The importance of health and education in economic development is beyond dispute, and yet the poor are often seen to underinvest in both health and education of their children, even when they are easily affordable or entirely free. Provide an in-depth analysis of this issue by considering two countries, where significant interventions have been made in either health or education or both, and evaluate their experience to answer the question.

Will O'Donnell

Development Economics

It is essential we understand the relationship between health and education and its effects on economic development in the developing world. Human Capital in its broadest sense encompasses the levels of education, health, and nutrition of the population. Few processes are as intertwined with development as human capital accumulation. Education increases productivity, speeds technological advancements, and increases the probability of more healthy productive children, all of which promotes economic development. Growth, in turn, incentivizes investment in human capital. Vogl (2012) states that 'Causal links point in every direction, traversing phases of the lifecycle as well as generations'1. It is therefore no wonder that governments of developing countries increasingly concern themselves with the underinvestment by the poor in both health and education. In this assignment I will provide a brief overview of some literature on the topic, and then compare two contrasting cases.

Firstly I will discuss some of the more general arguments of why the poor tend to underinvest. A frequently cited reason for this behaviour is that poor families are myopic in their decision-making process. The traditional human capital model assumes that individuals are utility maximisers and that they can take a lifetime view when deciding whether to invest in education, comparing the present value of benefits with the costs of investment. However in reality, poor families face an investment decision, where they must juggle current subsistence needs against investments in schooling that carry a remote and uncertain payoff. It is therefore easy for these particular individuals to be myopic or 'short-sighted' in their economic outlook, underestimating or disregarding the evident returns to education. This causes an inability to effectively internalise the returns to education and health in their decision making process. As a result, many children in developing countries have a sub- standard level of health and educational attainment.

Secondly, several studies show that the main cost factor influencing this underinvestment into education is the opportunity cost, which is the forgone family income from children's potential earnings (Basu 1999; Strauss and Thomas 1995). These opportunity costs are larger for poor, rural families with many small children (Behrman, Pollak and Taubman 1989). Family size and opportunity costs make liquidity constraints more binding, leading to an underinvestment into health and education across the developing world.

Thirdly, a wealth of the literature on the topic of human capital in development has found an intergenerational transmission between education and poverty, forcing low-income families to be stuck in a vicious cycle which ultimately ends in low educational attainment. Children born into disadvantaged families are at higher risk of experiencing malnutrition, illnesses, and home environments less conducive to learning, and they tend to receive a lower quality of schooling. They therefore tend to develop less motivation to learn. It is near impossible to reverse the impact that these deficiencies in a child's early years can have on the development of skills during youth and adulthood through normal education. Poor children therefore face important long-term learning constraints even in the absence of short- term liquidity constraints to attending school.

Moreover, households in developing countries often lack information on the returns to investing in preventative behaviour and that their health behaviour is responsive to information. But information, or rather the source of information, has to be credible for it to make a difference. Information campaigns carried out by governments with a bad track record might be doomed to fail. For example, Egypt was extremely successful at reducing the incidence of child deaths due to awareness campaigns. In India few children with diarrhoea were treated with preventative measures in the early 1990s, despite 10 years of vigorous campaigning by the Indian government (Rao et al. 1998). One could hypothesize that the lack of success of the Indian governmenť s ORT campaign was related to the forced sterilization effort carried out by the government during the state of emergency between 1975 and 1977, and the subsequent distrust, among the population, of any government initiative related to family issues.

The essential question is whether demand or supply-augmented policies are most useful. Most programs designed to increase school enrolments among the poor build schools closer to where they live, increase the resources for the schools in terms of raising teacher salaries and training, reducing class-size, and augmenting other educational inputs. These supply approaches may increase enrolments in some cases, but may not be especially effective in increasing enrolment

among the poor, leaving a wide and possibly growing gap between the educational attainment of the children of the poor and rich (Deolalikar, 1997). One could argue that if Mexico and India already have a high unequal distribution of income; demand policies would be more suitable to countering the divide.

Analysing Mexico and India will be extremely useful. Comparing two developing countries from the same continent seems relatively pointless, as they will tend to have more in common economically, politically and culturally. In both these countries, varying factors are at play which means that they are more likely to suffer from underinvestment in human capital, namely the high levels of income inequality. The interventions made by each country have been extremely different, offering a good juxtaposition of policies for analysis.

In Latin America, an educational divide keeps uneducated, poor families in persistent poverty. Latin America is divided between individuals who are highly educated and those who have little education, and this divide is simultaneously a cause and an effect of subsistence incomes across generations. Since the level of education and health of the parent is strongly correlated with children's educational attainment, the educational divide is self-reinforcing across generations, suggesting a form of 'education trap' which is hard to break out of.

Moreover, cultural biases against females attending secondary school and the financial benefits families gain from the marriage of their young teenage daughters have hindered girls' participation in education in Latin American countries. To encourage families to send girls to school, Progresa provided girls with a higher payout for attending secondary school than similarly aged boys. This may be deemed inequitable; however drastic measures have to be taken in order to reverse long standing cultural biases in pursuit of better investment into health and education.

The Mexican government implemented Progresa in 1997, covering 2.6 million families in rural areas by the year 2000. It was designed to reduce poverty by providing cash payments to families in exchange for regular school attendance, health clinic visits, and nutritional support. The two-pronged attack of Progresa recognised the intergenerational transmission of education and health and thus was seen to be a suitable intervention; however improving access to education is not sufficient to achieve improved educational attainment among children. As discussed earlier, poor children face considerable barriers to learning due to poor health. In the case of Mexico, Anaemia has decreased the work potential of females Haas and Brownlie, 2001) with severe knock-on effects

for economic development.

The cash payments were implemented in order to reduce the opportunity cost faced by poorer families when making human capital investment decisions. Poor families often rely on the wage labour of their children – particularly in rural areas – even if they recognize the importance of education and wish to send their children to school. The 'household demand' approach provides subsidies which can be administratively targeted to the poor within a community, and perhaps thereby able to close the gap between enrolments and educational attainment of the poor and not-poor, reducing the substantial inequality in schooling and income found in Mexico and in many other parts of Latin America.

Progresa was extremely successful making improvements in health as well as education. Secondary school enrolment increased substantially, with the biggest impact among girls. Enrolment figures for boys increased by 10% and the enrolment figures for girls increased by 20%. Other substantial effects include an increase in consumption (mostly food intake) of 22%. The proportion of malnourished children decreased by 17.2% and regular health visits have increased by approximately 45% among young children under 5 (Skoufias, 2005).

In India, enrolment levels have increased substantially over the past few decades. This seems promising; however it is argued that policy members seem to relax once children start attending school. Though 93.4% of children aged 6-14 are enrolled in schools; 35% of children aged 7-14 cannot read a simple paragraph; 41% cannot do subtraction; 66% cannot do division (Pratham 2005). Many believe that simply building schools and hiring teachers is the main solution to improving education, but schools in developing countries deliver very little. Education may be affordable or entirely free as stated in the question; however the standard of education that is needed in order to break out of the poverty trap might only be accessible through private schooling, which is simply unaffordable for poorer families.

My essay will cover two specific interventions that India has made. The first intervention is specifically targeted to the weakest children: it is a remedial education program, where a young woman (balsakhi) from the community works on basic skills with children who have reached grade three or four without having mastered them. These children are taken out of the regular class-room to work with this young woman for 2 hours per day. The program has been implemented in twenty Indian cities, reaching tens of thousands of students. It was started in Mumbai in 1994, and

expanded to Vadodara in 1999.

The second intervention could potentially benefit all children, but is adapted to a child's current level of achievement: it is a computer-assisted learning program (CAL hereafter), where children in grade four are offered two hours of shared computer time per week, during which they play games that involve solving math problems at varying levels of difficulty. Both programs are provided by Pratham, a very large NGO operating in conjunction with government schools in India.

Despite experts on the subject stating that complementary technology could be extremely useful in the classroom, very little rigorous evidence on the impact of computers on educational outcomes for India or other developing countries exists. Moreover, the little evidence available is not encouraging. For example, Joshua Angrist and Victor Lavy (2002) evaluate a CAL program in Israeli schools with disappointing results. Among the fourth and eighth grade students evaluated with math and Hebrew exams, the data show no benefits and provide some evidence that children who received such instruction are actually at a disadvantage.

The remedial education program increased average test scores in the treatment schools by 0.14 standard deviations in the first year, and 0.28 in the second year. Moreover, the weaker students, who are the primary target of the program, gained the most. In the second year, children in the bottom third of the initial distribution gained over 0.40 standard deviations. The CAL program increased math scores by 0.35 standard deviations the first year, and 0.47 the second year, and was equally effective for all students. These results persist over time: one year after leaving the program, initially low scoring students who were in balsakhi schools still do better than their untreated counterparts, though the difference is smaller. Students of all levels perform better in math if they were in schools where the math CAL program was implemented.

These results show that it is possible to dramatically increase the quality of education in urban India, a very important result since a large fraction of Indian children cannot read when they leave school. Subsidizing schooling among the rural poor may thus be a development strategy that deserves more widespread consideration as a geographically and economically targeted policy which can both reduce entrenched intergenerational transmission of poverty and promote long-term economic growth. Both programs are inexpensive and can easily be brought to scale: the remedial education program has already reached tens of thousands of children across India. An important unanswered question, however, given the evidence of decay in the gains a year after the programs

end, is whether these effects are only experienced in the short term, or can be sustained several years after the program ends, making a long-lasting difference in these children's lives.

Experts – namely Banerjee and Duflo – argue that there is no point pushing children into school until there is a real value to education. Interventions should therefore be geared toward the quality of education, rather than simply increasing enrolment levels. On their 'Poor Economics' website, Banerjee and Duflo state that 'Enormous gains can be made by focusing on teaching the basics and using technology to complement teachers'. Moreover, Nobel Prize winner (1998) Amartya Sen argued that the notion of development should mean an increased capability of people to pursue their well-being. Building schools is not enough; adequate measures should be taken to enable people to make use of the schools.

Progresa encouraged school attendance but did not emphasise performance unlike the CAL or 'balsakhi' policies examined in India. Educational attainment must be improved in order to increase the returns to education. In unequal societies, educational attainment offers the only means of climbing the social ladder where there are better employment prospects. It is promising that Progresa increased enrolment levels of poorer children, however if the Mexican government wants to make a dent in the large disparities between rich and poor, policies are needed which improve the standard of affordable education. This would have the effect of breaking the cycle of underinvestment into education over generations because families will internalise the higher return to education into their human capital decision making process.

Progresa was initially implemented in rural areas, whereas the influence of the bulsakhi and CAL programs was purely in urban areas. In the end, all policies I analysed have had positive results. The fact that one was in an urban setting and the other was in a rural setting definitely had large impacts on the respective successes of the policies. Underinvestment into health and education is rifer in rural areas across the developing world, not just in Mexico and India. This is due to individual preferences, cultural attitudes and the overall feelings toward employment practises, resulting in a lack of demand for education. This could possibly be the reason why Progresa has seen such impressive results.

Another difference in the two countries experiences is that households in Mexico under the influence of Progresa underwent improvements in overall health levels, whereas little improvement or change in health was documented in households under the influence of the Balsakhi or CAL

programs in India. One cannot be entirely confident that this means that Progresa is the better policy because health levels may have reached an adequate level in the Indian cities studied before the two policies were implemented. Despite this, I would argue that Progresa's two-pronged policy designed to have significant impacts on health and education levels has longer-lasting effects. As most of the literature on the topic shows, the intergenerational transmission of bad health and low educational attainment is problematic. Policies that attack both poor health and poor education would therefore be more effective at reducing the underinvestment phenomenon.

Naturally, sustainability is a concern. How long can the Mexican government afford these cash transfers? How can India justify widening the CAL program to reach rural areas or a wider proportion of the population, when returns to CAL type programs seem to be ineffective in developed countries, once a certain standard of education has been met? Progresa has been acknowledged for its cost effectiveness, the adequate targeting of beneficiaries, and its ability to sustain its integrity as an anti-poverty scheme, targeting the underinvestment in human capital by poorer families. The monitoring system of Progresa and the strong promotion of a human development approach are recognised as the main innovations of this intervention. The legacy of Progresa has yielded important lessons to the world, demonstrating that the overall development impact is higher when redistribution schemes are coupled with interventions aimed at improving human capital of the poor.

The Balsakhi program can also be brought to scale, since it has already reached tens of thousands of children across India. Evaluations conducted in two cities over two years suggest that this is a remarkably efficient and cost-effective program. Banerjee et al (2005) suggest that the cost of the program is approximately $2 per student per year. The CAL program has also been widely reviewed as an extraordinary success. Contrary to what has been found in other countries, the use of technology to complement education has been useful; however no significant improvements in health have been documented.

To conclude, one cannot say that Progresa is the better policy, as the intervention may not have worked in India. Similarly, the balsakhi and CAL programs may not be fruitful if implemented in Mexico. Policy makers need to be extremely knowledgeable about the particular cultures and attitudes of their populations, understanding their needs and thought processes. Recent global economic and financial crises affected Mexico's overall economic performance, noticeably reversing some of the impressive gains that had been made in the last decade. India has also been hit hard economically by the recent global financial crises, however more research is needed in testing

whether the policies discussed in this essay prevented the recession from having a greater negative impact on both Mexico and India.

References and Bibliography

Angrist, J., and Lavy, V., (2002) *'New Evidence on Classroom Computers and Pupil Learning'* The Economic Journal, Vol:112, pp. 735-765.

Arias, O., Diaz, A., and Fazio, M., (2013*) 'Breaking the cycle of Underinvestment in Human Capital in Latin America'*, World Bank Flagship report: "Poverty Reduction and Growth: Virtuous and Vicious circles", Vol.9, Available at: http://siteresources.worldbank.org/EXTLACOFFICEOFCE/Resources/870892-1139877599088/virtuous_circles_ch9.pdf [Date Accessed 31/10/13]

Banerjee, A., Cole, S., Duflo, E., and Linden, Leigh., (2005) *'Remedying Education: Evidence from Two Randomized Experiments in India',* NBER Working Paper No. 11904 Available at: http://www.nber.org/papers/w11904 [Date Accessed: 03/12/13]

Fuentes, R., and Montes, A., *'Mexico: Country Case StudyTowards the Millennium Development Goals at the Sub-National Level*', Background Paper for Human Development Report 2003, UNDP

Gantner, L., (2007) *'PROGRESA: An Integrated Approach to Poverty Alleviation in Mexico'* Available at: http://cip.cornell.edu/DpubS/Repository/1.0/Disseminate?view=body&id=pdf_1&handle=dns.gfs/1200428168 [Date Accessed 31/10/13]

Gaviria, A., (2002) *'Intergenerational mobility, sibling inequality and borrowing constraints'* Economics of Education Review Vol:21 pp.331-340 Available at: http://labor.bnu.edu.cn/resource/jee/0208/Intergenerational%20mobility.pdf [Date Accessed: 31/10/13]

Psacharopoulos, G., (1993) *'Returns to investment in education: a global update,'* World Development 22, pp. 1325-1343, Available at: http://www.wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1993/01/01/000009265_3961003230826/Rendered/PDF/multi_page.pdf [Date Accessed: 31/10/13]

Rao, K.V. et al., (1998) *'Knowledge and Use of Oral Rehydration Therapy for Childhood Diarrhoea in India: Effects of Exposure to Mass Media'*, National Family Health Survey Subjects Report 10

Skoufias, E., (2005) *'PROGRESA and Its Impacts on the Welfare of Rural Households in Mexico'*, Research Report 139, International Food Policy Research Institute., Available at: http://www.eldis.org/vfile/upload/1/document/0708/DOC22746.pdf [Date Accessed: 03/12/13]

Tatto, M., (1998) *'Improving Teacher Education in Rural Mexico: The Challenges and Tensions of Constructivist Reform'* Teaching and teacher education, An International Journal of Research and Studies, Vol. 9 (1), pp. 15-35