

Determinants of the Net Enrollment Rate of Indonesia's: Poor Population

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Abstract. One of the success of education indicators can be identified by the growth of the Net Enrollment Rate (NER). The positive economic growth and the reduction in poverty levels raise questions toward the factors that affect the NER at elementary, junior and senior high school levels for the poor population in Indonesia. Data panel models for 29 provinces with a time span of 2011-2015 are used as the basic data for these studies. The estimated result of the model shows that the very elastic coefficient of income per capita affects the NER for every education level in Indonesia. Government expenditure on education still has the effect towards the NER escalation for elementary, junior and senior high school education. Inequality in Indonesia escalates to the NER at the elementary and senior high school levels, whereas at the junior high level it reduces the NER. The age factor affects the junior high and senior high school whereas for the elementary level it has no effect.

Keywords: Net Enrollment Rate · Income per Capita · Government Expenditure · Inequality

1 Introduction

The development of education in Indonesia can be illustrated by the participation rate of Indonesian people at various school levels. The higher the participation rate for all education levels, the quality of Indonesian human resources is expected to be better. The indicators of this participation rate are the Gross Enrollment Rate (GER) and the Net Enrollment Rate (NER). The difference between these two indicators is at the emphasis on school-age accuracy, where NER emphasizes the exactness of school age at every level of education whereas not on GER. The impact of this disparity is that GER is usually larger than NER, where many students who take part in one of the levels of education are not in the appropriate age range.

Figure 1 shows the NER level in the Early Childhood Education Program (PAUD), Elementary School (SD), Junior High School (SMP) and Senior High School (SM). The NER of SD level is always higher than all the other levels, this is normal because elementary school is compulsory education. Unlike the PAUD which is not compulsory, but shows a considerable level of escalation during the year 2012-2017, which shows the larger community's awareness for PAUD. Junior high during the

period of 2009-2017 showed a fairly low increase, this gave a prediction on the awareness of achieving junior high level education, and in accordance with compulsory with 9 year study program proclaimed by the Government.

NER education at the SM level shows a constantly rising rate with a considerable increase in meaning. The trend of the SM-NER escalation leads to the NER level for junior high school and SD level, so the APK for all levels are expected to reach 100%.

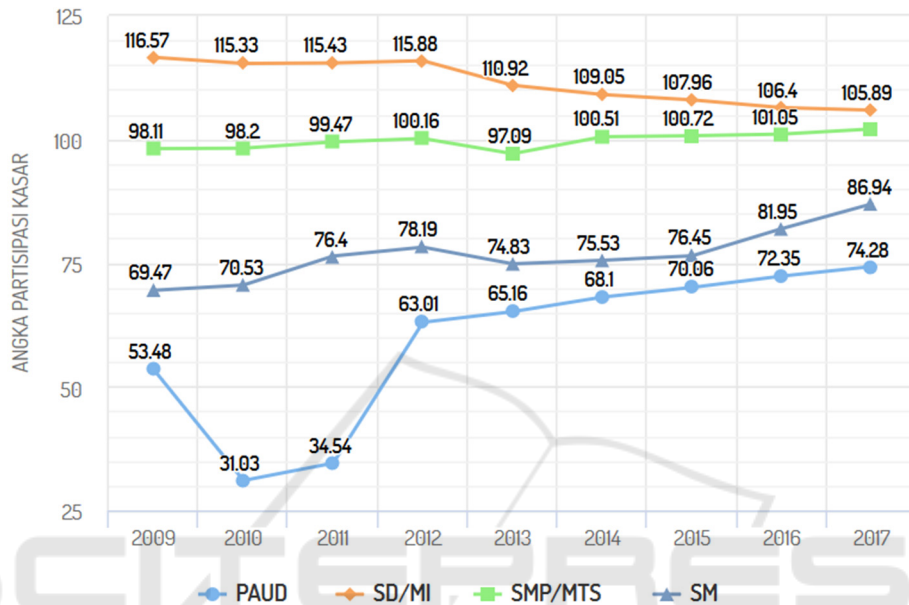


Fig. 1. Gross Enrollment Rate Growth for PAUD, SD/MI, SMP/MTS and SM at Indonesia in 2009-2017. Source: Ministry of Education and Culture (<http://apkapm.data.kemdikbud.go.id>).

Figure 2 provides an overview of the participation of school children at each level with an emphasis on the accuracy of school age at each level, where this figure is indicated by the NER. Compared to GER, the NER will not exceed 100%. This is because each NER number will not have students who study at one level of education outside the age of education. In Figure 2, PAUD is not displayed because it is related to data availability. Elementary school NER is around 93-96%, where the level of participation at the elementary school level is quite good, although there was a decrease in 2013. The junior high school level showed an increase up to 2015, but it fell quite far in 2016. Up to the middle school shows the success rate of the nine-year compulsory education program launched by the government.

The NER of the SM level shows a significant increase since 2013, although it is still at the level of 63.7% in 2017 but shows a fairly upward trend, so that expectations in the following years can continue to increase. NER SM which continues to increase can be expected as a milestone for improving the quality of human resources, at the level of work entry at adulthood (> 16 years).

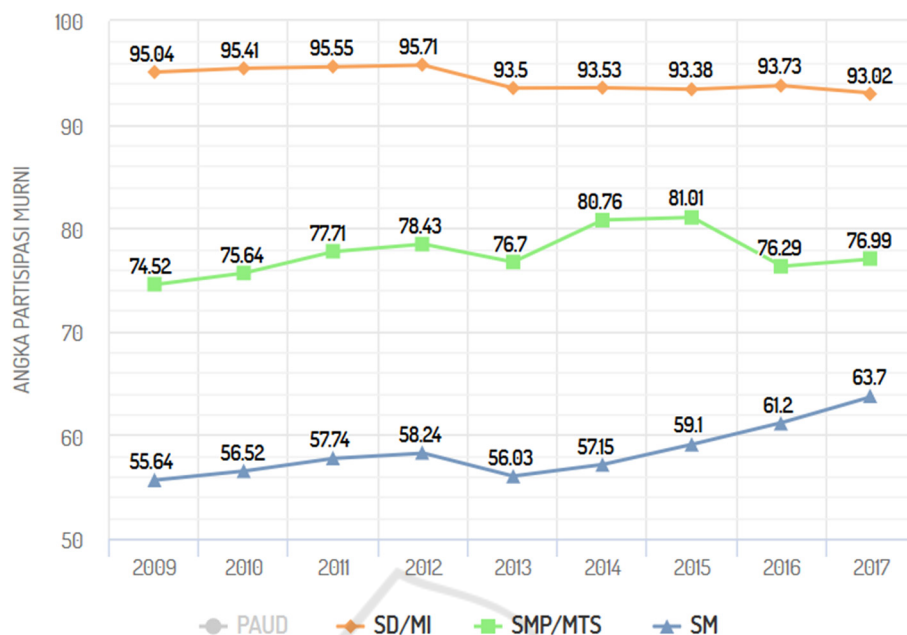


Fig. 2. Net Enrollment Rate Growth for PAUD, SD/MI, SMP/MTS and SM in 2009-2017. Source: Ministry of Education and Culture (<http://apkpm.data.kemdikbud.go.id>).

The escalation of GER and NER in Indonesia is inseparable from the influence of ease of public access towards education at all levels. One of the most important issues is the community purchasing power. This purchasing power is seen from the economic development in Indonesia which always shows the positive level of economic growth. Indonesia's economic growth in 2007-2016 tended to slow down, although it was still positive. In 2007, economic growth reached 5.3% and 5% in 2016.

The economic growth has succeeded in suppressing poverty levels in Indonesia. The percentage of poor people in Indonesia continued to decline throughout 2007-2016. This indicator shows the success in the process of economic development in Indonesia. The decrease in poverty levels was not matched by the inequality indicators. The GINI index represent a fairly high development in Indonesia. From 2011, the inequality worsened until 2013, although there was a relatively low decline from 2014 to 2016.

Figure 3 elucidate the graphic development of economic growth, poverty and inequality in Indonesia within 2007-2016. The phenomenon that appears in the figure is the high inequality in Indonesia with a poverty rate that is still above 10%, where the poverty line per capita per month in 2016 is IDR 364,527 for urban areas and IDR 343,647 for rural areas. This means that there will be poorer people hence the level of living needs is higher than the poverty line.

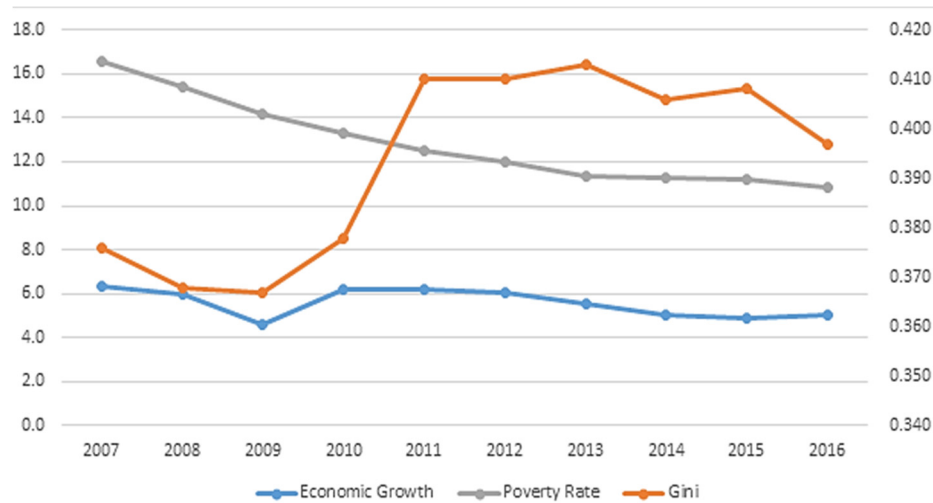


Fig. 3. Economic Growth, Poverty Rate and Inequality in Indonesia from 2007-2016. Source: Statistics Indonesia, processed.

Indonesia's economic development is quite successful, it can be seen from its economic growth that demands an increase in the quality of its human resources. One focus of economic development is to shape humans as resources and place humans as subjects rather than as objects (Human Centered Development). Education is fundamental to form broader human capabilities that are at the core of the development purpose. The fundamental purpose of development is human education and health (Todaro and Smith, 2012). Education has an important role in development, because education is an investment to increase human resources, strengthen physical capital, and the ability to adjust the applied techniques towards industrial machines (World Bank, 1996).

The role of the government cannot be separated from itself to ensure that its citizens receive and use the availability of education in Indonesia. The government, the ministries of education and the education authorities offices at the provincial and district/city levels are seeking to improve education access for all residents. Poor people with limited access to education can be facilitated to education with free education programs for all communities and free education specifically for the poor.

Economic growth is quite high and the development of the number of poor people continues to decline whereas the increase of inequality raises questions about access to education for the poor and how the NER for each level of education for the poor can be explained by several economic variables and government expenditure on education in Indonesia.

2 Literature Review

The potential economic growth for a country's is strongly influenced by its resources, both human capital, physical capital, and endowment resources. Harbison (1973) states that human resources are the basic capital of the wealth of a nation. physical capital and natural resources are merely factors of production which are basically passive whereas

human beings are active. It is humankind who is an active agent that will gather capital, exploit natural resources, build various social, economic and political organizations, and carry out the national development. If a country does not immediately develop the expertise and knowledge of its people and does not effectively utilize their potential in the development and management of the national economy, then in the future the country will not be able to develop anything.

Schultz (1961) argues that in a society, its members can be invested through spending on education, training, research and health to increase its production capacity. Human capital contributes greatly to increase the income. Human capital is an engine for economic growth (Azid and Khan, 2010). The quality of human capital depends on its education. The higher the level of education, the quality or productivity of humans is also expected to be higher. Educational and health outcomes as a form of measurement of the quality of human capital cannot be achieved at the same level for all communities. Higher education and a healthy life requires a lot of high costs, so that not all people can get maximum education and health facilities. Educational achievements in society are influenced by various variables that have been widely studied and published in various journals.

Variables that influence education are widely expressed by various studies. Variable income per capita, population growth rate, level of government expenditure in the education sector, total population and total urbanization are the variables that have a significant influence on the level of adult education in developing countries (Mazumdar 2005). On the other hand, Faguet and Sánchez (2008) provide more diverse variables to see the effect on education. These variables are per capita expenditure for public education costs, government spending on the education sector, growth in local government spending, teacher to student ratio, politics, household demographics and socioeconomic status.

Poverty has had a wide impact on human existence, not only the private lives of those who are poor, but also for people who are not classified as poor. Poverty is not only a personal burden, but also a burden and responsibility of the community, state and the world to overcome it (Maipita, 2014). One method that is believed to be very effective in reducing poverty is through education. Empirical evidence shows that increasing access of the poor towards education, health, and reducing inequality of access is important in poverty alleviation. Poverty can be caused by: (a) low quality labor force due to low levels of education, (b) difficult and limited access to capital ownership, (c) low levels of technological mastery, (d) inefficient use of resources, and (e) high population growth (Sharp et al., 2000). The results of various studies find that economic growth will increase income per capita and ultimately lead to a decrease in poverty (Dollar and Kraay, 2001; Field, 1989).

3 Studied Models

The model is built based on the main literature referenced from Rajkumar and Swaroop (2008) and several other supporting articles such as Anyanwu and Erhijakpor (2007); Checchi (1999); Flug et al. (1998); Pritchett and Filmer (1999); and Psacharopoulos (1994). The model development will refer to education indicators in the form of Pure Participation Rates. The categories used for NER are elementary, junior high and senior

high school participation rates whereas the independent variables chosen for the results of the literature study are Income per capita, Government Expenditures for Educational Affairs, Gini Coefficient, Population within the Age of Elementary School 7-12 years, Population within the Middle School Age 3-15 years and Population within the High School Age 16-18 years.

The data used is Susenas data from 2011 to Susenas from 2015. Macroeconomic and fiscal data were obtained from the Central Statistics Agency and the Directorate General of Fiscal Balance of the Ministry of Finance of the Republic of Indonesia. Unit analysis is carried out at the provincial level for each data year. The econometric model used refers to the panel data model with time series data from 2011 to 2015 and cross section data for 29 provinces in Indonesia based on data availability.

To test the significance of the relationship between the independent variable and the dependent variable, the econometric regression model hypothesis is used for testing the parameters in the population regression function. Testing this hypothesis includes the significant parameters testing as solely or as a whole of the population regression function. To test the hypothesis of a single population parameter the t test was used and for the significance of the regression as a whole the F test was used (Wooldridge, 2009). Multicollinearity is tested with the Variance Inflation Factor (VIF) whereas for heteroscedasticity the white heteroscedasticity test is used.

4 Results and Discussion

Estimated results of the model are run by using the Fixed Effect Model with *Estimated generalized least square* (EGLS) or by running panel data regression with *cross-section weights*. This method is done to correct the problem of *heteroscedasticity* (auto-correlation). Estimation results can be seen in Table 1 with all dependent variables: NER_SD, NER_SMP and NER_SMA.

Variable income per capita gives a statistical influence on all observed levels of education with a positive sign. This shows that if there is an increase in income among the poor population would also increase the school participation. The coefficient of income per capita is more than 3 for all levels of education. This number describe the elasticity of changes in Income per capita towards the changes in NER is very elastic. The elasticity for elementary school level is the highest number compared to junior and senior high school level. It can be stated that the level of elementary school is very influential towards the per capita changes. Income per capita variable becomes a variable that carries out an important role in increasing student participation in Indonesia.

Table 1. Estimation Results Using Fixed Effect Model for the Determinants of Participation Rates of Poor Population Schools Equation and the Determinants of Average Length of Education for Poor Population.

	NER SD Mit (5)	NER SMP Mit (6)	NER SMA Mit (7)
Constanta	-21.9378 *** (1.3995)	-19.4134 *** (1.2727)	-22.3587 *** (0.9029)
PKit	3.8180 *** (0.1767)	3.3820 *** (0.1644)	3.5781 *** (0.1141)
GOV_Edit	0.0504 * (0.0302)	-0.0662 ** (0.0304)	-0.0848 *** (0.0235)
GINIIT	0.8377 * (0.4753)	-0.5017 (0.5378)	0.8933 ** (0.3786)
AGE_712it	2.1961 (3.3377)		
AGE_1315it		23.2729 *** (5.0769)	
AGE_1618it			-10.8551 *** (1.965)
AR (1)	0.6454 *** (0.0716)	0.3947 *** (0.0749)	
AR (2)			-0.0298 (0.0388)
R2	0.9982	0.9985	0.9986
Adj R2	0.9975	0.9979	0.9977

Description:

- brackets indicate the standard error
- indicate the level of significance of alpha 10%
- ** indicate significance level at alpha 5%
- *** indicates a significant level of alpha 1%

Specifically, for each province the influence of the Income per capita variable can be shown in the following Table 2. Many provinces have a large influence on income per capita of poor families (very elastic). This shows the sensitivity of this variable in influencing the increase in school participation at the elementary, junior high and high school levels.

Table 2. Model Specification Coefficients for Income per capita Variables.

NO	Prov	SD	SMP	SMA	RLS
1	ACEH - PK ACEH	10.36	9.35	0.31	-0.13
2	SUMUT - PK SUMUT	9.06	5.73	5.34	0.35
3	SUMBAR - PK SUMBAR	5.62	3.62	2.45	-0.50
4	RIAU - PK R	5.43	4.80	5.99	0.13
5	JAMBI - PK JAMBI	11.03	7.38	6.98	-0.10
6	SUMSEL - PK SUMSEL	11.91	6.66	6.80	-0.04
7	BENGGULU - PK BENGGULU	16.11	15.10	12.62	0.12
8	LAMP - PK LAMP	9.75	5.38	6.28	2.12
9	BABEL -PK BABEL	3:44	3.99	0.94	-0.18
10	JABAR - PK JABAR	6.44	3.14	6.69	0.72
11	JATENG - PK JATENG	12.05	17.39	23.89	0.95
12	YOGYA - PK YOGYA	14.76	20.27	8.51	0.01
13	JATIM - PK JATIM	9.11	5.64	5.94	0.58
14	BANTEN - PK BANTEN	4.45	3.73	2.36	0.10
15	BALI- -PK BALI	3.95	1.80	2.01	0.14
16	NTB - PK NTB	7.04	5.06	2.78	-0.10
17	NTT - PK NTT	9.76	5.01	5.52	-0.20
18	KALBAR - PK KALBAR	5.82	4.93	4.04	0.16
19	KALTENG - PK KALTENG	4.99	5.67	2.95	0.05
20	KALSEL -PK KALSEL	3:26	2.37	2.56	0.21
21	KALTIM - PK KALTIM	4.37	3.85	5.02	0.76
22	KALUT - PK KALUT	0.62	0.45	2.15	-0.02
23	SU LUT - PK SULUT	-0.29	2.77	1.66	4.66
24	SULTENG - PK SULTENG	7.57	5.47	4.60	0.04
25	SULSEL - PK SULSEL	-0.13	3.47	3.05	5.04
26	SULTRA - PK SULTRA	-0.26	4.93	3.68	5.97
27	MALUKU - PK MALUKU	-0.37	5.79	5.46	7.22
28	MALUT --PK MALUT	3.02	3.29	2.94	0.04
29	PAPUA - PK PAPUA	3.25	1.86	1.10	0.06

Source: Data Processing

The effect of government expenditure on education statistically affects the education participation but only at the elementary level which has a positive sign. In other words, government spending on education can increase the education participation of the poor. For the poor at the Junior High and Senior levels, the effect is negative. This indicates that government expenditure has more influence on poor people in basic education compared to secondary education.

Based on the model specifications, it can be seen which provinces have a large impact and can even reduce student participation rates from government expenditure

variables for education. Bengkulu Province is a province that has a positive impact on government spending on the education sector. This can be seen from the number of elementary, junior high and senior high student participation rates that remain high. The following table shows the coefficient on government expenditure for the poor on student enrollment.

Table 3. Coefficient Specifications Model for Government Expenditure.

NO	Provincial	Elementary	Junior High	Senior High	RLS
1	ACEH - GOV ED ACEH	-0.06	0.48	0.47	0.00
2	SUMUT - GOV ED SUMUT	-0.36	0.22	1.09	-0.10
3	SUMBAR - GOV ED SUMBAR	-0.22	0.13	0.09	0.08
4	RIAU-- GOV ED RIAU	-1.45 -1.94		-1.86	0.11
5	JAMBI - GOV ED JAMBI	1.45	1.44	1.78	-0.04
6	SUMSEL - GOV ED SUMSEL	-1.01	0.34	1.00	-0.01
7	BENGKULU - GOV ED BENGKULU	1.80	2.65	1.59	-0.01
8	LAMP - GOV ED LAMP	-2.39	0.82	0.13	0.36
9	BABEL - GOV ED BABEL	0.02	0.09	0.38	0.03
10	JABAR - GOV ED JABAR	-0.70 -0.66		-0.08	-0.20
11	_JATENG - GOV_ED_JATENG	-0.91 -1.27 - 0.11			0.25
12	YOGYA - GOV ED YOGYA	-1.93 -1.06		-0.71	0.02
13	JATIM - GOV ED JATIM	-0.75	0.48	-0.99	-0.25
14	BANTEN - GOV ED BANTEN	0.26	0.05	0.04	-0.06
15	BALI - GOV ED BALI	0.07	0.01	0.08	-0.03
16	NTB - GOV ED NTB	-0.11	0.20	0.54	-0.02
17	NTT -GOV ED NTT	to 0:05	0:20	-0.07	-0.01
18	KALBAR - GOV ED KALBAR	-0.71	-1.31	-0.30	-0.28
19	KALTENG - GOV ED KALTENG	0.14	0.49	0.10	0.03
20	KALSEL - GOV ED KALSEL	0.07	0.07	-0.45	0.05
21	KALTIM - GOV ED KALTIM	-0.28	-0.22	-0.14	0.06
22	KALUT - GOV ED KALUT	0.09	0.12	0.07	0.00
23	SULUT - GOV ED SULUT	-0.52	-0.68	-0.11	0.08
24	SULTENG - GOV ED SULTENG	-1.56 -1.36		-0.83	0.07
25	SULSEL-- GOV ED SULSEL	-0.28 0.12		0.12	-0.01
26	SULTRA - GOV ED SULTRA	-0.62 -0.32		-0.62	0.01
27	MALUKU - GOV ED MALUKU	-0.23 -0.23		-0.10	0.00
28	MALUT - GOV ED MALUT	-0.11	0.02	-0.05	0.00
29	PAPUA - GOV ED PAPUA	-0.50	- 2.25	-3.82	0.18

Source: Data Processing

Income inequality significantly affects the elementary and high school levels, while for the junior high level the effect is not statistically significant for education participation of the poor. The increase in income inequality shows the effect on increasing school participation at the elementary and high school levels. This increase in inequality also shows a gap in income from the rich and poor. The increase in the gap can be caused by an increase in the income level of the rich who certainly has an influence in increasing government tax revenue which in turn will also be used to encourage the level of student participation among the poor.

Table 4. Specifications model for Income Inequality Variable.

NO	Provincial	Elementary	Junior High	Senior High	RLS
1	ACEH - GINI ACEH	130.37	30.15	33.17	1.91
2	SUMUT - GINI SUMUT	-0.58	12.64	2.63	0.80
3	SUMBAR - GINI SUMBAR	-0.73 -1.80 -1.15			7.14
4	RIAU-- GINI RIAU	-11.41 -7.41		-6.58	0.15
5	JAMBI - GINI JAMBI	3.04	3.80	48.24	-1.00
6	SUMSEL - GINI SUMSEL	-7.88 -7.64		-10.66	-0.22
7	BENGKULU - GINI BENGKULU	-38.73 -71.14		-27.46	-0.10
8	LAMP - GINI LAMP	4.88	-1.69	-7.96	1:06
9	BABEL - GINI BABEL	-7.20 -8.81 -0.88			1.23
10	JABAR - GINI JABAR	-1.80 -2.09		-3.37	1.13
11	JATENG - GINI JATENG	-6.09	14.56	37.58	2.06
12	YOGYA -GINI YOGYA	to 3:19	2:27	30.28	-0.38
13	JATIM - GINI JATIM	-1.56	4.02	8.12	1.38
14	BANTEN - GINI BANTEN	-0.47	-0.38	0.16	0.36
15	BALI - GINI BALI	1.72	2.57	4.31	0.19
16	NTB - GINI NTB	-17.78	-16.68	2.41	0.57
17	NTT - GINI NTT	-13.56	-12.71	-4.61	2.29
18	KALBAR - GINI KALBAR	1.24	0.23	2.27	-0.25
19	KALTENG - GINI KALTENG	1.91	1.52	0.87	-0.02
20	KALSEL - GINI KALSEL	0.85	-1.74	8.18	-1.26
21	KALTIM - GINI KALTIM	-1.68 -3.39		-1.96	0.24
22	KALUT - GINI KALUT	-5.47	-2.26	10.96	0.04
23	SULUT - GINI SULUT	1.89	0.28	0.62	0.08
24	SULTENG - GINI SULTENG	-19.14-12.80-0.93			-10.63
25	SULSEL - GINI SULSEL	6.33	2.84	0.12	0.23
26	SULTRA - GINI SULTRA	-2.08	-9.90	1.85	4:47
27	MALUKU-GINI MALUKU	11.98	5:49	-8.63	-1.45
28	MALUT - GINI MALUT	-1.89	3.82	-0.06	-0.83
29	PAPUA -GINI PAPUA	2.60	to 3:17	3:01	0:24

Source: Data Processing

The age factor at the elementary level has no influence on the participation of the poor population in education. This is because the NER value is already quite high as a result of compulsory education and free school fees at the elementary and junior high levels. Elementary school as compulsory education has also been realized by all social levels in Indonesia. This is reflected by the NER which reaches more than 100%, where the awareness to enter elementary school level is very large. This high NER figure illustrates that the level of awareness of entering school at the elementary school age (7-12 years), and outside of elementary school age is very high.

At the junior high and high school levels the age factor has a significant influence on educational participation among the poor population. For junior high school level, the increased number of ages for entering junior high school education will increase the junior high enrollment rates, while for senior high school level the increase number of senior high school age will reduce the number of high school education participation among the poor population. This illustrates that at the high school level the participation rate of the poor is still very low, so that even though the age of senior high is also escalate, it is not necessarily used for entering high school education. It can be seen that there is a substitution to enter high school level on other expenses made by the poor, hence the cost of high school education is still considered high for the poor.

5 Conclusion

Within the studies results and discussion it can be concluded that: (1) Income per capita is an important variable in increasing NER in Indonesia; (2) Income per capita coefficient value which is very elastic can also provide an illustration of the effectiveness to increase income per capita, thus immediately able to increase NER at every level of education in Indonesia; (3) Government expenditure on education also can increase NER for elementary and high school, but at junior high school level it has the effect of reducing NER; (4) Age factor has an influence on educational participation in junior and senior high school education, for elementary school level it has no effect.

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