Returns to Education in Nepal

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Take away. 1. Economists trying to draw a link between education and poverty alleviation should assess the impact of education on social indicators, such as improvement in health and civic participation, than on other factors, such as productivity, which are only remotely related to poverty alleviation.

2. When we look at the impact of education on the three (out of four) factors that are described in the Tenth Five Year Plan as prerequisites for poverty alleviation— improving the health of people, improving agricultural productivity, and reaching out to the vulnerable groups—primary education appears to be our best bet for poverty alleviation.

What has been done? Most economists agree that education makes individuals more productive and thus enhances economic growth. In this strand of literature, earnings are used as proxies for productivity gains. The consequent economic growth then translates into higher income, lowering poverty. Mathematically, earnings are regressed against one's level of education, controlling for other factors that could affect earnings. The coefficient on the level of education variable gives the impact of one additional level of education on earnings.

What are the flaws with the existing methodology? When the objective is to draw a link between education and poverty alleviation in Nepal's context, the above described methodology is flawed for several reasons:

First, earning does not necessarily reflect productivity, with the possibility of the bias in either direction, but mostly downward. In rural schools, for example, it is common for teachers to teach a grade lower (or higher) than the grade they are qualified to teach. In such cases, teachers' productivity will be lower (or higher) than reflected in the earnings. Similarly, for women, who either choose to or are forced to engage in household production activities instead of taking up paid work, their earnings will reflect a lower productivity, leading to underestimation in returns to their education. Finally, labor market discrimination across gender or ethnicities could also make earnings weak reflectors of productivity.

Second, even if education increases productivity, the resulting economic growth might not translate into reduction in poverty if individuals whose productivity rises are individuals on the upper rungs of the economic ladder. In cases where it does, little

poverty reduction might come at a cost of severe inequality, as among the East Asian Tigers, which experienced spectacular economic growth between the 1960s and the 1990s (again because of skewed capital accumulation—both physical and human—towards one segment of the population). Rising inequality could only ignite more instability in Nepal.

Third, whether one goes to school, to what level of schooling she does, or what kind of job she ends up taking also lies on factors such as family background which are hard to account for using even the most sophisticated econometric techniques.

Fourth, in many cases, what is produced—or what is earned as a result of excess production—is consumed right away. In such cases, higher earnings at a given point in time do not necessarily improve the future living standard of the people. If our policy goal is to improve the future living standard of the people, findings from an analysis that looks at *present* earnings alone will not be of much help. This is because present earnings give little indication of what the individual's earning patterns will be in the future.

Finally, as Amartya Sen argues, education benefits an individual in "countless" other ways apart from increase, if at all, in the productivity of the individual. Earnings do not necessarily account for those "countless" other ways.

What are the major findings of my analysis? Economists have also used a more direct approach, albeit rarely, setting social indicators, not earnings, as dependent variables. Although a rigorous discussion of the method used is beyond the scope of this paper, the basic model estimated is the following:

Social indicator = α + β (*Educational attainment*) + μ (*A vector of control variables*).

In this equation, *social indicator* could be, for instance, whether an individual has participated in the electorate or used contraceptives as a means of family planning. *Educational attainment* is the years of schooling that the individual has had. Control variables could range from educational attainment of parents to walking distance to the nearest ballot box or health post—in this case, basically any factor that could affect the individual's decision to participate in the electorate or to use the contraceptive. The findings of my analysis discussed below have been derived from the following model:

Social indicator = α + β (*Educational attainment of the household head*) + γ (*the household head's parents' average education*) + δ (*Gender of the household head*) + μ (*other control variables*).

The variable *social indicator* refers to one of the following:

(1) whether the household owns a latrine

(2) whether at least one child in the household has been immunized against diseases,

(3) whether the household used at least one improved variety of seed in 1994-95, and

(4) whether the household used at least one "advanced" machine (tractor, water pump or a trolley) in agriculture in 1994-95.

The *other control variables* are specific to the *social indicator*. For indicator (1), for example, income of the household is included to account for the fact that whether a household owns a latrine could be a function of the household's income (i.e. a household might not build a latrine if the income is too low, even if the household head has had numerous years of schooling). Similarly, for indicator (3), distance to the nearest bus station is controlled for.

Using this method for the 1995-96 Living Standard Survey data, the following results stand out.

First, whether a household head has primary education does not alter the probability of the household using an advanced machine. It increases the chances of immunization, latrine construction and the use of improved variety of seeds, however. This finding suggests that our primary education has been successful, as far as the findings of this analysis go, in terms of creating hygiene awareness.

Second, assuming that a household head has primary education, her completing secondary education does not improve the chances of her household using advanced machines or seeds. It does improve the chances of children in the family being immunized against major diseases and the chances of constructing a latrine. One reason why the probability that the household uses advanced machines or improved variety of seeds decreases with secondary education is that, going from primary to secondary education, an individual starts to think about moving out of agriculture to find another job. In other words, secondary education gives her a perception that she is no longer fit for agriculture, which lowers her incentive to invest in agriculture and buy machines or seeds that could potentially increase production.

Third, our post-secondary level is almost counter-agriculture. A household head's completion of post-secondary education significantly *lowers* the chances that the household uses advanced machines in agriculture. This could be because of the reason discussed in the preceding paragraph. Further, if a household head has secondary education, her completing post-secondary education does not increase the chances of children in the family being immunized against diseases (that is, the marginal impact of higher education on immunization is zero). This finding suggests two possibilities. Either, our secondary education is so effective in installing hygienic knowledge that, going from secondary to post-secondary education, one learns virtually nothing extra about health. Or, our post-secondary education is so weak in emphasizing knowledge about health that

an individual's carefulness towards health does not increase with post-secondary education, but in fact diminishes over time.

What are the policy implications? In the table below, the three levels of education are ranked based on the size of their coefficients. These policy goals are derived from the Poverty Reduction Strategy Paper (PRSP) (which is also the Tenth Five Year Plan) prepared by the government of Nepal in collaboration with the World Bank.

The PRSP emphasizes four major aspects for poverty alleviation: (1) improving the social services sector, of which health is one; (2) increasing agricultural productivity; (3) reaching out to backward and vulnerable groups, which by definition are those at the lower rungs of the economic ladder; and (4) improving governance. The fourth goal could not be included because of unavailability of data on civic participation.

Policy goal matrix			
Policy goal / Education level	Primary	Secondary	Post secondary
Improving the health of the people			
Increasing the use/ownership of latrine	1	2	3
Encouraging immunization against diseases	2	3	1
Increasing agricultural productivity			
Encouraging the use of improved seeds	2	1	3
Encouraging the use of advanced machines	3	2	1
Reaching out to backward and vulnerable groups	3	2	1
Total	**11**	**10**	**9**

Note: 3: most effective; 1: least effective

Notwithstanding the weaknesses in the analysis discussed in the next paragraph, it stands out that primary education gives the highest marginal payoff and therefore should be the primary focus of our education policy going forward.

Caveats. Although evaluating returns using social indicators, as opposed to earnings, is more appropriate for reasons explicated above, this method also has some drawbacks. Firstly, the list of indicators is not comprehensive by any means. There are several other indicators we could analyze (such as consumption or the use of contraceptives) and link to the poverty alleviation goal. Moreover, the social indicators used here were chosen mostly because of convenience – mainly, data issues – than because they are the most strongly related to policy goals. The use of contraceptives, for example, could be a better measure of health awareness than ownership of a latrine.

Secondly, education is not the sole determinant of these outcomes; income of the household and distance to the nearest amenities are significant in most of the cases. There could be other areas, such as building roads, which if emphasized might lead to faster poverty alleviation than by emphasizing education.

Thirdly, in the analysis, educational attainment of the head of the household is used. It is not always the case that the head of the household makes the decision, especially if the head of the household is a woman. Therefore, the outcome variables cannot always be attributed to the education level of the household head.

Finally, it has been assumed that the policy methods mentioned in the table above—improving the health of the people, improving agricultural productivity and reaching out to backward and vulnerable groups—lead to poverty reduction in Nepal. This claim remains to be tested.

Economists working on Nepalese economy should work to address some of these issues.