.820214	1.913876
B-G Serial Correlation LM Test Prob Chi-Squared	0.8551	0.3683	0.8791
Heteroscedasticity test			
ARCH test Prob Chi-Squared	0.7310	0.1459	0.6873

The table showed that even though the model 2 or the ratio model has the lowest HQ, SC and AIC value but the serial correlation and heteroscedastic test captured the best result in the third model that is log transform model.

The estimation result for all models is described in following Table 2.

Table 2. Regression Result

Variable	Model 1	Model 2	Model 3
	Level	Ratio	Log transformation
Block Grand-DAU	0.072632***	0.260092***	0.218054***
GDP	-0.000756	-0.001105	0.113232

[2] Complete calculation showed in appendix.

Poverty population			
Lag (1)	1.593164***	1.380790***	1.597243***
Lag (2)	-0.663953***	-0.476679***	-0.675609***
DAU			
Lag (1)	-0.126636***	-0.333926***	-0.316730***
Lag (2)	0.057500***	0.105997**	0.120803***
GDP			
Lag (1)	0.000596	0.000960	-0.145943*
R Squared	0.997070	0.998767	0.998653
R Squared Adjusted	0.996749	0.998633	0.998505
Fstat	3110.836***	7408.151***	6776.452***

*** significant at 1%; ** significant at 5%; * significant at 10%

Table 2 explain that most of the variables in all models have high significance level. Mostly the relationships are similar which reflect in the small range of difference for R squared and the F statistics probability level. However, as mention before, the serial correlation and heteroscedasticity test conducted to the models select the third model as the most appropriate model. Therefore, this paper only interpret the chosen model, namely the log transform model. The model is written as follows:

$$lpovpop = 1.0475 + 0.2lDAU + 0.11lgdp - 0.32lDAU_{-1} + 0.21lDAU_{-2} - 0.15\, lgdp_{-1} + 0.59lpovpop_{-1} - 0.67lpovpop_{-2}$$

R squared = 99%

R squared adj =99%

F stat = 6776.452***

The result showed that an increase of 1 percent DAU in current time increase poverty population about 0.2 percent but an increase in 1 percent DAU in a quarter earlier can reduce quarter in the current year.Tthere is no budget disbursement because all local government still under negotiation with the local parliament to pass the yearly budget of the local government either for provincial or districts level.

The GDP coefficient only has significant relation in reducing poverty after a quarter year. The result depicts that 1 percent increase in GDP after a quarter (GDP_{-1}) reduce the poverty as much as 0.15 percent. However, the current GDP is not statistically significant hence, cannot be interpreted.

Most interesting is the autoregressive variable that is lag of poverty population which significantly affect the dependent variable. The lag of first quarter show a positive relation to

current poverty population whereas the lag of second quarter show a negative relation. Therefore, an increase of 1 percent of one quarter earlier poverty population increase 0.59 percent current population but the increase of 1 percent two quarter earlier reduces the poverty population for 0.67 percent current population.

Sepulveda and Martinez-Vazquez (2011) explained that the direct effect of fiscal decentralization on poverty involved the role of subnational government especially in implementing the retributive policies in the region. For the case of Indonesia, Lestari et.al. (2019) found that DAU influence the direct expenditure of Bali province. The direct spending based on the Minister of Internal Affairs rule no.59/2007 (Permendagri no.59/2007), the direct expenditure include the personnel's salary/wage , spending on goods and services (supplies) and also capital expenditure for government i.e. land and building purchased. Such spending has limited impact on poverty eradication.

Comparing the finding in this study then no wonder that the magnitude of the coefficients are small since the DAU spent on nonproductive sector. The nonproductive sector has limited multiplier on economic activities that connected to poverty alleviation.

5. Conclusion and Policy Implication

The block grant, namely, Dana Alokasi Umum (DAU) can contribute to poverty eradication after a lag time that after one quarter. Moreover, Gross Domestic Product (GDP) also play significant role in poverty alleviation after one period lag or after a quarter year. Furthermore, the number of population in poverty also influenced by previous number of poverty population.

The implication due to this study is that the local government must ensure the use of block grant to achieve the development target in the region. Hence, the proper allocation of productive and non-productive use of the block grant so that poverty alleviation target can be achieved.

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Appendix

Regression result

Model 1
Level Model

Dependent Variable: POVPOPQ
Sample (adjusted): 2000Q2 2018Q1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BLOCKQ	0.072632	0.013594	5.342787	0.0000
GDPQ	-0.000756	0.000658	-1.148739	0.2549
POVPOPQ(-1)	1.593164	0.087104	18.29041	0.0000
GDPQ(-1)	0.000596	0.000641	0.930124	0.3558
POVPOPQ(-2)	-0.663953	0.073881	-8.986810	0.0000
BLOCKQ(-1)	-0.126636	0.025979	-4.874580	0.0000
BLOCKQ(-2)	0.057500	0.014630	3.930240	0.0002
C	2726.934	917.1474	2.973278	0.0041

R-squared	0.997070	Mean dependent var	33307.27
Adjusted R-squared	0.996749	S.D. dependent var	4539.174
S.E. of regression	258.8101	Akaike info criterion	14.05451
Sum squared resid	4286890.	Schwarz criterion	14.30747
Log likelihood	-497.9622	Hannan-Quinn criter.	14.15521
F-statistic	3110.836	Durbin-Watson stat	
Prob(F-statistic)	0.000000		

Model 2
Model Ratio

Dependent Variable: POVRATIO
Sample (adjusted): 2000Q2 2018Q1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
YC	-0.001105	0.000708	-1.560352	0.1236
BLOCKRATIO	0.260092	0.039545	6.577148	0.0000
YC(-1)	0.000960	0.000707	1.357244	0.1795
BLOCKRATIO(-1)	-0.333926	0.072714	-4.592326	0.0000
BLOCKRATIO(-2)	0.105997	0.041308	2.566004	0.0126
POVRATIO(-1)	1.380790	0.109298	12.63329	0.0000
POVRATIO(-2)	-0.476679	0.094767	-5.029996	0.0000
C	1.132733	0.402920	2.811306	0.0065

R-squared	0.998767	Mean dependent var	14.23613
Adjusted R-squared	0.998633	S.D. dependent var	2.871484
S.E. of regression	0.106185	Akaike info criterion	-1.542825
Sum squared resid	0.721619	Schwarz criterion	-1.289863
Log likelihood	63.54172	Hannan-Quinn criter.	-1.442120
F-statistic	7408.151	Durbin-Watson stat	1.820214
Prob(F-statistic)	0.000000		

Model 3
Model Log Transformation

Dependent Variable: LPOVPOPQ
Sample (adjusted): 2000Q2 2018Q1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LBLOCKQ	0.218054	0.022586	9.654429	0.0000
LGDPQ	0.113232	0.084117	1.346117	0.1830
LPOVPOPQ(-1)	1.597243	0.081124	19.68886	0.0000
LPOVPOPQ(-2)	-0.675609	0.075612	-8.935171	0.0000
LBLOCKQ(-1)	-0.316730	0.041900	-7.559265	0.0000
LBLOCKQ(-2)	0.120803	0.024441	4.942617	0.0000
LGDPQ(-1)	-0.145943	0.084693	-1.723193	0.0897
C	1.047596	0.233873	4.479334	0.0000

R-squared	0.998653	Mean dependent var	10.40426
Adjusted R-squared	0.998505	S.D. dependent var	0.137550
S.E. of regression	0.005318	Akaike info criterion	-7.531001
Sum squared resid	0.001810	Schwarz criterion	-7.278038
Log likelihood	279.1160	Hannan-Quinn criter.	-7.430296
F-statistic	6776.452	Durbin-Watson stat	1.913876
Prob(F-statistic)	0.000000		

Serial Correlation Test

Model 1
Level Model

Sample: 2000Q1 2018Q4
Included observations: 72
Q-statistic probabilities adjusted for 2 dynamic regressors

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	0.029	0.029	0.0627	0.802
. | . |	. | . |	2	0.028	0.027	0.1224	0.941
. | . |	. | . |	3	0.040	0.038	0.2430	0.970
. | . |	. | . |	4	-0.053	-0.056	0.4622	0.977
. | . |	. | . |	5	0.033	0.034	0.5463	0.990
. | . |	. | . |	6	0.027	0.027	0.6054	0.996
. | . |	. | . |	7	0.026	0.027	0.6614	0.999
. | . |	. | . |	8	-0.003	-0.012	0.6620	1.000
. | . |	. | . |	9	0.028	0.029	0.7304	1.000
. | . |	. | . |	10	0.015	0.014	0.7498	1.000
. | . |	. | . |	11	0.001	0.001	0.7500	1.000
.*| . |	.*| . |	12	-0.135	-0.143	2.3734	0.999
. | . |	. | . |	13	-0.021	-0.012	2.4140	0.999
. | . |	. | . |	14	-0.025	-0.017	2.4714	1.000
. | . |	. | . |	15	-0.029	-0.018	2.5480	1.000
. |*. |	. |*. |	16	0.166	0.155	5.1621	0.995
. | . |	. | . |	17	-0.013	-0.013	5.1787	0.997
. | . |	. | . |	18	-0.019	-0.020	5.2148	0.998
. | . |	. | . |	19	-0.024	-0.030	5.2728	0.999
. | . |	. | . |	20	0.033	0.056	5.3847	1.000
. | . |	. | . |	21	-0.048	-0.053	5.6262	1.000
. | . |	. | . |	22	-0.049	-0.053	5.8837	1.000

. | . |	. | . |	23	-0.046	-0.054	6.1121	1.000
***| . |	***| . |	24	-0.376	-0.397	21.807	0.591
. | . |	. | . |	25	-0.014	-0.014	21.829	0.646
. | . |	. | . |	26	-0.017	-0.012	21.864	0.696
. | . |	. | . |	27	-0.027	-0.007	21.951	0.740
. | . |	. |*. |	28	0.040	0.083	22.144	0.775
. | . |	. | . |	29	-0.024	0.012	22.214	0.811
. | . |	. | . |	30	-0.018	0.013	22.255	0.845
. | . |	. | . |	31	-0.013	0.013	22.275	0.874
.*| . |	.*| . |	32	-0.100	-0.118	23.609	0.858

*Probabilities may not be valid for this equation specification.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.135347	Prob. F(2,62)	0.8737
Obs*R-squared	0.312987	Prob. Chi-Square(2)	0.8551

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Sample: 2000Q2 2018Q1
Included observations: 72
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BLOCKQ	0.000404	0.013805	0.029289	0.9767
GDPQ	1.79E-05	0.000668	0.026853	0.9787
POVPOPQ(-1)	-0.054429	0.137174	-0.396790	0.6929
GDPQ(-1)	-4.68E-05	0.000656	-0.071384	0.9433
POVPOPQ(-2)	0.044547	0.114073	0.390509	0.6975
BLOCKQ(-1)	0.002356	0.026724	0.088147	0.9300
BLOCKQ(-2)	-0.002076	0.015359	-0.135172	0.8929
C	358.7796	1157.605	0.309933	0.7577
RESID(-1)	0.082934	0.183925	0.450912	0.6536
RESID(-2)	0.069619	0.163952	0.424626	0.6726

R-squared	0.004347	Mean dependent var	1.08E-11
Adjusted R-squared	-0.140183	S.D. dependent var	245.7208
S.E. of regression	262.3791	Akaike info criterion	14.10570
Sum squared resid	4268254.	Schwarz criterion	14.42191
Log likelihood	-497.8054	Hannan-Quinn criter.	14.23159
F-statistic	0.030077	Durbin-Watson stat	1.963977
Prob(F-statistic)	0.999997		

Model 2
Model Ratio

Sample: 2000Q1 2018Q4
Included observations: 72
Q-statistic probabilities adjusted for 2 dynamic regressors

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob*

. | . |	. | . |	1	0.072	0.072	0.3920	0.531
. | . |	. | . |	2	0.035	0.030	0.4851	0.785
. | . |	. | . |	3	0.054	0.050	0.7113	0.871
**| . |	**| . |	4	-0.274	-0.285	6.5880	0.159
. | . |	. | . |	5	-0.032	0.007	6.6717	0.246
. | . |	. | . |	6	-0.026	-0.009	6.7257	0.347
. | . |	. | . |	7	-0.007	0.034	6.7295	0.458
. |*. |	. |*. |	8	0.204	0.139	10.188	0.252
. | . |	. | . |	9	0.005	-0.031	10.190	0.335
. | . |	. | . |	10	-0.023	-0.050	10.238	0.420
. | . |	. | . |	11	-0.034	-0.053	10.337	0.500
. | . |	. | . |	12	-0.043	0.064	10.503	0.572
. | . |	. | . |	13	-0.038	-0.033	10.630	0.642
. | . |	. | . |	14	-0.053	-0.059	10.883	0.695
. | . |	.*| . |	15	-0.059	-0.087	11.214	0.737
.*| . |	.*| . |	16	-0.152	-0.185	13.425	0.642
. | . |	. | . |	17	-0.029	-0.004	13.506	0.702
. | . |	. | . |	18	-0.016	-0.003	13.531	0.759
. | . |	. | . |	19	0.003	0.015	13.533	0.810
. |*. |	. |*. |	20	0.202	0.131	17.727	0.605
. | . |	.*| . |	21	-0.024	-0.073	17.786	0.662
. | . |	. | . |	22	-0.028	-0.043	17.870	0.714
. | . |	. | . |	23	-0.027	-0.028	17.947	0.760
***| . |	**| . |	24	-0.414	-0.325	36.972	0.044
. | . |	. |*. |	25	0.050	0.117	37.260	0.055
. | . |	. | . |	26	0.039	0.039	37.439	0.068
. | . |	. | . |	27	0.001	0.003	37.439	0.087
. |** |	. | . |	28	0.275	0.052	46.600	0.015
. | . |	.*| . |	29	-0.047	-0.101	46.877	0.019
. | . |	. | . |	30	-0.048	-0.065	47.174	0.024
. | . |	. | . |	31	-0.035	-0.049	47.331	0.030
**| . |	.*| . |	32	-0.260	-0.113	56.305	0.005

*Probabilities may not be valid for this equation specification.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.884676	Prob. F(2,62)	0.4180
Obs*R-squared	1.997722	Prob. Chi-Square(2)	0.3683

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Sample: 2000Q2 2018Q1
Included observations: 72
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
YC	-8.60E-05	0.000713	-0.120593	0.9044
BLOCKRATIO	0.007466	0.040077	0.186288	0.8528
YC(-1)	3.11E-05	0.000709	0.043872	0.9651
BLOCKRATIO(-1)	0.053423	0.083507	0.639743	0.5247
BLOCKRATIO(-2)	-0.043976	0.053168	-0.827114	0.4113
POVRATIO(-1)	-0.242300	0.212910	-1.138039	0.2595
POVRATIO(-2)	0.206635	0.182308	1.133443	0.2614
C	0.300306	0.465028	0.645779	0.5208
RESID(-1)	0.300571	0.233227	1.288748	0.2023

RESID(-2)	0.172170	0.176067	0.977866	0.3319

R-squared	0.027746	Mean dependent var	3.86E-15
Adjusted R-squared	-0.113387	S.D. dependent var	0.100815
S.E. of regression	0.106377	Akaike info criterion	-1.515408
Sum squared resid	0.701596	Schwarz criterion	-1.199205
Log likelihood	64.55470	Hannan-Quinn criter.	-1.389527
F-statistic	0.196595	Durbin-Watson stat	2.041370
Prob(F-statistic)	0.993734		

Model 3
Model Log Transformation

Sample: 2000Q1 2018Q4
Included observations: 72
Q-statistic probabilities adjusted for 2 dynamic regressors

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	0.037	0.037	0.1020	0.749
. | . |	. | . |	2	0.006	0.004	0.1044	0.949
. | . |	. | . |	3	0.012	0.011	0.1150	0.990
***| . |	***| . |	4	-0.410	-0.411	13.276	0.010
.*| . |	.*| . |	5	-0.107	-0.090	14.182	0.014
. | . |	. | . |	6	-0.054	-0.055	14.416	0.025
. | . |	. | . |	7	0.009	0.032	14.423	0.044
. |*. |	.*| . |	8	0.097	-0.081	15.199	0.055
. | . |	.*| . |	9	0.016	-0.076	15.220	0.085
. | . |	. | . |	10	0.012	-0.053	15.231	0.124
. | . |	. | . |	11	0.010	0.016	15.240	0.172
.*| . |	**| . |	12	-0.189	-0.220	18.403	0.104
. | . |	.*| . |	13	-0.042	-0.080	18.564	0.137
. | . |	.*| . |	14	-0.023	-0.069	18.610	0.180
. | . |	. | . |	15	-0.016	-0.015	18.635	0.231
. |** |	. | . |	16	0.217	0.072	23.100	0.111
. | . |	.*| . |	17	0.005	-0.098	23.103	0.146
. | . |	. | . |	18	0.032	-0.040	23.206	0.183
. | . |	. | . |	19	0.063	0.042	23.608	0.212
.*| . |	. | . |	20	-0.092	0.024	24.469	0.222
. | . |	. | . |	21	0.008	-0.007	24.476	0.271
. | . |	. | . |	22	0.013	0.014	24.494	0.322
. | . |	. | . |	23	-0.012	0.036	24.509	0.376
**| . |	**| . |	24	-0.205	-0.304	29.179	0.213
. |*. |	. |*. |	25	0.079	0.113	29.893	0.228
. | . |	. | . |	26	0.031	0.038	30.006	0.267
. | . |	. | . |	27	-0.020	-0.001	30.055	0.312
. |*. |	.*| . |	28	0.081	-0.107	30.857	0.323
. | . |	. | . |	29	-0.055	-0.048	31.232	0.355
. | . |	. | . |	30	-0.037	-0.020	31.408	0.396
. | . |	. | . |	31	-0.028	0.009	31.508	0.441
.*| . |	**| . |	32	-0.156	-0.301	34.736	0.339

*Probabilities may not be valid for this equation specification.

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.111345	Prob. F(2,62)	0.8948

Obs*R-squared	0.257682	Prob. Chi-Square(2)	0.8791

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Sample: 2000Q2 2018Q1
Included observations: 72
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LBLOCKQ	-3.98E-05	0.022953	-0.001734	0.9986
LGDPQ	0.018149	0.094595	0.191857	0.8485
LPOVPOPQ(-1)	-0.050144	0.137610	-0.364390	0.7168
LPOVPOPQ(-2)	0.043319	0.122014	0.355028	0.7238
LBLOCKQ(-1)	0.010915	0.049193	0.221871	0.8251
LBLOCKQ(-2)	-0.007858	0.030422	-0.258304	0.7970
LGDPQ(-1)	-0.021887	0.098944	-0.221211	0.8257
C	0.091560	0.314979	0.290687	0.7723
RESID(-1)	0.090985	0.193915	0.469202	0.6406
RESID(-2)	0.040105	0.160625	0.249682	0.8037

R-squared	0.003579	Mean dependent var	-4.09E-15
Adjusted R-squared	-0.141063	S.D. dependent var	0.005049
S.E. of regression	0.005393	Akaike info criterion	-7.479031
Sum squared resid	0.001804	Schwarz criterion	-7.162827
Log likelihood	279.2451	Hannan-Quinn criter.	-7.353149
F-statistic	0.024743	Durbin-Watson stat	2.003298
Prob(F-statistic)	0.999999		

Heteroscedasticity Test

Model 1
Level Model

Heteroskedasticity Test: ARCH

F-statistic	0.115047	Prob. F(1,69)	0.7355
Obs*R-squared	0.118184	Prob. Chi-Square(1)	0.7310

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Sample (adjusted): 2000Q3 2018Q1
Included observations: 71 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	57857.81	18733.15	3.088525	0.0029
RESID^2(-1)	0.040963	0.120770	0.339185	0.7355

R-squared	0.001665	Mean dependent var	60228.29

Adjusted R-squared	-0.012804	S.D. dependent var	145523.6
S.E. of regression	146452.3	Akaike info criterion	26.65455
Sum squared resid	1.48E+12	Schwarz criterion	26.71829
Log likelihood	-944.2366	Hannan-Quinn criter.	26.67990
F-statistic	0.115047	Durbin-Watson stat	1.985940
Prob(F-statistic)	0.735500		

Model 2
Model Ratio

Heteroskedasticity Test: ARCH

F-statistic	2.118403	Prob. F(1,69)	0.1501
Obs*R-squared	2.114877	Prob. Chi-Square(1)	0.1459

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Sample (adjusted): 2000Q3 2018Q1
Included observations: 71 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008451	0.002702	3.127179	0.0026
RESID^2(-1)	0.172957	0.118832	1.455474	0.1501

R-squared	0.029787	Mean dependent var	0.010149
Adjusted R-squared	0.015726	S.D. dependent var	0.020701
S.E. of regression	0.020538	Akaike info criterion	-4.905342
Sum squared resid	0.029104	Schwarz criterion	-4.841605
Log likelihood	176.1397	Hannan-Quinn criter.	-4.879996
F-statistic	2.118403	Durbin-Watson stat	1.968600
Prob(F-statistic)	0.150073		

Model 3
Model Log Transformation

Heteroskedasticity Test: ARCH

F-statistic	0.157783	Prob. F(1,69)	0.6924
Obs*R-squared	0.161986	Prob. Chi-Square(1)	0.6873

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Sample (adjusted): 2000Q3 2018Q1
Included observations: 71 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.40E-05	7.93E-06	3.029046	0.0034
RESID^2(-1)	0.047800	0.120337	0.397219	0.6924

R-squared	0.002281	Mean dependent var	2.52E-05
Adjusted R-squared	-0.012178	S.D. dependent var	6.13E-05
S.E. of regression	6.17E-05	Akaike info criterion	-16.52237
Sum squared resid	2.62E-07	Schwarz criterion	-16.45863
Log likelihood	588.5442	Hannan-Quinn criter.	-16.49702
F-statistic	0.157783	Durbin-Watson stat	1.995224
Prob(F-statistic)	0.692432		