

Public Spending Education and Inequality: A Case Study in Indonesia

Erwin Saraswati

Abstract—Indonesia has been widely known a country with unique characteristic, culturally, regionally and geographically. As Indonesia is an archipelago country, there are many islands and culture that impact to every life system, especially in education system. In this case, region in Indonesia is divided by developed and developing region, due to the different characteristic of two regions themselves. Education becomes one vital attention in Indonesia's development phase. It is supported by the fact that, recently, Indonesia has raised education spending an attention to achieve welfare, especially for the poor people. Thus, education becomes equal towards the poor people. It is an unfortunate fact that the raising education spending has no longer brought an expected implementation for the poor, particularly in developed region. Cap formula of spending proves that an increase of 3.8% per year for developing region and 8% per year for developed region will is expected to be equitable for the poor people.

Index Terms—Public spending education, cap spending, the poor people and inequality

I. INTRODUCTION

For the last few years, Indonesia has tried to improve welfare for the poor society by allocating more education spending. It is due to the fact that, quality of education will impact for labor force quality, in which people have science and skill in technology that cause and accelerate economic growth [1]. Higher education will effect higher national revenue [2], [3] and [4], and all of them impact to economic growth prospect as [5] point out similarly.

After the application on Act no.20/2003 about education spending above 20% from district revenues, then public education expenditure is found to be higher than before the application of the policy in education. Based on investigation, education expenditures rose significantly, 28.24% from year 2003 to 2008. China sociologist, suggests that higher expenditure negatively impact to economic growth or relatively small to increase education performance [6], [7] argue that the rising education spending must be assisted by better education systems, especially in the developing countries. Since, budget in the developing countries indicates distortion sources, better education systems remains essential and vital. This is in line with [8], who argue that the rising education budget without education system improvements is eventually useless. Following such scheme, increase in public spending should have limitation (cap) that leads to on the question on how

about the formula of public spending increase.

As previously overviewed Indonesia has unique characteristic, culturally, regionally and geographically that required such category to explain movement of people welfare. As a result of the budget increase aiming to achieve welfare for poor society, it is important to know how the education spending has been on target. In order to achieve these goals the analysis based on developing and developed region is properly employed. In accordance with the statement of Ministry of Rural Area Development No. 001/KEP/M-PDT/1/2005, on 27 January 2005, thus this cluster is obliged. Further, this category was tested using t test for following variables, such as efficiency of education, human capital, income per capita (as proxies to economic growth), and poverty reduction. The reason of this region based classification is to describe mover or faller welfare because Indonesia government focuses on achieving the welfare for developing region.

This research is subject to analyze welfare of poor society related to enhanced public spending education and is based on the government program which is the welfare pro poor. The contributions of this research are 1) providing guidance for district to evaluation public policy in education; and 2) determining cap formula for public spending. The organization of this paper consists of introduction, spending of education, research methods, t test analysis between developing and developed region, welfare analysis, cap formula of education public spending, and conclusion and suggestion.

II. WELFARE CATEGORY

Welfare enhancement becomes one of government's expectation by the improvement on the education spending. Local community in one nation or state is divided into four categories or group of welfare [9]. The first group is called chronically poor, in which it is inhabited by the society whose average consumption per capita remains to be under the poverty line; the second group as known persistently poor, in which it is fulfilled by group of community whose position is in the middle of chronically poor, whose poverty level can not be justified within one or two years. This group can be differentiated with the chronically poor society, in the expected situation where this group can be less poor in a while. The third group is localized by group of community that remains poor from time to time. Yet, in average it remains less poor (well known as transient poor/mover). Principally, the mover has better consumption level, thus the poverty strike is avoidable. The last group is well known as a group of community who is constantly rich (never poor). Picture 1, provides explanation the categorized of welfare.

Manuscript received August 3, 2012; revised September 15, 2012.

Erwin Saraswati is with the Accounting Department of Economic and Business Faculty, Brawijaya University, Malang-East java, Indonesia (e-mail: erwin_saraswati@yahoo.com)

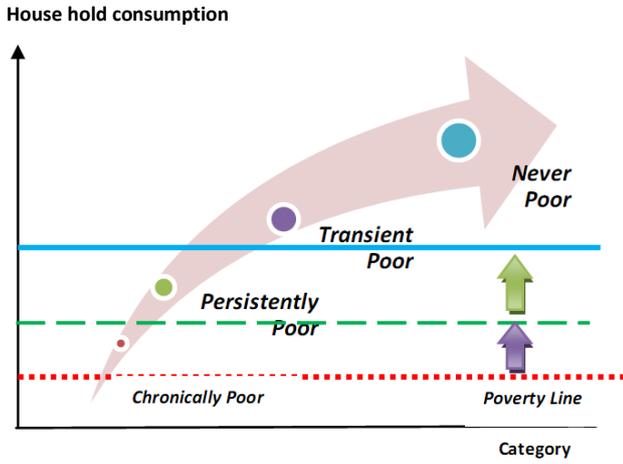


Fig. 1. Welfare Category

This research applied Miranti [10] concept as conducted by 2009, utilizing mover or faller that separately categorizes mover is for the poor people moving successfully into more welfare state. Meanwhile, faller fails to move into better condition.

As briefly overviewed, one of the most notable Asian countries, China was successful in reducing poverty, by building and maintainung cooperation with world bankto improve education and healthy. This program works, and China can reduce poverty from 303, 4 million to 213,2 the poor people [11] during 10 years. In fact, based on world bank data (1999) onpost crisis era, Indonesia has 50.4% people living under poverty line. Eventually, Indonesian government has raised education expenditure, by altering fuel subsidy intooperational fund (BOS), since 2005. It is in relation with the expectation that such subsidiary reaches the goal properly for the poor people.

III. SPENDING OF EDUCATION

Spending of education is divided by two sources, of public and private spending. Public spending is education expenditure from government and aims to cover operational cost in primary and secondary school, while private spending is expenditure from house hold. In Indonesia, public spending is much more than private spending (above 70%, see picture 2). Within the Asian countries scope, Korea and Cambodia found to be properly involved in this paper. Since, Korea and Cambodia are, in contrast more dominant on private spending above 70-80% [12]. In fact, Korea has 2.9% of GDP for private spending and exceeds OECD countries average which is around 0.8%.

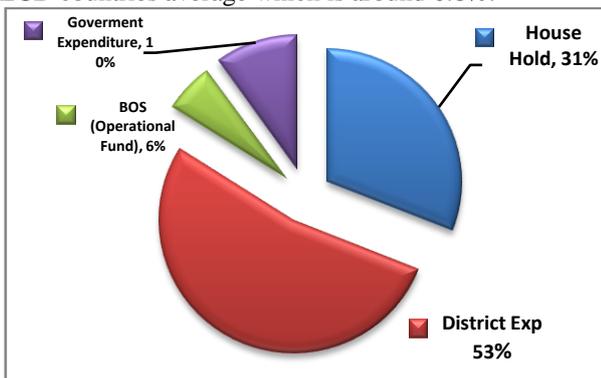


Fig. 2. Composition Spending of Education in Indonesia

This picture describes sources of Education spending in Indonesia based on District expenditures, which comprises: private spending (31%); government expenditure (10%); BOS/Fund Operational (6%) and the biggest district expenditure (53%). Sources: World Bank Indonesia, 2008.

Indonesia government will reach education for all, asNational constitution, phase 33, that all people must well educated. Therefore, Indonesia spent more money for education expecting the people to creatively improve revenue, and to indirectly impact growth of income per capita [1]. It later inspires many researchersto conduct the research on impact of public spending to welfare in Indonesia [3], [13]-[16]. The result is various, which in one side, it is improvement on increasing public spending as [17], [18], [5]; stated. Meanwhile, on the other side, the impact of public spending increase is negative, which means itdoes not improve performance [4], [8], [18]-[20] and inequality for poor people [3], [14], [16].

Therefore, this research tries to investigate on how education expenditure is minimally set up, in order to impact for the poor people and to fulfill the merit of equality. Based on previous research in Indonesia, it is found that education spending is not efficient and unequal. This paper thus examines policy and amount of appropriate increasing education spending.

IV. RESEARCH VARIABLES

This research utilizes some variables, that are efficiency of public spending, income per capita, human capital and poor people. Efficiency performance is measured by stochastic frontier, with input public spending education and output performance of education, literacy, enrollment rate, income per capita and level of education. Income per capita variables is measured by revenue every district, human capital using Human Development Index and level of consumption for poor people variables.

Definition of Efficiency is relation between input and output. In the education systems the output is part of student improvement in certain education [20], such as, decreasing literacy level, and increasing enrollment or graduation rate. The input is education spending, wages of teacher, ratio of teacher and student [6], [18]-[20].

Human Development Index is defined as index for describing labor force and is obtained from aggregated life of expectancy, level of education and standard of life. As a result, this index is form of labor force quality [1], [22]-[24]. The last variable is poor people based on the consumption of 20% (considered as low level) as applied by [9], [10], [13], [16], [25].

All variables in this research are related to characteristic of developed and developing region which ease the portray of movement of welfare in both cluster. Increasing public spending by government aims for poor people to be more equitable. Many researchers find contrary, where the inequality, especially for the poor people [3], [14], [16], remained exist.

V. SAMPLE

Population of this research is all districts in Indonesia, without the complete data. After deleting the data related to

district financial report and statistic data, the researcher gained 115 district samples. Table I, describes sample condition.

TABLE I: SAMPLE PROCEDURE

Year 2003:	
The number of districts in Indonesia	465
The number of districts that does not record of education spending	(324)
The number of districts that does not complete of statistic data	(26)
The number of districts of efficiency estimation	115
The number of efficiency observation	115
The number of economic growth observation	115
The number of poor people observation	115
Year 2008:	
The number of districts in Indonesia	469
The number of districts that does not record of education spending	(16)
The number of districts that does not complete of statistic data	(4)
The number of districts rural and urban	449
The number of efficiency observation	449
The number of efficiency observation in year 2003	115
The number of economic growth observation	115
The number of poor people observation	115

VI. RESEARCH METHOD

This research employs two period observation, year 2003 that the application on Act no.20/2003 and year 2008 by the consideration of complete data in terms of financial report and statistic data. Testing is conducted by t test and computes a formula of public spending. Before this test, the efficiency of public spending is obtained from run data

TABLE II: MEAN AND T-TEST OF PERFORMANCE OF EFFICIENCY, EDUCATION SPENDING, INCOME PER CAPITA, HUMAN CAPITAL/QUALITY OF LABOR FORCE AND POVERTY LEVEL 2003 AND 2008

	Developing Region (mean)		(t-test)	Developed region (mean)		(t-test)
	2003	2008		2003	2008	
Eff	1.00659	1.00405	***3.195 (0.0016)	1.00659	1.004064	**1.92 (0.055)
Ed_Sp	9,7327	121,564	***9.937 (0.000)	14,316	224,34	***13.589 (0.000)
Inc_P	170,845	369,446	***11.91 (0.000)	208,286	453,745	***14.123 (0.000)
Hum capital	66.51	66	0.631 (0.5285)	70.25	70.36	0.212 (0.8324)
Poor_People	45.63	40.18	*1.663 (0.098)	36.52	35.71	0.365 (0.7151)
***Significant at level 1% **Significant at level 5% *Significant at level 10%						
Table caption: this table describes mean and T-test of performance of efficiency, education spending, income per ,human capital/quality of labor force and poverty level. Analysis based on cluster of developing and developed region in period 2003 dan 2008..						

The increase in education spending in developed region impacts on efficiency improvement, acceleration of economic growth. Yet unfortunately it brings no significant impact on human capital improvement and poverty reduction. It means that increasing cost at IDR 210.027 billion from year 2003 to 2008 (average IDR 42 billion) is proved to be unable in improving labor force quality and in reducing poverty (faller). Based on analysis, the likelihood of people in developed region tends to be more chronically poor, which leads to the need of high education spending for skill and assets spending in running economic activities.

In addition, [3] finds that labor force in Indonesia has

based on stochastic frontier analysis. This method is one of measurements of efficiency, especially in public sector. Since, obtaining certain monetary has been difficult to achieve through input and output, the most affordable measurements are always number or units. The other reasons, in public sector does not have market mechanism, impacting to output difficulty to get a monetary value [26].

VII. DISCUSSION

The result t test and computation of formula of public spending for two clusters are discussed in the following lines.

T-test Education Spending and Welfare Variables

The classification of developing and developed region aims at explaining that welfare has been equitable pro poor, so that the gap between them can be overcome. Research result in Indonesia finds that it is inequitable [3], [14]. Education spending mostly consumed by non-poor society [16], and cost of education is high that causes participation in senior high school lower than primary education [15], [14]. Therefore, it is required to limit education spending based on developing and developed region. The maximum level of education expenditure is different, because of the differences in infrastructure, facility, quality of labor forces, economic growth and quantity of the poor people.

Table II provides the explanation, in which mean condition in year 2008 (such as, performance of efficiency, education spending, income per capita, human capital/quality of labor force and the poor people) was relatively better than year 2003.

insufficient quality, with the result that labor quality can not reach market expectation. Therefore, it does not impact to the poor people. Besides, Indonesia has labor force with low education (usually it does not pass primary school) and has been dominated by under age labor. The developed region, as a result demands increasing public spending more than 42 billion (see table 2).

On the contrary, the improvement of education spending of IDR 22.4 billion is able to increase efficiency and to reduce poverty (mover) at developing region. In the developing region with relatively small spending increase can improve welfare. It is probability that the cluster at

developing region is more persistently and transiently poor.

The result of *t test*, finds that developing region is better than developed region, inspite of relatively small increased spending. This finding explained that labor quality in Indonesia has experienced inequality, consistent with [3], [14]. The inequality has been obviously tracked on the enrollment, teacher distribution and education quality at several districts in Indonesia. It is due to the fact that district characteristic impacts to education system. In terms of utilizing the funds; however, developing region is more efficient and effective than developing region, because certain input can achieve welfare.

Based on different result, it indicates that developed and developing region have different funding scheme of increasing cost of education. Thus, researcher computes a formula to determine a certain amount of increased public spending. This formula is expected to be more equitable for the poor.

Cap Formula of Education spending

It is an ample evidence that on average education spending in the developing region improves above IDR 22.4 billion per year, while in the developed region is above IDR 42 billion per year. It indicates, that the developing region should spend (cap) IDR 22.4 billion minimally and IDR 42 billion in the developed region as it is expected to improve welfare.

In this research education spending cap formula applies minimized spending based on higher income per capita per district. This formula is found to be easier than the other alternative, such as the percentage of total expenditure or the percentage of household income per capita as [27] states. Higher income per capita can reduce poverty level [28] as the result of that scheme, the education spending cap formula is employed. Thus this formula is best applied to estimate the spending cap due to its being easier as the income per capita that would indicate economic growth. Analysis computation spending cap formulas as follows (see table 3):

TABLE III: SPENDING CAP ANALYSIS BASED ON HIGHER INCOME PER CAPITA*)

Region	Inc_Perca (2003- 2008) (1)	Ed_Spend (2003- 2008) (2)	Ed_Spend/year ¹ (3)= (2:1)/5	%EdSp 2003 (4)	%EdSp 2008 (5)	Ed_Spe/ year ² (6)= (5- 4)/5
Develo ping	370,055	123,687	6.7%	2.82	21.78	3.8%
Develo ped	553,038	301,963	10.9%	2.23	43.45	8%

Table caption: this table describes *spending cap* based on higher income per capita district from year 2003 to 2008.
 *) based on alternative method by Ruekert/Mielke, 2009
 1) percentage from income per capita district
 2) percentage from APBD.

Overall, based on the investigation on education spending from year 2003 to 2008 it can be stated that minimize education spending increases IDR 24.8 billion or 3.8% of APBD or 6.7% of income per capita district in the developing region. Meanwhile, the developed region demands a number of IDR 60.4 billion or 8% of APBD or 10.9% of income per capita district. It is expected that attaining welfare, especially for the poor people (pro poor) must be encouraged. Increasing education spend to a certain limit impacts welfare, yet higher increase, is found to be inefficient. Therefore it is important to determine threshold

that education expenditure occurred, remains efficient and effective.

It is a marked indication that good economic growth might contribute to the poverty reduction and welfare improvement, based on income per capita for the poor people (mover). It is of significant to know that gradually increased expenditure would reversely decrease performance on education output. Consequently, such limitation on spending budget is necessarily applied.

VIII. CONCLUSION

At last, education system in Indonesia remains complex, due to the three factors of, distribution of population, ethnicity and social structures [28]. It is supported by the fact that Indonesia itself has unique characteristic culturally, regionally and geographically. Nevertheless, Indonesia government strives to improve education spending. It is for the sake of generating more and more educated people, who can be contributive towards raising better income and better economic growth.

Additionally, the impact of education spending improve to economic growth acceleration, that can improve quality of labor force and welfare of poor people by transferring the welfare pro poor people (mover or faller). Increased education spends in developing region is different significantly than the developed region, but developing region has improved welfare or reduced poverty better than the developed region itself.

Based on the minimized spending formula, developing region should increase 3.8% and developed region is about 8% of income per capita district, that is expected to transfer welfare (mover), particularly for the poor people. Due to the reason that educated people are easier in creating income that impact to economic growth acceleration and labor force quality significantly.

This research unfortunately has limitations, that spending education only investigates public spending, excluding private spending. Private spending can be solely obtained by primary data, while this research used secondary data. Also, this research ignored education spending in rural and urban area, but it classified merely on developed and developing region, because of the difficulty in finding out the data, especially when concerning the statistic data.

Ultimately, it is suggested that future research should investigate on empirical study which impacts to public and private education spending on welfare. Based on several researches, the two funding leverage differently towards people welfare.

REFERENCES

- [1] E. A. Hanushek and D. D. Kimko. "Schooling, Labor-Force Quality, and the Growth of Nations," *The American Economic Review*, vol. 90 no. 5, pp.1184-1208, 2000.
- [2] E. A. Jamison, D. T. Jamison, and E. A. Hanushek. "The Effects of Education Quality on Income Growth and Mortality Decline," *NBER Working Paper Series*, October, 2006.
- [3] D. A. Granado, Javier, Fengler, Wolfgang, Ragatz, Andrew, Yavuz, and Elif "Investing in Indonesia's Education: Equation, Equity, and Efficiency of Public Expenditures," *Munich Personal RePEc Archive, The World Bank, Poverty Reduction and Economic Management (PREM), Jakarta, Indonesia, 2007.*

- [4] S. Herrera, and G. Pang, "Efficiency of Public Spending in Developing Countries: An Efficiency Frontier Approach" *World Bank Policy Research Working Paper 3645*, 2005.
- [5] A. Afonso and M. S. Aubyn, "Non-parametric Approaches to Education and Health Efficiency in OECD Countries. Universidad del CEMA, Buenos Aires, Argentina," *Journal of Applied Economics*, vol. VIII, no. 002, pp. 227-246, 2005.
- [6] Y. Jeon. and M. P. Shields, "The Efficiency of Public Education in the Upper Peninsula of Michigan," Department of Economics Central Michigan University, 2003.
- [7] G. Paul and M. Kremer, "Schools, Teachers, and Education Outcomes in Developing Countries," *Working Paper No. 122. Center for International Development at harvard University*, September, 2005.
- [8] E. A. Hanushek and L. Woessmann, The role of School Improvement in Economic Development. *CESifo Working Paper no.1911, category 5: Fiscal Policy, Macroeconomics, and Growth*, pp. 1-94, February, 2007.
- [9] J. Haughton and S. R. Khandker, Handbook on Poverty and Inequality, *The World Bank*, Washington D.C., 2009.
- [10] R. Marianti, Mencari Jalan Keluar dari Kemiskinan di Jawa Timur, Maluku Utara, dan Timor Barat. Jakarta: *Lembaga Penelitian Smeru*, 2009.
- [11] M. P. Todaro dan S. C. Smith, *Pembangunan Ekonomi di Dunia Ketiga*. Edisi Kedelapan. Jakarta: Penerbit Erlangga, 2003.
- [12] M. Bray, "The Cost and Financing of Education: Trends and Policy Implications," Asian Development Bank, Comparative Education Research Centre. The University of Hongkong, 2002.
- [13] D. Suryadarma, A. Suryahadi dan S. Sumarto, "Causes of Low Secondary Enrollment in Indonesia," *SMERU Working Paper*, 2006.
- [14] D. Suryadarma, A. Suryahadi, W. Widyanti, dan S. Sumarto, "From Access to Income: Regional Ethnic Inequality in Indonesia," *SMERU Working Paper*, 2006.
- [15] V. Paqueo and R. Sparrow, "Free Basic Education in Indonesia: Policy Scenarios and Implications for School Enrolment," *World Bank*. Jakarta, 2005.
- [16] P. Lanjouw, M. Pradhan, F. Saadah, H. Sayed, and R. Sparrow, *Poverty, Education and Health in Indonesia: Who benefits from Public Spending?* 2001.
- [17] K. C. B. Biswas dan W. C. Lewis, "Measurement of Technical Efficiency in Public Education: A Stochastic and Nonstochastic Production Function Approach," *Southern Economic Journal*, vol. 67, no. 4, pp. 889-905, April, 2001.
- [18] L. C. Adkin dan R. L. Moomaw, "Determinants of Technical Efficiency in Oklahoma Schools: A Stochastic Frontier Analysis. *Department of Economics, Oklahoma State University*, February 23, 2005.
- [19] D. Sutherland, R. Price, I. Joumard dan C. Nieq, "Performance Indicators for Public Spending Efficiency in Primary and Secondary Education," *Economics Department Working Paper*, no. 546, 2007.
- [20] E. A Hanushek, "Measuring Investment in Education," *The Journal of economic Perspective*, vol. 10 no.4, pp.9-30, 1996.
- [21] M. Badescu, "Measuring Investment Efficiency in Education," *CRELL Research Paper 1*, 2006.
- [22] R. Ismail and D. P. Selvaratnam, "Health, Education and Economic Growth in Malaysia," *IJUM Journal of Economics and Management* 7, no. 2, pp. 1-15, 1999.
- [23] E. Duflo, "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment," *The American Economic Review*, vol. 91, no.4, September, 2001.
- [24] A. O. Akanbi and N. J. Schoeman, "The Welfare Implications of Expenditure in General in African Countries," Working Paper: 2007-07. University of Pretoria, Department of Economics Working Paper Series, May, 2007 .
- [25] D. Suryadarma, "Corruption, Public Spending, and Education Outcomes: Evidence from Indonesia." Research School of Social Sciences. The Australian National University, 2008.
- [26] U. Mandl, A. Dierx dan F. Hzkovitz, "The Effectiveness and Efficiency of Public Spending," European Commission Directorate-General for Economic and Financial Affairs Publications, 2008.
- [27] R. Mielke. *Spending cap Formula for NR 151 Storm Water Rule*. Waukesha, Wisconsin, September, 53188-1020, 2009.
- [28] *Country Report: Indonesia, Indonesian Public Policies on Inclusive Education*, 2008.



Erwin Saraswati was born in Malang, 24 January. The author accomplished her degrees in accounting field. Her bachelor degree was from Brawijaya University (1985, in Malang, Indonesia). She later continued her master degree in GajahMada University (1991, in Yogyakarta, Indonesia), and completed her doctordegree in Indonesia University (2011, Jakarta, Indonesia). She involved activity in lecturer and Accounting and Business Development. She chief of director in Accounting and Business Development, in Brawijaya University, Malang, Indonesia. Her latest publication are Strategy Marketing and performance (2010); Siklus Hidup Perusahaan, Factor Analysis (2011). Her current interests on Public Management accounting. Dr. Saraswati also actively joins with IAI (Indonesia accounting Committee) and ISEI (Indonesia Economic committee) and ICMA (Indonesia Certified Management Accounting). Dr. Saraswati has been awarded several research funds on World Bank research, Education Department and Brawijaya University. Several research on districts government.