How Well Has Education Helped Families Escape Poverty?

Edita Abella Tan with Charles Siriban

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Following A.Sen, we see a person's wellbeing to be the product of all his functionings that his capabilities enable him to undertake. His capabilities consist of his various abilities (human and physical capital) and the opportunities that exist in his community for their employment and benefits. His human capabilities are composed of his education, health, non-cognitive abilities like honesty and industry. The opportunities society provides him consist of the markets for goods, communications and transportation, education and health services, capital and credit that the community has developed, and other goods and services that the government and other institutions provide. A person responds to these opportunities by his human capabilities or human capital. The community's culture and political system set the boundaries of the freedoms for the exercise of his capabilities. There may be restrictions on women's labor force participation and social activities, and there may be social demands that impose financial burden on families, e.g. dowry, wedding celebration, town fiesta. There may also be forms of informal social insurance that help families survive serious losses from illness, death and natural calamities. There is as well the political and social life to which one belongs and participates in. One's human and physical capital and society's cultural norms set the constraints on a person's access to extant opportunities. But the opportunities for enhancing human capabilities and the opportunities for their application in employment, in acquiring information and further schooling, in availing of social services such as education and health facilities, basic utilities like water system and electricity, transport infrastructure, new technologies and fair legal system are the fruits of good governance and egalitarian economic growth. Nations generally begin their life with meager capabilities but through their leaders' development efforts, they raise their people's capabilities to attain a high standard of living. Many countries have succeeded to reach advanced economic status but majority of the world's nations are still struggling to develop their economies. The Philippines is one of the latter and many of its people are still poor. Its poor are still deprived of both human and societal opportunities.

Economic development raises the productivity of human and physical assets, increases the demand for them and develops efficient markets. Sustained growth under a just political system reduces poverty. Economic growth, as Kuznets argued decades ago, may initially raise inequality since technological or market breakthroughs take place in specific industries or enterprises. Through time, inequality declines when more people are able to increase their income and afford to develop their capabilities. Egalitarian fiscal and education policies also reverse tendencies toward inequality. Poverty reduction, in contrast to inequality in income distribution, generally follows sustained economic growth, e.g. the East Asian tiger economies and the Northern European countries. The newly industrializing countries of Asia such as Malaysia, Thailand, Indonesia and China have also drastically reduced their poverty rate and Vietnam is fast reducing

its poor population though income inequality in these economies has remained relatively high. The Philippines has very much lagged behind in reducing its poverty rate, now 25% of the population, and its Gini ratio which has remained virtually unchanged at just below 45%. Its low and volatile growth in half of the last Century may be blamed for the persistence of poverty. The economy failed to industrialize and generate more and more productive jobs to its fast growing population.

 A number of studies explain fairly well the country's poor economic performance, especially in the context of the exemplary success of its immediate neighbors. The studies provide consistent and complementary reasons for the country's low and volatile growth rate. The recent ADB-sponsored publication, entitled *Diagnostics of the Philippine Economy Toward inclusive Growth* edited by Canlas, Khan and Zuang (2009) is one that gives a fairly comprehensive if not complete analysis of its poor performance. The World Bank's volume, *The East Asian Miracle: Economic Growth and Public Policy*, points to the common elements or strategies that explain the exemplary success of the tiger economies but which the Philippines failed to adopt and implement. At the same time, the country suffered serious political instability under the Marcos authoritarian regime that ended in a deep recession in 1985 and 1986 when GNP fell by 15%. Currently, the country has the lowest income per capita among the original ASEAN while its Northeast neighbors have earlier achieved OECD status. Poverty rate declined but slowly reaching a still high level of 25%. This rate is based on a rather low poverty line that was not set to meet basic needs and tends to underestimate the extent and depth of poverty. It does not capture the large slum population, the high child malnutrition and the high infant and maternal mortality.

 Social and income mobility is a facet of poverty. Low mobility may be expected in an economy with high and persistent poverty rate for the factors that determine poverty are the same factors that impede the poor's escape from it. A rapidly falling poverty rate implies an increasing upward mobility by large segments of the population. It results from a build-up of both human and community capabilities. At the same time, the depth of poverty sets barriers against escaping it. A person with low human and physical capital has limited access to good paying jobs and his low income disallows him from feeding and educating his children well and from taking advantage of existing community services. There may be other barriers to mobility than human capital such as discrimination against particular social groups. For instance, the
African American population in the United States and the low-caste Indians still suffer discrimination that prevents them from escaping poverty. The Philippines appears not to suffer from any serious social barriers. The problem has to do with poor performance of the economy.

 This chapter looks into the development of human capabilities through education. We inquire into the rate of education mobility on average and across income groups over the past two decades. It follows the simple theory of demand for and supply of education. There is a fairly

large (extensive) supply of education of all three levels – elementary, secondary and college though of generally low quality. Families are assumed to desire to raise the wellbeing of their children through education and make their decision based on the education choices they face, and their expected returns and costs. We expect family income to be the principal constraint on what category of education to invest, which level of what quality, among others. Clearly, the poor have limited choice for they can afford only low-cost education while the very rich can afford the best education that is available here and in other countries. It is not uncommon for rich families to have their children educated in America and Western Europe. As such, the inequality in income leads to inequality of education.

Nevertheless we find some education mobility among the poor but the mobility differs between levels - elementary to secondary and secondary to college given the cost differences between the levels. There is substantial mobility from elementary to high school but very limited between high school and college. This is explained by the relative cost to the families of elementary and high school education vis-a-vis college education. The lower income groups can afford to send their children to public elementary and high schools which are provided for free but not to college. The recently implemented Conditional Cash Transfer program is seen to increase enrollment and retention rates of the poor in the elementary level.

It may be reasonably assumed that most families appreciate the benefits from education. Education is the principal component of a person's human capability. It increases his information on available opportunities, enhances the efficiency of his decision-making, enriches his social life and qualifies him for particular occupations. A given level of education qualifies one to pursue the next higher level. It hastens on-the-job training and facilitates skill acquisition for new jobs. Basic education provided in elementary and high school is distinguished from higher and advanced education given in universities. High school education is generally required for blue collar jobs in the industrial sector while higher education is required for professional, academic and administrative jobs. As a country develops from a mainly agricultural economy, demand for more varied and higher levels of schooling increases. High school education is now a common requirement for most industrial jobs. There is increasing demand for highly skilled labor with advanced education in science, technology and finance to meet the job requirements of knowledge-based economies. Globalization has facilitated the movement of labor and production processes across countries, particularly the migration of highly skilled workers across the world. The labor force in the Philippines has responded strongly to these changes as is evidenced by the large migration of labor of varied skills to practically all countries of the world.

There is as well a fast growing BPO, and that the migrants' remittances and BPO earnings now contribute more than the net exports of goods and services. The country's industrialization, albeit still slow, the BPO and labor migration are expected to continue to increase the demand for skilled labor. Earnings from both migration and BPO very much depend on the level and

quality of education. The great majority of overseas workers have high school and higher education while BPO employers usually require college education. Among the country's wage earners, returns to college education are higher than high school and elementary education. Ducanes and Tan (2014) show that completing high school substantially increases family income, and that getting college education more than doubles the increase. Interaction terms between education and region indicators are included to account for the effect of underdevelopment on returns to education. Tan, Canales and Cruz (2013) estimate the returns to education among wage earners and find the returns to college education at about 6%. Martinez' (2016) chapter shows a similar relative impact of college education vis-a-vis high school education on income mobility. How many poor children are able to go to college and benefit from its relatively high return? We try to find out at what income level education mobility is highest. Assuming majority of families have a strong motivation to send their children to higher education level, at what income level are they able to succeed in doing so. The chapter describes the education system for the categories of education that are available to the masses especially the poor. Which categories can the poor invest in? Data on direct cost are not available and so we infer the relative costs of broad categories of education, such as level and quality of education and whether the child goes to public or private school.

It is noted that education is a stock variable. Not much change in the education of parents is expected. We focus on the education of the youth. How well have they responded to existing supply of various categories of education, especially those that are heavily subsidized? The chapter considers different aspects of education mobility: (a) trend in education attainment of the poor and non-poor, (b) enrollment rate of children that are part of either of the following age categories – 6-12, 13-17 and 18-24 year olds which roughly correspond to elementary, high school and tertiary, respectively, for the same years, and (c) change over time in the decile distribution of completed education and enrollment of the youth aged 15-24. . The enrollment rate of children in each age group when compared with their parents' education would indicate education mobility within the family. The family and labor force surveys provide the empirical bases of education mobility. While we find some mobility over time, the inequality of education has remained serious. The observed mobility is largely within the lower levels, i.e. incomplete to complete elementary education to up to high school. There was limited upward movement to college among the poor. Returns to college is much higher than returns to high school relative to elementary education so that the gains in high school education bring less improvement in income than if the education mobility reaches college. Moreover, much fewer poor youth succeed to enroll in high quality programs for access to high quality college is very much restricted to those who can directly afford them in private institutions and those who have gone to high quality elementary and high school.

Despite the observed mobility, a significant proportion of poor children are not able to complete either the elementary or high school level. Poverty is seen to be the major reason for young

children dropping out of these levels. We show that the depth of poverty among the poor is such that more than 75% of their income goes to basic needs: 62% to food, 9.6% to shelter and household operation, 3.0% to transportation and 2% to health and clothing. Less than 1.0% goes to education. The poor's expenditure on education covers only out-of-pocket cost for school supplies, transportation and school activities. Proximity to a school is a major determinant of enrollment.

The cost of education generally consists of school fees and the cost of learning materials, extra clothing and living expenses, school activities and transportation. School fees vary across levels and whether it is provided by the government or by the private sector. Public education at all levels is highly subsidized. The public elementary and secondary levels are provided extensively and for free. They enroll the great majority of the youth, 90% in the elementary and 75% in the secondary level. Students who could not be accommodated in existing public high schools may apply for a voucher for enrollment in private high schools. Private schools of all levels have been allowed to operate quite freely and they substantially increase the supply of education. They dominate the provision of higher education and enroll 75% of its students. Their fees vary across level, field of specialization and quality. Majority of private schools are operated as private enterprises and offer fields that are of popular demand and are affordable to the masses.

Elementary education has the lowest cost since it is provided for free by the state and is present in virtually all community units called "barangay". A school's proximity to the family home frees the family of extra living expenses and transportation cost. As we go up the education ladder, the schools offering the program become less dispersed and get concentrated in large town and central cities. High schools are generally located in a few large villages and towns, colleges and universities in large towns and cities. The central cities of each region would have a number of high schools and colleges and universities. Thus, urban youth face lower non-tuition cost for high school and higher education than rural youth. Higher education costs so much more than the two lower levels for it is provided largely by the private sector and are located in large towns and cities. At the same time, transportation infrastructure is not equally distributed across regions and those with poor infrastructure face higher transport and extra living expenses.

Two approaches have been applied in studies on economic mobility, economic in terms of family income or family expenditures: poverty dynamics or transitions over time, and intergenerational transfer of income between parents and children. The poverty dynamics tries to explain dimensions and determinants of families' transition from poverty to non-poverty over time, or the reverse. The intergenerational transfer of income is seen in the correlation between parents' and child's incomes. Longtitudinal surveys and household surveys that contain data on parents' and respondents' education have been used to explain intergenerational economic transfers. Parents are seen to transfer not only their financial resources directly through

bequests or through their human capital investments but also IQ and values (Bowles and Gintis 1975, Bowles, Gintis and Groves, 2005). In the United States, which have been found to have relatively high and persistent poverty rates, evidence also suggests relatively high intergenerational education and income transfers. The elasticity of child's income with respect to parents' income averages at .4. It could be as high as .6 when longer income cycles of parents and of children are applied. In this case, a high elasticity is taken to reflect low economic mobility given that the next generation's income is largely inherited (Mazumbar 2007). More recent studies concern the importance of non-cognitive traits in career success; they could be positive such as discipline, honesty, pulchritude, loyalty, sociability and negative such as having external attitude or the belief that fate or luck determines outcomes, not hard work. Values tend to be inherited and so contribute to income transfer (Cunha and Heckman 2007, Groves 2005)

Studies on intragenerational transfers look into the economic mobility of families and explain what determines persistence in one state, particularly being chronic poor, or movement upward or downward in the income distribution ladder. Panel data are commonly used which allow tracing a sample of families' income and other economic circumstance through the periods covered. There are as well annual family surveys that include questions on parental education and income and the correspondent's education and income. Narayan and Petesch's (2007) piece in the volume entitled *Escape from Poverty* reviews the empirical works contained in the same publication and similar recent studies. For the semi-industrialized economies which have developed a relatively large non-agricultural sector, education is found to be a major determinant of income and poverty rate and its persistence. In agricultural economies, ownership of physical assets such as land and livestock explain much of income and poverty incidence. But in semi-industrialized economies, the authors find education to "invariably" determine poverty transitions. They point to the importance of social structures in determining the opportunity structure that encourages or exclude particular groups or the poor from breaking out of poverty. However,they warn of making conclusion about poverty transitions from relatively short spans of panel data.

In the volume, Dercon and Shapiro (2007) review results from 50 panel studies in developing economies. The transition rate varies widely across countries which may be explained by variation in span of the panels. Short panels possibly overstate the extent of movement out of poverty. On the other hand, Nelson and Ericson in the same volume (2007) compare poverty rates and transitions in advanced economies. The US and Portugal have much higher poverty rates and chronic poverty rates than the other OECD members. They argue that what cause high poverty incidence in an advanced economy also cause its persistence. Relatedly, some studies show that much of the reasons for the relatively high poverty rate among African Americans have remained. The relatively high rate in the US may be attributed to the high poverty rate of its Black population. (Hertz 2007). As such, it is important to consider group differences that have specific poverty roots when analyzing determinants of poverty and poverty dynamics.

Nelson and Erikson (2007) also show that estimated poverty transition depends on the poverty line used by a country. Poverty transition tends to increase when a relatively high poverty income is applied. A relatively high poverty line obviously increases poverty rate but since those defined poor are not so poor, they can more easily escape poverty. Chronic poverty tends to fall. This has an important implication on the Philippine case where the poverty line is set very low. At low poverty line, the defined poor are simply not able to afford to invest in higher levels of education for their children. We show this by estimating expenditure on education function.

Baulch's (2011) volume entitled *Why Poverty Persists* contains a series of articles that look into reasons for poverty transition in some countries in Asia and Africa. Quisumbing's (2011) chapter for instance, shows that illness or death in the family, loss of employment, payment of dowry and other untoward events took a serious toll on family income. On the other hand, the studies in India focus on the caste system that still excludes lower caste families from accessing government services and employment opportunities (see for instance Epstein, 2007). Slum dwellers in Rio de Janeiro face employment discrimination due to their living in slums (Perlman, 2007). In the Philippines, living conditions in the slum areas definitely wreak havoc on the health, learning rate and confidence of school children and permanently damage their future human capabilities.

Education policy determines the structure of education and how it is financed. In both advanced and emerging economies, basic education is provided for all and for free. Access of the poor to various categories of education depends on the structure that has developed. Policy on higher education differs more widely, with some countries allowing and supporting only a small number of state universities, e.g. Singapore, and other countries allowing a large sector with private institutions, e.g. Japan, South Korea, the US and the Philippines. Allowing a large private educational sector tends to result in inequality of quality. *The Economist*'s feature article entitled "The New American Aristocracy" (Jan.24, 2015) shows the disproportionate share of America's rich students in the country's high quality university education. They earn extraordinary high returns to their privileged education. They pass on to their children the advantage of good education, thus the intergenerational transfer of high quality, high returns education. The article shows that rich kids perform better in admission tests in the Ivy Leagues, with some using their parents' alumni connection to the school. Also, the much higher inflation in education cost in the US has further concentrated access to high quality education. Deaton (2005) writes that up to the 1970s, intergeneration transfer of wealth was directly made through bequeath of physical assets. In the contemporary knowledge-based economy, the transfer has been largely through education. Details on the polarization of the US labor market are discussed by Autor, Katz and Kearney (2006).

Ranasinghe (2015) reports an opposite result in Australia following a major financial reform of its higher education. It initiated a generous income-contingent loan for college education in 1988

that allowed more low income students to attain college education. In Australia, public primary and secondary education is fully subsidized but the government partially subsidizes high school education in private schools which are considered to be of higher quality. Access to higher education remained unequal since rich youths tend to enroll in the better quality private high school and perform better in the university admission tests. Nevertheless, the intergenerational education correlation fell from .31 to .24 among the youngest cohort who benefited from the higher education reform. Daouli, Demoussis and Giannakopoulos (2010) find a similar reduction in the rate of intergenerational education transfer in Greece following a government program that substantially increased subsidy to higher education.

We observe that for higher education to be equitably distributed, basic education has to also be equitably accessible. While the United States has instituted compulsory free public elementary and high school education, its quality varies across counties which fund their schools. Rich children enroll in high quality basic education as they reside in rich counties that support high quality school. The poor youths who enroll in poor elementary and high schools are disadvantaged in competing with their rich counterparts in good quality colleges and universities, including those subsidized by the states. The Philippines has a similar structure of education where there are a very small number of high quality colleges and universities which are effectively accessible to rich students who have superior college-preparatory education.

The studies do show that intergenerational and intrageneration transfers of income are sensitive to the span of time over which the transition is analyzed, how high or low is the poverty line used to meet a chosen standard, and education policies. Hulme, Moore and Shepher of the Chronic Poverty Reseach Centre (2001) suggest that greater attention be given to the causes of poverty rate and its dynamics than to transition.

The chapter is organized as follows: Section 2 describes the education system to show what levels and quality are available to the average youth in urban and rural areas of selected regions. This is to indicate the affordability to the poor of education of particular level and quality. The section provides data on the quality of education that is available in each region. Section 3 presents information on education mobility in the aggregate and across income groups. Section 4 discusses the poverty situation and how it impinges on the education of the youth. We show how little the poor are able to invest in their children's education since more than 60% of their income goes to food. Section 5 discusses the regression results of the enrollment and expenditure functions. The last section has the summary and policy recommendations.

2. The Philippine Education System

We describe here the education that is available to the average Filipino youth or its supply. One may characterize the country's educational system as low quality and extensive (Table A1). There are 49,300 elementary schools 13,243 secondary schools and 1,935 colleges and universities. The

38,678 public elementary schools enroll 90% of students and are present in most barangays; the public secondary schools number 13,243 that enroll 75% of students and are located in all cities, towns and large villages. The two levels grew by 7.2% and 164.8% from 2001 to 2012, respectively. The private elementary and secondary schools also grew substantially, respectively, 84.8% and 66.9%. Both elementary and secondary schools increased in all regions including the poor regions of Bicol, Eastern Visayas and ARMM. The private colleges and universities dominate the higher education level and enroll 75% of college students. They are present in all large towns and cities of the various regions. The Congress has created 112 state universities and colleges (SUC) that include the University of the Philippines, the most respected university in the country. More recently, local governments have joined the Congress in increasing public colleges and universities which now number 101. In addition are about 2,000 technical-vocational schools. The schools of all levels, public and private could grow rapidly since they could be established without them having to meet high standard. Education policy has never given priority to quality. The public schools have been established mainly to meet the demand of the growing population of school-age children and youth. The private sector also responded to the growing population and its demand for education. The national budget for the public elementary and secondary system has been regularly increased but mainly to provide new classrooms, teachers and textbooks for each year's incoming students. Note that the population growth rate has been high though it has declined from about 3% in the 60s to the current rate of 1.7%. Enrollment in the elementary followed the growth of the population. The government budget per student at constant prices in the public schools remained virtually constant until in the last five years. (Table A2). Except for the religious institutions, the private schools are operated as self-financing business enterprises that derive their income from student fees. They cater to effective demand which has consisted mainly of what families in different income classes can afford, mainly low-cost and low-quality.

The Congress had legislated at least one state university or college (SUC) in each region. The creation of a SUC was not based on any economic or social criterion but more for the political interest of sponsoring Congressmen. The national budget could not provide high quality, high cost university programs for so many SUCs and so majority of them provide programs of similar quality and orientation as those offered by the private sector. Manasan and Parel (2015) show that most SUCs offer programs that are already in large supply by the private sector, e.g. teacher training. A handful of high quality private universities and a small number of higher quality colleges and high schools, mostly religious in origin, have been founded to meet the demand of the country's affluent families, e.g. Ateneo de Manila University and De La Salle University, Poveda. Their fees are very much higher than the average fees of the private sector. At the same time, the University of the Philippines, the sole high quality state university, has been sustained as a banner university and given especially favorable budget. It is the oldest state university founded by the American Colonial Government to be the conceptual institution of higher learning and research. Apparently, there exist among politicians pride in its prestige and

appreciation of its historic origin so that the university has been regularly granted much higher budget than the rest of SUCs.

The quality of education in the country is reflected in the performance of elementary and high school students in national achievement tests and of graduates in professional licensure examinations. Table A3 shows that the average scores of Grade Six students in the National Elementary Achievement Test or NEAT were 68.4 in Mathematics, 65.1 in English and 60.6 in Science. Fourth Year high school students did much poorer than the Grade Six students as they scored only 38.0, 52.0 and 42.1, in the same set of subjects, respectively. Possibly, secondary education requires more and higher cost learning inputs that include laboratories than elementary education which the majority of high schools were unable to afford. There were significant differences in the achievement at the two groups across regions with the ARMM doing so much worse than the rest of the rest. Metro Manila where the most respected universities and colleges are located did better than average only in English but worse in Mathematics and Science at both levels. Note, however, that students from Eastern Visayas, a poor region, performed best in the elementary tests.

The professional licensure examination has been used to gauge the quality of college education (Table 1). Except for the examination in Medicine, performance in the various fields has been quite low, at around 30%. The passing rates in each field vary widely across schools from which the takers graduated. Three popular fields which have attracted the largest number of students - teacher training, accountancy and nursing have low passing rates: 29.9% for elementary teaching, 39.7% for secondary level, 36.1% for accountancy and 37.1% for nursing. Students flock to these fields which are perceived to offer higher probability of employment and available at low fees in most places. The public school system is the largest single employer of college graduates and pays higher salaries than private schools. The foreign market for nurses has also increased demand for a nursing degree. Accounting jobs have been relatively large and stable. These professional fields have attracted students from middle income classes which can afford the relatively low tuition rates charged by the institutions.

Numerous colleges and universities offer these fields. In the 2014, examinees in secondary teacher training came from 1,745 schools, those in accounting from 555 schools and those in nursing from 531 schools. In the six regions investigated, graduates from just a handful of the respected universities had passing rates of more than 80%: In accountancy only 2, in teacher training, 7 and in nursing, 30. The high performing institutions are located mainly in the capital cities of Metro Manila and Cebu. Majority of the schools have passing rates of less than 40% and a fairly large number scored below 10%. A significant number of schools have very small number of test takers, with some only have only one taker, possibly because they have small enrollment or that their graduates have given up on taking the test for fear of failing it. It may be expected that the schools that charge low fees also offer poor quality program. These schools

are the ones that are physically close to the masses, especially the poor. When CHED permitted the use of fee data, Tan (2003) found a significant positive correlation between school fees and passing rate in the licensure examination. Perhaps, it is in these low-quality low-fee schools that the low-income youth could enroll.

 A rather small number of universities are of high quality. The most respected institutions in the country are the University of the Philippines, Ateneo de Manila University, De La Salle University and the University of Santo Tomas. They are rated highly in the country though their ranking among the top 500 universities in the world was below the 360th. The Commission on Higher Education has granted them most of the award for excellence for some of their academic programs. (Table 2) Of the 24 Center of Excellence (COE) award given to science and mathematics programs, The University of the Philippines main campus in Diliman and in Los Banos garnered 15, De La Salle University, 4, Ateneo 2 and UST 1 and Central Luzon State University got 2. It is noted that no COE has been granted to any engineering program and only one for Medicine. The largest number of COEs granted for a program went to teacher training, 28 in all. Some colleges and universities outside Metro Manila were given the award. There were 25 COEs for other fields such as social sciences, literature, and music. Note that there were 1,751 teacher training schools in the licensure examinations list but only 28 were recognized as excellent in quality. Even fewer COEs were found in the nursing field, 5 out of the 531. There were 3 in agriculture, 3 in Veterinary Medicine and 3 in information technology, none for accountancy. The only COE award for Medicine was granted to the University of the Philippines' Manila campus which specializes in health sciences.

The cost structure of higher education reflects the effective demand of the population. Tullao et al (2014) made some estimate of the cost structure of state universities and private higher educational institutions. The average tuition fee per unit in the SUCs is less than P200 (CHED). The University of the Philippines charges the highest fee of about P40,000 per year. But it has adopted a socialized tuition scheme which charges graduated tuition fee depending on family income and wealth. However, the full tuition of P40,000 charged to the richest students amounts to just a fraction of the university's total cost, about 30%, so the rich also get subsidized. Tullao et al (2014) made a rough estimate of operating cost in private institutions based on interviews with school representatives and the accounting reports of registered corporate schools. Metro Manila schools bear higher cost than provincial schools. Cost in Metro Manila ranges from P1,277 to P2,398 per credit unit. In the poor region of Bicol, the cost per unit ranges from P551 to P959. Assuming a 20 credit load per semester, the cost per year would amount to P51,000 to P119,900 in Metro Manila and P22,040 to P38,360 in Bicol. Annual school fees in the prestigious Ateneo de Manila and De La Salle University are casually observed to be at least P200,000 per year. The De La Salle Hotel and Management program costs more than P300,000. The budget per capita in public elementary and high school approximated P15,000 per year but

the fee in Ateneo de Manila for elementary grades is about P150,000. The figures give a rough picture of the wide variation in school fees which likely reflect variation in quality.

 Access of the poor to the higher quality colleges and universities, whether public or private, is very limited. Clearly, they cannot afford the high fees in the high quality institutions, possibly even the lowest cost college fees. Admission to the high quality SUCs is highly competitive and very few poor get admitted there. They tend to attract more applicants than what their facilities can accommodate. They administer admission tests and other criteria to select the most promising applicants. Admission tends to be very regressive as evidenced by the distribution of students in the University of the Philippine main campus (Diliman). UP admits students based on their performance in admission tests and average high school grades. Since the 1990s, it has administered a socialized tuition scheme whereby tuition fees plus book and living allowance are set depending on family income. The university sets the full tuition fee at a fraction of total current expenditure per student so even the rich students who pay full fees get subsidized. Poor students represent only 5.5% of the total and the rich 55%. (Table 3) Rich students obtain the larger share of the subsidy to UP studies since the full tuition fees which they pay cover less than half of total cost. The government of Manila operates the Pamantasan ng Lungsod ng Maynila (the University of the City of Manila). It has exhibited high performance in the professional examinations. The university limits admission to Manila residents who perform well in its admission tests. The Philippine Normal University, a high quality teacher training SUC, also has to administer an admission test. The poor students who go to poor quality elementary and high school and who suffer other learning disadvantages at home such as poor nutrition and lack learning space and materials have very low chance of performing well in the admission tests administered by the higher quality SUCs and LGUCs.

 3. Education Mobility

 There is complementary evidence showing increased education attainment of the population and education mobility among the lower income groups. This could be attributed to the wide and growing presence of elementary and secondary schools, public as well as private. The net enrollment rate (enrollment rate of youth of schooling ages in DepEd defined school ages) in elementary and secondary levels has not changed much from 2000-2001 to 2012 but the retention rate at both levels also rose. (Table A4) Gross enrollment rate exceeded net enrolment rate which implies that some children who might have dropped out earlier returned to school. There is a significant increase in the education attainment and enrollment rate among all income groups including the poor. Data from the 2010 Population Census show that the proportion of the population with elementary education declined with the age but the proportion of the population with high school education was higher for the younger age groups than for the older population.

From the APIS, we find fewer poor youth (age 15-24) stopped schooling at the elementary level in 1998 than in 2013 as substantially more continued on to high school. (Table 4)   In 1998, of those in the first decile who stopped schooling, 12.1% had incomplete high school, 11.5% completed it but 18.3% were still enrolled at this level, and that the total attaining high school was 41.9%. In 2013, the poor's high school attainment increased quite substantially: 14.8% with incomplete high school, but 18.2% had graduated and 20.2% were still enrolled, totaling 53.2% with high school education. As such, the proportion of those with high school educationfrom increased by 11.3 percentage points increase (or around 27% rate of increase) from 1998 to 2013. On the other hand, for the second poorest decile, the proportion of 15-24 year olds with high school education has changed from 51.3% in 1998 and 58.4% in 2013, which is equivalent to a rate of increase of 14%. Those still enrolled in high school contributed much to the observed increase in high school education among the poor. Some of them possibly continued on to college.

College attainment and college mobility were much lower than those in high school. Of the youth in the first decile in 1998, only 9.1 % of the youth reached college, with 1.9% had incomplete college, 1.0 had completed it and 6.2% were still enrolled at the time of the survey In 2013, the corresponding figures were 2.1%, 1.0% and 3.2%, respectively, for a total of 6.3%, which is lower than the corresponding figure in 1998.. Those in the second decile had significantly higher college attainment 11.5% in 2013 than those in first decile. Further, they improved their college attainment from only 7.3% of 15 to 24 year olds reaching college in 1998 to around 11.5% in 2013.

Overall, while there was greater mobility in high school than in college, a large proportion of 15 to 24 year olds in the lowest decile were not able to reach high school in 2013. Furthermore, there was much higher inequality in college education than in high school education. In 1998, the distribution of the youth with high school attainment was not very unequal across from the second to the sixth deciles, ranging from 51.3% to 56.6%. In 2013, the range was 53.2% to 52.0% across the first to the sixth decile (with the highest proportion reported for the fourth decile at 59.2%). Contrast the high school distribution to that of college education where the share in college attainment monotonically increased from first to the top decile in both 1998 and 2013. In 1998, 9.1% of the 15-24 year olds in the first decile have at least reached college, with the share monotonically increasing reaching 59.6% in the top decile. In 2013, the distribution worsened as the share of the first decile went down to 6.3% from 1998, and monotonically increased to 68.2% for the top decile. The inequality in college education has worsened. The mobility in high school education led to a larger population of youth qualifying for entry to college. There is no substantial program for providing poor youth with college education unlike that for the elementary and secondary levels.

Other data show education mobility among the poor. Ducanes and Tan's table (see Table 5a) shows that in 2009, 58% of poor families' adults had educational attainment of elementary and below, while 17.0% had incomplete high school education; the corresponding figures for the non-poor were 26.3% and 11.6%, respectively. Improvement in the poor's education are also seen in the rise in the educational attainment of the younger family heads over that of the older cohorts. Only 37% of the youngest heads aged 18-24 had elementary or less education and 25.6% with incomplete high school. The percentage with this low education increases as the age of the head rises reaching 91.2% among the oldest group of 65 years and older having educational attainment of elementary and below. The percentage with incomplete high school falls as age of head increases from 25.6% for the youngest group to just 5.5% for the oldest (see Table 5b).

Education mobility is also reflected in the panel data which gives the enrollment rate of children by school age that corresponds to education level – 6-12 for elementary, 13-17 for high school and 18-24 for college for the year 2004 and 2008. In 2008, at the elementary level, the enrollment rate for the first decile was 88.4% and it monotonically increased reaching 98.8% for the top decile. During the same year, the enrollment rate of those aged 13-17 years old corresponding to high school dropped was 62% for the first decile, 68.5% for the second decile and reached 92.8% for the richest decile (see Table 6). This is an encouraging enrollment rate for the poorest two deciles since more poor children have reached high school than their parents, about 65% vs 17%. However, a much smaller percentage of poor children enrolled in college. There is insignificant difference in the percentage of college graduates among children and their poor parents, about 1.2%. The tables also show that those youth in higher income brackets attained a higher grade than those in lower brackets.

The education mobility within the lower levels (i.e., elementary to high school) may be attributed to the fairly extensive subsidy for high school education given through the public high school and through the voucher system where students who could not be accommodated in existing public high schools are given a voucher for enrollment in private schools. Parents need only pay for the out-of-pocket cost for transportation, school supplies and school related expenses and extra living expenses. However, there is no large and effective subsidy program for college. The Commission on Higher Education is given a limited budget for scholarship. The SUCs and (LGUCs) admit 25% of college students which include rich ones. The poor quality SUCs and LGUCs offer superfluous programs that are already offered by the large majority of private institutions.

Very likely, most of the poor youth who succeed to pursue college enroll in low quality colleges and universities. On average, college education has high returns. Finishing college substantially increases income and improves condition of employment (comfortable, stable with regular work hours, with social security). The quality of college education appears to determine

the quality of job a graduate is able to find. Table 7 shows that only 52% of college graduates are employed in administrative-executive (officials/supervisors/managers) and professional occupations in 2009. The rest are in so called pink occupations such as sales, clerical and other service jobs. Among the overseas workers, there are more college educated workers with professional jobs. BPO jobs in the country are considered to be low skilled and low paying. About 80% of the employed are in call centers which do not require a good quality college education.

4. Poverty and Education

The poverty rate as officially estimated has remained high at 21% of families and 25% of the population. The poverty line used is unreasonably low and likely underestimates the level and intensity of poverty in the country. The poverty line was set not to meet acceptable standard for basic needs in food, shelter, transportation and for other essential functioning in a relatively modern society. In 2009, total expenditure by the poorest families was P 43,402 or around P 603 per capita per month for average size of 6 (see Table 8b). A little more than 75% of their expenditure went to basic needs: 61.8% to food, 9.6% to shelter and housing operations particularly utilities, 3.0% to transportation, and 1.6% to clothing and medical care. Less than 1.0% went to education (see Table 8a). In 2009, only P307 was spent on education (see Table 8b). This would hardly cover out-of-pocket cost for transporation, school supplies, extra clothing and food and miscellaneous for school activities. The expenditure for education would not be enough for sending a child to a high school in a far off town or village that would require extra transportation and food. There is no way the poor can afford to pay for tuition for college in private colleges and universities that would entail extra out-of-pocket cost and tuition fees. Note that the lowest cost in college in Bicol was estimated by Tullao et al (2014) at P51, 000 per year. The poverty line used does not allow the defined poor to meet even the subsistence food budget. Food expenditure of the lowest three deciles is less than the cost of the NSO food subsistence used in deriving the poverty line[1].

Direct subsidy to the poor for their children's education through the public school system has proved effective. The Conditional Cash Transfer program that benefited substantial number of families since 2010 is shown to raise the enrollment rate of the poor. The beneficiary families can spend the cash grant on any expenditure and it is expected to improve their food and other consumption and benefit the children's abilities in a more general way. It appears that other

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[1] The poverty line is set to equal the "subsistence food consumption" derived from cost of a very modest basket of food that meets the recommended nutritional requirement for an average family of 6 members. An allowance for non-food needs equal to 1/3 the subsistence food cost is added to it to get the poverty line. There are essential non-food needs that likely cost as much, if not more than the subsistence food cost. When the US set its poverty line in 1965, the food subsistence budget was allotted 1/3 and non-food needs, 2/3 of the poverty line. The poverty line has been set equal to the subsistence food cost multiplied by 3. The poverty line was set to meet minimum standard of consumption for food and other basic needs. The Philippine poverty line was not intended to meet a desired standard of consumption for all basic needs. It simply used the subsistence food cost as a numerical basis of poverty line. In the Philippines, the poverty line was not set to meet a desired standard of each basic need. The poor as defined by the poverty line do not meet the subsistence food threshold. It is only at the fourth decile that the subsistence food threshold is met.

direct transfers to the poor are required to effectively raise their capabilities from poverty state. Decent housing and nutrition subsidy would be required to raise the poor children's capacity to get the full benefit of available schooling. As we see above, the poor do not save and have no prospects of investing in their shelter and improve their physical assets. At the same time, the quality of basic education that is available to the poor needs to be raised so that they can compete for admission and scholarship in good quality education. Moreover, raising the quality of basic education may be expected to encourage the youth to stay in school and study harder. According to the NSO survey, one of the main reasons for children dropping out of school is lack of interest which likely reflect lack of energy due to poor nutritional intake and poor self image due to lack of money for social activities. (Albert et al, 2012)

The extensive presence of elementary and secondary schools all over the country has allowed the poor to attain at least high school education. It would not be efficient to expand to the same extent college education for there is not as much demand for college education as for high school education. In fact the unemployment of college educated has persisted at almost double digit level in the past decades. Equalizing access to college education would involve integrated reforms of the three education levels, focusing on improving the quality of education that is supplied to the poor. Unless the quality of basic education for the poor is improved, they would not benefit from subsidy at the college level. Improving the quality of the original Grade 1-6 elementary program might achieve more than adding three additional years. At the college quality improvement cannot be applied to all 1900 or so institutions, not even to all 112 SUCs. Raising the quality and capacity of ten to 15 universities, whether public or private, would more than suffice to develop the country's competitiveness in education. The political stance of dividing a small resource by maximum n has to be abandoned if we are to improve our higher education. After all, higher education is at the heart of the country's educational system. It produces the teachers and learning materials for the lower levels, the business and government leaders, and develops the innovative capacities of the various productive sectors. Education mobility will follow education reforms that improve the quality of all levels of education.

5. Enrolment and Expenditure Functions

Descriptive statistics were presented above that show serious inequality in the distribution of education. Here, we model enrollment rate for three school age groups, 6-12 to correspond for elementary enrollment, 13-17 for high school and 18-24 for college[2]. Separate regressions are run for these three school age groups to account for the rise in education cost as the education level rises.

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[2] In this case, for 18-24 year olds, the sample only includes those who are not yet college graduates.

The probability of school attendance of an individual is modeled as a function of individual, household head, household and community characteristics. In particular, the following function is estimated for each age group using the probit regression:

$current\_attend$
$= f(female, hh.female, hheduc.hs, hheduc.postsec.collugrad, hheduc.collgradhigher,$

$lnpcinc, cashreceipt.abroad, age0to5, age6to24, age25to99, urban, Region_m)$ (1)

where

- current_attend = 1 if the individual attends school
- female =1 if the individual is female
- hh.female = 1 if the household head is female
- hheduc.hs =1 if household head's highest grade completed is high school undergrad or high school graduate
- hheduc.postsec.collugrad=1 if household head's highest grade completed is postsecondary or college undergraduate
- hheduc.collgradhigher=1 if household head's highest grade completed is college graduate or higher
- lnpcinc refers to logarithm of household's per capita income
- cashreceipt.abroad=1 if household receives remittance abroad
- age0to5 refers to the number of household members aged 0 to 5 years old
- age6to24 refers to the number of household members aged 6 to 24 years old (excluding those that are already college graduates)
- age25to99 refers to the number of household members aged 25 to 99 years old. Included here are household members below 25 years old who are college graduates
- urban=1 if the individual resides in a household in urban area

- $Region_m$ refers to regional dummies. In this case, Region I serves as the base category[3]

For the highest grade completed of the household head, the base category is elementary and below. Data from the 2002, 2008 and 2010 rounds of the Annual Poverty Indicators Survey (APIS) are used to estimate the respective school attendance regressions. The regression runs only include individuals who are children of the household head.

The results of child attendance regression in 2002, 2008 and 2010 are given in Tables 9a to 9c, which allow for a comparison of the average marginal effects of selected explanatory

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[3] To ensure comparability of regression results, the provinces in 2002 APIS were reclassified based on the regional classification implemented in 2008 and 2010 APIS (given that there is no province indicator in 2008 and 2010 APIS).

variable for each age group over time. The average marginal effects of household per capita income, head's education, child's gender and receipt of remittances are significant and of the expected sign. In this case, the average marginal effect of household per capita income is stronger for high school and college than for elementary enrolment. A similar thing can be deduced for the individual gender variable, with the average marginal effect of being a female on school attendance higher among high school and college individuals.

The average marginal effect of household head education on school attendance also exhibits a similar pattern, with the average marginal effect increasing as one goes to higher age groups. For college age individuals, having a household head who is at least a college graduate increases probability of school attendance (relative to having a household head whose educational attainment is elementary or below) by 27.9 percentage points in 2010, which is almost 7 times larger than the estimated average marginal effect of the same household head education among elementary individuals. This possibly suggests greater influence of parental education on schooling of individuals at higher education levels. As expected, there is not much difference in the coefficients of parent's education on probability of school attendance of elementary-age individuals considering its low relative cost.

Not much change can be observed in the average marginal effects of household head education variables for elementary and high school individuals from 2002 to 2010. However, among college individuals, the average marginal effect of household head education variables is observed to be lower in 2010 than in 2002. For instance, having a household head with at least college degree increases school attendance of an 18-24 year old individual by almost 28 percentage points, which is approximately 10 percentage points lower than the average marginal effect observed in 2002. While the observed average marginal effects of household head education among college individuals are lower in 2010 as compared to previous years, these are still larger than the estimated average marginal effects for high school.

On the other hand, household per capita income increases the probability of school attendance for all year levels in 2002, 2008 and 2010, and that among elementary individuals, not much change can be observed with regards to its average marginal effect on school attendance. For high school and college, the estimated average marginal effect of per capita income is larger for the latter years, with larger increase over time observed among college individuals. Not much change can be observed on the average marginal effect of receipt of remittance across all year levels over time, although remittance is not a significant determinant of elementary attendance in 2002.

Interestingly, living in an urban area is a significant determinant of school attendance for all year levels in 2002. However, the urban indicator affects the probability of school attendance only of high school individuals in 2008 and in 2010, the said indicator is not a significant determinant of school attendance in all of the year levels. We also find the parameters of regional

location not totally consistent with expectation, i.e, that poor regions have negative impact on enrollment in high school and college, in some cases (see full regression tables in the Appendix).

On the other hand, to determine the additional expenditure on education associated with an increase in the number of children attending school, the following equation is estimated using OLS for each per capita income quintile group on FIES 2009 dataset:

$$educ = B_0 + B_1 toinc + B_2 attend.512 + B_3 attend.1317 + B_4 attend.1824 +$$

$$B_5 urban + B_6 cashreceipt.abroad + \sum_k \alpha_k Region_k + u_i \quad (2) \text{ where}$$

- Educ = total household expenditure on education
- Toinc = total household income
- Attend.512 = number of 5 to 12 year old household members attending school
- Attend.1317 = number of 13 to 17 year old household members attending school
- Attend.1824 = number of 18 to 24 year old household members attending school
- Urban=1 if the household is located in an urban area
- Cashreceipt.abroad=1 if the household receives remittance from abroad
- $Region_k$ refers to regional dummies (with Region 1 being the base region)

The regression analysis is limited to households with 5 to 24 year old individuals. Table 10 shows the estimated coefficients of variables pertaining to number of school-age children (full result of regression runs are in the Appendix). As expected, the estimated increase in household expenditure associated with greater number of older individuals attending school is larger than the same increase in number of younger individuals across all per capita income quintiles. For instance, for the first quintile, having one more 18 to 24 year old household member attending school is associated with an increase in education expenditure amounting to P 2,746, which is more than 20 times the estimated increase in education expenditure associated with one more 5 to 12 year old individual attending school.

Also, the estimated increase in education expenditure associated with having one more individual attending school increases as one goes to higher quintile groups. There is a significant jump in the increase in education expenditure associated with one more elementary household member from third quintile to fourth quintile (from P 393.5 to P 1,160 or almost a three-fold increase), and from fourth quintile to fifth quintile (from P 1,160 to P 6,893 or almost a six-fold increase).On the other hand, the increase in education expenditure associated with additional high school and college age individuals attending school is smaller as one goes from third to fourth, and from fourth to fifth quintiles. For instance, the additional education expenditure from having one more high school member attending school in fifth quintile is 2.7 times the corresponding figure in fourth quintile, while the additional education expenditure from having

one more college age member attending school in fifth quintile is just almost twice as the corresponding increase in fourth quintile.

6. Concluding Remarks

Poverty in the country has highly persisted at a fairly high level of about 20% for families and 25% for the population over the past decade. The higher poverty rate for the population is partly due to the greater number of children poor families have. The persistence of high poverty rate leads to fairly high rate of chronic poverty for they are caused by the same factors that prevent poor families from pulling themselves by their bootstrap.

The poor in the country are bounded by sheer lack of human and physical capabilities, and possess little assets. For poverty to diminish, opportunities for raising their total capabilities along Sen's notion must be developed by the state. There must be opportunities for developing their human capabilities through education, health and housing. There must also be opportunities for raising their productivity and their social and political participation. For rural areas, transport, irrigation and electricity infrastructures are essential for raising directly their standard of living and indirectly raising their productivity in their current jobs. Economic growth has not done much to achieve these. The government however has given priority to education. It has established a universal public elementary school system, a large public secondary school system and voucher system for high school students. But it has not developed an effective college education for the poor. College education is still provided largely (75% of enrollment) by the private sector.

The paper presented data that shows a very unequal distribution of access to higher education levels across income classes. Both enrolment rate and completed education are very low for the poorest families and their children. College education is attained largely by the upper income groups. The paper explains this inequality principally by family income and implicitly by the relative cost of the three levels of education (elementary, high school and college).

Most poor families have elementary education and the enrollment rate of their children in elementary grades is fairly high, at about 90 percent. But as we go up the education ladder, enrollment rate drops substantially from high school to college. The paper explains this pattern by looking at the cost to the family of each education level. The fact that public elementary school is universally available across all barangays makes it inexpensive. College education, however, is provided largely by private institutions, which rely on school fees to finance their operations.

The state universities and colleges, which number only 112 out of the total 1,900 higher educational institutions, enroll only about 25% of college students. The SUCs have to administer admission tests to limit the number of students to their existing capabilities. Data show that only a very small number of high school graduates who continued their studies were admitted to

SUCs, at less than 2%. In the University of the Philippines, less than 10% of students come from poor families, while more than 50% are from rich families.

The inequality in access to college education is exacerbated by the inequality in the quality of education. Public basic education is notoriously low in quality. This is possibly explained by the low budget per capita that it has been provided. College education is also generally of low quality. It is surmised that the few poor students who are able to enroll in college enroll in low quality institutions. Their college preparatory education is poor and so they do not qualify for admission in high quality SUCs and for scholarship in high quality universities.

The education mobility that we observe pertains to the attainment of high school education by the poor's children. But we find little mobility in the poor children's climb to college education and high earning jobs.

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Table 1: Performance in Selected Professional Licensure Examination in Selected Regions, 2014

Passing Rate by Number of Schools

	Region	80-100	60-79	40-59	20-39	< 20	Small Number of Takers
1	National Capital Region						
	Teacher Training	5	14	16	28	13	114
	Accounting	1	0	12	18	15	27
	Nursing	12	11	21	24	5	25
2	Central Luzon						
	Teacher Training	0	8	16	45	14	55

#							
	Accounting	0	1	9	8	6	32
	Nursing	1	7	12	19	5	11
3	Central Visayas						
	Teacher Training	1	10	16	30	14	42
	Accounting	1	3	1	6	1	12
	Nursing	6	3	10	8	2	3
4	Eastern Visayas						
	Teacher Training	0	0	5	7	23	36
	Accounting	0	1	1	5	3	3
	Nursing	6	2	7	2	0	2
5	Bicol						
	Teacher Training	0	1	12	37	16	52
	Accounting	0	0	6	2	14	14
	Nursing	2	4	3	12	1	0
6	Northern Mindanao						
	Teacher Training	1	2	5	19	7	32
	Accounting	0	2	2	5	4	22
	Nursing	3	2	11	4	2	1

Table 2a: Distribution of Center of Excellence Award in Science and Math, by selected universities, 2014

University	COE Award in Science and Math

University of the Philippines (Diliman and Los Banos)	15
De La Salle University	4
Ateneo de Manila University	2
Central Luzon State University	2
University of Santo Tomas	1

Source: Commission on Higher Education

Table 2b: Distribution of Center of Excellence Award by Program, 2014

Program	Number of COE Awards
Science and Mathematics	24
Agriculture, Forestry, and Fishery	9
Medicine	1
Veterinary Medicine	3
Teacher Training	28
Information Technology	3
Criminology	3
Others (Philosophy, Literature, Music, Social Sciences)	25

Source: Commission on Higher Education

Table 3: Percentage Distribution of Applicant and Qualifiers and Qualifying Rate in UP Diliman

Level	Income Range (in PhP '000)	2008			2010			2012		
		Applicant	Qualified	Qualified/ applicant	Applicant	Qualified	Qualified/ applicant	Applicant	Qualified	Qualified/ Applicant
0	No data	8.6	3.5	3.9	8.1	4.4	4.6	7.1	3	3.4
1	<100	17.8	9.4	5.0	15	7.9	4.4	12.5	5.5	3.5
2	101-200	21.1	15.4	7.0	19.5	14	6	18	13.1	5.7
3	201-300	13.8	12.8	8.7	13.7	11.7	7.2	13.1	9.7	5.8
4	301-400	8.8	9.9	10.8	9.1	8.7	8.1	9.4	9.1	7.6
5	401-500	7.1	9	12.2	7.6	9	10.1	8.4	8.5	8.4
6	500-1 million	13.9	21.4	12.4	16.1	21.4	21.2	18.7	24.4	10.3
7	>1 million	8.9	18.5	19.8	10.9	23	17.8	13.1	26.6	16
Total (%)		100	100	100.0	100	100	100	100	100	100
Total number		40,084	3,826	9.5	45,178	3,831	8.5	48,486	3,821	7.9

Source: University of the Philippines Office of Admission

Table 4: Education Attainment of 15-24 year old individuals by Family Income Decile, 1998, 2013

Elementary

Decile	1998			2013		
	Out of School	Enrolled	**Total**	Out of School	Enrolled	**Total**
1	44.2%	4.2%	**48.4%**	36.6%	2.7%	**39.3%**
2	35.9%	4.0%	**39.9%**	26.2%	2.0%	**28.2%**
3	31.6%	3.6%	**35.3%**	22.6%	1.5%	**24.1%**
4	26.8%	3.0%	**29.8%**	18.1%	1.7%	**19.8%**
5	22.0%	1.9%	**23.9%**	15.6%	0.8%	**16.4%**
6	18.3%	1.4%	**19.7%**	14.0%	0.5%	**14.5%**
7	13.9%	1.2%	**15.1%**	11.6%	0.8%	**12.4%**
8	11.8%	0.9%	**12.7%**	7.3%	0.5%	**7.8%**
9	6.9%	0.5%	**7.5%**	3.0%	0.4%	**3.5%**
10	3.1%	0.5%	**3.6%**	2.3%	0.2%	**2.5%**

High School

Decile	1998				2013			
	Out of School		Enrolled	**Total**	Out of School		Enrolled	**Total**
	Incomplete	Graduate			Incomplete	Graduate		
1	12.1%	11.5%	18.3%	**41.9%**	14.8%	18.2%	20.2%	**53.2%**
2	15.9%	13.9%	21.5%	**51.4%**	12.4%	23.9%	22.2%	**58.5%**
3	13.1%	14.6%	24.4%	**52.1%**	13.7%	21.3%	23.8%	**58.8%**
4	11.4%	16.6%	25.2%	**53.3%**	12.3%	23.8%	23.0%	**59.2%**
5	11.8%	17.1%	24.7%	**53.6%**	12.0%	25.5%	19.8%	**57.3%**
6	12.6%	20.0%	24.0%	**56.6%**	9.2%	24.4%	18.4%	**51.9%**
7	10.5%	17.7%	22.1%	**50.2%**	8.4%	24.8%	16.6%	**49.8%**
8	9.8%	18.8%	20.7%	**49.2%**	6.4%	19.9%	14.7%	**40.9%**
9	8.7%	17.2%	18.4%	**44.4%**	5.8%	18.9%	12.3%	**36.9%**
10	3.7%	11.4%	17.6%	**32.7%**	2.0%	8.6%	12.0%	**22.6%**

College

Decile	1998				2013			
	Out of School		Enrolled	**Total**	Out of School		Enrolled	**Total**
	Incomplete	Graduate			Incomplete	Graduate		
1	1.9%	1.0%	6.2%	**9.1%**	2.1%	1.0%	3.2%	**6.3%**
2	1.6%	0.5%	5.2%	**7.3%**	2.3%	0.9%	8.3%	**11.5%**
3	3.8%	1.1%	7.0%	**11.9%**	3.4%	1.7%	10.4%	**15.5%**
4	3.9%	1.8%	9.6%	**15.2%**	3.0%	2.6%	12.5%	**18.1%**
5	5.1%	2.9%	12.6%	**20.6%**	3.4%	3.6%	16.1%	**23.0%**
6	5.5%	3.1%	12.8%	**21.5%**	6.6%	4.8%	18.8%	**30.2%**
7	6.7%	4.9%	20.2%	**31.8%**	6.5%	5.7%	21.2%	**33.5%**
8	7.4%	6.0%	21.7%	**35.1%**	6.0%	9.6%	29.5%	**45.1%**
9	8.4%	9.2%	27.1%	**44.7%**	7.5%	14.7%	29.9%	**52.1%**
10	8.1%	16.8%	34.7%	**59.6%**	7.1%	25.0%	36.7%	**68.7%**

Source of basic data: APIS 1998 and 2013

Table 5a: Poverty Incidence (based on income) by Education of most educated adult household member, 2004 to 2008 panel

Education level of most educated member in 2004	2004	2007	2008	# of HHs
Elementary and below	55.1	55.3	48.7	1,829
HS undergrad	48.8	51.3	46.7	946
HS grad	34.5	32.9	30.2	1,916
College undergrad	19.2	21	18.4	1,345
College grad	5.9	5.8	6	1,538
Total	32.7	33	29.7	7,574

Source: NSO's APIS 2004, 2007, and 2008 panel data, as cited in Ducanes and Tan (2014)

Table 5b. Poor HHs: Educational Profile of Adult (18+) Population

Age group	Elementary and below	HS Undergrad	HS grad	College undergrad	College grad	Total
18-24	37.0	25.6	26.8	9.7	0.9	100.0
25-40	49.9	19.3	23.5	5.8	1.6	100.0
41-65	70.9	12.1	13.1	3.0	0.8	100.0
66+	91.2	5.5	2.8	0.3	0.2	100.0
Total	57.6	17.0	19.0	5.2	1.1	100.0

Source: FIES 2009, LFS January 2010, as cited in Ducanes and Tan (2014)

Table 6: School attendance by age range, 2004 and 2008

Decile	6 to 12 years old		13 to 17 years old		18 to 24 years old (excluding college graduates)	
	2004	2008	2004	2008	2004	2008
1	86.1%	88.4%	64.3%	62.0%	9.2%	9.1%
2	89.6%	92.6%	66.2%	68.5%	12.5%	14.2%
3	91.4%	93.1%	69.8%	70.8%	14.6%	13.9%
4	92.8%	93.9%	70.5%	72.8%	16.6%	16.4%
5	94.8%	95.5%	74.5%	75.0%	19.4%	19.7%
6	95.3%	95.7%	77.5%	76.4%	20.1%	22.6%
7	96.3%	97.5%	80.1%	80.3%	25.4%	23.6%
8	97.5%	97.9%	85.0%	84.4%	29.6%	29.2%
9	97.8%	98.4%	87.7%	89.2%	36.0%	34.3%
10	99.1%	98.8%	93.0%	92.8%	53.4%	53.3%

Source of basic data: 2004, 2008 APIS

Table 7: Primary Occupation of HS Undergraduates, HS Graduates, College Undergraduates and College Graduates, October 2001 and October 2009

Primary Occupation	HS Ugrad		HS Grad		Coll Ugrad		Coll Grad	
	Oct-01	Oct-09	Oct-01	Oct-09	Oct-01	Oct-09	Oct-01	Oct-09
Armed Forces	0.09%	0.05%	0.40%	0.28%	0.83%	0.61%	0.50%	0.47%
Officials/Supervisors/Managers	7.17%	11.08%	10.25%	13.78%	15.07%	19.59%	20.07%	20.73%
Professionals	0.15%	0.02%	0.32%	0.03%	1.15%	0.41%	33.95%	31.22%
Technicians and Associate Professionals	0.87%	0.95%	1.90%	1.72%	5.95%	6.38%	7.90%	7.72%
Clerical Support Workers	1.46%	1.15%	3.07%	2.88%	10.06%	11.04%	15.82%	19.69%
Service and Sales Workers	10.12%	9.16%	13.44%	15.96%	16.97%	18.25%	8.20%	9.41%
Skilled Agricultural, Forestry and Fishery Workers	18.03%	16.24%	12.63%	10.68%	9.84%	6.93%	3.70%	2.68%
Craft and Related Trades Workers	12.55%	8.83%	14.45%	10.57%	10.49%	8.05%	2.73%	1.72%
Plant and Machine Operators, and Assemblers	7.95%	7.14%	13.39%	10.36%	10.94%	9.48%	2.58%	2.09%
Elementary Occupations	41.45%	45.17%	30.01%	33.55%	18.46%	19.05%	4.47%	4.18%
Other Occupations Not Classifiable	0.16%	0.21%	0.13%	0.18%	0.25%	0.21%	0.07%	0.09%
Total	100%	100%	100%	100%	100%	100%	100%	100%

Source of basic data: Labor Force Survey (October 2001 and October 2009)

Table 8a: Average household expenditure on selected items (as proportion of total hh expenditure), by national income decile

Decile	Food		Housing		Clothing and Footwear		Medical Care		Transportation and Communication		Education	
	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009
1	64.1%	61.8%	10.1%	9.6%	1.9%	1.6%	1.0%	1.5%	2.2%	3.0%	0.8%	0.6%

2	63.1%	60.6%	9.6%	9.5%	2.3%	1.9%	1.1%	1.5%	2.6%	3.8%	1.3%	1.2%
3	61.3%	59.1%	9.7%	9.9%	2.5%	2.0%	1.2%	1.7%	2.9%	4.2%	1.7%	1.3%
4	58.7%	56.8%	10.2%	10.4%	2.7%	2.1%	1.4%	1.8%	3.4%	4.9%	2.1%	1.8%
5	56.5%	54.4%	10.6%	10.9%	2.8%	2.1%	1.4%	2.1%	4.0%	5.6%	2.5%	2.0%
6	53.5%	51.4%	11.0%	11.5%	2.8%	2.2%	1.6%	2.2%	4.4%	6.3%	2.7%	2.5%
7	50.6%	48.1%	11.3%	11.9%	2.8%	2.2%	1.7%	2.4%	5.1%	6.9%	3.3%	2.9%
8	46.7%	44.3%	11.5%	12.5%	2.9%	2.3%	1.9%	2.6%	5.8%	7.6%	3.7%	4.0%
9	42.4%	39.7%	11.6%	12.8%	2.9%	2.3%	1.8%	3.1%	7.1%	8.2%	4.8%	5.1%
10	33.9%	32.0%	12.8%	14.0%	2.9%	2.4%	2.3%	3.4%	9.2%	9.9%	5.9%	6.2%

Note: Housing expenditures include expenditures on Fuel, Light and Water, House Maintenance and Repairs, Household Operations, Durable and NonDurable Furnishings

Source of basic data: FIES 2000 and 2009

Table 8b: Average expenditures on selected household items, by national income decile (at current prices)

Decile	Food		Housing		Clothing and Footwear		Medical Care		Transportation and Communication		Education		Total Expenditure	
	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009
1	16,871	26,658	2642	4157	511	704	276	719	636	1,353	246	307	26,463	43,302
2	25,457	39,874	3901	6375	930	1,230	483	997	1,047	2,564	562	843	40,537	66,057
3	30,958	47,861	5003	8252	1,296	1,631	647	1,441	1,478	3,481	922	1,143	50,795	81,480
4	35,995	54,977	6362	10285	1,650	2,016	927	1,830	2,110	4,883	1,345	1,856	61,693	97,420
5	41,516	62,899	7905	13019	2,054	2,460	1,115	2,510	2,971	6,517	1,905	2,485	74,015	116,488
6	48,151	70,885	10197	16459	2,480	3,044	1,538	3,183	4,030	8,792	2,578	3,695	90,878	139,371
7	56,487	81,586	13013	20932	3,101	3,740	2,078	4,365	5,958	11,995	3,951	5,249	113,097	171,369
8	65,222	94,277	16560	27775	4,073	4,994	2,897	6,243	8,518	16,532	5,558	9,060	141,771	216,392
9	78,557	111,981	22550	37840	5,507	6,674	3,615	9,489	13,993	23,877	9,748	15,474	189,464	288,435
10	118,494	157,078	56374	79728	10,516	12,245	9,282	19,336	40,519	55,376	23,439	34,541	399,678	535,156

Source of basic data: FIES 2000 and 2009

Table 8c: Average household expenditure on selected items, by national income decile (expressed in 2006 prices)

Decile	Food		Housing		Clothing and Footwear		Medical Care		Transportation and Communication		Education		Total Expenditure	
	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009	2000	2009
1	21,996	22,961	3,445	3,581	667	607	360	620	829	1,165	320	264	34,502	37,297
2	33,191	34,344	5,087	5,491	1,212	1,060	630	859	1,364	2,209	732	726	52,851	56,896
3	40,363	41,224	6,523	7,108	1,689	1,405	844	1,241	1,927	2,998	1,202	984	66,225	70,181
4	46,930	47,353	8,295	8,859	2,152	1,737	1,208	1,576	2,751	4,206	1,754	1,599	80,434	83,910
5	54,128	54,176	10,306	11,214	2,678	2,118	1,454	2,162	3,874	5,613	2,483	2,140	96,500	100,335
6	62,778	61,055	13,295	14,177	3,233	2,622	2,006	2,741	5,254	7,572	3,361	3,183	118,485	120,044
7	73,646	70,272	16,966	18,029	4,043	3,222	2,709	3,760	7,768	10,332	5,152	4,521	147,453	147,604
8	85,036	81,203	21,591	23,924	5,311	4,302	3,777	5,377	11,106	14,240	7,247	7,804	184,838	186,384
9	102,421	96,452	29,400	32,592	7,180	5,748	4,713	8,173	18,244	20,566	12,709	13,328	247,019	248,437
10	154,490	135,296	73,499	68,672	13,711	10,547	12,102	16,655	52,828	47,696	30,560	29,751	521,093	460,944

Source of basic data: FIES 2000 and 2009

Table 9a: Estimated average marginal effects of selected variables on school attendance: 6-12 year old individuals, 2002, 2008 and 2010

VARIABLES	(1) 2002	(2) 2008	(3) 2010
1.female	0.0170***	0.0133***	0.0105***
	(0.00272)	(0.00262)	(0.00361)
1.hh_female	-0.00152	-0.0101*	0.0198**
	(0.00663)	(0.00540)	(0.00861)
1.hheduc_hs	0.0186***	0.0342***	0.0249***
	(0.00316)	(0.00311)	(0.00426)
1.hheduc_postsec_collugrad	0.0403***	0.0496***	0.0288***
	(0.00587)	(0.00596)	(0.00750)
1.hheduc_collgradhigher	0.0512***	0.0499***	0.0372***
	(0.00851)	(0.00841)	(0.0113)
lnpcinc	0.0311***	0.0266***	0.0310***
	(0.00241)	(0.00285)	(0.00432)
1.cashreceipt_abroad	0.00915	0.0217***	0.0180**
	(0.00612)	(0.00553)	(0.00797)
1.urban	0.00817***	-0.00195	-0.00623
	(0.00302)	(0.00317)	(0.00461)

Table 9b: Estimated average marginal effects of selected variables on school attendance: 13-17 year old individuals, 2002, 2008 and 2010

VARIABLES	(1) 2002	(2) 2008	(3) 2010
1.female	0.0777***	0.0773***	0.0902***
	(0.00515)	(0.00573)	(0.00821)
1.hh_female	-0.0456***	-0.0472***	-0.0482***
	(0.00915)	(0.0101)	(0.0141)
1.hheduc_hs	0.0932***	0.0990***	0.0726***
	(0.00591)	(0.00657)	(0.00948)
1.hheduc_postsec_collugrad	0.160***	0.163***	0.162***
	(0.0105)	(0.0119)	(0.0173)
1.hheduc_collgradhigher	0.219***	0.222***	0.200***
	(0.0159)	(0.0176)	(0.0226)
lnpcinc	0.0590***	0.0791***	0.0802***
	(0.00441)	(0.00563)	(0.00857)
1.cashreceipt_abroad	0.0442***	0.0531***	0.0545***
	(0.00984)	(0.00978)	(0.0144)
1.urban	0.0235***	0.0166**	-0.00542

| | (0.00574) | (0.00706) | (0.0101) |

Table 9c: Estimated average marginal effects of selected variables on school attendance: 18-24 year old individuals, 2002, 2008 and 2010

VARIABLES	(1) 2002	(2) 2008	(4) 2010
1.female	0.0849***	0.0669***	0.0707***
	(0.00691)	(0.00695)	(0.00979)
1.hh_female	-0.0319***	-0.0711***	-0.0416***
	(0.0103)	(0.0102)	(0.0140)
1.hheduc_hs	0.117***	0.0922***	0.0742***
	(0.00792)	(0.00803)	(0.0116)
1.hheduc_postsec_collugrad	0.236***	0.200***	0.188***
	(0.0114)	(0.0115)	(0.0155)
1.hheduc_collgradhigher	0.377***	0.332***	0.279***
	(0.0145)	(0.0142)	(0.0201)
lnpcinc	0.0980***	0.102***	0.127***
	(0.00578)	(0.00652)	(0.00950)
1.cashreceipt_abroad	0.0749***	0.101***	0.0766***
	(0.0102)	(0.00932)	(0.0133)
1.urban	0.0218***	0.0123	0.0108
	(0.00792)	(0.00825)	(0.0117)

Table 10: Estimated coefficients of number of household members attending school on total household expenditure on education

Variables	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Number of 5-12 year olds	131.4***	173.6**	393.5***	1,160***	6,893***
	(25.94)	(85.95)	(132.0)	(268.2)	(822.9)
Number of 13-17 year olds	594.5***	1,291***	2,448***	4,872***	13,339***
	(48.19)	(114.2)	(223.7)	(430.3)	(1,103)
Number of 18-24 year olds	2,746***	6,896***	9,430***	15,425***	30,526***
	(232.8)	(396.7)	(471.1)	(705.8)	(1,460)

Table A1: Number of schools per Barangay, by Region 2001-2014

	Number of barangays	Elementary		High School		Growth Rate of Schools	
		Public	Private	Public	Private	Public Elem	Public Secondary
Philippines	42,025	97.7		117.3		7.2	164.8
NCR	1,705	0.28	0.4	0.08	0.27	8.8	83.9
Region I	1,265	1.81	0.14	0.31	0.16	4.6	34.1
Region II	2,311	0.87	0.04	0.08	0.04	9.1	100.5
Region III	3,102	0.84	0.2	0.11	0.12	14.6	111.5
Region IVA	4,011	0.79	0.22	0.12	0.12	6.4	56.6
Region IVB	1,158						
Region V	3,471	0.85	0.04	0.11	0.04	6.3	72.4
Region VI	4,051	0.81	0.06	0.11	0.04	3.6	51
Region VII	3,003	0.93	0.07	0.11	0.07	4.6	154.4
Region VIII	4,300	0.81	0.02	0.08	0.02	4	51.8
Region IX	1,904	1.15	0.04	0.1	0.04	-4.4	99
Region X	2,022	0.78	0.08	0.08	0.08	31.8	119.1
Region XI	1,162	1.83	0.27	0.21	0.15	-21.8	24.2
Region XII	1,194	1.2	0.09	0.2	0.1	20.5	235
Caraga	1,310	1.17	0.05	0.12	0.07	6.4	163.4
ARMM	2,490	0.67	0	0.04	0.01	84.5	176.4
CAR	1,176	1.11	0	0.13	0.07	17.2	92.7

Source: Department of Education, Statistical Bulletin, 2001, 2015 Table A2: Budget per student (2006 prices), 2001-2015

Year	DepEd Budget Billion, 2016 Prices	Enrollment (000)	Growth Rate		Per Student Budget	
			Budget	Enrollment	Gross Pesos	Operation
2000	119.1	15984			7452	6334
2001	110.9	16394	-6.9	2.5	6765	5750
2002	126.8	16853	14.3	2.8	7522	6394

2003	125.4	17380	-1.1	3.1	9216	6134
2004	123.1	17522	-1.8	8	7023	5970
2005	118.2	17658	4	0.8	6693	5690
2006	121.6	12528	2.9	-0.7	6935	5895
2007	133.5	17730	9.8	0.1	7327	6228
2008	133.9	18083	0.3	2	7409	6298
2009	150.3	18742	12.2	3.6	8018	6815
2010	145.2	19245	-3.4	5.5	7545	6413
2011	164.4	19848	13.2	3.1	8281	7039
2012	183.5	20475	11.6	3.2	8961	7617
2013	219	20658	19.3	0.9	10199	8669
2014	221.8	20923	1.2	1.3	10601	9011
2015	251.5	21242	13.3	1.5	12122	10304

Source: Department of Educational Statistical Bulletin, 2000-2001 Q and A, 2016, NSO Philippine Statistical Yearbook 2015

Table A.4. Net Enrolment Rate in Elementary and High School, 2000-2001 and 2012

Regions	Elementary		Secondary	
	2000-2001	2012	2001	2012

	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
Phils			96.8			95.2			66.1			64.6
I	98.4	97.0	97.7	97.07	97.25	97.44	71.1	77.7	74.0	72.36	80.88	76.48
II	95.6	95.7	95.7	96.30	97.88	97.00	76.0	78.5	77.3	63.81	74.92	69.19
III	98.8	97.9	98.3	96.00	97.80	96.87	73.7	80.8	77.0	69.21	77.84	73.39
IV-A	98.0	99.0	98.5	94.26	95.83	95.02	71.6	78.9	76.3	71.22	67.08	71.22
IV-B				94.69	95.96	95.30				56.79	68.08	62.28
V	95.8	95.3	95.6	96.46	97.21	96.82	68.8	73.2	71.1	55.02	67.64	61.10
VI	96.3	96.0	96.2	94.65	96.41	95.50	67.1	64.9	63.5	55.70	67.57	61.46
VII	97.1	99.9	98.6	97.40	99.16	98.25	70.2	74.2	72.4	56.99	69.34	63.00
VIII	91.7	95.5	94.6	93.51	95.11	94.29	65.1	67.4	65.4	52.41	65.79	58.87
IX	91.1	93.8	93.4	93.29	95.27	94.25	61.1	64.6	63.1	44.22	56.24	50.08
X	96.0	95.2	95.6	92.70	93.26	92.97	64.1	71.7	67.9	50.74	61.76	56.13
XI	93.2	94.4	93.9	97.31	98.50	97.91	70.2	77.2	73.9	50.48	62.40	56.31
XII	96.5	98.4	97.3	86.93	89.73	88.29	65.6	71.7	68.8	47.98	59.03	53.39
Caraga	92.5	93.4	92.9	93.65	93.06	94.34	58.6	64.1	61.4	51.80	64.86	58.12
ARMM	86.2	96.5	91.3	83.85	93.48	88.61	60.6	61.3	61.0	33.11	46.15	39.61
CAR	94.3	94.5	94.4	97.12	98.58	97.82	68.5	74.6	71.7	62.32	75.58	68.80
NCR	100.6	101.9	101	94.25	96.30	95.24	65.4	73.1	69.4	74.86	82.01	78.38

Table A5

| Region | Survival Rate to Grade 6 | | | | | | | Survival Rate to Secondary IV | | | | | |
| | 2000-2001 | | | 2014 | | | | 2000-2001 | | | 2014 | | |
	Male	Female	All	Male	Female	All		Male	Female	All	Male	Female	All
NCR	61.5	66.7	64	79.1	83.3	81.1		63.4	73.1	69.4	78.6	85.7	82.1
Region I	76.8	81.9	79.3	89.6	93.6	91.5		71.1	77.7	74.4	81.7	90	85.7
Region II	67.5	75.3	71.2	86.3	92.4	89.2		76	78.5	77.3	81.1	88.2	84.6
Region III	72.3	79.1	75.5	89.8	92.6	91.8		73.2	80.8	77	81.8	89.4	85.5
Region IV-A	64.9	72.3	68.4	81.4	88.7	84.8		73.6	78.9	76.3	77.5	88.1	82.7
Region IV-B				76.4	83.2	79.6					74.6	84.2	79.2
Region V	63.8	67.6	65.7	83.4	89.8	86.4		68.8	73.2	71.1	73.2	85.4	79.1
Region VI	69.3	66.2	67.8	84.7	91.3	87.8		62.1	64.9	63.5	78.7	87.5	83
Region VII	65	74.2	69.3	85.6	92	89.1		70.2	74.2	72.4	75.8	87.5	81.8
Region VIII	52.5	63.1	57.6	78.5	86.8	82.5		63.1	67.4	63.8	73.1	82.9	77
Region IX	46.2	57.1	57.3	59.1	66.4	62.5		61.7	64.6	63.1	65.1	75.3	70.3
Region X	56.8	66.3	61.2	69.8	79.6	74.4		64.2	71.7	67.9	69.6	78	74
Region XI	56	65.5	60.5	73.2	82.5	77.7		70.2	77.2	73.9	72.1	80.9	76.5
Region XII	45.3	51.5	48.3	70.7	79.7	74.9		65.6	71.7	68.8	72.2	82	77.2
Caraga	52.6	61.2	56.7	77.9	87	82.1		58.6	64.1	61.4	73.2	80.9	77.1
CAR	58.7	66.1	62.2	81.5	86.3	83.8		68.5	74.6	71.7	77.8	91.5	84.5
ARMM	27.9	28	27.9	36.7	62	39.4		60.6	61.3	61	64.6	70.2	67.8

| Philippines | 60.8 | 66.3 | 63.5 | 77.7 | 83.9 | 80.6 | | 69.5 | 73.7 | 71.6 | 76.2 | 85.1 | 80.6 |

Source: Department of Education Statistics Yearbook, 2001 and Philippine Statistical Authority, Yearbook of Statistics 2015

Regression results: Estimated average marginal effect on school attendance of 6-12 year olds

VARIABLES	(1) 2002	(2) 2008	(3) 2010
1.female	0.0170***	0.0133***	0.0105***
	(0.00272)	(0.00262)	(0.00361)
1.hh_female	-0.00152	-0.0101*	0.0198**
	(0.00663)	(0.00540)	(0.00861)
1.hheduc_hs	0.0186***	0.0342***	0.0249***
	(0.00316)	(0.00311)	(0.00426)
1.hheduc_postsec_collugrad	0.0403***	0.0496***	0.0288***
	(0.00587)	(0.00596)	(0.00750)
1.hheduc_collgradhigher	0.0512***	0.0499***	0.0372***
	(0.00851)	(0.00841)	(0.0113)
lnpcinc	0.0311***	0.0266***	0.0310***
	(0.00241)	(0.00285)	(0.00432)
1.cashreceipt_abroad	0.00915	0.0217***	0.0180**
	(0.00612)	(0.00553)	(0.00797)
age_0to5	-0.00766***	-0.00804***	-0.00317
	(0.00142)	(0.00218)	(0.00294)
age_6to24	-0.00147*	-0.00170**	-0.00321***
	(0.000877)	(0.000824)	(0.00113)
age_25to99	0.0160***	0.00568***	0.00645**
	(0.00329)	(0.00217)	(0.00274)
1.urban	0.00817***	-0.00195	-0.00623
	(0.00302)	(0.00317)	(0.00461)
Regional dummies (base: Region I)			
2.region	0.0334***	-0.00277	-0.0145
	(0.0114)	(0.00960)	(0.0130)
3.region	0.00145	-0.00209	-0.00246
	(0.00877)	(0.00903)	(0.0123)
5.region	0.0132	0.00166	0.0154
	(0.00907)	(0.00861)	(0.0119)
6.region	0.0127	-0.00886	-0.0152
	(0.00896)	(0.00858)	(0.0110)
7.region	-0.0109	-0.00623	0.00302
	(0.00881)	(0.00863)	(0.0120)
8.region	-0.00154	-0.0155*	0.00468
	(0.00894)	(0.00890)	(0.0121)
9.region	0.00567	-0.0282***	-0.0105
	(0.00982)	(0.00867)	(0.0119)
10.region	0.00783	-0.0105	0.0328**
	(0.00875)	(0.00902)	(0.0140)
11.region	-0.0101	-0.0300***	-0.0134
	(0.00978)	(0.00844)	(0.0116)

	0.00624	-0.0254***	0.0218*
12.region	(0.00998)	(0.00840)	(0.0124)
13.region	0.00413	-0.0231**	-0.0158
	(0.00996)	(0.00942)	(0.0125)
14.region	0.0275**	0.00591	0.0225
	(0.0107)	(0.0102)	(0.0148)
15.region	-0.0974***	-0.0735***	-0.0673***
	(0.00779)	(0.00798)	(0.0102)
16.region	0.0258**	0.000109	0.00792
	(0.0105)	(0.00921)	(0.0123)
41.region	0.0138	-0.0175**	-0.00919
	(0.00911)	(0.00845)	(0.0113)
42.region	0.0135	-0.000893	-0.00500
	(0.00956)	(0.00887)	(0.0112)
Observations	29,505	27,540	12,550

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Regression results: Estimated average marginal effect on school attendance of 13-17 year olds

	(1)	(2)	(3)
VARIABLES	2002	2008	2010
1.female	0.0777***	0.0773***	0.0902***
	(0.00515)	(0.00573)	(0.00821)
1.hh_female	-0.0456***	-0.0472***	-0.0482***
	(0.00915)	(0.0101)	(0.0141)
1.hheduc_hs	0.0932***	0.0990***	0.0726***
	(0.00591)	(0.00657)	(0.00948)
1.hheduc_postsec_collugrad	0.160***	0.163***	0.162***
	(0.0105)	(0.0119)	(0.0173)
1.hheduc_collgradhigher	0.219***	0.222***	0.200***
	(0.0159)	(0.0176)	(0.0226)
lnpcinc	0.0590***	0.0791***	0.0802***
	(0.00441)	(0.00563)	(0.00857)
1.cashreceipt_abroad	0.0442***	0.0531***	0.0545***
	(0.00984)	(0.00978)	(0.0144)
age_0to5	-0.00733**	-0.0121**	0.0146**
	(0.00321)	(0.00511)	(0.00737)
age_6to24	-0.00637***	-0.00542***	-0.0141***
	(0.00171)	(0.00194)	(0.00275)
age_25to99	0.00277	0.00650*	-0.00854
	(0.00388)	(0.00394)	(0.00553)
1.urban	0.0235***	0.0166**	-0.00542

	(0.00574)	(0.00706)	(0.0101)
Regional dummies (base: Region I)			
2.region	0.0420**	0.00977	-0.0114
	(0.0187)	(0.0178)	(0.0262)
3.region	-0.0437***	-0.0279*	-0.0331
	(0.0148)	(0.0160)	(0.0235)
5.region	0.0290*	0.0644***	0.0660***
	(0.0164)	(0.0163)	(0.0243)
6.region	0.0582***	0.0526***	0.0357
	(0.0157)	(0.0166)	(0.0236)
7.region	0.00551	0.0387**	0.0122
	(0.0164)	(0.0167)	(0.0243)
8.region	0.0266	0.0335**	0.0470*
	(0.0166)	(0.0171)	(0.0250)
9.region	0.0409**	0.0577***	0.0538**
	(0.0190)	(0.0182)	(0.0269)
10.region	0.0376**	0.0578***	-0.0140
	(0.0159)	(0.0181)	(0.0265)
11.region	0.00489	0.0154	0.0144
	(0.0180)	(0.0173)	(0.0253)
12.region	0.0190	0.0562***	0.0670***
	(0.0180)	(0.0172)	(0.0246)
13.region	-0.0168	0.0351**	0.0581**
	(0.0165)	(0.0174)	(0.0251)
14.region	0.0887***	0.128***	0.0538*
	(0.0186)	(0.0196)	(0.0278)
15.region	0.0421***	0.0712***	0.0134
	(0.0152)	(0.0175)	(0.0245)
16.region	0.0727***	0.0370**	0.0132
	(0.0188)	(0.0178)	(0.0257)
41.region	-0.0267*	0.0160	-0.0194
	(0.0151)	(0.0158)	(0.0224)
42.region	0.0421**	0.0482***	0.0319
	(0.0172)	(0.0176)	(0.0254)
Observations	19,609	19,885	9,500

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Regression results: Estimated average marginal effect on school attendance of 18-24 year olds

	(1)	(2)	(4)
VARIABLES	2002	2008	2010

1.female	0.0849***	0.0669***	0.0707***
	(0.00691)	(0.00695)	(0.00979)
1.hh_female	-0.0319***	-0.0711***	-0.0416***
	(0.0103)	(0.0102)	(0.0140)
1.hheduc_hs	0.117***	0.0922***	0.0742***
	(0.00792)	(0.00803)	(0.0116)
1.hheduc_postsec_collugrad	0.236***	0.200***	0.188***
	(0.0114)	(0.0115)	(0.0155)
1.hheduc_collgradhigher	0.377***	0.332***	0.279***
	(0.0145)	(0.0142)	(0.0201)
lnpcinc	0.0980***	0.102***	0.127***
	(0.00578)	(0.00652)	(0.00950)
1.cashreceipt_abroad	0.0749***	0.101***	0.0766***
	(0.0102)	(0.00932)	(0.0133)
age_0to5	-0.0495***	-0.0501***	-0.0388***
	(0.00494)	(0.00674)	(0.00970)
age_6to24	0.00174	-0.00280	-0.000247
	(0.00212)	(0.00220)	(0.00321)
age_25to99	0.0102***	0.00567	0.00245
	(0.00369)	(0.00366)	(0.00520)
1.urban	0.0218***	0.0123	0.0108
	(0.00792)	(0.00825)	(0.0117)
Regional dummies (base: Region I)			
2.region	0.0733***	0.0661***	0.0171
	(0.0236)	(0.0216)	(0.0304)
3.region	-0.0665***	-0.0139	-0.0623**
	(0.0183)	(0.0185)	(0.0258)
5.region	0.0726***	0.105***	0.0512*
	(0.0220)	(0.0207)	(0.0288)
6.region	0.123***	0.0921***	0.0550**
	(0.0194)	(0.0196)	(0.0264)
7.region	0.0204	0.0556***	0.0333
	(0.0209)	(0.0197)	(0.0268)
8.region	0.129***	0.141***	0.0560*
	(0.0225)	(0.0219)	(0.0298)
9.region	0.139***	0.109***	0.0749**
	(0.0255)	(0.0234)	(0.0316)
10.region	0.0801***	0.106***	0.0379
	(0.0205)	(0.0212)	(0.0311)
11.region	0.0151	0.0677***	0.00129
	(0.0236)	(0.0205)	(0.0288)
12.region	0.0463*	0.0504**	0.0311
	(0.0238)	(0.0212)	(0.0295)
13.region	-0.0539***	0.0153	-0.0205

	(0.0188)	(0.0186)	(0.0256)
14.region	0.175***	0.154***	0.112***
	(0.0222)	(0.0216)	(0.0296)
15.region	0.189***	0.177***	0.0783***
	(0.0195)	(0.0198)	(0.0284)
16.region	0.119***	0.0833***	0.0468
	(0.0245)	(0.0224)	(0.0305)
41.region	-0.0686***	-0.0259	-0.0725***
	(0.0183)	(0.0183)	(0.0255)
42.region	0.135***	0.115***	0.0426
	(0.0229)	(0.0233)	(0.0336)
Observations	15,973	14,908	7,791

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Results of OLS regression on education expenditure across per capita income quintiles

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
toinc	0.0142***	0.0166***	0.0185***	0.0252***	0.0214***
	(0.00148)	(0.00294)	(0.00240)	(0.00264)	(0.00358)
attend_512	131.4***	173.6**	393.5***	1,160***	6,893***
	(25.94)	(85.95)	(132.0)	(268.2)	(822.9)
attend_1317	594.5***	1,291***	2,448***	4,872***	13,339***
	(48.19)	(114.2)	(223.7)	(430.3)	(1,103)
attend_1824	2,746***	6,896***	9,430***	15,425***	30,526***
	(232.8)	(396.7)	(471.1)	(705.8)	(1,460)
cashreceipt_abroad	347.0**	833.6***	932.9***	1,933***	3,074***
	(156.3)	(231.2)	(294.6)	(465.4)	(1,064)
urban	-176.9**	-569.6***	-751.0***	-697.1	2,207*
	(72.39)	(153.5) dummies	(269.7) ion	(526.0)	(1,313)
	Regional	base: Reg	I)		
2.w_regn	127.0	551.9	2,375***	3,627**	6,392
	(231.4)	(342.9)	(777.6)	(1,655)	(4,106)
3.w_regn	-20.79	-305.0	6.316	139.4	6,818**
	(213.4)	(292.2)	(553.7)	(971.5)	(2,927)

5.w_regn	-195.6	410.5	136.0	407.1	248.7
	(201.1)	(390.5)	(715.0)	(1,300)	(3,779)
6.w_regn	-229.5	-355.1	773.4	512.9	3,093
	(210.1)	(317.2)	(670.3)	(1,235)	(3,215)
7.w_regn	-161.5	-54.84	-573.6	893.6	1,456
	(217.6)	(350.7)	(625.9)	(1,185)	(3,206)
8.w_regn	-117.0	293.8	667.0	956.0	-2,685
	(204.1)	(365.5)	(703.1)	(1,543)	(3,831)
9.w_regn	-199.4	-215.8	-1,110*	-2,652**	-10,556**
	(195.3)	(364.1)	(623.2)	(1,310)	(4,121)
10.w_regn	-159.9	570.6	1,439	1,408	3,251
	(202.6)	(446.9)	(897.5)	(1,356)	(3,965)
11.w_regn	-143.6	138.4	-518.9	-340.6	-3,771
	(201.1)	(373.5)	(614.0)	(1,150)	(3,010)
12.w_regn	-38.57	449.3	4.199	1,564	4,451
	(194.4)	(362.5)	(618.4)	(1,400)	(4,404)
13.w_regn	-654.1***	-1,295***	-2,249***	-2,753***	8,308***
	(217.0)	(300.2)	(547.5)	(928.7)	(2,884)
14.w_regn	1,289***	1,456***	2,605***	2,625**	2,515
	(342.1)	(523.2)	(966.2)	(1,335)	(3,584)
15.w_regn	-123.1	-393.5	-1,849**	-3,709*	-4,222
	(223.3)	(296.9)	(724.5)	(2,241)	(6,459)
16.w_regn	0.575	-72.61	1,875**	758.1	3,640
	(198.8)	(357.6)	(886.7)	(1,807)	(5,120)
41.w_regn	-562.0***	-45.41	-1,290**	1,058	8,397***
	(206.6)	(365.9)	(534.7)	(957.3)	(2,755)
42.w_regn	-56.58	-172.1	231.6	-1,934	2,777
	(202.8)	(337.4)	(802.7)	(1,410)	(4,454)
Constant	-432.3**	-968.8***	-1,228**	-3,104***	-10,422***
	(207.6)	(354.4)	(565.8)	(996.1)	(2,640)
Observations	7,836	6,755	5,962	5,432	4,753
R-squared	0.216	0.275	0.290	0.307	0.324

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1