The Effect of Interest Rate, Inflation and Government Expenditure on Economic Growth in Indonesia Period of 2005-2012

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Abstract

This study analyzed the effect of interest rates, inflation rates and government spending on economic growth in Indonesia during 2005 to 2012. By using the method of data analysis panel, overall the independent variables namely interest rate, inflation rate and government spending has a 99% influence on the dependent variable of economic growth. The results of this research is government spending has a positive significant to economic growth. It means that government spending has an effect on economic growth, according to Keynesian theory. Variable interest rate has a significant negative to economic growth, it means that the interest rate effect on economic growth. If the central bank decrease the interest rate, then the investment will be increase, and it means economic growth will also increase. While the rate of inflation also affect economic growth, inflation has a significant positive to economic growth, because the inflation rate in Indonesia is relatively low, it is below 10% and stable.

Keywords: interest rate, inflation, government expenditure, economic growth

1. Introduction

Benchmark of advance in a country can be identified from the rapid development of its economy from year to year. Since the development of economy will directly impact to the rate of social economic welfare. In addition, it can contribute to the government, through increasing tax revenue along with the development of economic activities. Rate of tax revenue position in Indonesia is classified still lower than other countries in ASEAN, as the comparison is as follows :

Table 1 : Table Rate of tax revenue (%) from GDP

Country	2005	2006	2007	2008	2009	2010	2011	2012
Indonesia	12,50	12,25	12,43	13,04	11,43	10,85	11,77	*
Malaysia	14,83	14,52	14,30	14,66	14,94	13,74	15,25	16,11
Singapore	11,80	12,07	13,04	13,97	13,32	13,23	13,78	*
Thailand	17,24	16,74	16,12	16,45	15,16	15,97	17,55	*

* = Data is not available

Source : World Bank

From table of Rate of tax revenue above, the average rate of tax revenue in Indonesia tend to be smaller than the neighboring countries. It shows that the rate of tax revenue in Indonesia needs to be improved. It is not by directly issuing policy of increasing tax rate but more specifically to stimulate exonomic activities, that enable to give bigger tax revenue along with higher economic activities.

While other reasons, related to economic growth theory of neoclassic ideas from solow-swan, stating Q=f(K,L). Which Q is quantity of production output influenced by capital things (K) and workforce (L). Thus, when the economic growth is positive, it can be used as a benchmark to add the capital , which is also assumed as increasing investment . Further if the capital increased, it is expected to provide more job vacancies to reduce the rate of unemployment. The amount of unemployment in Indonesia is still very high if compared to some other countries in ASEAN as follows :

Table 2 : Table amount of unemployment (%)

Country	2005	2006	2007	2008	2009	2010	2011	2012
Indonesia	11,2	10,3	9,1	8,4	7,9	7,1	6,6	*
Malaysia	3,5	3,3	3,2	3,3	3,7	3,4	3,1	3
Singapore	4,1	3,6	3	3,2	4,3	3,1	2,9	2,8
Thailand	1,3	1,2	1,2	1,2	1,5	1	0,7	0,7

* = Data is not available

Source : World Bank

From data amount of unemployment in percentage by comparing Indonesia with some neighboring countries such as Malaysia, Singapore, and Thailand for the last eight years, the author find a tendency for rate of unemployment in Indonesia is still relatively high if compared to the neighboring countries. It can be identified from the table that Thailand has the least rate of unemployment . This is possible due to the low production cost rate in Thailand compared to that of in Indonesia, with low rate of labor wage, it stimulates increasing investment to enter Thailand massively that provide a lot of job field.

Ideas underlying this research, is argument of Keynes related to determinant factors of economic activities in a country. Keynes argues that to measure economic activities of a country is from the demand point of view. If the demand for goods or service is high, the producer will increase its production rate and further lead to the increase of job field to fulfil the high productivity. On the contrary, if the demand of goods and service is low, then it leads to the decrease of production and increase the amount of unemployment. Either directly or not, from the whole demand (agregat demand) it will impact to rate of price and inflation happened on economy of a country. Agregat demand (AD) as the benchmark of economic growth (Y) according to keynes, is divided to be three sectors, including expenditure of household sector (C), expenditure of private sector in form of investment (I) government expenditure sector (G). If adopting open economy, it is included in foreign trades factor that is export netto (X - M).

While in this research the test is only conducted to two sectors in influencing economic growth, including private sector expenditure in form of investment (I) influenced by interest rate policy of Bank of Indonesia (investment function = y,i), and government expenditure sector(G) added with inflation rate as the impact of economic activity. In which the value of Y will use GDP data from 33 provinces in Indonesia. Thus government expenditure variable uses local expenditure which is divided to be two, direct and indirect expenditures of government of each provinces. Based on the   enactment of regulation no 32 of 2004 related to local autonomy, the local government has authority to manage the government expenditure which further regulated by Permendagri No. 59 Year 2007 changes over permendagri no 13 of 2006 dividing local expenditure to be classified based on its relationship to activity, so that expenditure is classified to be two, indirect expenditure and direct expenditure. Indirect expenditure itself consists of expenditure of staffing, expenditure of interest, expenditure of subsidiary, expenditure of grant, expenditure of financial support, expenditure of social support and expenditure of unpredictable thing. While direct expenditure consist of expenditure of staff, expenditure of capital and expenditure of goods or service.

Further impact of interest rate and inflation, the two things are closely related by the issuence of government policy particularly for Bank of Indonesia as the policy holder related to interest rate as one of inflation controller policy instrument and the inflation itself is able to influence economic growth. According to Bank of Indonesia definition of standard interest rate is interest policy reflecting a stance or monetary *stance* policy stated by Bank of Indonesia and announced to public, By considering other factors in economy, Bank of Indonesia generally will raise BI Rate if inflation forward is predicted to be above the stated target, on the contrary Bank of Indonesia will reduce BI Rate if inflation forward is predicted to be below the stated target.

While definition of inflation according to Mankiw (2007) inflation is tendency for increasing price generally and continously. Price raising of one or two kinds of things only are not considered as inflation, except if the price raising has spread out to most of other goods price. According to classic money theory, changes of price rate as a whole is like changes of measure units. Because actually social economic welfare depends on relative price, not on the whole of price rate (Mankiw, 2007).

From definition of interest rate and inflation the author found a close relationship with economic growth for instance, when inflation is indicated to raising soon, then to control the inflation rate, Bank of Indonesia makes a policy of raising interest rate. Thus impact of interest rate raising will encourage people to save their money in the bank, that amount of money circulat in the society will decreased and reduce buying power of society, further is expected to be able to reduce the price of goods and lead to lower inflation rate. on the contrary if inflation is low enogh, the interest rate will be reduced. This will encourage people to choose for investment than for saving, since investment profit is higher than saving in the bank. From the increase of investment it will impact on increase of goods and service production so that increase agregat supply too.

 From explanation above, the researcher is interested to test effect of interest rate, inflation rate and expenditure of government toward economic growth in Indonesia during periode 2005-2012.

2. METHOD
Data used in this research is annual time series data (annual) for 8 years from periode 2005-2012 and cross section data from 33 provinces throughout Indonesia. Since the research data examined are 2 types of data time series and cross section, then to analize and test the hypothesis in this research is by using analysis model of panel data regression (pooled data). According to Pyndick and Rubenfeld (1998) panel data is combination of time series data (time periode) and cross section data (individual sample data). While according to Gujarati (2003), panel data is used if the amount of observation is more than one and the total unit of *cross section* is also

ore than one. (for example : amount of company, amount of country, dsb) and *time series* (for example: day, month, year, dsb). In panel data, the same *cross section* unit is surveyed throughout the day (Gujarati, 2003). Advantages of useing panel data according to Gujarati (2003) and Baltagi (2005) are :

1. can minimize individual heterogenity
2. can measure effect that cannot be observed with *time series and cross section*.
3. can interprate well and efficiently, because in this modelling, information inputted is so lot that can reduce kolinearity among variable and with better *degree of freedom* .
4. Dynamics of changes from variable observed can be catched better because in this metode , *cross section* unit is observed continously.
5. Allow to learn more complex behavior.
6. can minimize the bias appeared as a result of false data grouping.

Model of panel data regression used in this research is regression model as follows :

$Y_{it} = \beta_0 + \beta_1 \, gov1_{it} + \beta_2 \, gov2_{it} + \beta_3 \, birt_{it} + \beta_4 \, Inf_{it} + e_{it}$

Which are :

Y = GDP value of provinces in Indonesia year 2005-2012
Gov1 = direct expenditure amount of provinces in Indonesia year 2005- 2012
Gov2 = indirect expenditure amount of provinces in Indonesia year 2005 - 2012
Birt = BIrate value in Indonesia at 2005 – 2012
Inf = inflation value of provinces in Indonesia th 2005 – 2012

3. RESULT
Discussion of the regression result

 The result of Haussman test conducted on panel data regression in this research shows that probability value of haussman test is 0,000 smaller than alpha 0,5. The result of Haussman test is a test to decide which model is the best from fix effect or random effect to be chosen in panel data regression. Thus, from the result of this test, it shows that this research is more appropriate to use panel data model of fix effect. While if looking at the result of regression between independent variable toward dependent variable can be identified the result is as follows :

Table 1 : Result of panel data regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	58.833	0.2937	200.298	0.0000
direct expenditure	0.1047	0.0388	27.018	0.0075
indirect expenditure	0.3141	0.0345	91.040	0.0000
Interest rate	-0.7161	0.0509	-140.549	0.0000
Inflation rate	0.0283	0.0109	25.915	0.0102

Source : processed data

From the result of regression above we can recognize that the whole independent variable has significant impact toward dependent variable with different impact as well as answering problem of study in this research. On variable of direct expenditure which is symbolized by variable gov1, statistically has significant influence with probability value for 0,0075 and positively influence toward dependent variable of economic growth for 0,1047 or big impact by10,47%, it indicates that if there is an increase of a unit of independent variable, direct expenditure will impact on dependent variable of economic growth by 10,47%. From the result of regression analysis, then the hypothesis of independent variable of direct expenditure toward dependent variable of economic growth is known to be H1 is accepted and H0 is refused.

On variable of indirect expenditure which is symbolized by variable gov2, statistically has significant impact with probability rate by 0,0000 and positively influence toward dependent variable of economic growth by 0,3141 or has big impact by 31,41%, it indicates that if there is an increase of a unit from independent variable of indirect expenditure then it will impact on dependent variable of economic growth by 31,41%. From the result of regression analysis, then the hypothesis of independent variable indirect expenditure toward dependent variable economic growth are known to be H1 is accepted and H0 is refused.

 the result of this research is similar to the result of previous research conducted by Cooray (2009), Bose, Haque, and Osborn (2003), Nurudeen and Usman (2010), and Dandan (2011) stating that relationship between government expenditure effect toward economy has positively significant impact in accordance with theory of Keynesian. According to keynes (1936) if government increase its expenditure, money circulary among people will increased that people will tend to spend their money and increase their demand (so that demand agregat increased). in addition, saving also will increased so that can be used as investment capital, and condition of economy will grow up (Keynes, 1936). From the theory, we found relationship pattern of how was

effect of government expenditure in influencing economy in this research, if it is made in scheme, it will be as follows :
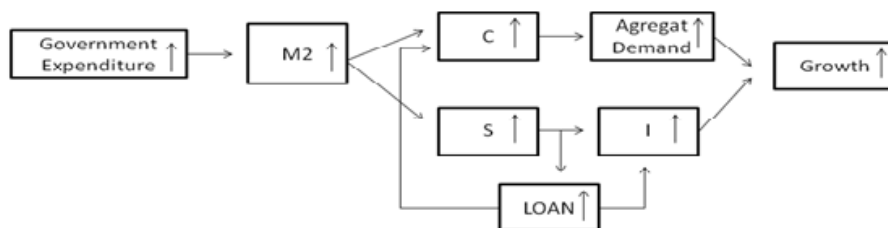

figure of scheme 5.2 : pattern scheme of relationship between government expenditure and economic growth.

the result of this research is similar to research conducted by Al Bataineh (2012) who examine the impact of government expenditure toward economic growth in Jordan by using time series data during 1990-2010 and found that government expenditure on agregat level has positive impact toward economic growth in accordance with Keynesian theory.

On variable of interest rate symbolized by variable birt, it is statistically has significant impact with probability level by 0,0000 and has negative impact toward dependent variable of economic growth by -0,7161 or has impact by -71,61%, this indicates that if there is an increase of a unit from independent variable of interest rate then it will impact on dependent variable of economic growth by -71,61%. From the result of this regression analysis, thus hypothesis from independent variable of interest rate toward dependent variable of economic growth are known to be H1 is accepted and H0 is refused. The result of this research is similar to the result of research conducted by Udoka and Roland (2012), Anaripour (2011), as well as D'adda and Scorcu (2001). This will be explained through investment theory which becomes other factor in increasing economic growth through interest rate policy.

investment is often modelled as function of revenue and interest rate, which given relation of I = f (Y, r). the increase of income encourages people to make higher investment, while higher interest rate can slower investment because borrowing money will be more expensive. Even if a company decide to use its own fund in an investment, interest rate is opportunity cost of the fund investment than to borrow amount of money with the interest (Hassett, Kevin A, 2008).

This is coherent to argument of Keynes in Mankiw (2003), investment is function of interest rate I = f(r). The function states that the increase of interest rate will reduce investment. Further according to Mankiw (2003), relationship of investment and interest rate is contrary, that if the interest rate is high then the company's desire to make investment is decreased and on the contrary if interest rate is low then the desire to make an investment increased. Relationship between investment and interest rate is happened that way because underlying reasons of companies in making investment is to gain profit. High interest rate will reduce profit they will gain and reduce desires of businessman to make investment. The lower interest ate, the higher prospect for gaining profit and it will increase their investment. Investment itself is the most changeable GDP element. When expenditure over goods and service decreased during recession, most of the decrease is related to reduction of investment expenditure (Mankiw, 2003).

From theories above we can conclude related to how interest rate influence economic growth which has significantly negative relationship on this research So, in effort to encourage better economic growth, thus higher investment is necessary because relationship pattern of investment with interest rate is contrary or in other words is negative. Thus, effort to encourage better economic growth through high investment is by reducing interest rate, with low interest rate, it will help to increase investment rate in Indonesia so that finally the target is good economic growth that can grow up optimally. That is why during the last few years, researcher found that there is negative relationship between interest rate and economic growth in Indonesia.

From theory and explanation above, relationship pattern of how interest rate effect can influence the economy on this research, if it is made in scheme, it will be as follows :
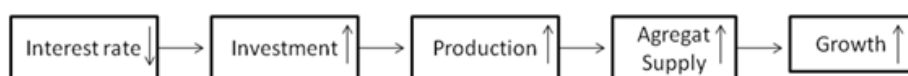

figure of scheme 5.3 : pattern scheme of relationship between interest rate and economic growth

On variable of inflation rate symbolized by variable inf, it is statistically has significant impact with probability level by 0,0102 and positively influence toward dependent variable of economic growth by 0,0283

or impact by 2,83%, this indicates that if there is an increase of a unit from independent variable inflation rate then it will impact on dependent variable of economic growth by 2,83%. From the result of this regression analysis, thus the hypothesis from independent variable of inflation rate toward dependent variable of economic growth are identified to be H1 is accepted and H0 is refused. the result of this research is similar to the result of research conducted by Mallik and Chowdhury (2001), Fabayo and Ajilore (2006), as well as Kremer, Bick, and Nautz. (2009). if inflation is relatively low, it will impact positively toward economic growth. This is in accordance with theory on chapter II related to theory of relationship between inflation and economic growth, through argumentasi of Tobin (1965) which assumes that money is substitutes of capital which lead to modal inflation has positive relationship toward economic growth in long term. This is supported by Fischer (1993) who noted positive relationship of economic growth with low inflation rate and becomes negative when inflation is high (slower economic growth because inflation increased too high).

By connecting the theory tersebut to the result of this research and reality in fact, it can be concluded that inflation performance has positive impact toward economic growth. By the increase of inflation rate gradually and regularly below inflation limit, it will encourage producers and traders to raise their production and to increase their selling, because by the increase of inflation, this will lead to increase of prices so that able to raise profit value gained by the producers or the sellers. By the increase of profit gained by the producers will stimulate producers to increase more production so that when the goods produced are increasing, the salary of manufacturer worker will be increased too, so that able to increase demand agregat which finally lead to increase of economic performance and economic growth.

From theory above a scheme of relationship patter between inflation and economic growth can be made as follows:
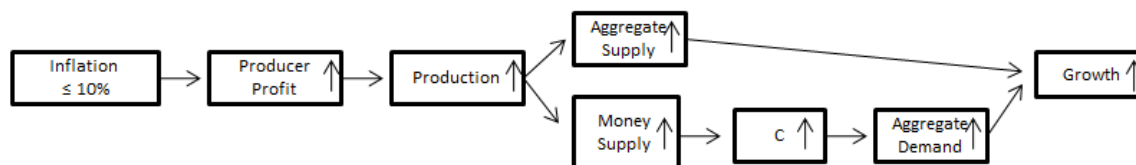

figure of scheme 5.4 : pattern scheme of relationship between inflation and economic growth

The research whose result is similar to finding of this research, according to Khan and Senhadji (2001) who examine about relationship between inflation and economic growth in140 countries during periode 1960 until 1998. They argue that inflation has negative impact toward economy when inflation rate is above certain threshold value. On the contrary, inflation gives positive impact for economy when inflation is below certain threshold value. They found that threshold value of developed country is 1-3 percent, while for developing country the threshold value is 11-12 percent.

If reviewing from result of regression analysis simultanously, or how impact of the whole independent variable toward dependent variable of economic growth, thus what need to note is R2 value (R square) on the result of regression by 0,994264 or by 99% the whole influence of independent variable toward dependent variable of economic growth, and less than 1% is impact of other variables outside the model.

while if reviewing from the result of panel data regression on table of result of cross section panel data from 33 provinces in Indonesia (the result of regression can be seen in appendix) koefisien value of each provinces are identified with different magnitudes and can be identified there is a province achieving lowest position in its economic growth that is North Maluku. While the highest position of its economic growth is East Java Province.

Condition of East Java and North Maluku

From the result of cross section regression, it is found that the highest economic growth is achieved by East Java Province and the lowest is North Maluku Province. if we compare the condition of its economy, a significant gap is clearly found. From its total of PDRB on 2012 as the comparison standard (in thousands), PDRB of East Java achieved 1.001.721.443. while North Maluku PDRB is only around 6.918.638. This is also influenced by high level of direct and indirect expenditure of provinces government, as a comparison the direct expenditure of East Java Province is 5,6 million and indirect expenditure 6,6 million. while North Maluku Province direct expenditure is only 722 thousands and indirect expenditure is 447 thousands. Reviewing from its inflation, East Java has inflation rate for 0.52 and North Maluku for 0.62, which means inflation rate in North Maluku is higher 0,1% if compared to East Java.

If reviewing further related to excellent sector, the difference is clearly found , in East Java Province its economic system is mainly supported by trading sector, hotel and restaurant, whereas North Maluku is mainly supported by farming sector. The similar thing is also found in workforce absorption sector dominating the two provinces that is in farming sector. While comparison of amount of employee is significantly different, if employees of East Java achieved more than 19 million, on the other hand North Maluku Province is only about

466 thousands.

   Things to be more considered here is level of poverty in the two provinces, in East Java Province the poverty level achieved 13,08% whereas North Maluku Province is about 8,06%. It means the high economic growth in East Java, is along with high level of poverty too. Contrary condition is shown by North Maluku Province with low economic growth along with low level of poverty. Thus, it requores evaluation of government of East Java Province in dealing with problem of poverty, while the North Maluku Province needs to make economic stimulus policy by the local government so that lead to increase economic growth of North Maluku Province to be better.

4. Conclusion

Based on the result of this research the author find that variable of government direct expenditure and variable of government indirect expenditure has significantly positive impact toward economic growth. This is possible since the government expenditure, is able to increase the amount of money circular in the society that lead to the society to increase aggregate demand which further enable to increase economic growth that along with ideas of Keynes. On variable of interest rate it has significantly negative impact on economic growth. This is possible since interest rate always decreased in order to increase investment that will positively impact on production further increase the demand aggregate and supply aggregate with final target of increasing economic growth.

   While variable of inflation rate has significantly positive impact on economic growth. This is possible since the average of inflation rate in Indonesia is relatively small, below 10%, so that the increase of goods price is not drastic but constantly gradual that market can be adaptive and increase profit of producers and sellers, which finally lead to better economic development. Whereas finding from data cross section shows that economic growth of East Java Province is in the highest position while North Maluku Province is in the lowest economic growth position.

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