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# Accelerating Regional Development Using the Human Development Index Approach (A Case Study of Southeast Sulawesi)

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**Abstract**

Development is an activity carried out on an ongoing basis which focus on diversification of economic activities, social aspects and infrastructure, to encourage private and public sector investment by reducing differences in socio-economic aspects among various regions, improving living standards, providing quality services to citizens based on equality and justice. Examining the development in Southeast Sulawesi, there are some issues which the authors managed to find, namely: (a) an increased rate of unemployment and poverty, (b) reduced social services: education and health, (c) poor regional competitiveness, (d) regional development which has not been integrated either cross-sectorally or in inter-stakeholder integration, and (e) lack of basic infrastructure and regional infrastructure. This research aims to analyze the effects of the human development variable which affects acceleration in the development in Southeast Sulawesi.
In this research, the method employed to analyze the relationship between the dependent variable and the independent variables was multiple linear regression using the method of ordinary least squares (OLS). The findings show a correlation between HDI and the explanatory variables with a value range of 0.60-1.00. Based on the interpretation of the analysis results, the following conclusions are drawn: (a) components that can help accelerate development in Southeast Sulawesi are the life expectancy, the literacy rate, the average years of schooling, per capita income, the number of poor people, the unemployment rate and social infrastructure which have fairly considerable influences in supporting the development in Southeast Sulawesi, (b) dimensions such as education, economy and infrastructure form the basis for designing a development program which suits the conditions of Southeast Sulawesi.

**Keywords**: development, human development index, education, health, infrastructure, panel data, southeast sulawesi

## 1. Introduction

The beginnings of the regional development focuses on the development of the activities done by local companies which are bounded by administrative territories. The region in question refers to the growth pole both geographically and functionally (Bernstein 2006; Chambers 2004). In a functional manner, the growth pole is described as a group of companies, branches of industry, or dynamic elements which enhance the economy. While geographically, it is described as a series of development which generates real impacts, i.e. appeal which invites a variety of activities by placing their businesses in a particular place without prior interactions or which has nothing to do with the businesses.
Enactment of the free trade system in the global era has resulted in a shift in the developmental perspective which now emphasizes on the purpose and the analysis context. This analysis context focuses on the regional development which involves multidimensional aspects such as spatial dynamics, residence, occupation, investment, social aspects and the innovation system. Development is a systematic activity carried out by making transformations in the economic sector, the education sector and the social sector. Such transformations bring an impact on changes in the social structure, the attitude of the society, local and national institutions (Fadeiye 2005; Banwo & Oluranti 2012).
Accelerated development in the economic, education and social sectors will reduce income inequality and poverty. It requires series of ongoing changes which are both well-coordinated and well-planned in the social structure, the attitude of the society and national institutions (Apostolache 2014; Nugroho & Dahuri 2004; Todaro & Smith 2006; Solihin 2009). The economic development here is defined as a process in which the regional government along with the entire society manage a variety of the existing resources, establish a

 

partnership pattern to provide employment opportunities, stimulate development in the economic activities in that area (Leigh & Blakely 2013; Kuncoro 2004).

The primary objective of carrying out development is to widen the spectrum of human choices, more specifically increased standards of living of every person in terms of their income; consumption level of food, clothing and shelter; health care; education and creation of any conditions conducive for the growth of their confidence as well as their increased freedom. Basically, these choices are unlimited and always change. People often appreciate intangible achievements in the magnitude of the income and the economic growth such as greater access to education, health, better life, greater assurance of safety, use of leisure time, political and cultural freedom, and the freedom to conduct social activities (Firdausy 1998).

Taking a long look at the development at the regional level, there are a number of issues found which require alternative solutions to the problems, namely: (a) an increased rate of unemployment and poverty, (b) reduced social services: education and health, (c) poor regional competitiveness, (d) regional development which has not been integrated either cross-sectorally or in inter-stakeholder integration, and (e) lack of basic infrastructure and regional infrastructure.

A number of planning programs have been implemented, but quality of the planning lies in the depth and breadth of knowledge about the order which later influences these changes. The program of *Bangun Kesejahteraan Masyarakat* or *Bahteramas*, which is a program intended for promoting public welfare, comprises of development programs carried out in Southeast Sulawesi Province with three pillars, namely: (a) exemption from the operational costs of education, (b) more quality health services, (c) allocation of financial aid for each village per annum (Bappeda Prov. Sultra 2013).

Pursuant to the current development paradigm, economic growth has the human development index (HDI) as one of the parameters by also taking into account the level of the human life quality. The parameters used to consider the quality of human resources are education, health, and decent standards of living.

Education is a systematic process to improve the quality of human resources in a holistic manner as it is the key to development. Support for improving the quality of human resources is given through the following ways (Kemenkokesra 2012): preparing universal secondary education, increasing the portion of vocational education and encouraging private sector participation through Corporate Social Responsibility (CSR) in the field of education.

The Indonesian education system has undergone a paradigm shift in the main aspects of education due which are resulted from the social and political aspects, they are: (a) there has been a re-definition of the national education objectives which put emphasis on citizens living in a democracy, (b) changes in school management which previously was centralized into a decentralized one, and (c) a paradigm shift in the curriculum which is conceptualized in the national competency standards, graduates' relationship with the world of work as well as accommodates the needs of the region through involvement of local stakeholders (Bourn 2014; Farisi 2007; Raihani 2007; Wasitohadio 2011).

This development in education focuses on quality improvement and expansion of learning opportunities at any levels of education. The predetermined quality improvement in the field of education aims to produce quality humans, while the expansion of learning opportunities aims to balance that the school age population that always increase every year and the population growth rate to ensure the learning opportunities as wide as possible.

Access to health care facilities will greatly determine the increase in the development index. Public access to the whole health care facilities through BPJS (which stands for *Badan Penyelenggara Jaminan Sosial* or the Social Security Agency) will step up improvement in the level of public health status, attempts to provide education about the upbringing and child development through integrated *posyandu* (i.e. intergrated health-service stations for mothers and their children) as well as early childhood educationa and revitalization of family planning (Kemenkokesra 2012) which will be conducive for an increased HDI for regions. The relationship between the HDI and health development is explained as follows: if the population has high life expectancy, easiness in terms of health care access and facilities as well as a high rate of infant survival, these will support the development for a population with good physical health will facilitate the conduct of economic and educational activities. In order that the public can enjoy the outcomes of the economic development in regions, the economic sectors developed in each region should be the ones which can utilize local resources which the people in regions control (Funck 2008).

Due to the long value chain, the price for the processed products of the superior commodity is more expensive. To compete globally, each region needs to formulate their own vision and mission which contain a pattern of regional development objectives therein. Specific, unique, precise and accurate formulation of the vision and mission will help the regions achieve sustainable competitive advantage.

 

## 2 Methods

Panel data (also known as longitudinal/ cross-sectional time-series data) are defined as the data collected from a number of individuals observed over a certain time span, or the data which are results of the observation on the same unit done over different time spans (Kennedy & Peter 2008; Astuti & Maruddani 2009; Sarafidis & Wansbeek 2010). A series of panel data is comprised of several entities, in which each measurement has been performed repeatedly over different time spans. The panel data may carry either individual/joint effects or time effects, or both, which are analyzed using the model of random effects (Park 2011). The time series and cross-section combination can improve quality and quantity of the data in a way which makes it impossible to only use one of the two dimensions (Gujarati & Porter 2009; Peracchi 2001).

The use of these panel data offers several advantages, namely: (a) accommodating the heterogeneity level of the individuals who are not observed, (b) providing data which are more informative, more varied and more efficient, (c) allowing the investigation to the dynamics of the data, (d) allowing the identification and measurement of the effects unidentified by the time-series and cross-sectional data, (e) allowing the establishment and examination of the behavior of the model which is more complicated than the time-series or cross-sectional data, (f) panel data usually gather in a micro unit (Baltagi 2008).

The regression model is a method employed to analyze the relationship among variables. This relationship can be expressed using an equation linking a dependent variable and an independent variable. The equation for the multiple linear regression model with the dependent variables $Y$ and $k$ and the independent variables $X_1$, $X_2$, $X_3$...$X_k$ can be expressed as follows (Gujarati 2011; McManus 2011; Wooldridge 2002: Chudik & Pesaran 2013):

$$\left[ Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + ... + \beta_k X_{3kit} + \mu_{it} \right] \quad (1)$$

where i=1,2..N, t=1,2...T. N is the total number of the cross-section unit (individuals) and T is the total time span, $Y_{it}$ = a dependent variable at time $t$ and the cross-section unit $i$. μ= the confounding variable *(error term),* i = the individual No. $i$, t = time span No. $t$. $\beta$ = parameters for the variables.

The estimated model for the equation is as follows:

$$\bar{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 X_{1i} + \hat{\beta}_2 X_{2i} + ... + \hat{\beta}_k X3_{ki} + \varepsilon \quad (2)$$

where $i = 1,2,3,..., n$ *dan* $\varepsilon \approx N(o, \sigma^2)$ n which $\hat{\beta}_0$ = estimated $\beta_0$ , $\hat{\beta}_1$ = estimated $\beta_1$ , $\hat{\beta}_k$ = estimated $\beta_k$ , $\varepsilon$ = estimated $\mu$ and n= the total number of observation. These equations can be expressed using the following matrix:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ . \\ . \\ . \\ Y_n \end{bmatrix} = \begin{bmatrix} 1 & X_{11} & X_{21} & ... & X_{k1} \\ 1 & X_{12} & X_{22} & ... & X_{k2} \\ . & . & . & ... & . \\ . & . & . & ... & . \\ . & . & . & ... & . \\ 1 & X_{1n} & X_{2n} & ... & X_{kn} \end{bmatrix} \begin{bmatrix} \beta_o \\ \beta_1 \\ . \\ . \\ \beta_k \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ . \\ . \\ \varepsilon_n \end{bmatrix} \quad (3)$$

in which $Y$ represents the sized observation vector, $X$ represents the size-free variable matrix, $\beta$ represents the vector of the parameter to be estimated of having a $k$ x $1$ size, $\varepsilon$ represents a $n$ x $1$-sized random error vector. According to its purpose of use, the multiple linear regression analysis cannot be separated from the following error assumptions:

- The assumption of E (ε) = 0 means that the mean or the expected value of each component vector equals to zero, with $\varepsilon$ as the vector for column $n$ x $1$ and $0$ as the zero vector.
- Asumsi E (εε1) σ21 is a notation which is comprised of two things, namely the variance and covariance of the error term.

Thus, E (ε) = 0, meaning that:

$$E\begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ . \\ . \\ \varepsilon_n \end{bmatrix} = \begin{bmatrix} E\varepsilon_1 \\ E\varepsilon_2 \\ . \\ . \\ E\varepsilon_n \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ . \\ . \\ 0 \end{bmatrix} \qquad E(\varepsilon\varepsilon^1) = E\begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ . \\ . \\ \varepsilon_n \end{bmatrix} [\varepsilon_1, \varepsilon_2, ... \varepsilon_n] \quad (4)$$

With $\varepsilon 1$ which is the transpose of the column vector $\varepsilon$, by doing multiplication, the following is obtained:

 

$$E(\varepsilon\varepsilon^{1}) = E\begin{bmatrix} \varepsilon_1^{\,2} & \varepsilon_1\varepsilon_2 & \dots & \varepsilon_1\varepsilon_n \\ \varepsilon_2\varepsilon_1 & \varepsilon_2^{\,2} & \dots & \varepsilon_2\varepsilon_n \\ . & . & . & . \\ . & . & . & . \\ . & . & . & . \\ \varepsilon_n\varepsilon_1 & \varepsilon_2\varepsilon_n & . & \varepsilon_n^{\,2} \end{bmatrix} \quad (5)$$

By using the expected value (E) of each matrix element, the following result is generated:

$$E(\varepsilon\varepsilon^{1}) = E\begin{bmatrix} E(\varepsilon_1^{\,2}) & E(\varepsilon_1\varepsilon_2) & \dots & E(\varepsilon_1\varepsilon_n) \\ E(\varepsilon_2\varepsilon_1) & E(\varepsilon_2^{\,2}) & \dots & E(\varepsilon_2\varepsilon_n) \\ . & . & . & . \\ . & . & . & . \\ . & . & . & . \\ E(\varepsilon_n\varepsilon_1) & E(\varepsilon_2\varepsilon_n) & . & E(\varepsilon_n^{\,2}) \end{bmatrix} \quad (6)$$

Due to the assumption of homoscedasticity, i.e. every error term has the same variance E (εi2) = σ2, for any *i* and there is no serial correlation, meaning that between one error term and another error term are independent, kov (εiεj) = 0.

$$E(\varepsilon\varepsilon^{1}) = E\begin{bmatrix} \sigma^2 & 0 & 0 & \dots & 0 \\ 0 & \sigma^2 & 0 & \dots & 0 \\ . & . & . & . & \\ . & . & . & . & \\ . & . & . & . & \\ 0 & 0 & 0 & \dots & \sigma^2 \end{bmatrix} = \sigma\begin{bmatrix} 1 & 0 & 0 & \dots & 0 \\ 0 & 1 & 0 & \dots & 0 \\ . & . & . & . & \\ . & . & . & . & \\ . & . & . & . & \\ 0 & 0 & 0 & \dots & 1 \end{bmatrix} = \sigma^2 I \quad (7)$$

In which *I* represents the identity matrix with an n x n size.

The matrix above is called the variance-covariance matrix of the error term *ε*. Elements of the main diagonal of the matrix generate a variance, while the elements outside the main diagonal generate a covariance, *ε* is normally distributed with a zero mean and a constant variance σ2 = $\varepsilon \approx N(0, \sigma^2 I)$. Formulas of the regression parameters *β0, β1, β2, ...βk* in the multiple linear regression are estimated using the Ordinary Least Square method. The estimator of the Ordinary Least Square method is obtained by minimizing the sum of squared errors for the multiple linear regression model and it is expected to be a best linear unbiased estimator.

**3. Findings and Discussion**

The analysis of the relationship between human development and the development program in Southeast Sulawesi was estimated using panel data from 10 regencies and 2 cities. The cross section component was comprised of the data taken over a certain time span. Meanwhile, the time series component was comprised of the data taken from one single object over several years, 5-year data from 2008 to 2012 were used, which were taken from the UNDP the Human Development Report of Indonesia, the Central Statistics Agency at the central level, at the provincial level of Southeast Sulawesi and at the districts/ cities of Southeast Sulawesi (Table 1).

The analysis of the relationship between the economic growth and the human development of Southeast Sulawesi was carried out using the variable of the human development index (IPM/ Y) as the dependent variable, which was associated with a number of explanatory variables, i.e. the literacy rate (AMF/ X1), life expectancy (AHH/ X2), average years of schooling (RLS/ X3) and per capita expenditure (X4), the open unemployment rate (X5), the number of poor people (X6), the dependency ratio (X7) and social infrastructure (X8). The analysis was made using the models of the pooled least squares approach, the fixed effects approach, and the random effects approach.

The analysis using Microsof Excel and Eviews 6 suggests a linear correlation between the independent variables and the dependent variable. Using correlation criteria (Table 2) (Sarwono 2006), the strength of the linear correlation and the direction of the relationship between independent variables and the dependent variable (Table 3) are explained as follows:

- The correlation between the literacy rate (X1) and the Human Development Index (Y) by 0.761582 is very strong and proportional, meaning that an increase in the literacy rate will result in an increase in the Human Development Index.

 

- The correlation between life expectancy (X2) and the Human Development Index (Y) by 0.596755 is strong and proportional, meaning that an increase in the life expectancy will result in an increase in the Human Development Index.
- The correlation between the average years of schooling (X3) and the Human Development Index (Y) by 0.921297 is very strong and proportional, meaning that an increase in the average years of schooling will result in an increase in the Human Development Index.
- The correlation between per capita expenditure (X4) and the Human Development Index (Y) by 0.690216 is strong and proportional, meaning that an increase in the the per capita expenditure will result in an increase in the Human Development Index.
- The correlation between the open unemployment level (X5) and the Human Development Index (Y) by 0.542591 is fairly strong and proportional, meaning that an increase in the the open unemployment level will result in an increase in the Human Development Index.
- The correlation between the number of poor people (X6) and the Human Development Index (Y) by -0.010925 is weak and inversely proportional, meaning that an increase in the the number of poor people will result in a decrease in the Human Development Index.
- The correlation between the dependency ratio (X7) and the Human Development Index (Y) by -0.577592 is weak and inversely proportional, meaning that an increase in the dependency ratio will result in a decrease in the Human Development Index.
- The correlation between social infrastructure (X8) and the Human Development Index (Y) by 0.053150 is weak and proportional, meaning that an increase in the social infrastructure will result in an increase in the Human Development Index.

Several variables which affect the development carried out in Southeast Sulawesi based on the results of the correlation analysis are as follows.

### 3.1 The Literacy Rate

Education is a way to save people from the poverty trap. Todaro & Smith (2006) state that it is a primary objective of the development. It serves as a key role to build a country's ability to absorb modern technology and to develop the capacity to create sustainable growth and development. Furthermore, Siregar and Wahyuniarti (2007) explain that education carries the greatest influence on poverty than the other developmental variables such as the population number, GRDP, and the inflation rate. The literacy rate of Southeast Sulawesi Province reaches 90.9% and 58% of the districts/ cities in Southeast Sulawesi Province has a literacy rate with a percentage which is higher than the literacy rate of Southeast Sulawesi Province (TNP2K 2010).

Literacy is acquired in primary education or other literacy program intended to teach basic literacy skills to the population in order that they will be able to develop their social and economic conditions. The estimation results of the relationship between human development and the literacy rate generate a regression coefficient by 0.0298 with a probability value (p-value) by 0.0000 (Table 4). This implies that each 1% increase in the literacy rate, the Human Development Index will also increase by 0.0298. The higher the literacy rate, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

### 3.2 Life Expectancy

Life expectancy is an instrument to evaluate performance of the government in improving public welfare in general, and the health level in particular. Comparing the level of welfare of a community to the other community is necessary to determine the life expectancy. One factor underlying this policy is that improved health of the poor can increase their productivity: better health will improve employment, reduce the number of days in which one does not come to work and raise energy output.

Life expectancy comprises one of the indicators used to measure the health of an individual in an area, the estimation on their average lifespan, an estimated average lifespan of a particular person born in a particular year. The estimation results of the relationship between human development and life expectancy generate a regression coefficient by 0.0561 with a probability value (p-value) of 0.0000 (Table 4). This suggests that each 1% increase in the life expectancy, the Human Development Index will increase by 0.0561. The higher the life expectancy, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

### 3.3 Average Years of Schooling

The average years of schooling imply that the higher the education level of a community, the longer the years of schooling and thereby the level of education attended is also higher. The average years of schooling is defined as the average number of years spent by a community aged 15 years and above to join any type of formal education which they once attended. The maximum limit for the average years of schooling is 15 years while the minimum limit is 0 years (UNDP 2013). The maximum limit by 15 years indicates that the targeted highest educational

 

level is equivalent to education at the senior high school level.

The estimation results of the relationship between human development and the average years of schooling generate a regression coefficient by 0.082 with a probability value (p-value) of 0.0000 (Table 4). This indicates that each 1% increase in the average years of schooling, the Human Development Index will increase by 0.0298. The higher the average years of schooling, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

The generally-accepted assumption saying that the higher one's level of education, the higher his/her quality, both in terms of his/ her ways of thinking and behavior. The higher the formal education attended, the higher the productivity. This is consistent with the human capital theory, i,e, education affects economic growth because it plays a role in increasing productivity of the workforce. This theory assumes that population growth is determined by productivity of the individuals.

3.4 Per Capita Expenditure

Real per capita expenditure indicates the purchasing power of the community and public welfare is said to increase if accompanied by an increase in the real consumption per capita, which is an increase in household expenditure, which is higher than the current rate of inflation. The estimation results of the relationship between human development and per capita expenditure generate a regression coefficient by 0.703653 with a probability value (p-value) of 0.0000 (Table 4). This indicates that each 1% increase in the per capita expenditure, the Human Development Index will increase by 0.703653. The higher the per capita expenditure, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

3.5 The Open Unemployment Level

Unemployment means people who do not go to work but are trying applying for a job or starting a business or those who do not apply for any job because they feel it is impossible to get a job or those who have already been accepted in a particular position but which have not started working (BPS Prov. Sultra 2010).

The open unemployment level indicates the working-age population which are included in the unemployed group. The open unemployment level is generated from the ratio of the percentage of the unemployed/ job seekers to the number of the workforce. The estimation results of the relationship between human development and the open unemployment level generate a regression coefficient by 0.0002 with a probability value (p-value) of 0.0021. This means that each 1% decrease in the open unemployment level, the Human Development Index will increase by 0.0002. The lower the open unemployment level, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

The working population in 2012 reached 975,879 people, smaller than the number of the working population in 2011 as many as 1,026,548 people. The number of the unemployed in 2012 is thereby increased by approximately 50,669 people when compared to the situation in 2011 in which the poverty level decreased by 28,870 people, lower than that in 2010. This is because urban areas could not avoid urbanization (migration) making the rapid population growth which occurred there did not accompanied by sufficient employment opportunities, which eventually resulted in unemployment. Meanwhile, at the regency level, the unemployment level is relatively low. Despite a relatively low education background, availability of the primary sector in rural areas which does not set a specific requirements makes it easier for the local society to find a job and thereby the unemployment rate in regencies is relatively lower.

Another fact which explains the pattern of the relationship between unemployment and poverty is the hidden unemployment (not working with long working hours) and poor families (Yakoub 2012). This hidden unemployment also indicates short real working hours, which will also result in low productivity. The low productivity of the workforce is not only influenced bythe working hours but also by quality of the human resources reflected in the low level of education, changes in corporate behavior and in the economic structure from a capital-intensive industry to a labor-intensive industry in response to a less flexible labor market. This increases the unemployment level. Therefore, it is necessary to reform a rigid labor market into a labor market with less control of the government and regulations over it (Aswicahyono & Kartika 2009). Even though they are working, their income remains relatively low even below the poverty line. The relatively high unemployment level indicates that the Indonesian economic growth which is less than 6% after the crisis has not been able to absorb the additional labor and reduce poverty substantially (*the jobless growth phenomenon*) (Kuncoro 2004; Thalo 2007).

3.6 The Number of Poor People

The poverty variable, which in this case is expressed in the percentage of poor people, significantly affects human development in Southeast Sulawesi at a 5% significance level. The estimation results of the relationship between human development and poverty generate a regression coefficient by 0.0005 with a probability value (p-

 

value) of 0.000 (Table 4). This means that each 1% decrease in the number of poor people, the Human Development Index will increase by 0.0005. The lower the poverty level, the higher the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

The relationship and the effect of the poor people variable on the human development variable is weak and inversely proportional (Table 1). Poverty makes one do not have the capability to do something, not because she/ he do not have something. Thus, one's ability to access resources really affects his/ her welfare. If one is not in poverty, then all his/ her basic needs will be met. Besides being able to meet his/ her needs for food, access to education and health care services can also be fulfilled. Poor people can continue their education, afford medical treatment as well as get better education, health, sanitation, and clean water. Fulfillment of these needs will improve quality of the population which in turn can increase the Human Development Index. Although it does not carry direft effects, improvement in the Human Development Index through education and health for the poor in a region will have positive an impact on increasing employment opportunities and/ or increased productivity which in turn will increase incomes and make them from the poverty trap.

The poverty rate of Southeast Sulawesi Province decreased, which was 19.53% in 2008 into 12.83% in 2013 (BPS Prov. Sultra 2013). A number of poverty reduction programs had been implemented (Bappenas 2013; Kemenkokesra 2013) to reduce poverty. Southeast Sulawesi through its poverty reduction programs have obtained good results both through the Bahteramas program with its three pillars of development, namely: (a) free medical treatment which also covers the cost charged for hospitalization in a Class-III room, (b) school operational assistance, (c) financial assistance given to the local government by 100 million rupiah for the village government and 50 million rupiah for the district government. However, the poverty level by 12.83% is still consider high since the national poverty rate is only equal to 11%. Nevertheless, the number of poor people is still quite large, amounting to 301,710 people in 2013, in which a majority of poor people in Southeast Sulawesi live in rural areas (90%) (Bappeda Prov Sultra 2013).

To reduce poverty due to the decreased purchasing power of the population which results from the economic crisis as well as regional growth and development that do not rely on competitive human resources, measures which the government often take are to boost economic growth expecting the "trickle down effect" (Bappenas 2012; Kemenkokesra 2012). Besides, to overcome poverty, the Human Development Index needs to be improved, especially improvement in the regional economic growth.

The focus of each poverty reduction program can be classified into four clusters, namely (Kemenkokesra 2012; Kemensos 2012):

- Cluster 1, which is a social assistance and security program intended to lighten the burden of the community and poor families in terms of fulfillment of their basic needs through increased access to basic services such as through food, health, and education.
- Cluster 2, which is a community empowerment program (the national community empowerment program) intended to increase capacity, independence and participation of the community in the development process.
- Cluster 3, which is an empowerment program intended for micro, small and medium enterprises (MSMEs), which is carried out with the aim of helping micro and small enterprises to increase their capacity and expand their business in order that the life of the poor becomes more stable and their income increases.
- Cluster 4 adalah program pro-rakyat, , which is a pro-people programs intended to complete a variety of programs and activities that have been carried out through the three clusters of poverty reduction programs and to help meet the needs of the low-income and marginalized population.

3.7 The Dependency Ratio

The dependency ratio is a number that states the burden borne by the group of productive age (Parson in Kristiana 2009). This dependency ratio is greatly influenced by the number of people with productive and non-productive age. To reduce or maintain this dependency ratio, there are several policies which can be taken such as implementing the family planning program to prevent significant increases in the number of the youth and enactment of the 9-year compulsory education program. This is important to note because of the high dependency ratio will be followed by the unpreparedness in dealing with the economic crisis.

The high dependency ratio will impede the economic development of Indonesia, as most of the income earned by the group of productive age will need to be used to meet the needs of the group of non-productive age. Developing countries with a high fertility rate have a high dependency ratio due to the large proportion of children in specific population groups. The smaller the population dependency ratio, the better the economic growth of an area.

Based on the regression results, it is revealed that a high dependency ratio, which indicates the dependency level

 

of the non-productive age population (0-14 and 65+) on the productive age population (65+), negatively affects the economic growth. A 1% increase in the dependency ratio will result in a decrease in the Human Development Index by 0.0006%. The higher the dependency ratio of an area, the higher the dependence of the non-productive age population (0-14 and 65+) on the productive age population (65+).

Developing countries commonly have a high dependency ratio due to the large number of young people which comprises the population here. The large proportion of the youth population is not favorable for the economic development because they tend to minimize the number of per capita income and they are all consumers. The findings of this research are consistent with the research conducted by Kristiana (2009) in which the dependency ratio of a population has a negative and significant effect on the rate of growth of the Human Development Index.

3.8 Social Infrastructure

One of the public-service components provided by the government is infrastructure. Public-service procurement in the form of infrastructure affects welfare of the public living in an particular area. Well-established infrastructure facilitates regional economic growth. Moreover, good quality infrastructure can also improve the life quality of the surrounding community through improvement in the quality of the environment.

Infrastructure availability encourages improved productivity of production factors. By contrast, negligence to the need for infrastructure might reduce productivity. According to Marsuki (2007) infrastructure basically can be defined as government's asset built to provide services to the public. Studies on the economic development theory according Marsuki (2007) and Sjafrizal (2008) state that to create and enhance economic activities, adequate infrastructure is necessary.

The estimation results of the relationship between human development and social infrastructure generate a regression coefficient by -0.000806 with a probability value (p-value) of 0.000 (Table 4). This means that each 1% decrease in the social infrastructure, the Human Development Index will deccrease by -0.000806. The lower the availability of social infrastructure, the smaller the Human Development Index of Southeast Sulawesi Province (*cateris paribus*).

## 4. Conclusions and Suggestions

4.1. Conclusions

Based on the analysis and interpretation of the analysis results, the following conclusions can be drawn:

- Components which can accelerate development in Southeast Sulawesi are life expectancy, the literacy rate, average years of schooling, per capita income, the number of poor people, the unemployment level and social infrastructure which have a fairly strong influence in supporting the development in Southeast Sulawesi areas.
- Dimensions such as education, the economy and infrastructure form the basis for designing developmental programs which suit the conditions in Southeast Sulawesi.

4.2. Suggestions

Programs that can be held to step up development in Southeast Sulawesi are the ones intended to improve education (the literacy rate, average years of schooling), as well as economic programs (expenditure per capita and the open unemployment level).

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## Appendix

Table 1. HDI Indicators for Southeast Sulawesi Province Years 2008 - 2012

| No | Regency | Year | IPM | AMH | AHH | RLS | PP | TPT | POV | TPN DN | INF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Buton | 2008 | 67.82 | 85.72 | 67.89 | 6.27 | 623.5 | 3.87 | 69.7 | 83 | 613 |
| | | 2009 | 68.24 | 85.72 | 68.23 | 6.52 | 624.09 | 2.06 | 62.6 | 88 | 661 |
| | | 2010 | 68.8 | 86.57 | 68.58 | 6.72 | 624.45 | 1.95 | 45.8 | 81 | 670 |
| | | 2011 | 69.34 | 86.60 | 68.93 | 6.93 | 626.92 | 2.29 | 43.7 | 85 | 713 |
| | | 2012 | 69.95 | 86.62 | 69.28 | 7.04 | 631.14 | 1.63 | 39.8 | 85 | 770 |
| 2 | Muna | 2008 | 66.49 | 87.59 | 65.79 | 7.3 | 606.14 | 5.24 | 59.9 | 61 | 649 |
| | | 2009 | 67.03 | 87.83 | 65.88 | 7.35 | 611.3 | 3.46 | 54.2 | 75 | 655 |
| | | 2010 | 67.45 | 87.97 | 65.97 | 7.43 | 614.94 | 3.47 | 46.6 | 76 | 695 |
| | | 2011 | 67.95 | 87.99 | 66.07 | 7.45 | 620.46 | 2.32 | 44.3 | 76 | 711 |
| | | 2012 | 68.35 | 88.37 | 66.16 | 7.53 | 623.14 | 5.11 | 40.3 | 72 | 861 |
| 3 | Konawe | 2008 | 68.72 | 94.60 | 66.74 | 7.98 | 601.4 | 5.68 | 55.7 | 61 | 671 |
| | | 2009 | 69.27 | 94.61 | 67.01 | 8.01 | 606.24 | 3.14 | 50.8 | 62 | 698 |
| | | 2010 | 69.77 | 94.61 | 67.28 | 8.34 | 607.72 | 3.58 | 42.2 | 63 | 649 |
| | | 2011 | 70.42 | 94.66 | 67.55 | 8.55 | 612.01 | 2.75 | 40.2 | 63 | 647 |
| | | 2012 | 70.95 | 94.68 | 67.82 | 8.56 | 616.76 | 1.87 | 36.6 | 63 | 1183 |
| 4 | Kolaka | 2008 | 70.06 | 93.14 | 66.61 | 7.7 | 626.63 | 3.40 | 68.7 | 49 | 2572 |
| | | 2009 | 70.41 | 93.16 | 66.87 | 7.71 | 629.26 | 4.63 | 64.1 | 49 | 2653 |
| | | 2010 | 70.83 | 93.25 | 67.13 | 7.9 | 630.68 | 3.60 | 59.7 | 50 | 2687 |
| | | 2011 | 71.46 | 93.27 | 67.38 | 8.08 | 635.29 | 3.12 | 56.9 | 50 | 2703 |
| | | 2012 | 72.00 | 93.30 | 67.64 | 8.09 | 640.22 | 5.91 | 51.8 | 62 | 2809 |
| 5 | South Konawe | 2008 | 68.86 | 94.10 | 67.31 | 7.6 | 604.15 | 3.67 | 43.7 | 54 | 566 |
| | | 2009 | 69.24 | 94.11 | 67.47 | 7.62 | 607.83 | 1.95 | 40.4 | 48 | 582 |
| | | 2010 | 69.42 | 94.12 | 67.63 | 7.63 | 608.83 | 1.17 | 35.7 | 53 | 607 |
| | | 2011 | 69.8 | 94.13 | 67.78 | 7.65 | 612.53 | 2.35 | 34.1 | 53 | 1042 |
| | | 2012 | 70.24 | 94.13 | 67.94 | 7.66 | 616.97 | 1.73 | 31.0 | 62 | 1225 |
| 6 | Bombana | 2008 | 66.05 | 88.2 | 67.30 | 6.23 | 598.00 | 2.88 | 21.8 | 62 | 362 |
| | | 2009 | 66.63 | 88.49 | 67.51 | 6.59 | 599.84 | 1.81 | 20.2 | 63 | 366 |
| | | 2010 | 67.20 | 89.28 | 67.71 | 6.82 | 601.24 | 1.86 | 22.0 | 61 | 355 |
| | | 2011 | 67.85 | 89.31 | 67.91 | 7.12 | 605.24 | 2.55 | 20.9 | 58 | 369 |
| | | 2012 | 68.51 | 89.53 | 68.12 | 7.28 | 610.12 | 2.71 | 19.0 | 62 | 398 |
| 7 | Wakatobi | 2008 | 66.03 | 88.80 | 67.83 | 6.52 | 589.39 | 5.28 | 24.9 | 56 | 221 |
| | | 2009 | 66.70 | 89.13 | 67.95 | 6.85 | 593.12 | 6.76 | 23.0 | 72 | 236 |
| | | 2010 | 67.20 | 89.86 | 68.07 | 6.89 | 596.29 | 5.18 | 17.1 | 69 | 239 |
| | | 2011 | 68.04 | 90.37 | 68.18 | 7.59 | 598.19 | 2.45 | 16.4 | 69 | 278 |

 

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2012 | 68.78 | 91.35 | 68.30 | 7.76 | 602.46 | 5.73 | 14.9 | 69 | 665 |
| 8 | North Kolaka | 2008 | 67.91 | 93.02 | 65.27 | 7.4 | 611.61 | 6.01 | 29.3 | 65 | 204 |
| | | 2009 | 68.5 | 93.04 | 65.41 | 7.51 | 617.2 | 4.55 | 28.4 | 53 | 246 |
| | | 2010 | 68.93 | 93.07 | 65.55 | 7.55 | 621.28 | 2.84 | 24.4 | 57 | 344 |
| | | 2011 | 69.33 | 93.58 | 65.69 | 7.57 | 623.79 | 1.94 | 23.3 | 55 | 344 |
| | | 2012 | 69.87 | 93.61 | 65.83 | 7.65 | 628.93 | 1.17 | 21.2 | 57 | 590 |
| 9 | North Konawe | 2008 | 67.16 | 86.5 | 67.64 | 7.59 | 601.82 | 1 | 8.2 | 57 | 219 |
| | | 2009 | 67.97 | 93.80 | 66.76 | 7.05 | 602.7 | 4.40 | 7.7 | 62 | 233 |
| | | 2010 | 68.38 | 93.81 | 67.05 | 7.08 | 605.70 | 3.30 | 7.0 | 62 | 168 |
| | | 2011 | 69.24 | 93.82 | 67.34 | 7.7 | 608.82 | 2.70 | 9.8 | 59 | 186 |
| | | 2012 | 69.84 | 93.84 | 67.63 | 7.97 | 611.91 | 2.10 | 11.8 | 62 | 215 |
| 10 | North Buton | 2008 | 67.43 | 93.80 | 66.47 | 7 | 598.33 | 1 | 12.1 | 63 | 173 |
| | | 2009 | 67.62 | 86.59 | 67.96 | 7.87 | 602.44 | 2.71 | 11.0 | 66 | 169 |
| | | 2010 | 68.07 | 87.02 | 68.28 | 8.02 | 603.44 | 3.18 | 10.3 | 68 | 164 |
| | | 2011 | 68.86 | 88.25 | 68.60 | 8.03 | 607.64 | 1.76 | 6.8 | 62 | 201 |
| | | 2012 | 69.31 | 88.34 | 68.92 | 8.05 | 610.76 | 1.76 | 8.9 | 73 | 250 |
| 11 | Kendari | 2008 | 75.09 | 98.37 | 68.95 | 11.01 | 628.14 | 13.79 | 23.6 | 52 | 302 |
| | | 2009 | 75.31 | 98.38 | 69.02 | 11.13 | 629.31 | 13.39 | 22.4 | 48 | 315 |
| | | 2010 | 75.66 | 98.60 | 69.09 | 11.25 | 631.54 | 13.49 | 23.3 | 48 | 307 |
| | | 2011 | 76.07 | 98.63 | 69.17 | 11.37 | 635.17 | 5.64 | 22.2 | 47 | 271 |
| | | 2012 | 76.51 | 98.68 | 69.24 | 11.39 | 639.95 | 6.92 | 19.3 | 48 | 385 |
| 12 | Bau-Bau | 2008 | 72.14 | 95.16 | 69.79 | 9.55 | 607.11 | 10.61 | 19.6 | 52 | 203 |
| | | 2009 | 72.87 | 95.30 | 70.09 | 9.75 | 612.11 | 9.23 | 18.2 | 49 | 207 |
| | | 2010 | 73.48 | 95.58 | 70.39 | 9.84 | 616.11 | 9.12 | 16.6 | 49 | 207 |
| | | 2011 | 74.10 | 95.6 | 70.69 | 9.87 | 621.67 | 5.61 | 15.8 | 49 | 216 |
| | | 2012 | 74.58 | 95.65 | 70.99 | 9.89 | 625.46 | 10.2 | 16.0 | 58 | 274 |

Description:
TPNDN = The Dependency Ratio
AMH = The Literacy Rate
TPT = The Level of Open Unemployment
AHH = Life Expectancy
POV = The Number of Poor People
RLS = Average Years of Schooling
INF = Social Infrastructure
IPM = The Human Development Index
PP = Per Capita Expenditure
Source: BPS (2013).

**Table 2. Interpretations of the Correlation Coefficient**

| Value | Interpretation |
|---|---|
| 0.00 – 0.199 | Very Low |
| 0.20 – 0.399 | Low |
| 0.40 – 0.599 | Medium |
| 0.60 – 0.799 | Strong |
| 0.80 – 1.00 | Very Strong |

Source: Sugiyono (2004)

 

**Table 3. Partial Correlation among Variables**

| | LNY | LNX1 | LNX2 | LNX3 | LNX4 | LNX5 | LNX6 | LNX7 | LNX8 |
|---|---|---|---|---|---|---|---|---|---|
| LNY | 1 | 0.761582 | 0.596755 | 0.921297 | 0.690216 | 0.542591 | -0.010925 | -0.577592 | 0.053150 |
| LNX1 | 0.761582 | 1 | 0.199685 | 0.753689 | 0.323372 | 0.460986 | -0.063112 | -0.770122 | -0.012807 |
| LNX2 | 0.596755 | 0.199685 | 1 | 0.529998 | 0.148180 | 0.352199 | -0.297398 | -0.155069 | -0.256868 |
| LNX3 | 0.921297 | 0.753689 | 0.529998 | 1 | 0.470752 | 0.599520 | -0.154875 | -0.617656 | -0.137984 |
| LNX4 | 0.690216 | 0.323372 | 0.148180 | 0.470752 | 1 | 0.210581 | 0.393224 | -0.194566 | 0.490265 |
| LNX5 | 0.542591 | 0.460986 | 0.352199 | 0.599520 | 0.210581 | 1 | 0.058362 | -0.357135 | -0.126006 |
| LNX6 | -0.010925 | -0.063112 | -0.297398 | -0.154875 | 0.393224 | 0.058362 | 1 | 0.107924 | 0.794939 |
| LNX7 | -0.577592 | -0.770122 | -0.155069 | -0.617656 | -0.194566 | -0.357135 | 0.107924 | 1 | 0.017144 |
| LNX8 | 0.053150 | -0.012807 | -0.256868 | -0.137984 | 0.490265 | -0.126006 | 0.794939 | 0.017144 | 1 |

**Table 4. The PLS Model**

Dependent Variable: LNY
Method: Panel EGLS (Cross-section weights)
Date: 04/01/14 Time: 20:22
Sample: 2008 2012
Periods included: 5
Cross-sections included: 12
Total panel (balanced) observations: 60
Linear estimation after one-step weighting matrix
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LNX1 | 0.298152 | 0.001316 | 226.4810 | 0.0000 |
| LNX2 | 0.561591 | 0.003707 | 151.4745 | 0.0000 |
| LNX3 | 0.082225 | 0.000564 | 145.8787 | 0.0000 |
| LNX4 | 0.703653 | 0.003266 | 215.4773 | 0.0000 |
| LNX5 | 0.000210 | 6.46E-05 | 3.242993 | 0.0021 |
| LNX6 | 0.000561 | 9.64E-05 | 5.822133 | 0.0000 |
| LNX7 | 0.000619 | 0.000296 | 2.092831 | 0.0414 |
| LNX8 | -0.000806 | 0.000106 | -7.637139 | 0.0000 |
| C | -4.159256 | 0.034364 | -121.0367 | 0.0000 |

Weighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.999855 | Mean dependent var | 7.270846 |
| Adjusted R-squared | 0.999833 | S.D. dependent var | 4.729937 |
| S.E. of regression | 0.000533 | Sum squared resid | 1.45E-05 |
| F-statistic | 44055.14 | Durbin-Watson stat | 0.709227 |
| Prob(F-statistic) | 0.000000 | | |

Unweighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.999725 | Mean dependent var | 4.243072 |
| Sum squared resid | 2.19E-05 | Durbin-Watson stat | 0.218424 |

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