HUMAN DEVELOPMENT ANALYSIS: THE ROLE OF DEMOGRAPHIC FACTORS IN WEST NUSA TENGGARA IN THE PERIOD OF 2013 - 2017

SCIENTIFIC JOURNAL

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UNIVERSITAS BRAWIJAYA

MALANG

2019

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ABSTRACT

The increasingly demands of globalization encourage various regions to compete in improving the welfare of their people. One effort to achieve it is in the demographic sector, namely by improving the quality of Human Resources (HR). A good quality of HR will boost the pace of the Human Development Index (HDI), which is common indicator of the development of a region. West Nusa Tenggara Province which has a low HDI but has potential in its community. By utilizing the panel data model, the analysis of this study took sample data from year 2013 to 2017, and aims to determine the effect of demographic factors, namely population density, open unemployment, fertility and productive age as independent variables toward HDI as a dependent variable in West Nusa Tenggara. The empirical results of this study indicate that the population density variable has a positive association on HDI while unemployment and fertility have a negative relationship on HDI in West Nusa Tenggara.

Keywords : Human Resources (HR), HDI, demography, stunting, panel data

A. INTRODUCTION

Background Study

Human development is always at the forefront of development planning. Since the planning in reality is an effort for human development, it is necessary to prioritize human development needs in the budget preparation. Such prioritization will improve community welfare as measured by the Human Development Index (HDI), a benchmark used to identify the impact of development in a country or region by showing the quality of a population in an area in terms of life expectancy, intellectuality, and decent living standards. HDI is also used to determine whether a country is classified as a developed country, developing country, or least developed country as well as to measure the influence of economic policies on life quality. Therefore, HDI focuses on the dynamics of the community towards economic, socio-cultural, or political development in a region.

As quoted from the opinion of Owens (1978), the most important thing is human development, not the development of things (the development of people rather than the development of things), because the real return of human development contributes more than that of development of things (physical). HDI was introduced by the United Nations Development Program (UNDP) in 1990 and is published regularly in the annual Human Development Report (HDR). The concept of human development places humans as the center of a series of economic development processes with an emphasis on expanding choices and enhancing human capacity (Fongang, 2003).

This is in line with UNDP in their 1990 Human Development Report, mentioning that the fundamental purpose of development is to create an environment that allows people to live longer and healthier with creativity to realize ideas. This statement is relevant with Amartya (1999) that placing human development as the ultimate goal of the development process expectably creates opportunities that directly contribute to efforts of expanding and enhancing people's capabilities and improving their life quality through, among others, advancement in health services, basic education, and social security, especially for the poor. Among the several notions of human development

above, it can be concluded that human development is an effort to improve the ability of individuals, especially through improving the level of health and education, so that individuals become healthier, more creative, and more productive so as to enable opportunities to be available to themselves.

Open unemployment rate in West Nusa Tenggara was lower than the national level in the last five years. Indonesia, particularly West Nusa Tenggara, is having demographic dividend, a condition where the population structure is very advantageous in terms of development due to the immense productive age population. This is a gift, but at the same time it is a challenge for the government to improve the development and human resource quality for future prosperity. The dividend can be gained if the government is successful in producing high quality human resource through education, training, health, employment, and investment.

Statement of the Problem

The author wants to know the impact of demographic factors on human development in West Nusa Tenggara in the period of 2013-2017.

Research Purpose

This study is conduct to understand the effect of demographic factors on human development in West Nusa Tenggara in the period of 2013-2017.

B. LITERATURE REVIEW

Theory Of Growth and Development

Robert Solow argued that economic growth will be achieved if there is output growth. Output growth occurs if two input factors, capital and labor, are combined, assuming that technological factors are constant (unchanged). Capital consists of raw materials, machinery, equipment, computers, buildings, and money. In producing output, capital and labor can be combined in various combination models. The formula can be as follows.

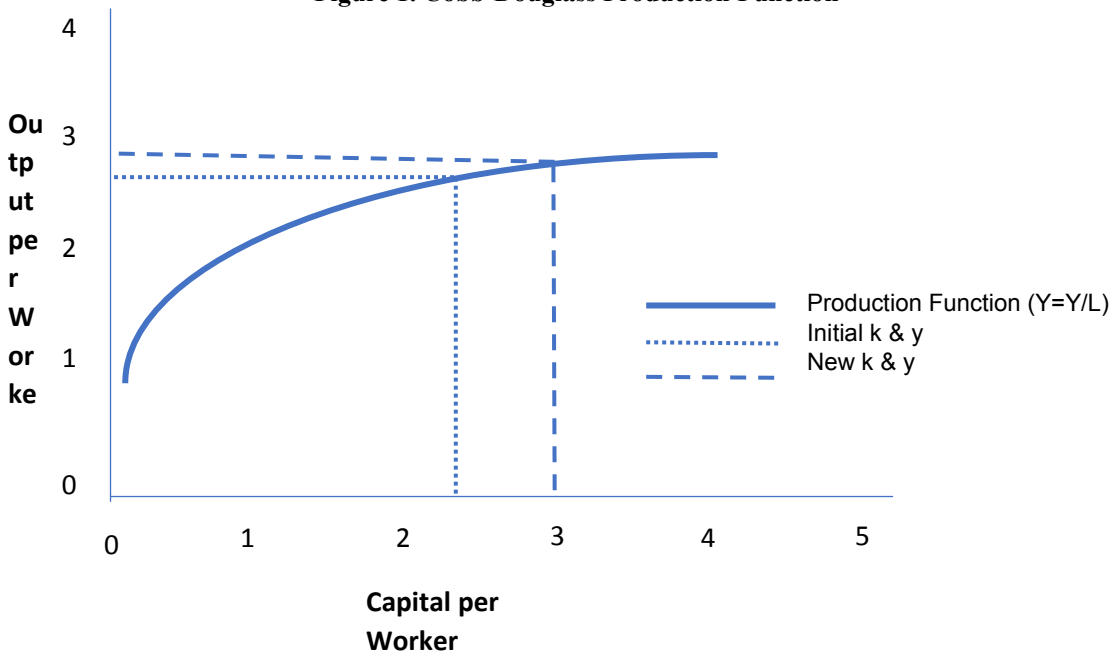
$$Q = F(K, L)$$

This function specifies that, for a given technology, defined by F(...), only so much output (Q) can be produced for given employment levels of the inputs capital (K) and labor (L). Robert Solow argued that economic growth is a series of activities originating in humans, capital accumulation, use of modern technology, and results or output. The population growth can have a positive impact, but it can also have a bad impact. Therefore, according to Robert Solow, population growth must be used as a positive resource.

Turning this observation into a model of economic growth requires some further assumptions. The assumptions regarding production that underlie Solow's growth models are as follows.

a. A single output is produced. Units of this output can be consumed or added to the capital stock.
b. A single type of capital and a single type of labor are employed in the production process.
c. The production function exhibits constant returns to scale. That is, changing the employment of both L and K by a proportional factor "z" would cause an equiproportional change in Y. The workbook upon which the illustrations below are based uses a particular constant-returns-to scale production function, the Cobb-Douglas function, $Y = K^{a}L^{1-a}$.

Figure 1. Cobb-Douglass Production Function



Source: : The Solow Growth Model (Mixon and College 2014)

The theory expressed by Robert Solow about economic growth begins with the basic assumptions about neoclassical production functions with decreasing returns to capital, where rates of saving and population growth are exogenous factors. These two variables determine the condition of the steady-state level of income. Because each country has different saving rate and population growth conditions, the steady state level in those countries is different.

METHODOLOGY

Type, Source of Data, and Data Collecting Method

This study uses quantitative data, which basically produces numeric analysis results processed through statistical methods. It indicates the relationships between variables being studied. This study uses various secondary panel data, both time-series (one variable or individual with coherent time data) and cross-sectional (one time data with coherent individuals). This study uses time-series data from 2013 to 2017 and cross-sectional data of 8 regencies and 2 cities in West Nusa Tenggara; they are Lombok Barat, Lombok Tengah, Lombok Timur, Lombok Utara, Sumbawa, Sumbawa Barat, Kabupaten Bima , Dompu, Mataram, and Kota Bima.

Research Variable and Operational Definition

Variable	Definition
HDI (y)	The dependent variable (Y) used in this study is the Human Development Index of regencies and cities in West Nusa Tenggara in the period of 2013-2017. The data started from 2013 because the HDI in West Nusa Tenggara experiencing a significant increase on that year, since before it stuck on low rank among the other province in Indonesia. It will interesting to study what factors that causing the increase in HDI in West Nusa Tenggara.

Population density (x1)	the data about the total population per square kilometer in regencies and cities in West Nusa Tenggara from 2013-2017, stated in number of person.
Unemployment (x2)	the number of workforces who do not have jobs in West Nusa Tenggara from 2013-2017, stated in number of person
Fertility (x3)	the number of births at a certain time in regencies and cities in West Nusa Tenggara from 2013-2017
Productive Age (x4)	the data of people aged between 15 and 64 years living in regencies and cities in West Nusa Tenggara from 2013 to 2017

The data of this study is analyzed using Ordinary Least Squares with HDI function = f (Population density, unemployment, fertility and productive age). Thus, the regression equation is as follows.

$$Y_{it}=\beta_0+\beta_1X_{1it}+\beta_2X_{2it}+\beta_3X_{3it}+\beta_4X_{4it}+e_{it}$$

Where:

Y = HDI

β_0 = intercept coefficient

X_1 = population densitycoefficient

X_2 = unemployment coefficient

X_3 = fertility coefficient

X_4 = productive age coefficient

i = Regency / City of NTB

t = time (year 2013-2017)

et = variable error

Estimation Method of Regression Model

This study uses quantitative descriptive analysis, which describes a problem by analyzing numeric data obtained from calculations to analyze the research problem. The panel data used in this study is processed in Stata 13, and the estimation of regression models uses Ordinary Least Squares (OLS) method.

In estimating the data panel regression model there are 3 approaches that are often used, namely: *Pooled Ordinary Least Squared (PLS)* method or *Common Effect Model (CEM), Fixed Effect Model (FEM)* and *Random Effect Model (REM).*

1. Pooled Ordinary Least Squared (PLS) This method is also known as the Common Effect Model (CEM). In this method, the model assumes that the combined data that exists, shows the real condition where the intercept value of each variable is the same and the coefficient slope of the variables used is identical for all cross section units.

   The weakness in this PLS model is that there is a mismatch of the model with the actual situation. PLS / CEM stated in the model as follows:

   $Y_{it} = \alpha + \beta'X_{it} + e_{it}$

2. Fixed Effect Model (FEM)
   The FEM approach stipulates that α is a specific / different group in the constant term on the regression model. The formulation commonly used in the model assumes that differences between units can be seen in the difference between constant terms. FEM here assumes that there are no time specific effects and only focuses on individual specific effects with the following model

   $Y_{it} = \alpha_i + \beta' X_{it} + e_{it}$

   The index i in intercept (αi) shows that the intercepts of each individual are different, but intercepts for time series units are constant (constant).

3. Random Effect Model (REM)
   In the REM method differences in individual characteristics and time are accommodated in the error of the model. This technique also takes into account that errors may correlate throughout time series and cross sections (Nachrowi and Usman, 2006 in Latuconsina, 2017).

   $Y_{it} = \alpha_{it} + \beta' X_{it} + e_{it}$

Model Selection Test

From the three approaches above, then the test is carried out to select the most appropriate and appropriate panel data model. The model selection test in the panel data model can be done with the hausman test and chow test.

1. Chow Test
   Chow test is a test of two different regression models to determine the best model, between FEM or CEM / PLS using F test statistics. Chow test is done with the following hypothesis:

   H_0: Pooled least square model
   H_1: Fixed effect model

   If the F-stat value is greater than the F-table, then it is reject the null hypothesis so that the model used is the FEM model, and vice versa.

2. Hausman Test
   The Hausman test uses H test statistics which follow a chi-square distribution with free degrees (db) of the number of independent variables. The conclusion is taken: if H0 is rejected, then the FEM regression model is better than REM. But if H0 is accepted, it means that the REM regression model is better than FEM.

   In addition, the basic refusal of H0 can also be seen from the value of the p-value. If the p-value is smaller than 5%, it can be concluded that the FEM model is better than the REM model. The Hausman test is carried out with the following hypothesis:

   H_0: Random effect model
   H_1: Fixed effect model

RESULT AND DISCUSSION

Before we conclude the result and analysis, it is advisable to conduct the process to determining the best model of our regression. This process is carried out in two stages, namely the Chow test to determine whether FEM or PLS and Hausman test to determine whether REM or FEM are as Table 1.

Table 1. Chow Test

Variable	Coefficient	t	P-value
Population Density	0.0034008	2.01	0.053
Unemployment	-0.0000691	-3.05	0.005
Fertility	-0.0006748	-1.19	0.241
Productive Age	-0.0110467	-1.73	0.093

Prob > F = 0.0039Source: Stata 13

Table 1 shows that the Prob > F = 0.0039 with α of 5% , it mean if (prob > f) < alpha 0.05 so H1 is accepted and Fixed Effect is the best choice.

Table 2. Hausman Test

Variable	Coefficient	z	P-value
Population Density	0.01763	5.12	0.000
Unemployment	-0.0000659	-2.73	0.006
Fertility	-0.0002442	-2.38	0.017
Productive Age	-0.0099435	-1.45	0.146

Prob > chi = 0.0000Source: Stata 13

Table 2 shows that the Prob > chi = 0.0000 with α of 5% , it mean if (prob > chi) < alpha 0.05 so H1 is accepted and Random Effect is the best choice.

If the Chow test signifies on the Fixed Effect model, then the next step is to determine which model is best between Fixed Effect or Random Effect. And according to the result from the regression is (prob > chi2 = 0.7890). If the (prob >chi2) < 0.05 so H0 is rejected, it is mean that the best choice for our model is **Random Effect**.

Model Interpretation

From the results of data processing using the random effect model GLS regression as Table 3 it is known that variables that significantly affect the human development index (HDI).

Table 3. Regression Coefficient Result

Variable	Coefficient	z	P-value
Population Density	0.01763	5.12	0.000
Unemployment	-0.0000659	-2.73	0.006
Fertility	-0.0002442	-2.38	0.017
Productive Age*	-0.0099435	-1.45	0.146

*= Not Significant Source: Stata 13

According to the interpretation above, we know that population density has a positive and significant impact on HDI in West Nusa Tenggara. Hence, we accepted the hypothesis that population density has a positive relationship with HDI in West Nusa Tenggara. High population density has a positive impact, but at the same time it has a negative impact. The community will benefit from density if they have high quality human resources because they have the capability of using the natural resources optimally, increasing productivity, and improving economic growth. The density will induce a bad effect if the community are unable to use the resources properly. Furthermore, with the abundance of human resources available, especially in the capital city, rapid development has been carried out both in the economic, social and tourism sector at the recent years. This indicate that a dense of population could also accelerate the development process and trigger the entrepreneurial passion in the community.

While unemployment does have influence on HDI. This means that we accept the hypothesis that unemployment has a negatively relationship with HDI. The current phenomena, especially in rural area, is that many children drop out of school due to poor economic conditions. Instead of studying, they choose to work to help their parents. In the end, this increases the number of unemployment.

We can see that fertility has a negative and significant impact on HDI in West Nusa Tenggara. Therefore, we accept the hypothesis that fertility has a negative relationship with HDI in West Nusa Tenggara. Furthermore, West Nusa Tenggara is considered as a region with low level of HDI. This means that the relationship between fertility and HDI is negative. Because there are additional opportunity costs for childbearing, or we can say the economic condition, more factors including infant mortality rate are quite high, resulting in low life expectancy that decreases HDI.

Furthermore, based on the regression result of HDI model in West Nusa Tenggara, productive age does not influence HDI. This means that, whenever the amount of productive age increases or decreases, HDI will not be affected or changed significantly. West Nusa Tenggara, the highest population of men and women is in the young age group (0-14 years). It's mean that the non-working age group is more dominant than the productive age group, consequently the income of the productive age population is absorbed in fulfilling basic needs such as education and health of children and the elderly.

CONCLUSSION AND RECOMENDATION

From the description above, we can conclude the results of the data panel analysis on each variable, it can be seen that aspects that affect the human development index in West Nusa Tenggara are population density that can stimulate entrepreneurial passion in the community on condition that community have the ability to maximizing resources, then unemployment which can reduce the HDI because that will increase independencies, and fertility if that is too much, there are additional opportunity costs for childbearing that be come a burden with the household.

In order to improve the Human Development Index, it is recommended that the local government should be more giving attention to the poor, by making an appropriate policy which guarantees to all the community welfare, not just a group of people. Provide them a place to develop in decent education and healthcare facilities. Create a good education system, the quality of principals, teachers and a learning environment that should be properly reviewed. And also giving them the equally and affordably health care with good health workers. These two aspects are very important and fundamental in building the quality human resources.

Bibliography

United Nation Development Programme Human Development Report : Human Development Index (HDI). Retrieved from http://hdr.undp.org/en/content/human-development-index-hdi

Badan Pusat Statistik Provinsi Nusa Tenggara Barat. Retrieve from https://ntb.bps.go.id/

DINAS KESEHATAN PROVINSI NUSA TENGGARA BARAT: PROFIL KESEHATAN PROVINSI NUSA TENGGARA BARAT TAHUN 2017. (2017). Retrieve from http://depkes.go.id/

Mantra, I. Bagoes. 2000. Demografi Umum, Pustaka Pelajar, Yogyakarta, 2000.

Amartya Sen. (1999). Development as Feedom.

Bastiaans, M., & Romaniello, V. (2016). Fertility and socioeconomic development : the role of education , life expectancy and GDP per capita, (414723).

Hmad, R. E. A., Herwani, K. H. A. N. S., Amal, S. H. K., & Bbas, S. H. A. (2017). CORRELATES OF HUMAN DEVELOPMENT INDEX IN LOW , MEDIUM , HIGH AND VERY, *55*(1), 31–52.

Keadaan Ketenagakerjaan NTB. (2018), (79), 1–10.

Latuconsina, Z. M. Y. (2017). Analisis Faktor-faktor yang Mempengaruhi Indeks Pembangunan Manusia Kabupaten Malang Berbasis Pendekatan Perwilayahan dan Regresi Panel. *Regional and Rural Development Planning*, *1*(2), 202–216. https://doi.org/10.1093/mp/ssp085

Melliana, A., Melliana, A., & Zain, I. (2013). Analisis Statistika Faktor yang Mempengaruhi Indeks Pembangunan Manusia di Kabupaten/Kota Provinsi Jawa Timur dengan Menggunakan Regresi Panel. *Jurnal Sains Dan Seni ITS*, *2*(2), D237–D242.

Mixon, W. (2014). The Solow Growth Model The Solow Growth Model : An Excel -Based Primer, (February 2007). https://doi.org/10.3200/JECE.38.4.483

Qasim, C. (2014). Determinants of Human Development Disparities: A Cross District Analysis of Punjab, Pakistan.

Siti, N. F. (2018). Analisis Pengaruh Kemiskinan, Pengangguran, Pertumbuhan Ekonomi Terhadap Indeks Pembangunan Manusia di Provinsi Banten Tahun 2010-2015.

Yuliani, T., & Saragih, N. (2014). Determinan pembangunan manusia di kabupaten/kota provinsi jawa tengah. *Jejak ; Journal of Economic and Policy*, *7*(1), 60–72. https://doi.org/10.15294/jejak.v7i1.3843

Zaman, K. ; I. W. ; A. M. (2007). THE IMPACT OF DEMOGRAPHIC TRENDS ON ECONOMIC GROWTH / PRODUCTIVITY IN PAKISTAN (1980 - 2007) Department of Management Sciences Department of Management Sciences, 133–146.

Zhou, Mo, B. . (2017). POLICY FACTORS INFLUENCING HUMAN DEVELOPMENT.