Determinants of Poverty in East Java Metropolitan Area in 2010-2016

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ABSTRACT

This research aims to identify determinants of poverty and as well as to estimate poverty trend. We use secondary data that gathered from 7 regencies and cities in Gerbangkertosusila Area. Our data range from 2010 to 2016 and analysed with random effect model. Our result shows that per capita GRDP, level of health, employment opportunities and education variables have negative and significant impact on poverty variable in Gerbangkertosusila Area during 2010-2016 period. Whereas inflation rate variable has no effect on poverty. We also found that employment opportunities variable is the most influencing factor affecting the level of poverty. We recommend to increase employment opportunities by promoting investment in regency and city around the area, increasing attention to the education problems like reducing the number of children dropped out from school, optimizing education budgets, promote education scholarships as well as improving the quality of health services, and establishing synergies between regency and city.

Keywords: Poverty, Metropolitan Area, Inflation.

ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi faktor-faktor penentu kemiskinan dan juga untuk memperkirakan kecenderungan kemiskinan. Data kami berkisar dari 2010 hingga 2016 dan dianalisis dengan model random efek. Hasil kami menunjukkan bahwa per PDRB per kapita, tingkat kesehatan, kesempatan kerja dan variabel pendidikan memiliki dampak negatif dan signifikan terhadap variabel kemiskinan di Gerbangkertosusila Area selama periode 2010-2016. Sedangkan variabel tingkat inflasi tidak berpengaruh pada kemiskinan. Kami juga menemukan bahwa variabel peluang kerja merupakan faktor yang paling mempengaruhi tingkat kemiskinan. Kami merekomendasikan untuk meningkatkan peluang kerja dengan mempromosikan investasi di kabupaten dan kota di sekitar Area Gerbangkertosusila, meningkatkan perhatian pada masalah pendidikan seperti mengurangi jumlah anak yang putus sekolah, mengoptimalkan anggaran pendidikan, mempromosikan beasiswa pendidikan dan juga untuk meningkatkan kualitas layanan kesehatan, dan membangun sinergi antara kabupaten dan kota.

Kata kunci: Kemiskinan, Daerah Metropolitan, Inflasi.

INTRODUCTION

Metropolitan is a term to describe large urban area, seen from the size of area, economic and social activities, and population. However, according to Law No. 26 year 2007, metropolitan area is an urban area consisting of a core area with functionally connected urban areas, an integrated regional infrastructure network system and it has at least 1 million inhabitants. In other words, Metropolitan

area is also defined as an area where economic and social life are co-integrated and it contributes to characterizes the activity of the city.

There are four areas on Java Island that defined as metropolitan area. These area such as Jabodetabek (Jakarta, Bogor, Depok, Tangerang, dan Bekasi), Bandung Raya (Bandung and Cimahi), Kedungsepur (Kendal, Demak, Semarang, Salatiga, and Grobogan), and Gerbangkertosusila (Gresik, Bangkalan, Mojokerto, Surabaya, Sidoarjo, and Lamongan). These metropolitan areas are expected to promote economic growth and able to provide better urban services for the surrounding area.

However, forming into metropolitan area often brings economic problems and one of them is poverty. Poverty is viewed as economic inability to fulfill basic needs including both food and non-food. So, it is often measured by consumption expenditure.

Metropolitan area is considered important to bring this poverty problem. Poverty in metropolitan areas is often associated with enactment of government policies that are considered not pro-poor.

Table 1. Poverty Rate in Metropolitan Area in Java Island Period 2012-2016

Regency/City	Year (%)				
	2012	2013	2014	2015	2016
Gresik Regency	14.29	13.94	13.41	13.63	13.19
Bangkalan Regency	24.61	23.23	22.38	22.57	21.41
Mojokerto Regency	10.67	10.99	10.56	10.57	10.61
Mojokerto City	6.46	6.65	6.42	6.16	5.73
Surabaya City	6.23	6.00	5.79	5.82	5.63
Sidoarjo Regency	6.42	6.72	6.40	6.44	6.39
Lamongan Regency	16.64	16.18	15.68	15.38	14.89

Source: *Badan Pusat Statistika*

Table 1 shows that the poverty in the metropolitan area in Java has a different rate. Poverty rate in Jabodetabek and Bandung Raya have fluctuated during 2012 to 2016, whereas Kedungsepur and Gerbangkerotusila show declining poverty rate. Although the Gerbangkertosusila has experienced decreased in poverty rate, but Gerbangkertosusila area is one of the metropolitan area that has the highest rate of poverty till 2016. In addition, a decreased of poverty rate trend in the Gerbangketosusila area is slower than other metropolitan areas. This phenomenan become our consideration and focus our research.

Gerbangkerotsusila is a metropolitan area located in East Java. Gerbangkertosusila Area consists of the core of urban area, such as Surabaya City and surrounding urban areas, such as Gresik Regency, Bangkalan Regency, Mojokerto Regency, Mojokerto city, Sidoarjo Regency and Lamongan Regency. The area as a center of economic activity should be able to raise the standard of living around it. But in fact, there are still many poor people living in Gerbangkertosusila Area.

Poverty in Gerbangkertosusila Area relatively high. There are some regencies that has poverty rate higher than average poverty rate of Indonesia in 2016, which means that the poverty rate in some regencies is higher than 10.70%. So that various programs and activities are always done by the government to alleviate poverty. Therefore, one of the efforts of poverty alleviation can be done by studying the determinants of poverty. The determinants selected in this research are several factors that have been proven to have a significant impact on poverty in previous research, such as GRDP, inflation, health, employment opportunities and education.

Table 4. Poverty Rate of Gerbangkertosusila Area in 2012-2016

Regency/City	Year		
	2014	2015	2016
Gresik Regency	61,481,856	64,761,284	67,549,360
Bangkalan Regency	18,364,151	17,716,348	17,676,648
Mojokerto Regency	41,375,599	43,310,326	45,246,427
Mojokerto City	30,281,357	31,748,683	33,400,841
Surabaya City	107,958,992	113,816,296	120,057,250
Sidoarjo Regency	51,073,839	52,904,222	54,954,656
Lamongan Regency	17,774,647	18,788,595	19,882,291

Source: *Badan Pusat Statistika*

GRDP is the total value of goods and services produced by a region in a certain period. GRDP has an important role in assessing the achievement of economic growth and determining the welfare of the society. Increasing the income will increase purchasing power, so it can be used to meet the needs in order to achieve welfare. If the welfare of society increases then poverty will decreases. Based on previous research conducted by Ncube et al. (2014) found that income inequality reduces economic growth and increase poverty in Middle East and North Africa region. It means, when the GDP increases then the poverty will decreases. Agusalim (2017) also found the same results in the long run in Indonesia. So, if per capita GRDP increases, it will makes poverty decreases.

Per capita GRDP in Gerbangkertosusila Area always increases every year, except Bangkalan Regency. Bangkalan Regency has decreased per capita GRDP. In addition, Bangkalan Regency has a lowest of per capita GRDP than other regency and city in Gerbangkertosusila Area. Whereas, Surabaya became the city with the highest per capita GRDP.

The large number of people in the metropolitan area makes demand for goods and services is high and drag the level of price that lead to inflation. High inflation will decreases purchasing power of people with fixed income and it will put pressure on poverty because it will be more difficult for them to meet decent living needs.

Previous research conducted by Chani et al. (2011) shows that inflation has long run positive significant impact on poverty in Pakistan.   Mustamin et al. (2015) found that inflation has indirect positive impact on poverty through economic growth in Makassar. Research conducted by Ismaila and Imoughele (2015) stressed the in African countries like Nigeria, its main source of economic growth under is inflation rate. Thus, based on these previous research we hypothesized that inflation has a positive impact on poverty. If inflation decreases then poverty will decreases.

People density in metropolitan areas give contributions to the deteriorating environmental conditions. This condition has led people more exposed to health hazards. Based on the circle of poverty theory, health increase productivity, which in turn it also affect poverty. Bintang and Woyanti (2018) considered someone's health is correlated with his or her life expectancy. He found that it has negative and significant impact on poverty in Central Java. Someone with better health condition has longer life expectancy, so it has the opportunity to earn higher income. In addition, Sisca et al. (2013) also argues that better health will improve work power, reducing leisure hours and increase output. So, health has a negative impact on poverty.

Employment opportunities can basically be defined as the ability of a person to obtain a job. It has direct impacts to revenue generation, so this means that employment opportunities can affect the probability of a person to enter into the category of poor and non-poor. The relationship between employment and poverty is reflected from the adverse impacts of unemployment which reduces public revenue, which in turn reduces a person's level of wealth. Decreased in the society's wealth by the existence of the increased unemployment will certainly increase the chances of someone trapped in poverty. Previous research conducted by Sisca et al. (2013) found that employment opportunities has negative and significant impact on poverty in Aceh. Masriansyah (2017) also found the same result in Sarolangun Regency. So, employment opportunities

hypothetically has negative impact on poverty. If employment opportunities increases then the poverty will decreases.

Low productivity is one of the factors that determine poverty. One of the way to increase the productivity is by improving education. The higher of the education, shown by increased in knowledge and marketable skills, the higher productivity. Increasing productivity will increase income and make society out from poverty condition. Bintang and Woyanti (2018) found that the education, represented by the average of school year, has negative impact on the poverty rate in 35 regency/city in Central Java. The same result also found by Sisca et al. (2013) that education has a significant and negative impact on poverty. So, our next hypothesis is that if the level of education increases, measured by the average of formal school years, then poverty will decrease.

So, based on our brief discussion previously, we are interested to identify determinants of poverty as well as to estimate its trend. We will test our hypothesis that whether poverty is influenced by per capita GRDP (Gross Regional Domestic Product), rate of inflation, level of health, employment opportunities and education. Our study intended to uncover the determinants of poverty in East Java Metropolitan Area for 2010-2016 period. We conduct a case Study in Gerbangkertossuila Area with aims to know which one the most determinants factor and variable that affect poverty in Gerbangkertosusila Area.

RESEARCH METHOD

We use panel data analysis to analyze the influence of the GRDP, inflation, health, employment opportunities, and education of poverty in Gerbangkertosusila Area which consists of Gresik Regency, Bangkalan Regency, Mojokerto Regency, Mojokerto City, Surabaya City, Sidoarjo Regency, Lamongan Regency.

Our estimation model is as follow:

$$\ln Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \varepsilon_{it}$$

Where Y_{it} is poverty rate as dependent variable, for independent variable we have X_{1it} as Gross Regional Domestic Product (GRDP), X_{2it} as rate of inflation, X_{3it} as health factors, X_{4it} as employment opportunities, X_{5it} as year of education. This model will be analyzed by random effect model.

We also perform elasticity test that is used to determine which one of independent variables that give most impact on the dependent variable. Variable that has the highest elasticity, means being the most influential variable in affecting poverty in Gerbangkertosusila Area. The elasticity test can be explained by the following formula:

$$e_t = \beta_i(x)$$

Where e_t shows the elasticity, β_i shows regression coefficient and *x* show the average value of independent variable. We also interested in to do trend analysis of poverty. In order to perform our estimation we calculate this equation:

$$Y' = a + bx$$

Where Y' is value of trend, *a* is constant value, *b* is our estimated slope coefficient, *x* is time period.

RESULT AND DISCUSSION

Regression Result

Based on the result of random effect model, obtained the function equation as follows:

$$\ln Y_{it} = 14.96886 - 0.00000000319 X_{1it} - 0.002107 X_{2it} - 0.016617 X_{3it} - 0.015481 X_{4it} - 0.068191 X_{5it} + \varepsilon_{it}.$$

Based on our random effect estimation, we get a constant value of 14.96886. It shows if the value of GRDP, inflation, health, employment opportunities, and education are zero, then the poverty has a value of 14.96886%. The value of *goodness of fit* (R^2) is equal to 0.6284. It means that per capita GRDP, inflation, health, employment opportunities, and education (independent variables) of the regression model are able to explain the variation of the poverty in Gerbangkertosusila Area (dependent variable) in 62.84%. Whereas, the remaining 37.16% is explained by other variables outside the model as well as government expenditures, investment, total population and other variables.

F-test is used to test the influence of GRDP, inflation, health, employment opportunities, and education on poverty in Gerbangkertosuila Area simultaneously. Based on the estimation results, we obtained the value of F-statistic of 14.54431. With n = 49, k = 6 and a confidence level is 95% (α = 0.05) then the numerator (k-1 = 5) as well as the degree of freedom (df) the denominator (n-k = 43), the value of F-table is 2.45. So, from the calculations obtained that F-statistic (14.54431) > F-table (2.45), it means that per capita GRDP, inflation, health, employment opportunities, and education simultaneously has significant influence on poverty in Gerbangkertosuila Area period 2010-2016.

In order to analyze the influence of per capita GRDP, inflation, health, employment opportunities, and education on poverty in Gerbangkertosusila Area period 2010-2016 partially, we use t-test. By using one tail analysis, it obtains value of t-table of -1.684, with the degree of freedom of 43 (49-6) and using confidence level of 95% (α = 0.05). Based on the estimation, the per capita GRDP, health, employment opportunities, and education partially has negative impact on poverty in Gerbangkertosusila.

The Effect of Per Capita GRDP on Inflation

The estimation results shows that the per capita GRDP has coefficient value of -0.00000000319 with probability of 0.0102 which is greater than 0.05. The t-statistic value of -2.688 is higher than t table of 1.684. It means, per capita GRDP increases by Rp 10,000,000 it will reduce the number of poor people by 0.0319%. So, it can be concluded that the variable per capita GRDP showed a negative sign and It has significant impact on poverty in Gerbangkertosusila Area. Our results is in accordance with the proposed hypothesis, so our first hypothesis is accepted.

Based on data from Badan Pusat Statistika, the GRDP in every regency/city in Gerbangkertosusila Area is increasing every year, except for Bangkalan regency which has decreased GRDP in 2015 compared to 2014. The increase of GRDP in every regency/city in Gerbangkertosusila Area is more than population growth. This makes per capita GRDP in each regency/city increasing every year. Increasing per capita GRDP in the Gerbangkertosusila Area help to illustrate the increase in people's purchasing power caused by an increase in per capita income. So, it can be used to meet the needs in order to achieve welfare. So, when the per capita GRDP increases, the poverty in Gerbangkertosusila Area will decreases.

The results of this research is in accordance with the researched by Septyo and Gunanto (2013), who found that GDP had negative significant impact on poverty in 44 city in Indonesia during 2007-2010 period of analysis. Agusalim (2017) also found the same results that per capita GRDP had negative significant impact on poverty in the long run in Indonesia during 1978-2015 period of analysis.

The Effect of Inflation on Poverty

Estimation result shows that the inflation has coefficient value of -0.002107 with probability of inflation is 0.496 which greater than 0.05. The t-statistic value of -0.686 less than t table of 1.684. So it can be concluded that the inflation had no significant impact on poverty in Gerbangkertosusila Area during 2010-2016 period of analysis. Therefore, the hypothesis stating inflation has a significant positive impact on poverty in Gerbangkertosusila Area is rejected.

Our finding is different from the results found by Sabir and Tahir (2012) who conducted study in Pakistan during 1981-2010 period. Their analysis showed that inflation had a positive impact on

poverty. On the other hand, our research is in accordance with the study conducted by Mustamin et al. (2015), who found that inflation had directly negative impact on poverty.

So, it shows the fluctuation of inflation rate in Gerbangkertosusila Area did not have implications on poverty. In addition, there is a negative relationship between inflation to poverty due to conditions and situations where the purchasing power of the people in a region is not the same or heterogeneous. So, that there will be reallocation of goods from people who have relatively low purchasing power to people who have greater purchasing power.

The inflation rate in Gerbangkertosusila Area is relatively low, that is below 10%. So, the level of inflation in Gerbangkertosusila Area does not have a significant impact on real income of people living in that area. High price is also needed to stimulate economic activity. Rising prices lead to an increase in corporate profits that will increase investment. Increase in investment activity will absorb the availability of employment so as to reduce unemployment, and increase people's income and ultimately will improve welfare.

The Effect of Health on Poverty

The estimation results show that the health has coefficient value of -0.016617 with probability of health is 0.003 which greater than 0.05. The t-statistic value of -3.095 more than t table of 1.684. It means, increase 1 year health conditions reduce the number of poor people by 0.016617%. So, it can be concluded that the variable health showed a negative significant impact on poverty in Gerbangkertosusila Area in 2010-2016. Therefore, the hypothesis stating that health has a significant negative impact on poverty in Gerbangkertosusila Area is accepted.

One of the successful development of the health sector of a region can be seen from the higher life expectancy of the population. The increase in life expectancy is reflected in the growing number of older people. The level of health in Gerbangkertosusila seen from life expectancy always increase every year in each regency/city. This shows that the improvement of the public health status of Gerbangkertosusila Area that includes increasing access and quality of health services. This increase is due to the increased in the health budget each year. But increasing life expectancy is not only a matter of longevity, but also about healthy living and productivity, especially to poor people to get out of poverty. In addition, improved access to and quality of health services should be balanced by the number of people in the metropolitan area is not small and environmental improvement. It takes the role of government and society to improve health degree.

The results of this research is in accordance with the researched by Sisca et al. (2013), if the health status decreases will increase the number of poor people in Aceh. Bintang and Woyanti (2018) also found the same result, that health is represented from life expectancy had negative and significant impact on poverty in Central Java. Better health in Gerbangkertosusila Area impact on longevity, so it has the opportunity to earn a higher income, it will improve work power, it reduces the day off and increases output. Health is an economic phenomenon considered as an investment, so health becomes a factor of production to increase the value added of goods and services or as a target of the various goals to be achieved. Therefore, health is considered a capital that has a positive rate of return.

The Effect of Employment Opportunities on Poverty

The estimation result shows that the employment opportunities has a coefficient value of -0.015481 with probability of employment opportunities is 0.002. The t-statistic value of -3.153 more than t table of 1.684. It means, every employment opportunity increases by 1% will reduce the number of poor people by 0.015481%. So, it can be concluded that the employment opportunity had a significant negative impact on poverty in Gerbangkertosusila Area period 2010-2016. Therefore, the hypothesis stating employment opportunity has a significant negative impact on poverty in Gerbangkertosusila Area is accepted.

The results of this research is in accordance with the research by Sisca et al. (2013) that employment opportunities had negative significant impact on poverty in Aceh period 1991-2012. This means that increased employment in the Gerbangkertususila Area can increase the income of the

people in each regency/city in Gerbangkertosuila Area and ultimately can reduce the poverty level. It requires a balanced employment opportunities growth between the growth of the workforce and an increase in employment opportunities in line with the quality of the workforce. Conducted study by Ravi and Engler (2015) shows that ther is positive relationship between national program scheme on rural households in India to increase the probability of households to holding savings and reduce the probability of depression. There should be attention to the availability of employment opportunities for poor people in the Gerbangkertosusila Area to get out of poverty, seeing current implementation of the AEC (ASEAN Economic Community) agreement which resulted in the labor market no longer having national borders.

The Effect of Employment Education on Poverty
The estimation result shows that the education has a coefficient value of -0.068191 with probability of education is 0.003. The t-statistic value of -2.208 more than t table of 1.684. If the education increases by 1 year, it will reduce the number of poor people by 0.068191%. So it can be concluded that the education had a significant negative impact on poverty in Gerbangkertosusila Area period 2010-2016. Therefore, the hypothesis stating education has a significant negative impact on poverty in Gerbangkertosusila Area is accepted.

The results of this research is in accordance with the research by Bintang and Woyanti (2018) that education has negative significant impact on poverty in Central Java. The same result also found by Sisca et al. (2013), in Aceh that if education increases, then poverty will decrease. The result of this research is also in accordance with the theory of poverty circle which states that one of the factors that determine poverty is the level of education and theory human capital which states the higher the level of education, the knowledge and skills will increase. Increased productivity will encourage income and welfare. So, reducing poverty in Gerbangkertosusila Area can be accomplished through improving education by increasing the average of school year to ensure that no one dropped out of school. Uneven educational service facilities are factors that affect the low level of educational participation. In addition, the high cost of college education is a very basic reason for people not to continue their education.

The Most Determinant Factor on Poverty
Estimation result shows that employment has the highest coefficient compared to other variables. It means that the available of employment opportunities greatly impact poverty reduction in the Gerbangkertosusila Area. Therefore, the hypothesis stating per capita GRDP is the most dominant variable in Gerbangkertosusila is rejected. The results of this research is in accordance with contemporary theory on poverty that one of the key mechanisms for reducing poverty in developing countries is providing adequate wages, and providing productive employment opportunities for the poor. Although the theory mentioned that GRDP is an important element in poverty alleviation, but GRDP does not give a direct answer. This is because the increase of GRDP is not felt by the poor. Therefore, employment opportunities are essential in any development strategy that focuses on poverty alleviation. The ability to get a job has a direct impact on earning that is useful to meet the needs of life. This means that employment opportunities can affect the probability of falling into the category of poor and not poor. Unavailability of employment opportunities can lead to unemployment. According to Sukirno (2006), the effect of unemployment is to reduce people's incomes that ultimately reduce the level of prosperity.

Poverty Trend in Gerbangkertosusila Area
The estimation result of poverty trend in Gerbangkertosusila Area shows that, $a = 1,030,510$ and $b = -25,713.9$. Trend value can be seen from the value of b. The value of b in this research is negative, it means there is a downward trend or negative trend of poverty in Gerbangkertosusila Area. In 2017, it is predicted that the number of poor people in the Gerbangkertosusila Area is 927,654 inhabitants, in 2018 there are 901,940 inhabitants, in 2019 there are 876,226 inhabitants, in 2020 there are 850,512 inhabitants and in 2021 there are 824,798 inhabitants. It means that poverty

in the Gerbangkertosusila Area will decrease over the next five years, from 2017 to 2021. Therefore, the hypothesis stating poverty in Gerbangkertosusila Area has a decreases trend is accepted.

The results of this research is in accordance with famous u-shape curve between poverty rate and growth, that in the early stages of development process, poverty in a region tends to increase. Conversely, when approaching the final stages of the development process, poverty will gradually diminish. Therefore, it is necessary to optimize every policy that has been done in order to decrease the amount of poverty in Gerbangkertosusila Area can be more.

CONCLUSION

Based on the result of the research and discussion, this research concludes that Per capita GRDP, health, employment opportunities and education has a negative significant impact on poverty, whereas inflation has a negative no significant impact on poverty in Gerbangkertosusila Area during 2010-2016 period.

Employment Opportunities has the most impact to poverty in Gerbangkertosusila Area period 2010-2016. Last, Poverty in Gerbangkertosusila for the next 5 years (2017-2021) has a negative trend. Poverty in the Gerbangkertotusila Area in 2017-2021 is predicted to decrease every year.

Based on the conclusion, the implication of this research that Per capita GRDP has a negative significant impact on poverty in Gerbangkertosusila Area. It means, there is needs to increase GRDP to reduce poverty in that area. Efforts to increase GRDP needs to be balanced with population growth rate. The collaboration and synergy among regencies and cities by developing productive sectors according to regional characteristics are needed to reach the regional competitive advantage.

Health has a negative significant impact on poverty in Gerbangkertosusila Area. That means, improving the quality of health services is required such as insurance with easy administration and environmental improvements.

Employment opportunity has a negative significant impact on poverty in Gerbangkertosusila Area. Employment opportunity is the most dominant factor on poverty in Gerbangkertsusila Area. That means, employment opportunity to reduce poverty in Gerbangkertosusila Area is urgently needed. It can be done by increasing and equalization of investment in Gerbangkertosusila Area especially in regency/city which is underdevelopment like Bangkalan Regency as well as increasing the number of entrepreneurs by creating cheap credit schemes such as Kredit Usaha Rakyat (KUR), and Lembaga Pengelola Dana Bergulir (LPDB).

Education has a negative significant impact on poverty in Gerbangkertosusila Area. That means, increasing education level to reduce poverty in this area is needed. It is important to increase educational attention such as ensuring the absence of dropouts for 12 years, optimizing the education budget, facilitating access to education in each regency/city, and increasing college scholarships.

The decreasing trend of poverty indicates that the policies taken by the government are appropriate. So, the government needs to optimize the policies that have been taken and consider the factors that are most dominant in influencing poverty in Gerbangkertosusila Area.

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