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Abstract

This paper aims to analyze the benefit incidence of government spending on education sector between each population group (different per capita household consumption groups) that divides the population into sub-group (quintile or deciles) using survey data (IFLS) in Indonesia in 2007. Benefit incidence analysis (BIA) is applied to know who benefit from government spending on education. The result shows that overall government spending on education sector is less progressive; it tends to provide more benefit to middle class and the rich one. The poor receive largest benefit on primary education, while government spending in higher education seems not to be pro-poor which is shown by the less benefit received by those groups. In contrast, the richest receive largest benefit on secondary and higher education. It proves that spending on secondary and higher education are regressive and pro-rich.

Keywords: benefit incidence, education, government spending

JEL Classification: H52, I21

I. Introduction

Education is understood as the basic need in the fight against poverty. Improvement of education outcomes gives *intrinsic value* in raising capabilities and freedoms of individuals, as well *instrumental value* of higher potential to obtain better revenues. World Bank suggests the combination of growth and development of human capital as strategy to reduce poverty. To carry out this strategy, government spending must be invested in the sector that is able to enhance human capital to provide benefits to the poor.

Government spending for social services has two basic objectives: efficiency and equity (Castro et al, 2000). Efficiency can be achieved when public spending generates external benefits or is able to correct market failures, including the role of government in public procurement.

Equality is intended to improve the distribution of economic welfare, or, more equitable income distribution, in the other words. Education sector is one of government spending that gets special attention. Duflo (2000) noted that investment in basic education infrastructure increased years of school enrollment. For each school built per 1000 children, the average years of education increased. This investment translated into wage increases from 1.5 percent to 2.7 percent for each additional school built per 1000 children. Demery (2000) stated that the poor are unlikely to the higher education level, so that the greater the share of government spending allocated to higher education level, the lower the share of education spending accruing to the poor.

The poor group often has limited access that makes them difficult to escape from poverty. The government is expected to provide public goods, which is education in this case, to be pro-poor. The questions need to be answered are how to ensure that increase in public expenditure will truly reach the poor; and, who are the ones actually receive benefits from public spending on education sector? Meerman (1979) stated that country that intent to use public expenditure as a tool to fight against poverty should ensure ho receive this resource.

Benefit incidence Analysis (BIA) is an instrument used to assess how government spending affects the distribution of welfare in the population. In the other words, BIA evaluates the distribution of government spending among different groups in the population, especially among different per-capita-household-consumption groups. In the literature, most of the BIA divides the population into sub-group (quintile or deciles) based on per capita household consumption. BIA provides valuable information about inefficiency and inequity in the allocation of government resources for social services and also on the utilization of such services by the community. BIA has been incorporated into an experimental tool kit for the World Bank Poverty and Social Impact Analysis (PSIA) of economic policy.

In the case of Indonesia, the government has been giving more attention in education for several years. Indonesian government, step by step, increased spending on education sector. In 2005 education received 9.76 percent of total national expenditure by function. This number increased to be 10.23 percent in 2006, and was 20.95 percent in 2007 (the highest this far), respectively - contributed 10.87 percent, 12.51 percent, 11.6 percent in 2008, 2009, and 2010. Levels of education included in the formal school system in Indonesia consist of primary education, secondary education and higher education. Primary education is the foundation for secondary education. It takes the form of primary schools, that is, *Sekolah Dasar* or other schools at the same level; and junior secondary school, that is, *Sekolah Menengah Pertama* or other schools at the same level. Primary education takes twelve years to be completed. Secondary education is the continuation of basic education. It comprises of general secondary education, that is, *Sekolah Menengah Atas* and other schools with the same level; and vocational secondary education, that is, *Sekolah Menengah Kejuruan* (SMK) or other schools with the same level. Secondary education takes three years to be completed. Higher education is the level of education after secondary education. It consists of diploma, bachelor, master, specialized postgraduate programs and doctorate programs imparted by a higher education institution. Higher education can be in the form of academy, polytechnic, college, institute, or university and shall provide education, research and community services.

The aim of this paper is to analyze the benefit incidence of government spending on education sector between each population groups (different per capita household consumption groups) that divides the population into sub-group (quintile or deciles). This paper focuses on the Indonesian government expenditure on education sector in 2007. The rest of the paper is organized as follows. Section II discusses the literature review of Benefit Incidence Analysis

(BIA) related studies in various countries. Section III describes the data and methodology that will be used to estimate the benefit incidence. The results of the study are presented in section IV. Finally, section V provides conclusions.

II. Literature Review

There have been many researchers studying Benefit analysis incidence on education spending across countries. The pioneers are Selowsky (1979) who analyzed education spending in Colombia; and Meerman (1979) who studied the same case for Malaysia. Selowsky (1979) revealed that the total subsidy to education was distributed evenly between quintiles. Subsidies to primary education was very progressive, but the reverse subsidy for higher education highly regressive. Meerman (1979) used a sample survey of households developed by the Malaysian department of statistics. Four important related sectors were studied in household level of Malaysia, which were: education, medical care, agriculture and public utilities (water, electricity, and sewerage). It was found that the distribution of subsidies to primary education gave higher benefit to households of the lowest per capita consumption. On the contrary, subsidies spent for higher education was pro-rich.

Selden and Wasylenko (1992) used benefit incidence approach to estimate the impact on the distribution of public education spending in Peru. They found slightly progressive on poor incidence in this education spending. One rationale was a lower proportion of poor children compared to middle-to-high-income-household children for the group of ages 6 to 12 years old who enrolled in primary school. It was also found that female got less benefit than male. However, another incidence study of Gertler and Glewwe (1989) who used a behavioral

approach, found that rural households, including the poor, were willing to pay high enough fees to cover operational costs of development of new secondary school in their village.

Demery (2000) estimated benefit incidence analysis in three countries, which were Indonesia (1989), Colombia (1992) and Cote d'Ivoire (1995). The subsidies were distributed to expenditure quintiles. In Indonesia and Cote d'Ivoire, quintile was defined across individuals; on basis of household per capita expenditure which was they belonged. But for Colombia, the analysis based on quintiles household. In Indonesia benefits were expressed on monthly basis, while for Colombia and Cote d'Ivoire annual estimation were reported. He noted that the poorest quintile benefited only 15 percent of total education spending in Indonesia, 13 percent in Cote d'Ivoire, and 23 percent in Colombia. He concluded that the subsidy was not well targeted to the poorest quintile of population (the poorest quintiles gained significantly less than their share in the total population). It was progressively distributed-in relation to their income or expenditure.

Peter lanjoouw et al (2001) investigated BIA on education spending in Indonesia using Susenas data 1998. They provided evidence that expenditure on primary education was pro-poor. Most of benefit spending on junior secondary schools was used by middle quintile. For secondary level, benefits were distributed very regressively and pro-rich. They also examined marginal incidence of government spending on education and found that spending in both junior and senior secondary school were much progressive.

Hamid et al (2003) analyzed benefit incidence of public spending on education by using more than 80 sources covering 56 countries for period of 1960-2000. They found that, (i) spending on primary education was pro-poor and progressive on average. The finding of pro-poor spending was explained mainly by the pro-poor incidence of spending in the Western

Hemisphere and the Middle East and North Africa. Spending on primary education in PRGF-eligible countries was not well-targeted; (ii) spending on secondary and tertiary education mainly benefited to the non-poor and the middle-class one; and (iii) countries that tend to have more pro-poor incidence of education spending also tend to have more pro-poor incidence of health spending. A more pro-poor benefit incidence structure was associated with better education and health outcomes, higher per capita income, better governance, wider availability of information, and closer location of health facilities to the poor.

Nakar et al (2007) estimated benefit incidence on education spending for Chad. They found that the richest strata benefit more from government transfer than do the poor strata and for all social services include education. Moreover, primary education expenditure was more progressive than secondary for higher education expenditure.

III. Methodology

III.1 Benefit Incidence Analysis (BIA)

This study utilizes Benefit Incidence Analysis (BIA) to analyze the distribution of education expenditure. It brings together elements of the supply and demand for public service and can provide valuable information on efficiencies (inefficiencies) and equities (inequities) in government allocation of resources for social service and on the public utilization of these services. BIA is an easy-to-use tool for *ex ante* designs as well as *ex post* monitoring and evaluation of effectiveness of social spending programs.

The BIA approach was pioneered by World Bank studies by Selowsky (1979) in Colombia and Meerman (1979) in Malaysia. The main goal of this method is to identify who benefits from public spending and how much they receive. The essence of the approach is to use

information on the cost of public goods and service together with information on their use by different per capita household consumption group to estimate the distribution of benefits (Wawan, 2009).

BIA involves four steps processes that can be easily implemented using spreadsheet software programs (Hamid et al, 2003). First, obtain the average unit cost of providing a public service by dividing government spending on the service by total number of users of service. Second, define the average benefit from government spending on a service as the average unit cost of providing the service. This simple assumption ‘attributes’ or ‘imputes’ benefits from government in-kind transfer to household or individuals welfare as measured by their per capita household consumption. Third, rank the population of users from poorest to richest using welfare measure and aggregate them into group (e.g. quintiles or deciles) with equal number of users. Total monthly per capita household consumption is taken as a proxy for welfare measure. And finally, derive the distribution of benefits by multiplying the average benefit calculated previously by the number of users of the service in each per capita household consumption group.

The procedure on how to estimate benefit incidence is given below:

$$X_j = \sum_{i=1}^3 E_{ij} \frac{S_i}{E_i} \equiv \sum_{i=1}^3 \frac{E_{ij}}{E_i} S_i \quad j = 1, 2, 3, 4, 5 \quad (1)$$

Where X_j is benefit incidence accruing to per capita household consumption group j; E_{ij} represents the number of enrolled students in education i from group j; E_i is the total number of enrolled students in a certain education level for all per capita household consumption group; S_i represents total expenditure on education level i; S_i/E_i is the unit cost of providing education at

level i ; subscript i represents level of education (primary, secondary and tertiary) and subscript j represents population ranked from poorest to richest using household per capita consumption and aggregate them into quintile.

The share of benefits accrued to quintiles j from total government spending on education (S) is given by:

$$X_j = \sum_{i=1}^3 \left(\frac{E_{ij}}{E_i} \right) \left(\frac{S_i}{S} \right) = \sum_{i=1}^3 e_{ij} S_i \quad j = 1, 2, 3, 4, 5 \quad (2)$$

Where, e_{ij} is the quintile j share of total student enrolled at primary, secondary and higher level and S_i is share of government spending of each level education i in total education spending. The (e) and (s) reflect the behavior of households in term of enrollment decision and government in term of budget allocation levels of schooling. The incidence of public expenditure on percentile j thus depends on two factors: the intra-sector allocation of the budget, notably in favor of the services most used by group j and the relative frequentation of these services by group j (Nakar et al, 2007).

III.2 Data

The data used in this study are as follows. (i) Government spending on a service. Data of actual expenditure of the government on education (primary, secondary, tertiary level and total government spending on education) in 2007 were obtained from the ministry of finance. (ii) Public utilization of the service. Data of Public utilization of the service in 2007 were obtained from the family life survey Indonesia (IFLS). IFLS is an ongoing longitudinal household surveys that collect a vast amount of information about individuals, households, communities and

facilities. The first wave of the survey (IFLS1) field in 1993 was representative of 83% population of Indonesia. Since then there have been three subsequent survey waves, IFLS2 (1997), IFLS3 (2000), and IFLS4 (2007) (Witoelar, 2009). In this research, the survey is used to estimate (1) the welfare measure (households are arranged from poorest to richest based on welfare indicator, named per capita household consumption); and (2) The number of enrolled students. Users of government services are referred as beneficiaries of the service. For educational service, beneficiaries include students enrolled each level (primary, secondary and higher) from each group of per capita household consumption.

IV. The Empirical Result and Analysis

IV.1 Realization of Government Budget

Realization of government spending in 2007 according to its function is shown in Table 1. Table 1 shows each of government expenditure which is divided into eleven functions. Among eleven functions in 2007, the government allocated 20.96 percent to education function. For this year of 2007, education was also the largest government spending. The allocation of education budget in 2007 was the largest allocation compared to preceding years. Primary education received the largest share of 8.87 percent compared with the other educational levels, where secondary education got 1.71 percent, 3.26 percent for higher education and 7.01 percent for others.

Table 1 is about here

IV.2 Incidence of Public Expenditure on Education

Table 2 shows that the largest allocation of government spending on education is primary education level, which is about Rp 23,147,968 billion or 64.32 percent of the total government spending on education (total of primary, secondary and higher level), while secondary gets Rp

4,411,167 billion or 12.26 percent, and higher one receives Rp 8,427,765 billion or 23.41 percent of total government spending on education. The poorest quintile receives the largest share of total government spending on primary level that is Rp 6,071,317 billion. Nevertheless, they receives the smallest share in total government spending on secondary and higher level that is Rp 652.450 billion and Rp 305.208 billion. The richest receives Rp 4,776,519 billion at the higher level which is the largest share at that level and only receives Rp 2,582,448 billion at the primary level. For the secondary level, middle class receives the largest share. Table 2 also shows that 26.23 percent of total students enrolled in primary level come from the poorest quintile, but only 3.62 percent of total enrolled of students at the higher level come from this quintile. A very large discrepancy occurred between the presence of primary and university level. In contrast, only 11.16 percent of the total students enrolled at primary level come from the richest quintile while 56.7 percent of total enrolled of students at higher level come from them. Above reflects the fact that most of poor households send their children to primary level and very rarely to reach the higher education. This result is in line with Seldon and Wasylenko's finding (1992) that the reason of less benefit received by the poorest in higher level of education was the lower proportion of enrolled in higher level compared with children of the middle-to-high-income-household class.

Table 2 is about here

Table 3 is about here

Table 3 shows the benefit incidence of government spending from total education spending on all three sectors, in contrast to table 2 which only shows the benefit incidence of government spending based on each education level. Table 2 is derived from equation 1 and

Table 3 from equation 2. Equation 2 reveals the intuitive appeal and simplicity of the BIA. This shows that the more government spending on education widely utilized by a given quintile, the more the quintile receives benefits. In the other words, benefit incidence depends on the composition of the users of education services that are classified by the composition of economic level in education spending. Estimation of benefit incidence captures the joint behavior of users and government. In other words, the determinants of the benefit incidence of each quintile are the average participation quintile, or the average utilization of educational services provided by the government, and intra-sectoral allocation of education spending by the government as well. By examining equation 2 and the results in Table 3, we can accurately capture the total benefits received by each quintile of total government expenditure on education (primary, secondary, and higher). This gives more information compared to the use the first equation that is only able to capture the benefits solely based on expenditure per level of education.

Total government spending on the education shows that the richest quintile receives about 22.80 percent of benefit, while the poorest receives only 19.53 percent of total spending on education. It can be concluded that overall spending on education is still pro-rich. However, spending on primary education is pro-poor and progressive. The poorest quintile of the population receives 16.87 percent of total government spending on education. They receive the largest share at primary level. The richest receives the smallest benefit at primary education level that is only 7.17 percent of total government spending on education. Primary education is often viewed as an important instrument to ensure the universal access to formal education system, the build of human capital, and attempt against poverty. Spending on secondary and higher level especially benefits to the non-poor. It is shown in table 3 that the richest receives about 13.27 percent of benefit from higher education spending while the poorest receives the smallest share

which is 0.84 percent. Government policy tends to be pro-rich and regressive at this educational level.

V. Conclusion

This research analyzes the incidence of public education spending in Indonesia in 2007 using Benefit Incidence Analysis (BIA). The question we attempt to answer is who benefits from public spending on education? In 2007, overall government spending on the education sector is less progressive; it tends to provide more benefit to the middle class and the rich. Nevertheless, government spending on primary education is pro-poor and progressive, while government spending in higher education seems to be not pro-poor, which is shown by the less benefit received by those groups. In contrast, the richest receives the largest benefit on secondary and higher education. It proves that spending on secondary and higher education is regressive and pro-rich.

The above finding should be considered as a challenge to policymakers to improve public social spending policy in favor of the poor. The big question for policymakers is what policies should be adopted to improve targeting of social spending? Policymakers should increase the budget allocation of public spending towards the poor and increase utilization of public services by the poor, at least to create a progressive service. Several issues related to this problem are quality of public education, formal and informal (out of pocket) costs faced by the poor, governance, gender bias, and location of public education services.

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Table 1. Realization of Government Expenditure 2007 by Function

Government Expenditure	Billion of Rupiah	Percent
General services	50,056,017	19.40
Defense	32,722,067	12.68
Security and order	29,210,737	11.32
Economy	51,249,635	19.86
Environment	5,478,493	2.12
Housing and public facilities	10,659,482	4.13
Health	17,467,051	6.77
Tourism and culture	1,676,261	0.65
Religion	2,208,113	0.86
Education	54,067,138	20.96
- Primary	23,147,965	8.97
- Secondary	4,411,647	1.71
- Higher	8,423,764	3.26
Other	18,083,761	7.01
Social security	3,209,749	1.24
Total expenditure	258,004,744.70	100

Source: Directorate general of Treasury, MOF, Indonesia

Table 2. School Enrollment and Distribution of Expenditure on Education in 2007

Quintile (Poorest to Richest)	Primary			Secondary			Higher		
	Number of Student	Exp. on education (billion of Rp)	% to Total Exp. on Primary Education	Number of Student	Exp. on education (billion of Rp)	% to Total Exp. on Secondary Education	Number of Student	Exp. on education (billion of Rp)	% to Total Exp. on Higher Education
1	1,420	6,071,317	26.23	193	652,450.5	14.79	20	305,208.9	3.62
2	1,308	5,592,453	24.16	245	828,240.2	18.77	44	671,459.5	7.97
3	1,126	4,814,298	20.8	301	1,017,552	23.07	65	991,928.8	11.78
4	956	4,087,450	17.66	315	1,064,880	24.14	110	167,864.9	19.93
5	604	2,582,448	11.16	251	848,523.7	19.23	313	4,776,519	56.7
Total	5,414	23,147,965	100	1,305	4,411,647	100	552	8,423,765	100

Source: IFLS 2007, author calculation

Note: Actual data of total expenditure on education in each level of education is taken from ministry of finance. Sample data of total number student is taken from The Indonesian Life Family Survey (IFLS).

Table 3. Benefit incidence of Public Spending on Education in 2007 (In percent of total spending)

Quintile (Poorest to Richest)	Number of Student	Primary		Number of Student	Secondary		Number of Student	Higher		All
		Exp. on Education (billions of Rp)	% to Total Exp. on Education		Exp. on Education (billions of Rp)	% to Total Exp. on Education		Exp. on Education (billions of Rp)	% to Total Exp. on Education	% to Total Exp. on Education
1	1420	6,071,317	16.87	193	652,451	1.81	20	305,209	0.84	19.53
2	1308	5,592,453	15.54	245	828,240.2	2.30	44	671,460	1.86	19.70
3	1126	4,814,298	13.37	301	1,017,552	2.82	65	991,929	2.75	18.96
4	956	4,087,450	11.35	315	1,064,880	2.95	110	1,678,649	4.66	18.98
5	604	2,582,448	7.17	251	848,524	2.35	313	4,776,519	13.27	22.80
Total	5414	23147965		1305	4,411,647		552	8,423,765		100

Source: IFLS 2007, Author's calculation

