Health Budget, Human Capital and Population Growth

by Sari Lestari Zainal Ridho

HEALTH BUDGETS, HUMAN CAPITAL, AND POPULATION GROWTH: EMPIRICAL STUDY IN INDONESIA

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This study aims to examine empirically the relationship between the health budget, human capital and population growth in Indonesia by using quantitative analysis and qualitative analysis. First, quantitative analysis is used to determine the relationship between the health budget, human capital, and population growth. Using regression as analitical technique, result of this research supports the theory that: (1) there is a significant positive relationship between the health budget and human capital, and (2) there is no relationship between the human capital, as measured by life expectancy and population growth, as measured by the numbers of crude birth rate. Second, qualitative analysis is used to describe the role of formal and informal institutions, including financial institutions in reducing birth rates in an effort to improve human capital. This study suggested the importance of the role of institutions, including the changes that occur in the institution.

Keywords: health budgets, human capital, population growth

Background

Population is an important variable that influences the quality of a country. Because it will affect the country's human capital manager. Human capital is defined as the quality of human resources that include health, knowledge and skills (Becker, 1993). The importance of human capital as an input development, should raise awareness of the government of a country in improving human capital.

There are many factors that influence the improvement of human capital. As an example of human capital in the form of health, which can be measured by life expectancy (Mankiw, 2007), influenced by many factors; including birth rates and health budgets. The low birth rate allows the high level of health of the family because it lets you meet nutrient needs within the family. Thus the population dynamics represented by the birth rate will affect the health quality of the population.

In addition part of a larger income for health budgets, allowing the public to obtain maintenance facilities and services in the field of better health and more, making it possible to realize a community with a life expectancy higher (Gupta, Clements, and Tiongson, 1998). So it becomes a necessity to increase the health budget in an effort to improve the quality of human capital. But there are pros and cons with regard to the need to enhance a country's health budget. The group that refuses to increase the health budget, based on the idea that high health budget would reduce state revenues and increase inflation.

Conversely groups that support the improvement of the health budget, based on the opinion that the health budget had a positive impact, in the form of increased income as a result of increasing the productivity of the workers. Therefore, this study aimed to investigate

the influence of the health budget and population growth to the quality of human capital, as measured by life expectancy in Indonesia, in the period 1996-2013.

Research Problem:

1. Is there relationship between human capital and health budgets?
2. Is there relationship between human capital and population growth?
3. Are there relationship between human capital together with health budgets and population growth?

LITERATURE REVIEW

At the macro level, economic science discusses the use of the state budget in order to achieve the welfare of society, including for the development of human resources, human capital, in order to achieve sustainable economic growth. In addition to the Budget, in particular the health budget, development efforts quality of human resources is affected by population dynamics that exist in society, which can be measured by a country's total fertility rate.
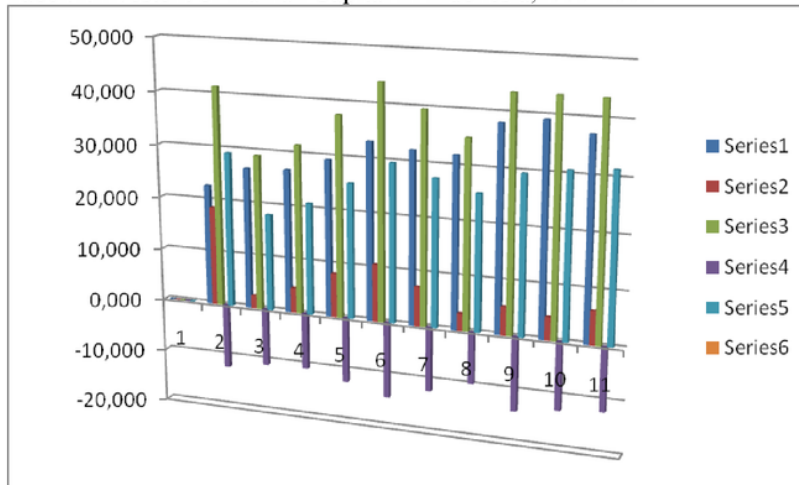
Human Capital

Human capital is deemed and important and special component of social development, which can be accumulated and probably has external effects. The increase in human capital is necessary and useful for growth and welfare of the people as a result of self-edification of each family member (Jakimovski,2011). Another important aspect of human capital is that it can be quantified (Lauven).Theoretically, the state budgeting affects the human capital. State investment, in the form of public expenditure on human capital, has a positive impact on the aging of the population in the long term (Annabi, Harvey & Lan, 2007). In fact, government spending on health can reduce poverty in the community as a result of an increase in the quality of human resource development (Widodo, Waridin, & Kodoatie, 2011).

However, health as a component of the stock of human capital is both a means and an end. It is a means, because its availability generates more earnings while an end, because it is considered as wealth. Also health is both demanded and produced by consumers. Grossman (1972 in Chambell et.all,2014) argued that it is both consumption and an investment good. Jakimovski(2011) state the forcing or emphasizing the human capital would result in:

a. Faster rate of development of the society
b. Sustainable development of society
c. Equitable distribution of development benefits

Tabel.1.Investent of Human Capital In Indonesia,1993-2002

Source: Lauween,2008. Human Capital and Economic Growth in India, Indonesia, and Japan: A quantitative analysis, 1890-2000.

Health Budget

Budgeting is the process in the form calculate, implementing plan, and measure in monetary units, for a certain period of time. A budget is a plan that is expressed quantitatively in monetary units for a period of one year. Budget process is operational process from planning in quantification form,to limited time. The usefulness of the budget:
a.Clarify the strategic plan
b.Helps coordinate the activities some parts of an organization
c. Delegate responsibilities to the leadership of the institution
A good budgeting system needs to be supported by regulation that are responsive to developing conditions. Function and role of the government budget in Indonesia:
 a.The budget as a tool of mobilization of investment funds
 b.The budget as a tool of economic stabilization
 c. The impact of the budget on the Economy
Health budget is allocation of Government budget to services in health area.The Allocation of Health budget in Indonesia,still lower that others budget. Rasio Of Budget In Indonesia from Total Spending in 2012 : Education : Welfare: Health: 20%: 11%: 3,4% (Minestry of finance,2012). Mills and Gilson (1990) state that the scope of the health sector into five aspects :
1) The ministry of health, environmental sanitation services (for example: water, sanitation, monitoring environmental pollution, safety, etc.)
2) Hospitals, social welfare institutions.
3) Education, training, pure medical research.
4) Medico-social work, social work.
5) Medical practitioner who received formal education, service providers

Public health and human rights are complementary approaches promoting and protecting human dignity and wellbeing (Aniekwu, 2006 in Agri 2013). A very important component of economic development of a country is its people''s state of health. In fact, there is the argument as to whether it is health that causes development or economic development causes health improvements(Agri,et,all.2013).

Population Growth

Population growth means an increase in the number of people who inhabit a territory or state (wordnet 30,2015). Theories of Population and Development interrelations Malthusian theory,stated that: (1) Population tends to increase at a geometric rate (2) Food can only increase arithmetically (3) population expands to eat up any surplus (4) subsistence wages forever unless moral checks (5) choose moral checks or positive checks (Hopkins,2006).

Various studies focusing on human capital, population growth and the health budget has been carried out, but this study differs from previous studies because of differences in the variables used and focus on empirical evidence that occurred in Indonesia in macro. One study has been conducted by Rosenzweig (1987), using variables population growth, human capital, and economic variables, the study concluded that the return on investment impact on family size decisions.

Sukarna, Budiningsih, & RJ (2006), conduct research on the health budget management at the local level, given the importance of financial institutions and managers play a role in budgeting, fund advocacy and lobbying, so it is a resource to create finance management and effective health spending , the results of this study show the importance of the human resources manager of the budget in order to ensure the health budget allocation to address the problems and needs of public health services.

Eneji, Juliana, and Onabe (2013), examines the relationship between health care expenditure, health status and national productivity in Nigeria in 1999 up to 2012. The study uses four variables, namely public health care expenditure as an explanatory variable for health status, productivity and poverty reduction. Results of the study found weak causal relationship between these variables.

Research Hypotheses
i. Ho1: There is no significant relationship partialy between Health Budget and Human Capital
ii. Ho2: There is no significant relationship partialy between Population Growth and Human Capital
iii. Ho3: There is no significant relationship between Health Budget,Population Growth and Human Capital

RESEARCH METHOD
Model Specification
In order to find out the relationship between different variables, the data were then analyzed using multiple regression analysis through the use of econometric model. The model is specified below:
HC = f (HB and PG)
Where: HC represent Human Capital ,HB represent Helath Budget and PG represent of Population Growth

The econometric form of the model is as follows:

$$HC = b_0 \, e + b_1 \, HB + b_2 \, PG$$

Where: b_0, b_1 and b_2 represent intercept, Impact of Health Budget, Impact of Population Growth, and Error terms respectively.

This research is a study of the economic budget and human resources, which discussed the government's budget problems in the areas of health, population growth and human capital in Indonesia.

Data and Variables

Data for this research study were secondary data generated from Ministry of Finance and Central Agency of Statstics. The period of time during the 18-year study is 1996 to 2013.

This study focuses on the effect of the health budget, the birth rate (as a proxy of population growth) and life expectancy (as a proxy of human capital) in all regions of Indonesia.

This study used two analyzes, the analysis of quantitative and qualitative analysis. First, quantitative analysis is used to determine the relationship between the health budget, human capital, and population growth. The analysis technique used is multiple linear regression, and the data of Indonesia from 1996 to 2013, this study used the health budget variables, life expectancy as a proxy of human capital variables, and the birth rate as a proxy of population growth. Second, qualitative analysis is used to describe the role of formal and informal institutions, including financial institutions in reducing birth rates in an effort to improve the human capital in Indonesia.

Tabel 1.Measurenment of Variabel

Variabels	Formula
Human Capital	life expectancy
Health Budget	Indonesian Government in Health Budget
Population Growth	birth rate

Source: Literature riview, 2015.

RESULTS AND DISCUSSION

Statistical Description

All of them are realized by four variables, which are: the Health Budget (HB / X1), Population Growth (PG / X2), Human Capital (HC / Y). The explanations of that measurement of the descriptive statistics are as follows:

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HB	18	6,96	9,80	8,8151	,94986
HC	18	4,17	4,25	4,2147	,03009
PG	18	2,41	2,60	2,5367	,09216
Valid N (listwise)	18				

Source: Data processed by authours,2015

From data above, The actual range of scores for this variable Health Budget in data with minumum value 6,96 and maximum value 9,80 with average of budget health is 8,8151.

This indicates that the health budget in this research have almost similar because minimum and maximum data not to far form the mean. The value of standar deviation of Health Budget 0,94985,its means average of the data are similar.

Population growth scores as variable X2 is showed 2,41 for minimum and 2,60 for maximum,with average value population growth of 2,5367. This indicates that the population growth in this research have majority in minimum area. The value of standar deviation of population 0,9216,its means the value of data is in average. Human capital scores for this variable Y showed minumum value 4,17 and maximum value 4,25 with average value of human capital is 4,2147. This indicates that the human capital in this research have almost similar because minimum and maximum data not to far form the mean.

Using multiple regresion test, first of all we do classical asumption test. Based on the result of normality test (figure 1), using Ln data to Health budget and Population Growth,to help meet the assumptions original data analysis of variance.The result of normality test,describe that the normal chart pattern indicates the point spread at the point, and follow the direction of the diagonal line,so its represession models meet the assumption of normality.

Variables in this research also show the results of calculation of health budget has variance inflation factor (VIF) 1.769 and population growth variables has VIF 1.769. In statistics, the variance inflation factor (VIF) quantifies the severity of multicollinearity in an ordinary least squares regression analysis. It provides an index that measures how much the variance (the square of the estimate's standard deviation) of an estimated regression coefficient is increased because of collinearity. So it can be concluded that there is no multicollinearity problem between independent variables or in the other words there is no perfect correlation between independent variables. By looking at the distribution point of heteroscedasticity test, we can see the point at the below random ride numbers of the Y axis, it can be concluded that the regression model in this study has been free from the problem of heteroscedasticity. From the autocorelation test, the result remain that there is no autocorelation.

To determine the influence of the health budget and population growth (birth rate) for human capital (life expectancy), conducted multiple regression analysis techniques. Regression equations obtained are as follows:

HC   = 3.758 + 0.033HB +0.064PG
Specification:
HC   = Human Capital
HB   = Health Budget
PG   = Population Growth

Table 2 Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.758	.128		29.452	.000
	Population Growth	.064	.040	.195	1.585	.134
	Health Budget	.033	.004	1.051	8.530	.000

a.   Dependent Variable: Human Capital

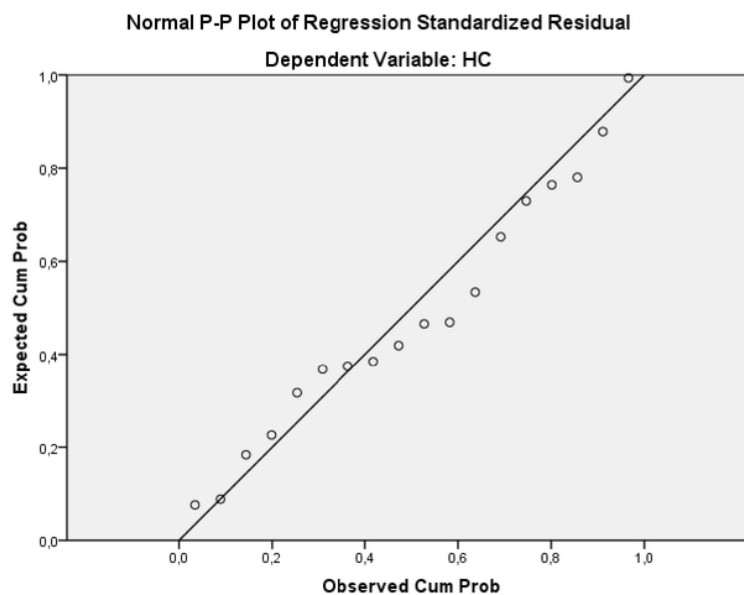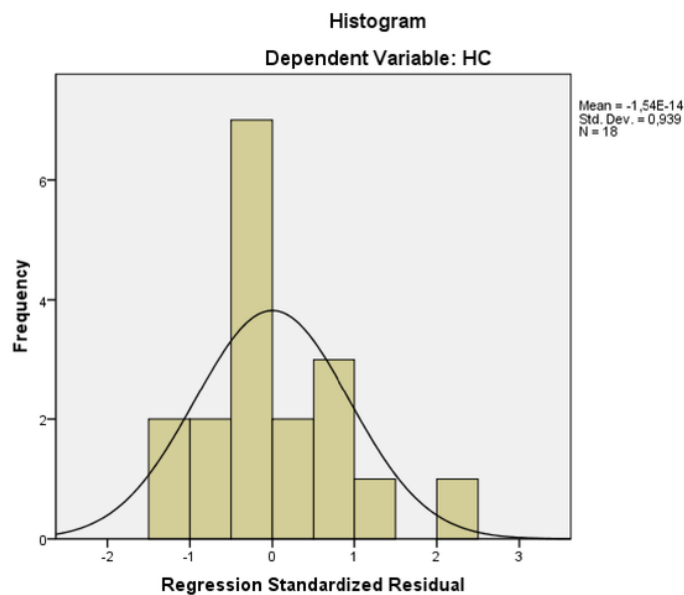**Source: Data processed by authours,2015**

Figure 1 Normality Assumption Test

Partial t Test

The Health Budget on Human Capital

Based on the result it can be seen that the variables of health budget and human capital have $t_{count} > t_{table}$, which are 8,530 > 2,13 with Signivicat value which are 0.000 < 0.05 .It can be concluded that $H_{a.1}$ is supported, in the other word health budget (X1) is partially influence to human capital (Y).

Population Growth to Human Capital

Based on the result it can be seen that the variables of Population growt and human capital have $t_{count} > t_{table}$, which are 1,585<2,131,with Sig. < α , which are 0,134 >0.05 .It can be concluded that $H_{a.2}$ is not supported to human capital, in the other word Population Growth (X2) is partially not influence to human capital (Y).

Results of this study stated that the population growth has no effect on the human capital means that if the crude birth rate with a minimum amount or more than the minimum amount may not be able to result the life expectancy. This is evident from the following by the data that remain the increasing rapidly of population growth such as in 2010, not followed significantly by human capital.

Goodness Of Fit- Test (F test)

F test or simultaneously test trough variance analysis is a test that is being used to see whether there is an influence between multiple variables simultaneously (variables X to variable Y). In the ANOVA setting, the observed variance in a particular variable is partitioned into components attributable to different sources of variation. As doing multiple two-sample t-tests would result in an increased chance of committing a statistical type I error, ANOVAs are useful in comparing (testing) three or more means (groups or variables) for statistical significance. In its simplest form, ANOVA provides a statistical test of whether or not the means of several groups are equal, and therefore generalizes the t-test to more than two groups.. Test output F as follows:

Table 3 Simultan Test ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.013	2	.007	50.804	.000[a]
	Residual	.002	15	.000		
	Total	.015	17			

Predictors: (Constant), Health Budget,Population Growth

Dependent Variable: Human Capital

Source: Data processed by authours,2015

Based on the ANOVA test on the table above, it can be seen that the probability value of F in multiple regeression 0,000 < 0,05 its means that which means that Health Budget and Population Growth together have the same effect on Human Capital. There is significant positive relationship between the health budget and human capital as well as a significant and negative relationship between the human capital, as measured by life expectancy and population growth, as measured by the numbers of crude birth rate. In this study also tests the F (F-Test) conducted to examine the mean effect of all independent variables together on the dependent variable. From the results of this test, the obtained value of F $_{arithmetic}$ amounted to 50.804> F $_{table}$ that is equal to 3.68 with a significance level of 0.000 is smaller than the significance level of 0.05.

Coeficient Determination Test (R²)

The coefficient of determination (R^2) was essentially measures how far the ability of the model to explain variation in the dependent variable. The coefficient of determination is a

value between zero and one. The more values close to one, means the independent variables provide almost all the information needed to predict the variation in the dependent variable.

Table 4 Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.933[a]	.871	.854	.01151	1.405

Predictors: (Constant), Health Budget,Population growth

Dependent Variable: Human Capital

Source: Data processed by authours,2015

The value of R Square is also close to 1, which means independent variable in this study (health budget and Population growth) already provide almost all the information needed to predict the variation of the dependent variable (Human Capital).

Based on the results of the regression estimation calculation, the value of R Square is 85.4%, which means that the variable of Health Budget and Population Growth influence on Human Capital. Both independent variables are able to explain the variability of the dependent variable in the percentage of 85.4%.The remaining 14.6 % of percentages are described by other variables that do not include in this regression model.

Since 1977 the health budget in Indonesia based on the State Budget, is part of the development expenditure outside the health sector project assistance, family planning and social welfare. However, since 2001 health budget is the budget and development based on the social welfare sector, health and women's empowerment. While the family planning sector is a sector in itself, separately acquire state budget spending.

In 1998 there reforms in Indonesia, with the fall of the new order that is triggered by the economic crisis. Reforms that initially only in politics, but then spread to the rest of the bureaucracy or institutions that are part of the government, including institutions play an important role in the implementation of population programs, which have an impact on policy change that raises a variety of issues including reopening the increasing population problems which previously had been resolved.

This proves the importance of the power of institutions that run the government, including supporting institutions (such as finance ministries, agencies deploy makers and law) and the main implementing agency of population programs and policies that affect the direction of the institution, including running a public education program to reduces problem-problems with regard to the number of residents, such as the problems of understanding on the management of the number of family members (Anindita, 2013; Siswanto, Pranowowati, & Widyawati, 2013).

CONCLUSION AND RECOMENDATION
Conclusion

Results from this study support previous research on the relationship between human capital, budgets, and population growth, which states that the positive and significant relationship between human capital and health budgets. The results showed an increase in human capital (as measured by life expectancy) caused by the increase in the health budget. This study also not supports the idea that suggested a negative relationship between human capital and population growth, based on the results of this study of human capital decline as a result of the declining number of population (as measured by the number of births) in Indonesia.

Based on these results, it becomes important for governments to be able to manage its spending, especially in the health field as well as maintaining the stability of the existence of isntitusi which can lead and support the development programs of human resources in order to achieve sustainable economic growth.

Recomendation

Furthermore, based on the ideas of the limitations in this study, both in terms of population, the variables used, analysis techniques, we are also advised to do further research using this type of research, theoretical basis, more variables and different methods, in order to be found a number of new research that is useful in expanding the horizons and develop the theory and knowledge that can be used as a tool in solving existing problems.

REFERENCES

Anindita, D. A. R., 2013. Studi Kasus tentang Pola Berpikir Tradisional pada Pasangan Suami Istri yang Tidak Mengikuti Program Keluarga Berencana (KB). Artikel Penelitian. Universitas Negeri Malang. Fakultas Pendidikan Psikologi. Program Studi Psikologi.http://jurnalonline.um.ac.id/data/artikel/artikel44B40CC39330FD7EED7DB6E8 E85092D4.pdf, diakses pada tanggal 8 Desember 2014.

Annabi, N., S.Harvey, dan L. Yu, 2008. "Public Expenditure on Education, Human Capital and Growth in Canada: An OLG Model Analysis",*Paper Presented at the 11th Annual Conference on Global Economic Analysis,* Helsinki, Finland. 2008. p. 1-33.

Becker, G. S., 1993. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*, The University of Chicago Press, Chicago dan London.

Eneji, M. A., D.V. Juliana, and B. J. Onabe, 2013. 'Health care expenditure, health status and national productivity in Nigeria (1999-2012)', *Journal of Economics and International Finance*, Vol. 5(7), pp. 258-272.

Gupta, S., B. Clement, and E. Tiongson, 1998. 'Public Spending on Human Development',*Finance dan Development: Economic Policy and Equity*, Vol.35 (3): 10 – 13.

Hopkins John. 2006, Population and Development Theories on Interrelations.Module 3a The Johns Hopkins University and David Bishai.

Mankiw, N. G., 2007. *Makroekonomi*: edisi ke enam. Erlangga. Jakarta.

Nicholas, P. K., and M. F.Smith, 2006. 'Demographic challenges and health in Germany'. *Population Research and Policy Review*, 25, pp: 479-487.

Rosenzweig, M. R., 1987. Human Capital, Population Growth and Economic Development: Beyond Correlations. Economic Development Center, *Bulletin* Number 87-8, Departement of Economics, Minneapolis, Departement of Agricultural and Applied Economics, St. Paul, University of Minnesota.

Siswanto, Y., P.Pranowowati, dan, S.A.Widyawati, 2013. Pemahaman Pasangan Usia Subur Paritas Rendah (PUSMUPAR) terhadap Norma Keluarga Kecil, Bahagia dan Sejahtera (NKKBS). *Jurnal Keperawatan Maternas*, Vol. 1, No.2, November, hal.: 134-141.

Sukarna, L. A., N, Budiningsih, and S. Riyanto, 2006. 'Analysis of Health Office Readiness in Allocation Health Budget in the Decentralised Era'. *Jurnal Manajemen Pelayanan Kesehatan*, Vol. 09(01): 10-18.

Widodo, A., Waridin, dan J. M. Kodoatie, 2011. 'Analisis Pengaruh Pengeluaran Pemerintah di Sektor Pendidikan dan Kesehatan terhadap Pengentasan Kemiskinan melalui Peningkatan Pembangunan Manusia di Provinsi Jawa Tengah'.*Jurnal Dinamika Ekonomi Pembangunan*, Vol. 1(1): 25-42.

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