The Effect of Education and Productivity to Poverty

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Abstract: The purpose this research is to analyze the effect of education and productivity to poverty in Madura Island partially and simultaneously. In this research, there are two independent variables are education (X1) and productivity (X2). Then, poverty (Y) is a dependent variable. The population in this research are four districts in Madura Island namely Bangkalan, Sampang, Pamekasan and Sumenep. The data used is secondary data from 2011-2015. The data collection technique used is purposive sampling. The method of analysis using pan-el data regression with SPSS application. The results of this research showed that education and productivity have a significant effect to poverty in Madura Island. As for suggestions, the population should be given the widest opportunity to take education to a higher level and to increase productivity should be increased the development of industrial infrastructure because most residents in Madura Island is still livelihood as farmers and fishermen.

1   INTRODUCTION

Suramadu bridge connecting Madura Island (Bangkalan) with Java Island (Surabaya) along 5.438 meters was inaugurated by the President of the Re-public of Indonesia, Susilo Bambang Yudhoyono on Tuesday, June 10, 2009. With the construction of the longest bridge in Indonesia is expected to improve the economy of Madura facilitate the flow of transportation. Suramadu bridge is also expected to in-crease industrial expansion in Madura.

However, based on The Central Bank of Indonesia, the potential for poverty in Indonesia is largely located in Eastern Indonesia. East Java is ranked 15th with the largest percentage of poor people. High economic growth in fact leads to decrease in poverty. In East Java, the highest poverty is predominantly in the northern regions of East Java and the island of Madura with a subsistence economy. Central Bureau of Statistics (BPS) in analyzing poverty using the concept of basic needs approach. The poor are residents who spend per capita per month for food and non-food less than the poverty line. Poverty line in the city is higher than in the village be-cause the prices of goods in the city tend to be higher than in the village.

Indeed, economic growth is key in the development of a region. Increased economic growth will increase people's income and purchasing power so that per capita expenditure per month increases and the poorest categorized population is reduced. Madura Island became part of East Java Province experiencing unfavorable conditions. The pace of economic growth is slow and per capita income lags be-hind. This is evidenced by the data from The Central Bank of Indonesia in 2014 on East Java about welfare rate shows the highest poverty mostly located in the northern region of East Java and the island of Madura namely Sampang, Bangkalan, Probolinggo, Sumenep and Pamekasan are the five poorest areas in East Java. This data is also supported by research conducted by Soejoto (2016) shows the classification of Madura regional development pattern as follows:

Table 1: Classification of regional development patterns.

No	Classification	District
1	Forward but Depressed	Sumenep
2	Relatively Disadvantaged	Pamekasan, Sampang
3	Very Disadvantaged	Bangkalan

Source: Soejoto (2016)

Poverty alleviation commitments must be accompanied by government social expenditure support, especially for productivity activities and community empowerment. In addition to productivity, high quality of education and health are

formed on composite index of HDI, then the capital to access the economy becomes easier, so that poverty can be sup-pressed. Based on The Central Bank of Indonesia, the Red Zone (quadrant 4) is low HDI, high% of poor people are in Sampang, Bangkalan, Probolinggo, Sumenep, Pamekasan, Situbondo, Bondowoso. The low quality of Human Resource society and the high poverty are mostly located in Madura Island and horseshoe area.

Based on the above description, the authors are interested to researching the effect of education and productivity to poverty in Madura Island. Thus, the research formulation in this research are: 1) Does education affect poverty in Madura Island? ; 2) Does productivity affect poverty in Madura Island? ; 3) Are education and productivity simultaneously affecting poverty in Madura Island?. The purpose of this study was to analyze the effect of education and productivity to poverty in Madura Island either partially and simultaneously.

2 LITERATURE REVIEW

2.1 The Theory of the Vicious Poverty Circle

According to Samuelson (2006: 440) the vicious circle in developing countries is low average income; low savings and investment; slow capital accumulation and low productivity. Barriers to development often get heavy. Low levels of income make it difficult to create savings, so capital is difficult to collect. As a result, productivity cannot increase so that in-come is unlikely to increase. Successful development must break the chain in some places. If the country succeeds simultaneously to invest more, develop skills and reduce population growth, it can break the vicious cycle of poverty and an angel circle will lead to rapid economic development.

Very low community revenues and an underdeveloped banking system in the early stages of the economic growth process do not allow a developing country to address the underlying capital shortage. Vicious circle theory illustrates the difficulties facing a poor country to realize development (Sukirno, 2006: 439).

2.2 Productivity: Roles and Determining Factors

The term productivity refers to the amount of goods or services that a worker can produce every hour of work. The key role of productivity in determining the standard of living prevailing in a country is the same as that of a sailor. Look again that the Gross Domestic Product of a country's economy measures two things at once the total income that each resident gains in economic activity and the total cost incurred to produce goods and services (Mankiw, 2014: 42).

According Mankiw (2014: 43-44) factors that determine the productivity of physical capital, human capital, natural resources and technological insights. The completeness of the equipment and structures used in producing goods and services is called physical capital. Then, knowledge and skills acquired by workers through education, training and experience. Like physical capital, human capital also enhances a country's ability to produce goods and services. Hu-man capital also produces factors of production. Furthermore, natural resources are inputs in production activities provided by nature such as land, rivers and mineral deposits. Then, that can affect productivity is the mastery of science and technology is an under-standing of the best ways to produce goods and services.

It is necessary to understand the difference be-tween the mastery of science and technology with human capital although both are closely related, but there are important differences. Mastery of science and technology refers to people's understanding of how things work. Human capital refers to resources that are expected to transform that understanding to the workforce. In other words, if likened to a book then science is the quality of the content of a book, while human capital is the amount of time used by someone to read the book (Mankiw, 2014: 45).

The special characteristic possessed by human capital is that it cannot be lost or diminished if the factors of production are used, utilized or sold. Of-ten more used human capital is not the measure de-creases but its value becomes higher (Irawan, 2002: 120).

Thus, Human Capital Theory and in a different sense Correspondence Theory both provide a set of implications for policies to alleviate poverty. Broadly speaking, the former implies that an effective anti-poverty strategy should incorporate the enhancement of education and skills amongst poor households. This will enhance their productivity in the informal urban and rural economy, and it will also increase their eligibility for paid employment in the formal

sector and for advancement once they are employed. Correspondence Theory similarly implies that in-creasing levels of schooling in the labour force are likely to be functional to the process of employment growth. However it does not necessarily imply a benign impact for those school leavers who fail to secure access to the formal sector (Oxaal, 1997).

2.3 Amartya Sen's Capability Approach

Amartya Sen, the winner of the Nobel Prize in eco-nomics in 1998, stated that the capability to function is the most important thing to determine the status of poor or not. Sen further argues that poverty cannot be measured properly on the basis of income or even with utility as it is understood so far; the most dizzy is not what a person has or can be what he is and what he does and can do. This is referred to as functionality. Sen defines capability as one's own freedom, according to their personal characteristics and control over commodities. This view helps to explain why development economists strongly emphasize the importance of education and health. They conclude that countries with high income levels but low health and education standards are a growing but undeveloped country (Todaro, 2014: 19).

2.4 Education and Poverty

There are many, various and interconnected causes of poverty, and we can't use a magic formula to eradicate it. But, we can consider education as a reducing risk element of high poverty, which may pre-vent the occurrence of another generation, much poorer. In the underdeveloped countries and developing countries, people instinctively know that education is a good thing for their children, and in developed countries, we have a lot to learn and to re-learn about the importance of education. People who live in poverty are aware of the fact that sending their children to school will give them opportunities that they didn't have. Even if education is not sufficient, due to the multidimensional nature of poverty. Educational systems, both at the micro and macro-level, have an important role in supporting social upward mobility. Education in all its forms, in my opinion, is one of the most important factors in breaking the vicious circle of intergenerational transmission of poverty. Investments in this area are profitable over the long term and bring the most reliable profits. At the same time, investment in education of children, especially those who are at the be-ginning of the road, represents a safe start in life. Heading to this, nations are creating for themselves both or education and training systems

more inclusive at all levels and for all ages, whether we speak of primary and secondary school levels, higher education or vocational training and education for adult person (Mihai, 2015).

Based on Diaz's (2008) research analyzes both the monetary and non-monetary effects of the education level of the head of the household on poverty. He propose that schooling returns should not be thought as a single number - usually the schooling coefficient in an income equation - but as a set of elements whose length depends on the number of identified poverty dimensions. He also found interesting dis-similarities by gender and urban-rural location. Exploring the non-pecuniary returns, he found that the education of the head positively influences family health and housing conditions.

Lelkels research (2010) showed that for a majority of countries, labour market-related factors (employment status and work intensity) and education are more important in explaining inequalities than are age or household structure. Income differences be-tween education group's account for the largest share of total inequality in Southern European countries.

3 METHODS

This study used a quantitative approach with the type of associative research. This research is an associative research because it is a research that aims to know the relationship between two variables or more and know its affect (Sujarweni, 2014: 11).

In this research, there are two independent variables are education (X1) and productivity (X2). Then, poverty (Y) is a dependent variable. Here is a re-search design:
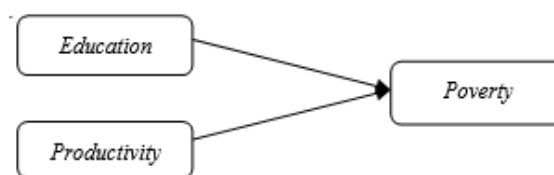

Figure 1: Research design.

Population of this research is Madura Island namely Bangkalan, Sampang, Pamekasan Sumenep. The data collection technique by purposive sampling are data of education, productivity and poverty from 2011-2015 in the four districts. The type of data is secondary data obtained from the Central Bureau of Statistics (BPS).

Data analysis technique used in this research is panel data regression by using SPSS application. To

measure education (X1) that is with percentage of educational level of high school graduates*(Source: BPS). To measure productivity (X2) that is with percentage data of Gross Regional Domestic Product according to business field ** (Source: BPS). Then, to measure poverty by percentage of poverty level*** (Source: BPS).

4   RESULTS AND DISCUSSION

Based on the balance of data, in this study is a panel of balanced data (balanced panel). The data panel is balanced if each cross section unit has the same amount of time series observation (Suliyanto, 2011: 229). In this study there are four units of cross section, each district has observation time series for five years.

In this study, the researchers wanted to study the effect of education (X1) and productivity (X2) variables to poverty (Y) in Madura Island namely Bangkalan, Sampang, Pamekasan and Sumenep for the period of 2011-2015.

The assumptions used in the analysis of this research data are intercept and constant slope coefficient over time. According to Ghozali (2014: 294) we assume intercept and slope coefficients are constant over time and space, while error term reflects differences over time and individuals. Assuming this means ignoring the time and space dimension, so direct the Ordinary Least Square regression. In this study there are four districts that have five series data so that researchers have observations of 20.

Regression equation in this research is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \mu_{it} \qquad (1)$$

Where i = unit cross section; t = time period.

Based on data processing using SPSS application obtained the following results:

Table 2: Autocorrelation test.

				Model Summary[b]		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.878[a]	.772	.745	1.78656	2.057

a. Predictors: (Constant), Productivity, Education
b. Dependent Variable: Poverty

Source: Data processed by researchers, 2017

Based on the output the value of R is 0.878 means the correlation between productivity and education

variables against poverty of 0.878. This means a tight correlation because the value of 0.878 approaching to 1. Then, the value of R Square (R2) of 0.772 means the percentage of the contribution of productivity and education variables to poverty is 77.2%, while the rest influenced by other variables that are not included in this model. Standard error of the estimate of 1.78656. Durbin Watson's value is used to see whether or not an autocorrelation is in the regression model. The DW value of that output is 2.057. Then for the dL and dU values in the DW table at 0.05 significance with n=20 and k=2 the dL value is 1.100 and the dU value is 1.537. Thus, the value 4- dL is 2.9 and the value 4-dU is 2.463. Thus dU<DW<4-dU is 1.537<2.057<2.463 then there is no positive or negative autocorrelation.

Table 3: Multicolinearity test.

		Collinearity Statistics	
	Model	Tolerance	VIF
1	(Constant)		
	Education	.980	1.020
	Productivity	.980	1.020

a. Dependent Variable: Poverty

Source: Data processed by researchers, 2017

From the above output, obtained the tolerance value of both independent variables greater than 0.1 is 0.980 and VIF value less than 10 that is 1.020 so there is no multicollinearity.

Table 4: Partial test.

		Coefficients[a]		
	Model	Standardized Coefficients Beta	t	Sig.
1	(Constant)		16.354	.000
	Education	.878	7.502	.000
	Productivity	.056	2.997	.003

a. Dependent Variable: Poverty

Source: Data processed by researchers, 2017

From these outputs, the education variables have a t-value of 7.502 with a significance level of 0.000. The productivity variable has a t value of 2.997 with a significance level of 0.003. T table can be seen in the statistical table on the significance of 0.05/2=0.025 with df=n-k-1 or 20-2-1=17, the results obtained for table t of 2.110. Thus, t arithmetic

education variables greater than t table (7.502>2.110) and level of significance 0.000< 0.05. This means that education has a partial effect on poverty. Then, t calculate the productivity variable is greater than t table (2.997>2.110) and significance level 0.003<.0.05. This means that productivity partially affects poverty.

Table 5: Simultaneous test.

ANOVA[b]

	Model	F	Sig.
1	Regression	28.709	.000[a]
	Residual		
	Total		

a. Predictors: (Constant), Productivity, Education
b. Dependent Variable: Poverty

Source: Data processed by researchers, 2017

From the output, obtained F count equal to 28.709 and significance value equal to 0.000. F table can be seen in table F at the 0.05 significance level with df1=2 and df2= (n-k-1) is (20-2-1=17) to obtain F table of 3.592. Thus, F arithmetic> F table (28.709>3,592) and a significance level of 0.000<0.05. Thus, education and productivity have a significant effect simultaneously to poverty.

The results obtained in accordance with the grand theory. According to Samuelson (2006: 440) the vicious circle in developing countries is low aver-age income; low savings and investment; slow capital accumulation and low productivity.

There is a correlation between educations to poverty. In general, if a person's education is low, he will work as a hSired laborer or work for a low wage. When the wages received are low, then the income is low. When income is low, then productivity is low and will create poverty. It will go on like a cycle called the vicious cycle of poverty.

And then, Lelkels research (2010) showed that for a majority of countries, labour market-related factors (employment status and work intensity) and education are more important in explaining inequalities than are age or household structure.

Based on the result of the analysis, education factor can reduce poverty level. When a person has a high education, he / she will get a decent job in accordance with the competence of his field; As well as the wages received. This will increase income and increase consumption. As consumption increases, productivity will increase so that economic growth will also increase and will reduce poverty slowly but surely. In accordance with the theory, education is a capital investment of human capital which if always used will not be exhausted, but will improve the ability and usefulness that will increase productivity.

5   CONCLUSIONS

Based on the results of research, the education partially affect to poverty in Madura Island. Productivity partially affect to poverty in Madura Island. Then, education and productivity simultaneously affecting poverty in Madura Island. As for suggestions for the results of this study is due to the education effect on poverty in Madura Island then the population should be in Madura given the widest opportunity to take education to a higher level because education is the investment of human capital. Likewise to increase productivity in Madura Island should be increased the development of industrial infrastructure because most residents in Madura Island is still livelihood as farmers and fishermen. The implications of this study are for further research that is to improve certain things that have not been reached by this research. For example, by adding other variables that affect poverty that has not been studied in this study, that are capital, income and health. Furthermore, research can also be expanded within the scope of a province or country.

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