INVESTING IN EDUCATION IS THE MOST EFFICIENT WAY TO REDUCE POVERTY

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In this essay, Emma Tobin tackles the question as to whether investing in education is the most effective way to tackle poverty. The first half of the essay presents arguments for the importance of education and the costs that devalue education in LDC's. It then focuses on women's education and its importance to society as a whole. She concludes by highlighting the importance of investing in education while simultaneously doing so in other areas.

Introduction

The attainment of education, one of the major goals of development economics, is also a driving force behind such development. The backbone of many development and aid programs hinges on investment in education (Todaro, 2011). But is this the most efficient means of reducing poverty?

It is estimated that roughly one fifth of the world survives on under a dollar a day (Khan, 2001). While it is estimated by that some 600 million people have been elevated out of poverty in the last 20 years, over a billion people are still classified as impoverished.

The inability and struggle to pull oneself out of poverty is referred to as the poverty trap. An income gives an individual the economic power necessary to satisfy their basic needs (Schultz, 1999). But the condition of poverty impedes ones productivity, and thus they cannot earn the income necessary to overcome these conditions (Todaro, 2011). People become trapped in a bad equilibrium.

In this essay I will argue that solitary investment in education is insufficient to truly reduce poverty. I will make the case that joint investment, with a focus on education, is more effective than unilateral investment. Further to this I will emphasise why a policy focus on bridging the gender gap will garner maximum returns. While the returns on educations can be great, its efficiency is contingent on numerous other endogenous factors and is subject to multiple limitations.

Why Education?

Many of the programmes and initiatives aimed at reducing poverty have had a singular focus on education in recent years.

The concept of equality of opportunity drives much of this investment. Structural

inequality in many lesser-developed countries can be extremely pronounced (Houle, 2009). This inequality often translates into a lack of access to the education, healthcare, and technologies that could help lift communities out of poverty (Todaro, 2011). Education grants an individual the knowledge necessary to overcome such inequalities. It is far more efficient to have direct investment in human capital, rather than invest in programs that may be corrupted by this (Psacharopolous, 2004). The benefits of education are particularly pronounced in these lesser-developed economies and its pursuit is universally supported as one of the key steps needed to combat poverty.

The majority of LDCs economies are based around the traditional sectors, which is proven to have the highest rate of returns from growth, resulting in less inequality and less poverty (Mitchell, 2012); the more volatile the state of technology within a country, the greater the returns on education. Human capital and labour act as the main productive assets. This makes education a prime investment for technological poor countries, and the most efficient means to overcome the initial challenges of poverty reduction (Psacharopolous, 2004).

Multiple schemes have been tested as a means of reducing poverty including the provision of technology, the freeing up of credit, microcredit initiatives, health programmes, agricultural programmes etc. Education is a key facet to all of these schemes and is imperative to their respective success. It forms the backbone upon which many other investments are made, as proven by the high correlation between education and development (Jameel, 2009).

Taken on its own, education is the process that gives an individual the knowledge and skills necessary to become maximally productive (Schultz, 1999). Skills such as reading and writing increase ones capabilities to accumulate and adapt to new information, facilitating innovation (Todaro, 2011). In turn there are increases in an individuals' employability, entrepreneurial skills, and widens their future opportunities as the demand for skilled labour increases (Khan, 2001).

The spill over effects of education have been proven to affect both immediate family and community (Psacharopolous, 1991). In Uganda, on average, a one-year increase in education of a neighbouring farmer was associated with a 4.3% rise in output locally (Psacharopoulous, 2004). The net result is that a singular investment in education garners a multitude of returns.

The short, medium and long-term effects of increases in education are substantive and relatively efficient when compared to the initial input.

The attainment of education increases an individual's productivity and contribution to the labour force. It is the equivalent of investment in physical capital, but with initially higher returns (Schultz, 1999) (Psacharopolous, 2004). The average rate of return on a year of schooling is 10%. In moving from an uneducated to an educated workforce, the economy has the ability to expand beyond subsistence levels.

But education alone is insufficient to stimulate development. Education and health are two mutually reinforcing factors (Miguel and Kremer, 2004). Both are important objectives of development, but also key components of growth (Schultz, 1999). Similar to the poverty trap, improvements in health can result in increases in educational attainment, and vice verse. But, improvements in health and education do not automatically garner higher incomes due to structural problems and labour market failures (Khan, 2001). Thus policy needs to be structured in such a way that is caters to the individual context of the region in question, with joint investment in health and education, as well as other necessary considerations.

Limitations and Policy Considerations

The structure of an investment programme should be considered as, if not more important than the monetary value of the investment itself. Policies that are either ill conceived or the rough equivalent to "throwing money at a problem" have been proven to ill effective at tackling poverty. Such policies are rampant in resource rich "rentier states", who despite high GDP's, struggle to elevate poverty (Ross, 2001). The way in which money is invested is therefore of the utmost importance.

Simply making education and schooling compulsory has little social returns; it does not ensure quality education and is rarely enforced (Acemoglu, 1999). Thus we are left with the need to increase self-motivated learning and the use of incentives.

First and foremost, we must consider the costs and benefits of education. While the long-term benefits of an education can be significant, these are useless if the cost of education reduces living standards and chances of survival today, particularly if a family is living at subsistence level. While a child may benefit from an education in the future, they lack the agency to make the decision to go to school now. The cost of education is born by the parents (Kremer, 2003).

Assuming the parents are risk averse, they will only send their children to school if they see it as a fair gamble, or as having a high probability of returns. But the risk of education is great given the opportunity costs it entails. Asymmetric information means parents may be ignorant of the full benefits of education and the insurance it can provide in future years. Moreover, the cost of education may be too much to bear in the current period. While the child's future earnings may increase with each additional year of education, in present value it is discounted in line with the cost it will entail (Todaro, 2011).

A lack of access to credit means there is no deferral of payment and the costs are to be fully covered in the present (Khan, 2001). Investment will only occur when Marginal Benefit is greater than or equal to Marginal Cost (Mitchell, 2012).

Five main costs, direct and indirect, detract from the value for education.

Firstly, the child may be earning important income for the family. Child labour is an unfortunate reality, but a necessity for many families to live above subsistence level

(Schultz, 1999). Secondly, there are costs associated with going to school -uniforms, travel, opportunity cost etc - which the family cannot bear (Kremer, 2003). Third, in the case of female education, investing in education may have no benefit to the family if culture dictates she cannot work, is to be married off, or the family will have to pay a substantial dowry upon her marriage (Psacharoplous, 1991). In North Sudan a female is expected to enter into seclusion after marriage or her 18th birthday, and therefore is not seen as a viable investment to family members. All of these contribute to an equilibrium in which the cost of education and the risk it bears is too great for individual level investment to occur. State level investment solely in education becomes inefficient and will not alter the individual's equilibrium unless steps are taken to increase benefits relative to cost.

State programmes geared towards negating these costs have had some success. The INPRES school construction scheme in Indonesia was deliberately geared towards regions with low enrolment, and saw an increase in number attending school, but with no real increase in relative productivity (Duflo, 2002). Schools in Kenya provided free uniforms, textbooks and even free breakfast with mixed results. The provision of free uniforms proved so popular class sizes doubled, but with a lack of real improvement in test scores. Textbooks proved an ill investment as students lacked the ability to understand them. The provision of a meal however proved most effective (Kremer, 2003). Not only does the promise of a meal a day create motivation among students to attend school, but it massively detracts from the cost of school to the parents, as it reduced their burden of costs on food provision. These incentive structures served to shift the equilibrium towards education, but with varying levels of efficiency relative to cost at a national level.

Fourthly, we consider the impact of health (inclusive of nutrition). The health of a child determines not only whether or not they attend school, but their attentiveness while there (Jameel, 2009). If a child suffers from illness the opportunity cost of schooling may be compounded if they are too unwell to concentrate. Furthermore, high levels of absenteeism in schools are often due to sickness. Future returns may be impeded if a health problem goes untreated and leads to a debilitating lifelong affliction (eg. Polio, Glaucoma) (Todaro, 2011). Miguel and Kremer's work on de-worming in schools is a testament to the huge impact illness has on education, and the massive returns that can be gained from investing in cheap medical treatments. At a cost of $3.50 approx per school 70% of children in 60 schools were treated for parasitic worms – a common ailment in the developing world. Participation increased by 7%, a 25% reduction in absenteeism and was proven to have spill over effects onto untreated and control schools due to a reduction in contagion within the community and region (Miguel and Kremer, 2004). These hugely efficient returns only serve to emphasis the benefit of joint investments.

Lastly we consider the quality of the education provided. If teachers are frequently absent, students do not receive returns on their investment (Jameel, 2009). The opportunity cost of possible income earned may be greater than a below par level of

schooling. Parents may be discouraged from the pursuit of current and future education is they see no tangible benefits today (Jameel, 2009). In India, Duflo (2010) found that children in grades 2-5 had poor literacy and numeracy skills with 65% unable to read a basic paragraph and 50% unable to perform rudimentary arithmetic. This was equated to the high level of teacher absences, with the consequence of children also being frequently absent. An incentive program was then implemented in private schools. Additional pay above a base line level became conditional on the teacher being present for each extra day over 20, with proof of attendance taken in the form of a photograph. Absenteeism fell in the treatment schools from 40% to 21% among teachers and students test scores increased by 0.17 standard deviations (Duflo et. al, 2010). The low cost nature of the programme earned statistically significant returns and thus can be classified as efficient.

Policy makers must be aware that incentives or compensations are necessary provisions in order to re-establish the market in favour of schooling. Otherwise the investment may be wasteful and inefficient.

Even when education is attained and health is good, there could be systematic market failures that prevent individuals earning returns. While the private returns on education may be great, the social returns are frequently less so (Psacharpoulous, 2004). Faulty credit markets can prevent a knowledgeable person from perusing entrepreneurial ventures, or investing in new technologies which otherwise would have increased their productivity and earnings (Khan, 2001). A failing labour market may not be able to provide employment for those in possession of high skill levels, or even jobs beyond the traditional sectors. Even if employment is attained, individuals may be underemployed, human capital wasted, and full returns lost.

Physical capital often doesn't adjust to faster growth in human capital (Duflo, 2010). Urban migration or even emigration may occur, leaving the targeted impoverished area without any tangible returns (Todaro, 2011). This may result in little to no returns on the initial investment being seen, it's efficiency negated by a failure to address structural problems elsewhere.

The benefits of allowing for all these considerations can be measured in the success and failure of various development targeted investments.

Progresa/Opportunidas in Mexico can be viewed as a fully efficient investment programme in education. Cash payments were made to mothers with under the strict conditions that children were kept in school, they engaged in health education programmes in the pre-existing facilities, and children were vaccinated and received frequent checkups (Rawlings, 2005). The results were encouraging, with a 23% reduction in illness among children and high school attendance compare to the control groups. The programme itself is very low cost, only accounting for 0.4% of Mexico's expenditure. Part of the programme's success was its focus on joint investments – empowering the mother, the child's attainment of education, and health provisions. It is estimated that the pro-

gramme now makes up, and has contributed to 25% of the rural poor's income. The success was such that the programme has been expanded and continued through successive governments (Todaro, 2011).

The Gender Gap and Maximum Returns

As outlined above, there is no singular investment strategy that will reduce poverty in a wholly efficient manner. There is widespread endogeneity between all of the mentioned factors, and countless unobserved variables of untold influence on any investment outcome. While there is much discussion about the best means of structuring investments, there is less ambiguity surrounding the most efficient demographic to target with these investments.

The highest returns on development investments are frequently seen among women. Inclusive of home work and economic work, women engage in productivity far more than men (Psacharopolous, 1991). On average, women receive higher returns on their schooling- 9.8 to men's 8.7. This is particularly true at secondary level (Pscharpolous, 2004).

But, as stated previously, women are particularly vulnerable to poverty (Schultz, 1999). They are often viewed as second to the men in the family and as a result are often left without the skills necessary to support themselves independently. Sen estimates some 100million women are "missing" due to poverty each year, either through sex selected abortion, premature and a disproportional number of deaths in their infancy and childhood, and early death in adulthood or becoming "unaccounted for" (Qian, 2006). A lack economic power hugely reduces a woman's agency over her own life. This is particularly problematic when we consider the mother is often the primary care giver to numerous dependents, children and grandparents alike (Schultz, 1991).

This lack of full access to health care and education means the mother can be ignorant of basic health practices, unable to leverage decision making power, and thus the children too may fall into ill health and not gain a full education. If female daughters are then denied access to education for the reason mentioned earlier, this cycle is perpetuated (Schultz, 1999). In effect females are considered luxury goods, meaning investments will not be made in their benefits during periods of financial duress. Yet this is exactly when investment should remain equal between the sexes (Psacharopolous, 1991). Simply put the returns on education for females far outweigh those for males.

The long-term benefits from female education are huge. Women are more prone to HIV/AIDS, and if untreated this can spread to a foetus. Wholly preventable through education on safe practices and condom use, this disease decimates the age group that would otherwise be contributing to productivity and growth (Todaro, 2011). Furthermore mother to child transfer means HIV can be propagated throughout generations. Educating women and providing them with a source of income has positive results for both mother

and child. Mothers have been proven to put a higher value on education and so, when granted decision making power their child has a higher probability of school attendance.

A disturbing result was drawn by Qian is her analysis of agricultural production in China. In the tea regions where women earned income, increases in female income were followed by increases in the survival rate for girls. Conversely in the orchard regions where men earned the bulk of the income, it was found that increases in male income actually decreased the girl's chances of survival (Qian, 2006).

Yet tangible returns on investments in female education have been seen and are having massive impacts on the composition and reduction of poverty globally. Falling fertility rates are contributed to female education about contraception, which will have great consequences. Lower population growth means a reduction in resource demands and a greater share of endowments for all. It also results in better childcare and lower infant mortality rates, increasing the standard of living (Schultz, 1999). Increasing labour market participation increases female control over decision making, resulting in better health outcomes for children, especially females (Psacharopolous, 1991). The social returns on female education are thus greater than male returns.

Conclusion

Many of the policies examined above are contingent on the correct functioning of other sectors. A functional education sector is useless without a competent, available and affordable health system. Multiple market failures can counteract an otherwise well structured investment strategy. Thus policies need to be tailored to the individual context of the affected area.

We have implicitly assumed throughout this essay that development and a reduction in poverty are desirable to the states affected, when in reality this may not be the case. Development and education are often cited as key triggers in democratisation (Houle, 2009). Hence we see many authoritarian regimes use poverty as a means of repression, providing just enough support to retain a healthy support base while suppressing the opposition. This is reaffirmed with multiple studies finding correlation between these variables (Houle, 2009). Education and development are thus often unsupported by the political institutions within a state or not run efficiently. IGO's and NGO's (if permitted to enter and work) often must function unilaterally, and inefficiently.

While it is difficult to establish true causality between education, growth and poverty reduction due to endogeneity problems, the empirical observations of returns are enough to justify investment. Because of the multiple correlations that exist, joint investment policies are needed in order to have a maximally efficient investment. No single policy has been proven universally effective. Investing in education can be an efficient means of reducing poverty, but that is contingent on how well it is tailored to its specific context.

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