Analysis of Factors Affecting Inflation and its Impact on Human Development Index and Poverty in Indonesia

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Abstract:

This study has the objective to analyze the effect that occurs between Indonesian Bank (BI)-rate, Foreign Exchange Rates, Money Supply, oil price and gold prices on Inflation, its impact on human development Index (HDI) and poverty in Indonesia for the period 1997 up to 2016.

This study used secondary data with purposive sampling method. Methods of data analysis using multiple regression analysis, Model 1: Results of this study indicate that there are significant variables simultaneously at BI Rate, Foreign Exchange Rates, Money Supply, oil price and gold prices to the level of inflation in Indonesia.

The results also showed variable BI rate, money supply, oil price and gold prices partial effect on the level of inflation positively and significantly, while the exchange rate variable does not affect the rate of inflation.

The results determinant coefficient of 0.9497means the ability of independent variables to explain the dependent variable of 94.97 % , while the remaining 5,03 % is influenced by other variables and are not included in this study. Model 2: inflation on HDI is significant and positif and model 3: Inflation on poverty is significant and positive.

Keywords *: Exchange rate , JUB , BI rate, oil price, gold price, Inflation, HDI and Poverty.*

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1. **Introduction**

Inflation is one of the most important macroeconomic variables and the most feared by the economic actors, including the Government, because it can bring bad influence on the structure of production costs and the level of welfare. And the wider effects such as instability, economic growth, the declining of competitiveness, the interest rate, uneven income distribution and unemployment is increasing. Some of the countries that have experienced hyperinflation showed that poor inflation would lead to social and political instability, and did not create the economic growth (Sukirno, 2004).

The year 1998 was the toughest year for the economy of Indonesia, where the rate of inflation was 77.63 per cent, the falling value of the rupiah against foreign currencies and socio-political factors that are not safe, resulting in the prices of goods and services continue to rise sharply until the end of 1998. Entering the year 1999 inflation rate can be on tap to 2.01 percent, this is the lowest inflation rate over a span of 20 years (1987-2006). The decline in inflation was caused by the strengthening of the rupiah in the foreign exchange market and also the prices of goods and services on the market which can be controlled by the government.

Ahead of the annual session of People's Consultative Assembly (August 2000), the inflation rate has risen to 9.35 percent with CPI of 563.28 percent, the increase in inflation is related to a series of government policies such as the reduction of fuel subsidies, excise tax and an increase in request of goods and services by the community to celebrate the same religious day.

In late 2002 there was a bomb blasting in Bali (Bali tragedy). This condition does not improve the rate of inflation, but only affects the inflation rate quarterly or monthly. In 2003, inflation declined from the previous year of 5.1 per cent that are affected by the improvement in the real sector and the confidence of investors to Indonesia. At the end of 2004 (December 26, 2004), there were an earthquake and tsunami that hit Aceh and parts of Sumatra, so that the rate of inflation in 2005 became 17.1 per cent, then in 2006 the rate of inflation achieved 6.60 percent.

Inflation can be caused by excess/pull request (liquidity/money/currency) occurs due to excessive total demand which is usually triggered by a flood of liquidity in the market resulting in a high demand and trigger changes in the price level. Increasing the volume of the medium of exchange or liquidity associated with the demand for goods and services resulting in increased demand for factors of production. The increasing demand for production factors causing prices to rise. While inflation insistence costs (cost push inflation) occurs due to the scarcity of production and/or also include the scarcity of distribution. The lack of launch of distribution flow or the reductionof production provided from the average normal demand could trigger a price increase in accordance with the legal validity of the demand-supply.

The phenomenon of inflation in Indonesia is not a short term phenomenon and occurs situationally, but as was common in other developing countries, inflation problem in Indonesia is more on the issue of long-term inflation due to it still has a structural barriers in the country's economy, Besides, inflation is more influenced by the surge in oil prices in the international market and the scarcity of raw materials as coal and gas, all of which will cause rise in energy costs. This may encourage further energy source procurement costs of electricity and fuel for most mills. Likewise, the same thing can happen on the distribution, which in this case the infrastructure factor plays a very important role.

According to some research about the factors that affect Inflation: (1) Asghapur, Kohnehshahri and Karami (2014), the interest rate has a negative correlation to inflation. This is also supported by Kandel, Ofer, and Sarig (1996) which states that interest rates are negatively correlated with inflation. (2) Ghazali (2003) found no significant relationship between interest rates and inflation. (3) Heni Noviarita (2003) in the study Analysis of Inflation in Indonesia (Dynamic Model Approach) 1980: 03-2002: 04 period shows that for the long term, a variable amount of money supply, exchange rates, gross domestic product, inflation expectations have a significant effect on inflation. (4) Bjornland (1997) asserts that the rise in oil prices has a long-term effect on core inflation and output. (5) Saleem, S. and Ahmad, K. (2015) explain that for long and short term, the Money, Crude Oil Prices, Exchange Rate, Interest rates and taxes do not have a positive relationship while real GDP had a negative correlation to inflation during the study period in Pakistan 1979 to 2012. (6) Zarshad Ahmed and Yasir Rahim stated that dollar, gold and Petrol Prices significantly took effect on inflation in Pakistan (June 2008 to June 2013). (7) Pourroy (2012) investigated the role of exchange rate in inflation targeting in developing countries and find strong evidence that exchange rate strategy plays a major role during inflation shock in 2007-2008. Management of nominal exchange rate gives stronger anchor (better resistance to inflation shock in 2007-2008). (8) Chhibber *et al.* (1998), found that monetary growth, foreign prices, exchange and interest rates, unit labour cost, and real output are the key determinants of inflation in that country.

Inflation as an economic phenomenon will certainly have an impact on economic activities, which often have a negative impact on public finances, the purchasing power of money will be lower, and to get something, more money is needed and can ultimately affect builders of quality of life (community/population). Indicators used to measure the quality of human life is a human development index (HDI) was introduced by the United Nations Development Program (UNDP) in 1990 and published periodically in the annual report of the Human Development Report (HDR). According to the UNDP; HDI is a composite index that includes three areas of human development which is considered to be very basic, which is used as an indicator of (i) the areas of health: age life (longetivity); (ii) education: knowledge; and (iii) the economic field: decent living standards (decent living).

Human development in Indonesia during the period 1996-2007 has increased, except for the period 1996-1999. It is not apart with the deteriorating situation of the Indonesian economy as a result of the economic crisis. Since the economic crisis in mid 1997, Indonesia's HDI has moved down to 64.3 (1999) and led to Indonesia's position slipped to 110 th out of 177 countries, where before Indonesia was ranked 99 of 177 countries (UNDP, 2004). In 2004, up to the order of 108 (out of 177 countries), this sequence is better than other ASEAN countries such as Vietnam (109), Myanmar (130), Laos (133) and East Timor (142), and under the Singapore (25), Brunei Darussalam (34), Malaysia (61), Thailand (74) and the Philippines (84).

Inflation influence on the HDI is based on the results of research from several reseachers; (1) Rita Otopea Osiakwan, Stephen E. Armah (2013), inflation has the negative and significant effects on the standard of living (meansure of HDI) in Ghana, Standard of living is only partially sensitive to inflation however the adverse impact of inflation on standard of living Increasingly worsens as inflation increases. Therefore in Ghana, people are Increasingly worse off as inflation increases. (2) Zezza *et al.* in the Arab Naz *et al.* (2011) inflation can disrupt business planning, nutrition, health and children's education. (3) Zeman *et al.* (2011) uses poverty growth model for countries of SAARC (Bangladesh, Nepal, Pakistan, India and Sri Lanka) in 1988-1909. Results showed that 1 percent increase in inequality income reduced poverty by 0.67 percent and 1 percent increase in economic growth to reduce poverty by 0.1 percent while trade openness and significant poverty reduction of health expenditures in SAARC countries.

Poverty is a state where the inability to meet basic needs such as food, clothing, shelter, education, and health.The non-capability in meeting those needs which are caused by rising prices of basic necessities that are continuous (inflation). CPM noted the number of poor people of March 2010 was 31.02 million (13.33%), in September 2014 was 27.73 million (10.96%) and in March 2015, the poverty rate increased by about ten percent to 28.95 million (11.22 percent). While the poverty severity index in March 2012 (0.473), March 2013 (0.432), in March 2014 there were at the level of 0.435, and in March 2015 which increased from the previous year was 0.535.

The results of the researchers stating that inflation can affect poverty including: (1) Shahidur Rashid Talukdar (2012), the effect of inflation on poverty in low income countries, lower middle-income countries, and upper middle-income countries to see whether the effect of inflation is similar or different in countries with different levels of income. They found that although in most of the cases inflation shows a positive and statistically significant correlation with poverty, however, in the case of low income countries, the relationship between inflation and poverty is negative and statistically insignificant under certain specifications. (2) Joko Susanto (2014), the results show that the economic growth has negative impact on poverty rate in java, while the inflation has positive impact on poverty rate in Java. A higher economic growth corresponds to a lower poverty rate, while a higher inflation corresponds to a

higher poverty rate. Furthermore, minimum wage has no impact on poverty rate in Java. (3) In Hazoor Muhammad Sabir and Safdar Hussain Tahir (2012) study results revealed that GDP growth rate per capita income, major crops, minor crops and livestock had negative impact while inflation and population growth rate had positive impact upon poverty in Pakistan (1981-2010). (4) Powers (1995), found there was a significant and positive relationship between inflation and the level of poverty when poverty is measured in terms of consumption (consumption poverty rate). (5) Eliana Cardoso (1992) in his article entitled "Inflation and Poverty", with the area of research in seven Latin American countries (Argentina, Colombia, Costa Rica, Chile, Mexico, Peru and Uruguay) with the data from the years 1977 to 1989, using linear regression method, reached the conclusion that inflation causes poverty generally through real wages (real wages), empirical evidence showed that rising wages more slowly than the price for inflation increased in Latin America. (6) Sudarlan (2015) said that inflation has a positive and significant impact on the poverty headcount and no effect on the poverty gap and poverty severity. (7) Theresa Thompson Chaudhry and Azam Amjad Chaudhry, simulated food and energy price shocks present some important results: First, the impact of food price increases on Pakistani poverty levels is substantially greater than the impact of energy price increases. Second, the impact of food price inflation on Pakistani poverty levels is significantly higher for rural populations as compared to urban populations. Finally, food price inflation can lead to significant increases in Pakistani poverty levels. For Pakistan, 20% increase in food prices would lead to 8% increase in the poverty head count.

Based on the above, then conducted a research on the factors that affect the rate of inflation in Indonesia in 1997 to 2016 that the BI rate, Money Supply, the rupiah against the US dollar, oil prices and the price of gold and how the effects of inflation on the index human development and poverty. The problem can be formulated as follows:

1. How does the BI rate, Money Supply and the rupiah against the US dollar, oil prices and gold prices on inflation in Indonesia simultaneously?
2. How does the BI rate, Money Supply and the rupiah against the US dollar, oil prices and gold prices to the inflation rate in Indonesia partially?
3. What is the effect of inflation on the human development index in Indonesia?
4. How is the effect of inflation on poverty in Indonesia?

2. Literature Review

2.1 Inflation

Inflation is used as one of barometer tool to measure the health rate of an economy. Inflation that is too high will decrease the level of social welfare. Conversely, too low inflation reflects the economy which does not run maximally which impact on slowing economic growth, stagnant job creation, and increased poverty community. Based on that, inflation is a macro-economic problem which is very important, in

which the unstable inflation rate is also more difficult to plan for the business world, and does not encourage people to save, and various other negative impacts that are not conducive to the overall economy. According to Al Magrizi (Adiwarman 2001) inflation consists of, first, inflation because of shortage of goods (natural inflation) and second, inflation because of human error caused by corruption and poor administration, the policy of excessive taxes which implicates burden of farmers and number of excessive money. Hamilton (2001) said that inflation has been described as an economic situation when the increase in the money supply is "faster" than the new production of goods and services in the same economy.

The quantity theory of money describes the systematic analysis of the direct relationship between growth in the money supply and inflation which is expressed in the formula; MV = PT. Where M = the amount of money supply, V = rate of turnover, T = volume of output, P = price level. Based on this theory, in the long-term growth in the money supply does not affect real output growth, but it will push up the price level proportionally.

Expert of monetary economy that embraces the quantity theory in its development, better known by economists' wing Monetarists. One of its leaders is Milton Friedman which states that inflation is always and everywhere a monetary phenomenon. Fisher and empirical studies prove that the growth of money supply and high inflation rate has a high correlation. Inflation can be distinguished based on the factors that cause it:

(a) Demand pull inflation
According to John Maynard Keynes (1883-1946) increase in aggregate demand as a source of demand-pull inflation. Aggregate demand consists of consumption expense, investment and the government. When aggregate demand is greater than the aggregate supply at the level of full employment, inflation occurs and even before the achievement of full employment rate of inflation may also occur.

(b) Inflation insistence on cost (Cost Push Inflation)
The price increase that occurred because of increased production costs, including rising wage levels. Where the basic cause of Cost-push inflation is the rise in money wages is more rapidly than the productivity of labor. Another factor that led to the price increases were the companies want huge profits because of rising wages and production costs. The increase in production costs encourages companies to raise prices, despite having to take the risk of facing a reduction in the goods produced. The method of calculating inflation could use several ways, among others, is the Consumer price index (consumer price index): an index number that compares the nominal GDP to real GDP for a given year, Whole sole price index (price index wholesalers), Implicit gross domestic product and Produces deflator price index. Factors that affect the inflation rate in this study were:

2.2 The rate of interest

The classic concept, represented by David Ricardo and Alfred Marshall, "*interest as determined by the rate of return that can be achieved by using capital or the price to be paid for using capital, price set as balance between global demand for capital and capital stock offered in the market*". Meanwhile, according to Marzuki (1997) interest is the amount of money paid in exchange for the use of the borrowed money and by Paul Samuelson and William D. Nordhaus (1993), interest is the price paid for borrowing money for a certain period, usually expressed as a percentage of the principal loan per year, while Frank J. Fabozzi (1999), interest is the price that must be paid borrower / debtor to the borrower / creditor for the use of resources during a certain period and Devereux and Yetman (2002), interest rate is described as the price a borrower pays for the use of money he does not own and has to return to the lender who receives for deferring his consumption, by lending to the borrower. Interest can also be expressed as a percentage of money taken over the period of one year.

2.3 Foreign Exchange

According to Frank J. Fabozzi and Franco Modigliani (Fei Ming, 2001) the exchange rate is defined as the amount of one currency that can be exchange per unit of another currency, or the price of one currency in terms of another currency, Dominick (1995) explains that the foreign exchange rate is the price of a domestic currency of foreign currency, Paul Krugman and Maurice Obsfeld (1996) stated that the price of a currency against other currencies is called currency and Puspopranoto (2004) the price at which the currency a country's currency is exchanged for another country called the exchange rate and Timothy (1997) says *"an exchange rate is an expression of the value of one country's currency in terms of another country's currency. It specifies how many units of one country's currency can be exchanged for one unit of the other country's currency".*

2.4 Free Money (Money Supply)

There are two different views in terms of printing money supply. First, money supply is entirely determined by the Monetary Authority or the Central Bank. In Indonesia, the amount indicated by the amount of base money. The amount of base money was influenced by the policy of the Monetary Authority in determining instruments of "Bank Indonesia Rate / BI Rate" which would be a signal of the interest rate of Bank Indonesia Certificates (SBI) and the amount of reserve requirement (the minimum reserve requirement; reserve requirement) set by Bank Indonesia. Both the money supply is determined by other institutions such as commercial banks and public behavior. In Indonesia, the money supply is affected by the commercial banks which is shown by the amount of demand deposits and quasi-money. Total demand deposits and quasi-money was influenced by the interest rate. The behavior of the market interest rate is also influenced by the behavior of people in the store or borrow money in the money market. According to Winardi (1995) when the amount of money in circulation far, compared with the amount of goods and services offered or when there is a loss of confidence in the national currency, inflation may occur.

2.5 World Oil Prices

Fluctuations in the price of crude oil in the international market, in principle, following the axiom generally accepted in the market economy, where the level of the prevailing price is determined by the mechanism of demand and supply (demand and supply mechanism) as fundamentals and non-fundamentals, especially with regard to infrastructure issues, geopolitics and speculation.

On the demand side, the behavior of oil prices is strongly influenced by the growth of the world economy and on the fluctuation supply side in crude oil prices which is strongly influenced by the availability or supply of oil by producer countries, both countries are members of the Organization of the Petroleum Exporting Countries (OPEC) as well as non-OPEC producing countries. According Kesicki (2010) and Breitenfellner *et al.,* (2009), the availability or supply of oil is closely associated with the production capacity, investment capacity and refinery infrastructure while according to Hamilton (2012), and the supply-demand conditions and the strike on the oil trade have such great influence in the oil price fluctuations than the Middle East political situation.

World crude oil prices measured by the spot price of world oil market, generally oil prices used as the standard price of the world is the West Texas Intermediate (WTI). West Texas Intermediate (WTI) which having a high quality of crude oil. And the other factor is the OPEC oil price, Dubai Crude, and Tapis Crude (Singapore). Besides that, the rise/drop in world oil prices could result in economic activities such as: (1) increase in oil prices could cause a rise in the marginal cost of industrial production so as to reduce production and increase unemployment (Lardic and Mignon, 2006, 2008; and Dogrul and Soytas, 2010). (2) The increase in oil prices led to rising inflation. The Crude oil prices which were higher will be immediately followed by the rising prices of oil products, such as gasoline and fuel oil which were used by the consumer (Cologni and Manera, 2008).

2.6 Price of Gold

Gold is one of the natural resources that can not be updated and the volume of gold in the world is limited. In addition, gold is not unduly influenced by political developments or security of a country. Besides, gold is believed to be one of the commodities that may be useful as an investment, as prices continue to rise so as to bring the benefits of the difference between the purchase price and selling price. According Sunariyah (2007) one of the forms of investment which tend to be free of risk is gold. Gold is considered better to hedge against inflation. However, according to Anggarwal (2010) reality may differ due to, gold may in the long term can be a hedge against inflation, but in the short term price volatility may occur.

3. Human Development Index (HDI)

The Human Development Index is a benchmark in the achievement of human development of good quality in terms of its impact on human physical condition (health and welfare) as well as non-physical (education). UNDP defines human development as a process of expanding the options for the population in terms of income, health, education, physical environment, and so on. According to BPS, the three basic dimensions as a reference to measure the Human Development Index which includes longevity and a healthy life (a long and healthy life), knowledge, and standard of living (desent standard of living). Elizabeth A. Stanton (2007) said that HDI is a measure of human development that combines human proxies for three important capabilities: health, education, and a decent standard of living. Health (H) is represented by life expectancy (LE), education by literacy (LIT) and school enrollment (ENR), the literacy and school enrollment indices are combined in a weighted average as the education (E) index, and standard of living by GDP per capita (Y).

According to Makiko Ito Harrison measure three dimensions are the basic concept of human development. They are (1) for people to live a long and healthy life, (2) for people to acquire knowledge and (3) for people to have access to resources needed for a decent standard of living. So that HDI of a country is thus the unweighted average of the life expectancy index component, the educational attainment component index and the adjusted real GDP per capita (PPP $) index component.

UNDP differentiate HDI level based on three classifications namely: Low (HDI less than 50), the lower-medium (HDI between 50 and 65.99), upper-medium (HDI between 66 and 79.99) and high (HDI 80 upwards). Regional HDI of Indonesia including lower-middle class (lower-medium) to medium-top (upper-medium). High levels of human development will determine the population's ability to absorb and manage the sources of economic growth, good connection with or against institutional technology as an important tool to achieve economic growth (Ramirez, 1998).

4. Poverty

Poverty according to the Central Bureau of Statistics (2000) is a condition where an individual or group of people unable to meet their basic needs, such as food, clothing, shelter, education, and health is regarded as a minimum requirement, and have a certain standard. According to the World Bank poverty is a situation where an individual or group has no option or opportunity to improve his/their standard of living in order to live in a healthy life and better according to the standard of living, dignity and appreciated by others. According to Rank (2004) the causes of poverty can be grouped in three main factors: individual factors, cultural and environmental factors, and structural factors. The individual poverty is an individual failure due to lack of motivation. According to the Rank (2004), human capital can have a big effect on individual poverty or success. And the literature shows that human capital

significantly affects public revenues, and due to the lack of human capital can put an individual at risk for poverty.

Meanwhile Djojohadikusumo (1995) states that the poverty pattern is divided into: (1) Persistent poverty, the poverty that has chronic or from generation to generation; (2) Cyclical poverty, the poverty that followed the pattern of the overall economic cycle; (3) Seasonal poverty as was the case with the fishermen and farmers of food crops; (4) Accidental poverty, is poverty because of natural disasters or the impact of a particular policy which led to reduced levels of welfare of the population.

The cause of poverty is seen from an economic standpoint according to Sharp Mudrajad, 1997 as follows:
(1) Poverty arises because of the inequality of resource ownership patterns which lead to an unequal distribution of income;
(2) Poverty arises from the difference in the quality of human resources;
(3) Poverty arises from the difference in the access to capital.

Based on the results of Easterly and Fischer (2001) the relationship between inflation and household poverty by using the data of 38 countries is that inflation makes the poor worse off and that the poor suffer more from inflation than the rich, while the results of the research by Min Bahadur Shrestha and Shashi Kant Chaudhary (2012) showed that a 10 percent rise in food prices is likely to increase overall poverty in Nepal by 4 percentage points. It implies that a one percent rise in food inflation will push 100 thousand additional people into poverty overall and 180 thousand additional people into food poverty.

From the description above it can be concluded that poverty causes inconvenience in life, endangerment enforcement of rights and justice, endangerment of bargaining position of a country in the world association, as well as the bleak future of the nation and the state. Based on the formulation of the problem contained in section 1 above, it can be hypothesized as follows:

1. It would be unlikely that the BI rate, Money Supply and the rupiah against the US dollar, oil prices and gold prices affect the inflation in Indonesia simultaneously?
2. It would be unlikely that the BI rate, Money Supply and the rupiah against the US dollar, oil prices and gold prices affect the inflation rate in Indonesia partially?
3. It would be unlikely that the inflation effect on the human development index in Indonesia?
4. It would be unlikely that the inflation effect on poverty in Indonesia?

5. Research Methodology

The scope of research concerning the inflation rate, the BI rate, Money Supply and the rupiah, world oil prices, the price of gold, HDI and poverty and the data recorded in the Central Bureau of Statistics (BPS) at the national level and Bank Indonesia.

The model used in this research is multiple linear regression model. The goal is to see the effect or the relationship between the dependent variable and independent variables. Regarding this study, the dependent variable is inflation, HDI and Poverty and the independent or explanatory variables are the BI rate, Money Supply and the rupiah, world oil prices, gold price. To analyze the data used Windows-based computer program that is widely used for statistical and econometric analysis of time-series types (E-views). The model specified is therefore:

1. $Y = a + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + e$
2. $Y1 = a + b6Y + e$
3. $Y2 = a + b7Y + e$

where:
X1 = BI rate
X2 = Supply Money
X3 = Foreign Exchange Rates
X4 = Oil Prices world
X5 = gold Prices
 Y =   Inflation
Y1 = HDI
Y2 = Poverty

According to the Gauss-Markov theorem, a good linear estimator has blue (best linier unbiassed estimator) properties. This property requires the following criteria:
(1). The ß1 estimate is linear to the dependent variable;
(2). The ß1 estimate is unbiased, meaning the expected average value or value of $\beta 1$ or E ($\beta 1$) equals the true ß1 value;
(3). Estimator ß1 has a minimum variance that is efficient.The accuracy of the sample regression function in estimating the actual value can be measured from goodness of its fit. Statistically:
(a) Individual Parameter Significance Test (t - test). This test is to know the influence of each independent variable individually to the dependent variable.
(b) Simultaneous Significant Test (F-test). This test is to determine whether the independent variables together affect the dependent variable. Where the value of F can be calculated as follows (Gujarati, 1997).

$$F\ hit = \frac{R^2 / (k - 1)}{(1 - R^2) / (N - k)}$$

If F hit> F tab with a certain level of significance (eg 5%) then Ho is rejected and Ha accepted. If Fhit <Ftab with a certain level of significance (eg 5%) then Ho accepted and Ha rejected.
(c) Testing Good ness of Fit (Test of R^2)

To know the level of better accuracy in regression analysis. Coefficient of determination (R^2) can be statistically measure. The level of regression accuracy is indicated by the magnitude of the coefficient of determination (R^2) whose magnitude is zero and one ($0 < R^2 < 1$). The value of R^2 close to 1 illustrates that the existing model has a high enough forecasting power, otherwise if the value is close to zero means that the model has no power in predicting (Gujarati, 1995).

The classical assumption is that the relationship between the independent variable and the dependent variable is linear. The linear equation is said to be good if it meets the BLUE (Best Liniear un biased Estimation) assumption, the four assumptions that must be met are as follows:

(1) Residual Ui is a random variable that is normally distributed with zero average that is E (Ui) = 0.
(2) Conditional variants of constant residual or homoscedicity.
(3) There is no autocorrelation between residuals.
(4) There is no multicolonierity between.explanatory variables

6. Result and Discussions

The regional economy does not escape from the economic diseases of inflation that always appear in the economy. Inflation as an economic turmoil should not be abolished at all but controlled at a certain rate so as to promote economic growth.

This study was conducted to determine the factors that influence inflation and how the effect of inflation on Human Development Index and poverty. In determining the factors influencing inflation, they are based on the theory of demand pull inflation and supply side inflation.

According to the demand pull inflation theory, inflation is due to an increase in aggregate demand (the economy in a state of full employment), resulting in excess demand and causing the price of goods to rise, the factors cause increased demand. While the inflation from the aggregate supply side is due to the rising production cost, to overcome this, the entrepreneur raises the selling price which is charged to society so that the price of goods and services increases.

In addition, the increase in the prices of these goods will affect the community's ability to access development in the fields of education, health and economy and the rising prices of these goods has also led to an increase in the number of poor people.

Testing Against Violations Classical assumptions made include; Autocorrelation, multicollinearity, heterocedasticity (Gujarati, 1995). From the test can be known whether the model used is relevant or not. The test of deviations of these classical assumptions can be explained as follows:

Model 1:

Based on the results of multicollinearity testing, the relationship between variables (BI rate, exchange rate, money supply, world oil price and gold price), determination coefficient value (R^2) is spanned 0.056867 to 0.747656. This shows that the test value is smaller than 0.8, meaning the relationship between variables does not contain multicollinearity. And for heterokedastisity test, the test result is Obs * R-square value of 6.996941 and prob .Chi-Square is 0,2209> α = 0,05, hence no heteroskedasity symptoms. As for the autocorrelation test, Obs * R-square value of 1.9637 and Prob. Chi-Square (2) of 0.3746> α = 0.05 to obtain the result that autocorrelation symptoms do not exist. Besides the normality test, obtained Jarque-Bera value of 0.5458 and the probability of 0.7612, based on these values it can be concluded that the data is normally distributed.

The statistical t test basically shows how far the influence of one independent variable individually in explaining the variation of the independent variable to the dependent variable. The results of the test can be seen as follows:

Table 1. *Results of Multiple Regression*

Dependent Variable: INFLASI
Method: Least Squares
Date: 04/03/17 Time: 12:19
Sample: 1997 2016
Included observations: 20

Variablel	Coefficient	Std. Error	t-Statistic	Prob.
C	26.86178	10.23589	2.808216	0.0325
BIRATE	1.445575	0.317153	4.557973	0.0004
Ln KURS	0.147439	2.255760	0.065361	**0.9488**
Ln JUB	-18.47942	6.549767	-2.821386	0.0136
Ln OIL	2.262646	1.016784	2.225296	0.0430
Ln GOLD	20.53676	4.912078	4.180871	0.0009

R-squared	0.962964	Mean dependent var	10.90800
Adjusted R-squared	0.949737	S.D. dependent var	16.15486
S.E. of regression	3.621822	Akaike info criterion	5.655156
Sum squared resid	183.6463	Schwarz criterion	5.953876
Log likelihood	-50.55156	Hannan-Quinn criter.	5.713470
F-statistic	72.80245	Durbin-Watson stat	1.662551
Prob(F-statistic)	0.000000		

From the result of t test can be done discussion of hypothesis proposed as follows:

1) Influence of BI Rate variable to Inflation, indicating that partially BI rate has a significant level of 0.0004 and t-count value of 4,5579, where the variable BI rate has significant effect to inflation. While the results of Cavoli's research, Tony and Rajan, Ramkishen S (2007) found a strong association related to interest rate on

inflation and output in the case of Korea and Thailand compared to the case of Indonesia and Philippines. On the other hand, exchange rate does not reflect the monetary policy response, both in terms of inflation and output (because of the parity conditions associated with exchange rate).

2) Influence of Exchange Variable to Inflation, indicating that partially Exchange rate has a significant level of 0.9488 and t-count value of -0.06536, where the variable Exchange rate has no significant effect on Inflation. The results of this study are in line with Kamas (in Madesha et al., 2013), study on Colombia observed that the exchange rates did not play an important role in explaining the variation in inflation in Colombia and that inflation appeared to be primarily inertial with respect to the exchange rate but Largely determined by demand shocks. And contrary to the results of Zahoor Hussain Javed et al's (2010) research, the sign of the variable exchange rate shows that there is a positive relationship between exchange rate and inflation measured by CPl. And the positive relationship is that as the exchange rate increases (devaluation or depreciation of Pakistani rupee) the inflation increases because the imports become the expensive ones in turn up the domestic costs of production and inflation.

3) Influence of Variable Amount of Money Supply (JUB) to Inflation, show that partially JUB has significant level equal to 0,0136 and t-count value equal to 2,8214 which mean JUB variable have significant effect to Inflation. (1) Dragos et al (2013), where the money supply and intrest rate has a significant and strong relationship for the country of the period 1987-2011, (2) Olorunfemi Sola and Adeleke Peter (2013), where there is a positive relationship between money supply and inflation in Nigeria from 1970-2008 and (3) Keshab Bhattarai, where the money supply growth has a positive and significant effect on inflation in the UK.

4) The Influence of World Oil Price Variable on Inflation shows that partially world oil price has a significant level of 0.0430 and t-hit value of 2.2252, which means that the world oil price variable has a significant effect on Inflation. The same thing from the Cologini and Manera (2008) study found that for all countries except Japan and the UK, changes in oil prices did affect the rate of inflation. Meanwhile Chou & Tseng (2011) examined the long run and short run effects of oil prices on inflation. The research is conducted for one country (Taiwan). The result clarifies that the oil prices in the global market has a significant and positive effect on inflation in the short run it is proved that the effect is not significant.

5) The Influence of Variable of Gold Price to Inflation shows that partially gold price has a significant level of 0.0009 and t-count value of 4,1809 which means that gold price variable has significant effect to Inflation, in line with Mishkin's opinion (2010) demonstrates that there is a positive relationship between gold prices and the increase in unexpected inflation since the gold and gold appreciation will support gold demand which boosts gold prices.

The result of F-statistic test shows that the value of F arithmetic is 72,8025 with probability (sig-F) equal to 0,0000, this means that the variable of BI rate, Exchange Rate, Total Money Supply (M1), world oil price and gold price has significant effect Simultaneously to Inflation And the coefficient of determination equal to 94,97%, which mean 94,97% change from inflation caused by variation of change of variable

of BI rate, Exchange rate,World Oil Price and Gold Price. Considering the above result, we get the following regression equation:

$Y = 26,8618 + 1,4456$ BI rate $+ 0.1474$ LnKurs $- 18,4794$ Ln JUB $+ 2,2627$ World Oil Price $+ 20,5368$ Ln Gold Price $+ e$

Based on the results of multiple regression above they can be interpreted that:

1) Influence of BI Rate Variables, Exchange Rate, World Oil Price and Gold Price to Inflation is positive, in this case means the ups and downs of BI rate variable, Exchange rate, World oil Price and Gold Price resulted in rising / falling inflation value.
2) The effect of JUB variable on inflation is negative, this means that the increase of the Money Supply will result in the decrease of inflation value. The results of this study contradict the results of Ali Yousfat's (2015) research; the study used annual time series data from 1970 to 2013, Johansen cointegration approach identify long run relationship. The empirical results confirm that in the long run money supply growth has significant and positive relationship with inflation. But based on the theory, if that causes inflation from the supply (increase the price of goods due to lack of liquidity), then the relationship is negative.

Model 2:
Based on the results of heterokedastisitas test, Obs * R-square value of 0.2365 and prob .Chi-Square is 0,6267> α = 0,05, hence no heteroscedidity symptoms. As for the autocorrelation test, Obs * R-square value of 2.1423 and Prob. Chi-Square (2) of 0.3426> α = 0.05 to obtain the result that autocorrelation symptoms are not a problem. Besides the normality test, obtained Jarque-Bera value of 1.3783 and the probability of 0.5020, based on these values it can be concluded that the data is normally distributed.

The statistical t test basically shows how far the influence of one independent variable individually in explaining the variation of the independent variable to the dependent variable. The results of the test can be seen as follows:

Table 2. *Results of Multiple Regression*
Dependent Variable: IPM/HDI
Method: Least Squares
Date: 04/04/17   Time: 10:48
Sample: 1997 2016
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.450380	0.394091	11.29276	0.0000
INFLASI	0.046868	0.020574	2.278025	**0.0352**

R-squared	0.223783	Mean dependent var	4.961611
Adjusted R-squared	0.180660	S.D. dependent var	1.600523
S.E. of regression	1.448752	Akaike info criterion	3.673922
Sum squared resid	37.77989	Schwarz criterion	3.773495
Log likelihood	-34.73922	Hannan-Quinn criter.	3.693360
F-statistic	5.189398	Durbin-Watson stat	1.535786
Prob(F-statistic)	0.035155		

Based on the above table, shows that inflation has a significant and positive effect on the HDI. This shows that the rise / fall of inflation will result in the rise / fall of HDI. The results of this study explain that inflation is caused by high purchasing power (demand push inflation). Besides, the influence of Inflation variable to HDI is 22.38%, while 77.62% is influenced by other variables.

Model 3:
Based on the results of heterokedastisitas test, Obs * R-square value of 0.3833 and prob.Chi-Square of 00,5359> $\alpha = 0,05$, then the heteroskedasitas symptom does not exist. As for the autocorrelation test, Obs * R-square value of 6.8233 and Prob. Chi-Square (2) of 0.0330> $\alpha = 0.05$ so the result obtained that the autocorrelation is problematic. Besides the normality test, obtained that Jarque-Bera value of 5.2749 and probability of 0.0715, based on the value it can be concluded that the data is normally distributed. The statistical t test basically shows how far the influence of one independent variable individually in explaining the variation of the independent variable to the dependent variable. The results of the test can be seen as follows:

Table 3. *Results of Multiple Regression*
Dependent Variable: Ln POOR
Method: Least Squares
Date: 03/25/17   Time: 22:34
Sample: 1997 2016
Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.484811	0.040295	86.48151	0.0000
INFLASI	**0.005374**	**0.002104**	**2.554604**	**0.0199**

R-squared	0.266085	Mean dependent var	3.543431
Adjusted R-squared	0.225312	S.D. dependent var	0.168302
S.E. of regression	0.148134	Akaike info criterion	-0.886766
Sum squared resid	0.394984	Schwarz criterion	-0.787193
Log likelihood	10.86766	Hannan-Quinn criter.	-0.867328
F-statistic	6.526003	Durbin-Watson stat	0.680886
Prob(F-statistic)	0.019907		

Based on the above table, shows that inflation has a significant and positive effect on Poverty. This shows that the rise / fall of inflation will result in the rise / fall of Poverty. The results of this study are similar to the results of other studies such as: (1) Hazoor Muhammad Sabir and Safdar Hussain Tahir, the co-efficient of inflationary poverty and inflation. (2) Chani *et al.* (Arab Naz1 *et al.,* 2011) examined the relationship between economic growth, inflation and poverty for the Pakistani state with the ARDL testing approach of the period 1972-2008. The results show that inflation has a positive effect on poverty. Short-term inflation has a positive impact on poverty. (3) Farhad, K.K and Nabi S.T. (2014) suggests that inflation has a positive effect on poverty in Iran. Besides, the influence of inflation variable to poverty is 26.60%, while 73.40% is influenced by other variables.

In model 3 above, it shows that autocorrelation is problematic, which means that model is not good in estimation. Therefore, error corection model is done (ECM). Based on the unit root results for inflation and poverty ie stationary at the level of 1st Difference, this means that Inflation to Poverty is integrated. To ensure long-term and short-term relationship between inflation with poverty, it is done cointegration test by Johansen method. The long-term relationship between inflation and poverty is Trace Statistic (35.87723)> Critical Value (15.49471) and Probability 0,0000 <0.05, as well as Max Eigen Statistic (34.38414)> Critical Value (14.26460) and Probability 0.001 <0.05, this means long-term cointegrated poverty inflation and long-term estimates have a significant and positive effect. While the results of short-term relationships show that inflation has no significant effect on poverty. Based on the results of the above research, for the long term, the results are not different when the autocorrelation is problematic.

7. Conclusion

This paper discusses 3 regression models, where model 1 is the relationship between BI Rate, Money Supply, World oil price and gold price with inflation, on the other hand inflationary relationship with HDI and Poverty in Indonesia. The findings reveal that the variable BI rate, Exchange rate, World oil Price and Gold Price to Inflation are positive and significant. While JUB variable to inflation is significant and negative. Model 2 refers that inflation has a significant and positive effect on HDI and model 3 refers that inflation   has a significant and positive effect on poverty for the long term. These findings indicate that inflation is a disease in the economy of a country that brings the impact of all economic activities. Another number of research results stated that the variables studied significantly influence the rate of inflation meaning that these studies can be used by the government in determining fiscal and monetary policy.

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