

Impact Of Mining Sector To Poverty And Income Inequality In Indonesia: A Panel Data Analysis

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Abstract: Since the decentralization was implemented by Indonesia government in the last decade, the provincial government has more powerful authority to use and manage on the own provinces. The use of natural resources is blessed by the God for community welfare. By using 30 provincial cross-section data that the mining sector has a negative affected and statistically significant to economic growth and it has insignificantly affected for decreasing poverty and also insignificant for income inequality in Indonesia. The purpose of this research is to understand the affect of mining sector to poverty and income inequality in Indonesia from 2002 to 2011. The research used explanatory method by using time-series and cross-section data and applied a two stage simultaneous equation method (2SLS). The important finding in this research is (a) mining sector had a negative impact on economic growth and economic growth was not significant statistically for poverty reduction, (b) inflation did not have any impact on economic growth and had a positive impact poverty headcount, poverty gap and poverty severity, and (c), economic growth had positive impact on income inequality.

Keywords: economic growth, income inequality, Indonesia, mining sector and poverty

1. Introduction

Indonesia is one of the fortune country because of a wealth of natural resources is quite large, both renewable and unrenewable resources. Indonesia has coal resources of 104 billion tons and reserves of 21 billion tons. However, according to the BP Statistical Review 2010, that the Indonesian coal reserves amounted to only 0.5 percent of the world's coal reserves. Mineral potential and owned Indonesian coal scattered in various islands. Because it has a considerable economic potential is, then it is a long time that mineral and coal resources as the mainstay of economic development of Indonesia (News Mining, 2011: 5). According to the World Coal Institute that Indonesia has an important role as a supplier of world coal. Since 2004, Indonesia has been become the world's second largest coal exporter after Australia. Indonesian coal exports directly to various countries, especially Asian countries like Japan, China, Taiwan, India, South Korea, Hong Kong, Malaysia and the Philippines. Other Indonesian export destinations are in Europe such as the Netherlands, Germany and the UK and US states. Indonesia's largest coal importers are Japan (22.8%) and Taiwan (13.7%), this is because Indonesia is bound cooperation Economic Partnership Agreement (EPA) with Japan which includes cooperation to increase coal exports to Japan (Ermina Miranti, 2008: 5). In the next few years the prospects of coal is expected to remain good in the domestic market and in the global market. This is caused by (a) the growing role of coal as a power plant in Indonesia and abroad, because of diminishing the role of oil as an energy source otherwise coal and gas increase, (b) the world coal market is increasing due to increasing demand for coal in the world, the two giants of China and India as a generator electricity,

(c) the use of coal as an alternative energy is relatively cheaper than oil and LNG, (d) although the current coal price down quite low due to the global crisis, the price of coal is still positive until a few years as demand for coal is quite large, and (e) an Indonesian coal mining company profits are relatively larger than the average miner's (Ermina Miranti, 2008: 6-7). The positive impact of mining sector is : (a) contribute to the improvement of education and population growth in Obuasi (Mensah, 2011: 62), (b) in the international mining industry, developing countries would be able to build a mining regime based on common economic higher, mutually beneficial and equitable (Tawiah and Baah, 2011: 1), (c) the availability of jobs in which 30 percent of immigrants to find work (Addei and Kwadjose, 2011: 103), and (d) the transfer of technology, especially in mining (Pourush and Thanai, 2012: 9). While the negative impact of the mining sector, is (a) the mining sector has a negative impact on health, the environment and finance, the increasing number of patients with respiratory illness (Addei and Kwadjose, 2011: 5), coal mining caused environmental damage through soil degradation, deforestation, water and air pollution, noise and loss of wildlife habitat (Gurdeep Sing, 2008: 22), (b) generating prostitution, rising crime rates, changes in the pattern of native life, increased competition among local residents regarding natural resources. (c) the mining sector has led to social and environmental impacts are serious, including soil degradation, pollution of water quality, pollution, loss in livestock and the disruption of the lives of wild animals (Kitula, 2005: 412). (d) increase mortality due to lung cancer in Appalachia are caused by smoking, low education levels and poverty and living in coal mining areas (Hendryx et al, 2008: 5). In Indonesia, based on Statistical Agency that the phenomenon of poverty and inequality become a serious issue, especially the policy makers for two reasons. First, for decades (1970-1990) or the New Order regime, Indonesia recorded an average economic growth rate of 6% - 7% per year, which makes one of the few countries that were able to achieve a relatively high growth rate. But the high rate of economic growth is not accompanied by an improvement in income distribution, and patterns of inequality in Indonesia is not much decreased. If the Gini coefficient used as a measure of income distribution, then for more than 30 years, Indonesia Gini coefficient is not significant changed. In 1965, Indonesian Gini coefficient of

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0.35, then increased in 1978 to 0.37, and in 1999 decreased to 0.33 (UNDP, 2001). Secondly, before the economic crisis hit Indonesia in mid-1997, Indonesia had made great progress in reducing absolute poverty measured by consumption. If in 1976 the percentage of poor reached 38.8% of the total population, then in 1990 to 16.8% in 1993 to 13.4% in 1996 and to 17.47% with a systematic pattern of declined. But the economic crisis in 1997 showed that the vulnerability of the progress that had been achieved in Indonesia. This caused the number of poor people increased sharply and millions of people was falling back into poverty. In 1999, the number of poor people increased by more than double that of 1996 by 22.5 million to 49.50 million (24.23%) in 1998 and 47.97 million (23.43%) on 1999 (Statiscal Agency, 2006). However, the World Bank said in a report entitled "Indonesia Constructing a New Strategy for Poverty Reduction (2001)" stated that: First, until the economic crisis, Indonesia had tremendous success in poverty reduction. Based on the country, development program succeeded in increasing the standard of living is better. The end of 1990 the economic crisis hit Indonesia that caused millions of people to be poor again. When poverty is defined relevant to current conditions and expanded, including the humanitarian dimension, such as similarities in food, housing and security, reducing the causes of poverty to the pressures from the outside (external shocks), ease in education, health and basic infrastructure, and the opportunity to participate in social and political life in common other communities. Second, it is estimated that the poverty rate of spending during the economic crisis - at least double that of August 1997 before the crisis amounted to 12.7% (SUSENAS, February 1997) and reached a peak of approximately 27% at year-end 1998 or 1999/early. This indicated that since poverty reduction was dramatic as the decline in rice prices and rising wages. Third, Despite encouraging news on poverty reduction since the peak of the crisis, most of the people of Indonesia continues to face a variety of deprivation or loss, including a high vulnerability to poverty, job loss, unexpected illness, family emergencies, one of the factors that can make be able to deal with the relative vulnerability. Analysis of final report explained that approximately half of Indonesia population faces greater than 50 percent chance experiencing episodes of poverty every three years. Fourth, the previous approach is too much emphasis on numerical targets. Poverty line, for example, focus on a number of expenditure items. Numerical targets, combined with top-down approach to development of the country, left with some important things, but it is difficult to measure the dimensions of poverty and well-being are not clear. Network of Mines report Indonesia on May 29, 2012 stated that nearly 34 percent of Indonesia land handed over to the corporation through the 10,235 permits mineral and coal mining, not including permits large-scale plantations, oil and gas working areas, geothermal mining. Coastal and marine areas are also not spared from exploitation, ranging from 16 points reclamation, sand mining, sand iron and gold into a waste dump (tailings) Newmont and Freeport. Likewise, at least 3.97 million hectares of protected forest areas and mining threatened biodiversity in it. In the current case, Indonesia is the country that has the list of endangered species in the world, covering 104 species of birds, 57 species of

mammals, 21 species of reptiles, 65 species of freshwater fish and 281 species of plants. Environmental pollution did not only occur in the river, but also the presenced of the holes left gaping by mining. In the Pacific Islands more than a thousand hollow tin mines were abandoned, taken care of. There are 150 holes in Samarinda mine, two holes of which has led to five children drowned last year. Environmental pollution also occurs in the air. Air polluted by mining the cause of respiratory distress. Samarinda City Health Department recorded a respiratory disease many as 17.444 cases until early 2011.

2. Research Methodology Object Research

Object of this study include three (3) main points, namely: mining sector, poverty and income inequality in Indonesia from 2002 to 2011. In this study, poverty used three indicators, that are poverty headcount, poverty gap and poverty severity. The use of such indicators as the studies were done before, especially for Indonesian cases only uses the percentage of poor population to the total population. Although this indicator has a weakness, that the percentage calculation ignored expenses or income of the poor to the poverty line. Thus, to overcome these weaknesses, it is necessary to use the size of disparity or poverty gap which measures the difference between the average percentage of expenditure or revenue or distribution of income or expenditure among poor and the third poverty indicators is the poverty severity. The last indicator is often used to see the depth or severity of poverty. For income inequality, the Gini coefficient is used to be the indicators. Although the Gini coefficient measuring income distribution only in the aggregate, however, these indicators are very commonly used in the measurement of inequality, while Williamson index is often used to calculate inter-regional disparities between regions or territories.

3. Types and Sources of Data

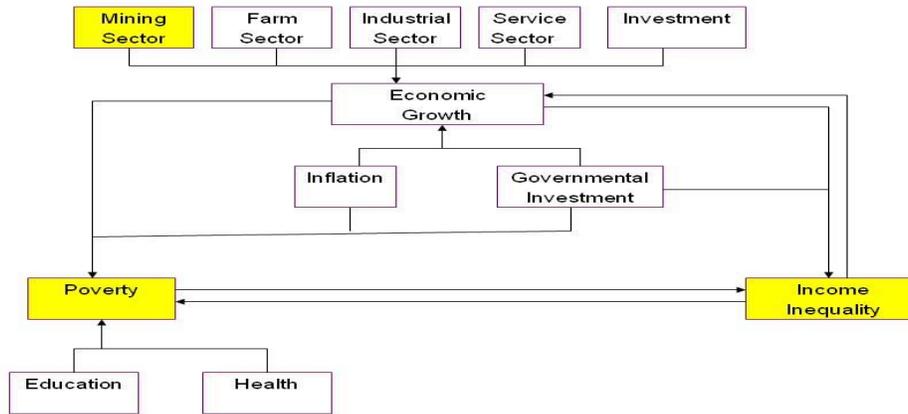
This study uses secondary data in the form of annual time series covering the period 2002 to 2011 and cross-sectional data (panel) for the 30 provinces in Indonesia, because the necessary data in this study is the macroeconomic data that include among others:

- a. Data of GRDP of mining, farm, industry and service sector for 30 provinces in Indonesia.
- b. Data of the number of poverty headcount, poverty gap, and poverty severity for the 30 provinces in Indonesia.
- c. Data of economic growth, the Gini index, poverty line, inflation, number of population, number of high school graduates (education) and life expectancy (health) to 30 provinces in Indonesia.

4. Framework of The Research

The framework to be used in this research is relationship among 9 (nine) independent and 3 (three) dependent variables. The independent variables consist of mining, farm, industial and service sectors, investment, inflation, government investement, education and health and the dependent are economic growth, poverty and income inequality.

Figure 1. The frame of the research



5. Model Analysis

In this research, the simultaneous equation model (simultaneous equation regression models) by using two stage least square regression (2SLS) to see no direct relationship between the mining sector, against poverty and inequality. Thus, the general specifications structural equation system used in this study are:

$$YP = f_1(GR, Mng, Farm, Ind, Serv, Inv, GI, Inf) \dots (1)$$

$$GR = f_2(YP, P, GI) \dots (2)$$

$$P = f_3(GR, YP, Inf, Educ, Health, GI) \dots (3)$$

Where:

- YP = rate of growth of income per capita
- P = poverty headcount
- GR = Gini coefficient
- Mng = ratio of GRDP mining sector to GRDP province
- Farm = ratio of GRDP farm sector to GRDP province
- Ind = ratio of GRDP industry sector to GRDP province
- Serv = ratio of GRDP service sector to GRDP province
- Educ = level of education (high school graduate ratio to total population)
- Health = health level (the average age of the population)
- GI = ratio of government expenditure for capital to PDRB
- Inf = rate of inflation
- Inv = Total investment according to province

6. Influence of Mining Sector to Economic Growth

The important finding in this study is that the mining sector has a negative impact on the economic growth of - 0.000347, which means that the mining sector increased by one percent would decrease by 0.0347 percent of the provincial GRDP, this is in accordance to the opinion of Ahmad Komarulzaman and Armida S. Alisjahbana 2006 that mining sector has negatively affect regional economic growth, but contrary to the opinion Mensah (2011: 10-11), Connolly and Orsmond (2011: 47) and Tawiah and Baah (2011: 7), Pourush and Thanai, 2012: 8 with case studies in Ghana, Australia and India that mining sector has positive impact on economic growth, education and development and transfer of new technologies, especially in mining.

7. Effect of Growth on Inequality

Relationship among triangle growth, poverty and inequality is a reciprocal relationship mutually influence each other. The results of this study show that economic growth has a positive and significant impact on income inequality, it indicates that Indonesia's economic growth is only enjoyed by a minority group of people, or about 20 percent of high-income groups but controlled almost 50 percent growth. The group that controls the important production factors such as capital and human resources with high productivity. So that they are mostly small groups of people who enjoy the most economic growth and lead to higher inequality. Likewise, poverty has a negative and significant effect of - 0.087047 against inequality, this means that the increasing number of poor people by one percent would reduce inequality by 0.087047 percent, this is in accordance with the opinion Zaman et al (2010: 42) to perform research in Pakistan with the empirical analysis of the Triangle Growth, Inequality and Poverty in Pakistan: Co-Integration Approach (1964-2006) with the conclusion that the pressure against poverty will have a negative impact on growth and income inequality, while the pressure on the growth will have a negative impact on poverty and inequality, and stress response in growth will have a negative effect. In contrast to the opinion of Adams Jr. and Page (2003) and McLeod and Lustig (2011) that poverty and inequality are positively correlated. According to Richard H. Adam Jr. and John Page (2003: 2043), to conduct research in the Middle East and North Africa on poverty, inequality and economic growth concluded that despite the low growth can reduce poverty and inequality. Poverty should have a positive impact on income inequality, increasing the number of poor cause greater income inequality not reverse the increasing number of poor cause of income inequality decreased, this indicates that the government's policy on poverty reduction and income inequality is less effective especially with respect to regional autonomy policy in force since 2001.

8. Effect of Growth on Poverty

a. Mining Sector influence on Poverty and Income Inequality in Indonesia

Several studies on the impact of the mining sector to economic growth and development, according to Connolly and Orsmond (2010: 49-50) that the "boom" in the

Australian mining sector since the 2000s increasing exchange rate, affect trade with other countries and in the overall performance of the Australian economy over the past decade is better than at the beginning of the mining boom, reflecting a stronger institutional framework. According to Rolfe et al (2011: 34-35) research that the income and expenditure of the natural resources sector are distributed to all local governments and central government, generates a current effect (multiplier effect) significant. It should be noted that these industries have contributed directly to the lagging regions in Queensland, helping to support the economic conditions become more powerful in the region. Similarly contributes indirectly from the natural resources industry spending on the development of businesses in the surrounding area and generate some large-scale industry in the southeastern and central parts of Queensland. Similarly, the opinion of Sachs and Warner (1997: 26) with the data from 95 developing countries finds that in modern economic growth regardless of natural resources tend to grow more slowly than the use of existing natural resources. According to Hawkins (2009: 52) with the area of research in Zimbabwe concluded that the mining sector is well placed to reverse the decline in the last 20 years. It's easy to become a sector of the fastest growing economies, becoming only the largest contributor to export and become an important source of revenue that is used to create jobs, economic diversification and poverty reduction. Instead, the results of this study concluded that the mining sector variables although very small negative effect on economic growth as measured by GRDP growth in the province and are statistik very significant.

b. The relationship between growth and poverty and income inequality in Indonesia.

The relationship between growth, poverty and income inequality are all factors influence each other or reciprocal to each other. For the case of the phenomenon of poverty in Indonesia to be the center of attention of government that can be reduced or eliminated and income inequality is reduced so that the distance between the highest income with the lowest income vanishingly small. Government policies is to sustain high economic growth and a stable and sustainable poverty reduction, but income inequality is increasing, it means that the economic growth is achieved only enjoyed by only a small part of Indonesian society. Several studies on the relationship between growth, poverty and inequality have been done by economists with different opinions. Growth and poverty relationship is negative (trade off) like Ahluwalia et al (1979), Janvry and Sadoulet (2000), Bigsten and Levin (2000), Bourguignon (2004), Fosu (2010), Gelaw (2010), Pradhan (2010) Zaman et al (2010) and Ijaiya et al (2011) and Yue (2011). Likewise, the relationship between growth and inequality, Kuznets (1955) argued that originally led to the growth of inequality increased and then decreased with the process of economic development. This opinion is supported by Barro (2008) that the relationship between growth and inequality is positive for countries that have a per capita income of less than US \$ 2,000 per year, while for countries with per capita incomes above US \$ 2,000 per year, the relationship between growth and inequality is negative (trade off). The results of this study concluded that the growth of positive and significant effect on the negative and not significant

income inequality on poverty in Indonesia. From both of these that the mining sector is a significant negative effect on growth and no growth effect on poverty in Indonesia, so that the mining sector has no effect on poverty in Indonesia. However, the mining sector is a negative effect on income inequality where the mining sector and a significant negative effect on the growth and positive influence on the growth of income inequality, thereby adversely affect the mining sector amounted to 0.00729 against income inequality in Indonesia. The results of this study indicate that the Kuznets hypothesis that growth causes inequality in the early development increases and decreases with the process of economic development has not been proven to the data of 30 provinces in Indonesia, because for over four decades of economic development of Indonesia, despite fluctuating income inequality tends to rise nationally. Likewise, the growth of a negative effect on the poor with the data of 30 provinces in Indonesia where a state of poverty and economic growth experienced fluctuating despite nationwide that economic growth proxy of GDP increased and poverty declined.

9. Conclusion

- a. Mining sector, industrial sector, the services sector and plays a role in the decline in the population of provincial GRDP growth, being a variable inequality, investment and government spending on the agricultural sector plays a role in the increase in GRDP growth in the province.
- b. Economic growth as measured by GRDP growth of provincial role in increasing income inequality, poverty plays a role in lowering the reverse inequality.
- c. Economic growth of provincial GRDP and income inequality has no effect on the reduction of poverty (Poverty Headcount, Poverty Gap and Poverty Severity) and economic growth have an influence in increasing income inequality in Indonesia.
- d. Inflation effects in increasing poverty is a third the size of the poor (poverty headcount), poverty (poverty gap) and the depth of poverty (poverty severity).
- e. Government spending on investment, education and good health impact in reducing poverty (poverty headcount, poverty gap and poverty severity).

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