EUROPEAN REPORT ON DEVELOPMENT

SOCIAL SAFETY NETS: THE ROLE OF EDUCATION, REMITTANCES AND MIGRATION

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MOBILISING EUROPEAN RESEARCH FOR DEVELOPMENT POLICIES

ABSTRACT

We study the role of education as a social protection mechanism. We compare the effectiveness of direct cash handouts in comparison to education over the long-term in reducing the vulnerability to poverty. We also look at the role of three inter-related mechanisms related to protection against shocks: Education, Remittances and Migration. We compute internal rates of return to investments education when the objective is social protection or poverty, and not just the value of incomes. We use Ghanaian Livings Survey data and show that, for benchmark interest rates, the returns to primary and secondary education are positive for social protection. This suggests that for the long-run, education may be a more important means of social protection than cash transfers.

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INTRODUCTION

Today, many sub-Saharan nations are celebrating the 50th anniversary of the end of the European colonial era. With the end of the colonial experience, many newly independent African nations embarked upon a rapid expansion in their education systems. It was believed that having a large trained and skilled labour force was important in order to attain the rapid economic development that the new nations thought they could and, indeed, should attain. Many countries were of the opinion that the colonial administrations had not invested sufficiently in education, at all levels - primary, secondary and tertiary. From that time until today, education has been believed to be very important for economic development. This has been the case both in the policy world as well as in the academic literature. Education has been expanded in Africa - at considerable cost, and African nations spend large percentages of their government spending on education, among the highest levels in the world.

In this paper, we focus on a second question. In particular, we ask whether education is important not only for the levels of income but also in reducing "vulnerability." In particular, could education be important as a means of reducing the vulnerability of individuals, particularly the poor, to shocks to their incomes? Could education be justified as a large-scale social protection mechanism for poor countries in sub-Saharan Africa? Indeed, is spending on schooling a more efficient way of providing social protection than direct cash transfers? In particular, is it better to give cash transfers to those whose incomes have fallen or is it better to spend money by increasing their education, which could, in turn, permanently increase incomes? Simply put: Is it cash or education that is a better method of social protection?

There is a saying, "Give me a fish and I eat for a day. Teach me to fish and I eat for a lifetime", generally believed to be Confucian. In this paper, we ask whether, by investing in education, one may help to prevent hunger much better than by giving cash handouts (or fish). By investing in education is there a better long-run return to reductions in vulnerability to poverty as compared to direct cash transfers each year when people fall below the poverty line.

There are two related aspects to the education proposition above, which, perhaps, did not loom large in the consciousness of the national leaders at independence when they were thinking of the benefits of education. First, there has been a significant migration of Africans out of the continent. This has occurred among both the educated and the uneducated. Second, as a consequence of this migration, African nations are now receiving large amounts of income from remittances of those migrants outside the continent. Both these facts have been well-documented in the literature. (See Nyarko, Y. (2009).)

The remittances and migration are, of course, also important parts of the social protection story. When a negative income shock occurs, there may be increased remittances from relatives. There may also be migration to greener pastures.

Presumably, the three concepts education, remittances and migration are related. Increasing education levels would make it easier for nationals to migrate out of the country - those migrating legally would, one would imagine, have a better chance of obtaining visas if they can, at least, speak the language of the destination country, usually a European one. One would further suspect that those with higher education would do better in the destination country if they have better education, and (although there is a lot of debate on this) that those who do better abroad would send more remittances back home.

To the extent that education levels may enhance the amount of remittances and to the extent that these are important when there are adverse shocks to the economy, then, albeit indirectly, education gets another boost in its influence on the vulnerability of the poor.

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There may also be feedback loops. The remittances of those who migrate may be used in the education of those relatives who remain in the home country. The migration of one group may encourage others to invest in education through imitation and through the establishment of migrant networks abroad which make migration easier and publicise the opportunities, thereby increasing the perceived benefits of migration.

In this paper, we focus primarily on the education part of the cycle of feedbacks of education, migration and remittances. We provide a definition of social protection as the probability of falling below a particular level of income. We then measure the changes in these probabilities due to increases in investments in education (from primary to secondary, for example). We use the Ghana Living Standards Survey data1 to illustrate this and we then compute the implied lifetime net-benefit to this investment. We find that, when measured in this way, for benchmark interest rates (5%), these investments yield positive values for primary and secondary school education. We also compute the internal rates of return to these investments in education. We then describe the connection with remittances and their impact on our computations. We leave the data work and description of the data sources to a companion piece (Gyimah and Nyarko (2010).)

Vulnerability and Education

Very often there is confusion in the literature between poverty and insurance on the one hand, and vulnerability, however defined, on the other. If vulnerability is taken to mean variability in incomes, then the extremely poor whose incomes are fixed at very low levels may be among the least vulnerable in society using this definition of vulnerability.

We will be working with the Ghana Livings Survey so this is probably a good time to illustrate some of the data there. We use wave 5 for the first few sections of this paper. There are 4 educational categories we consider "No Schooling', Primary, Secondary, and Tertiary with observations of size 7034, 5011, 7780 and 290 respectively. Figure 1 shows the total number of observations of our dataset broken down into different education levels and age groups.
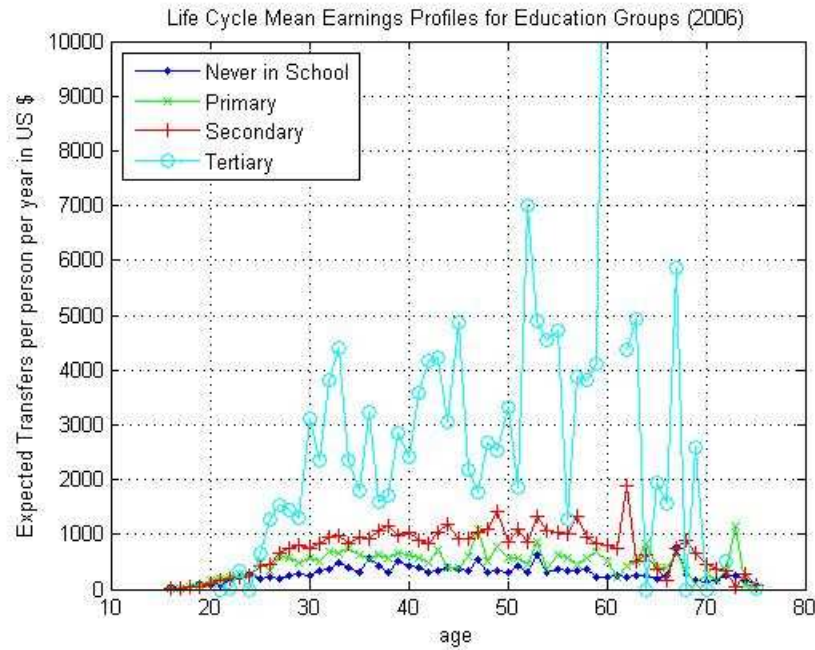
Figure 1
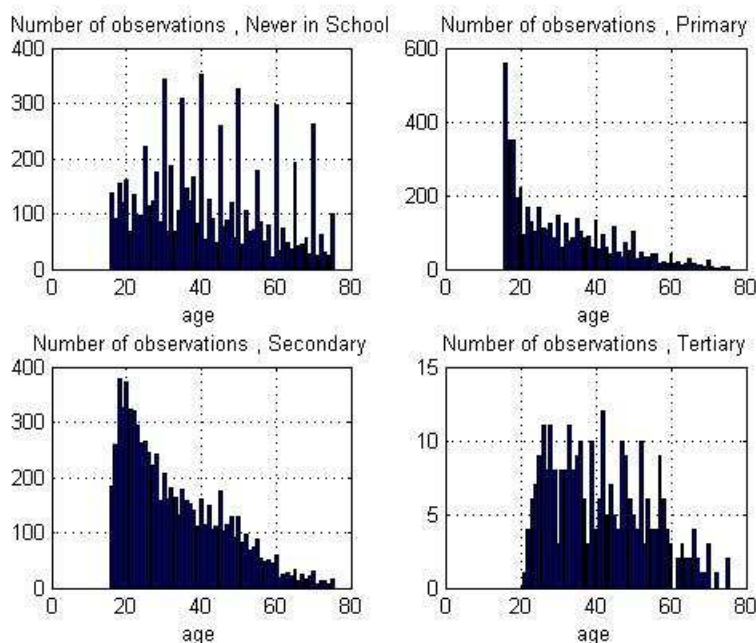
The diagram below shows the mean incomes of individuals of different ages with different education levels.

Fig. 2: Life Cycle Earnings.

It is easy to see that there is much more variability in the incomes of the higher educated, at least across age groups. Next, we delve into this in a bit more detail and look at the variability of incomes within age groups and for a given education level. In the figure below, we use the standard deviation as our measure of variability. We see that, at almost all ages, the levels of the variability of incomes is smallest among the poor.

Figure 3

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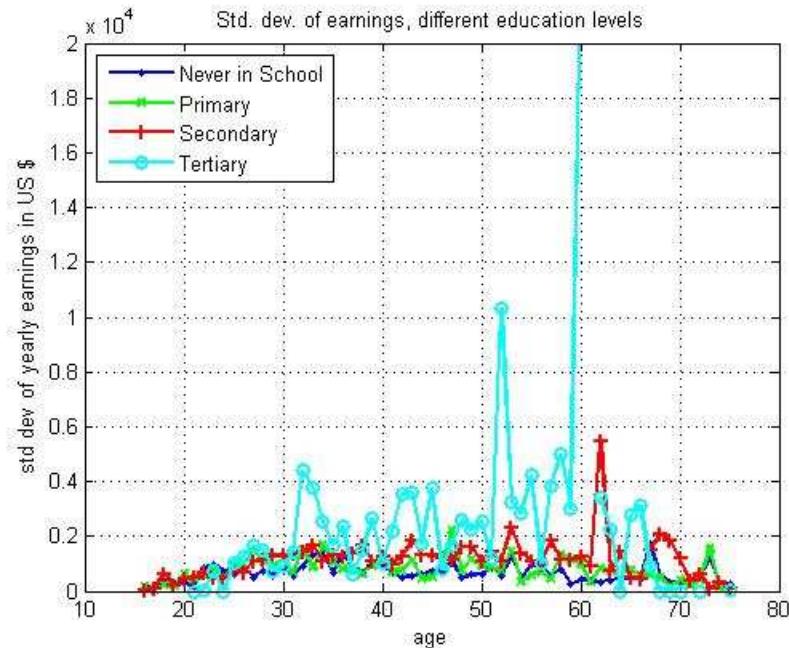
For the appropriate measure of vulnerability, there should also be an income test on any definition we use. When a billionaire loses half of his or her wealth, we may or not feel sorry for the person, but we certainly do not include this in our conception of the vulnerable. Policy-makers and governments are all much less concerned with smoothening out the consumption of the rich. The rich should be able to use commercial insurance markets to good effect. In particular, any definition of vulnerability must restrict attention to the poor, for it is the poor that should be of concern to policy-makers. The concern is in providing support when incomes are low in an absolute, rather than relative, sense.

In poor nations, one could imagine extreme concern for the poor whose income may fall below an ex ante specified poverty-line threshold. We think of the probability of starving - not getting the required food nutrients. There is often a threshold poverty-line, with concern for individuals who fall below it.

The United Nations Millennium Goals are a set of some 8 goals, or "Targets", which nations are required to achieve by 2015. Target #1 is the reduction of the threshold poverty-line as defined as an objective. Part 1 of Target 1 asks for the proportion of the population below \$1 a day to be reduced by one half by the year 2015. For Ghana, the implied poverty rate is around 1/4 (25%)of the average income of the country. The bottom 20% (1/5) of the income scale is, therefore, the poverty threshold under this measure.

We follow this approach in our definition of the objective of social protection. (In many studies, in contrast, the poverty lines are computed by determining the cost of obtaining the minimal nutrients for basic survival.) We consider a distribution of income levels, y, of individuals in the economy. We consider having a cut-off income level z, which represents the poverty line. Those who fall below that level are recorded as a "minus" in our social protection welfare function. The further away the income is from this level, i.e., the bigger is the gap between actual income and the poverty line, z-y, the worse the record of welfare. In particular, we suppose that the aggregate loss is the Foster-Greer-Thorbeck (FGT) measure:

$$W = \int_0^z w(z-y)g(y)dy \qquad\qquad (1)$$

in which g(y) represents the income distribution in the country and w the utility function expressing the "costs" associated with income y being below the level z. In particular, our concern is only with individuals having income below the poverty line z, and, in addition, the further the income is from the poverty line is, the more we are concerned. (The original FGT measure would normalise W by z; as we discuss later, in our dynamic analysis, there will be an implicit normalisation by discount factors which captures the spirit of the need for the normalisation in FGT). A similar formalisation has also been used by A. Sarris and P. Karfakis (2010), in their study of vulnerability.

If our social welfare function w(x) is equal to 1 over the relevant range, then (1) becomes the probability of lying below the poverty line. It is also the fraction of those below the poverty line. If this number is high, then there is a high probability of being poor. It can, therefore, be considered as a measure of vulnerability. Note also that, when w(x)=x over the relevant range , then w(z-y) is the payment or cash transfer by the government to bring the individual up to the poverty line. In this case, W can be considered the (normalised by population) cost of a social protection scheme which guarantees all individuals the poverty line income. In this case, multiplying (1) by the population would be the government's cost of bringing everybody who falls under the poverty line up to that line. In a static model, the objective of policy would be to minimise the social objective W.

Figure 4 below shows the evolution across age groups of poverty - the fraction of poor of each age group at different education levels. As expected, the lower the level of education, the higher the level of poverty for all ages in general. (There are some interesting, but justifiable, outliers with the tertiary educated - when they are younger and, presumably, in college, and again at retirement age at 60).

Figure 4

Proportion of individuals living in poverty across education groups over time (2006)
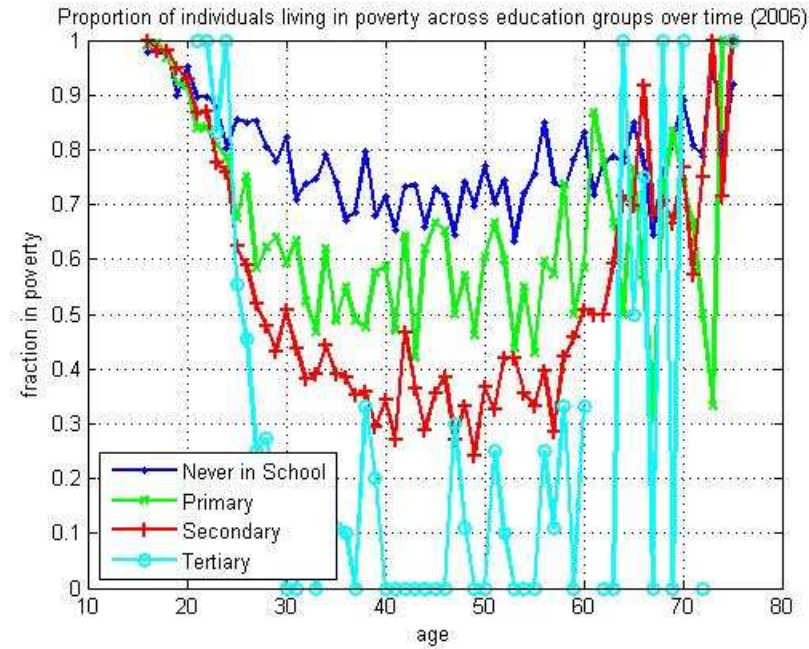
Now, suppose that whenever an individual falls below the poverty line, the government incurs a Social Protection cost (SP) equal to the amount of money needed to bring this person up to the poverty line. If the government was, for example, constitutionally required to make sure that everyone was at the poverty line, then this amount SP would be the cost to the government. (In particular, we now use the formulation in (1) with $w(x)=x$. We normalise and consider the average per person cost - or the expected cost given the distribution of different types of people with different income levels. This is the expected transfer per person from the government in order to eliminate poverty. Even when the government does not actually transfer money to the poor, this could still be considered as a measure of how bad poverty is. This is a measure which could, therefore, be used in evaluating different social programmes for eliminating poverty. Indeed, what we will do later is to look at a social programme - education - and determine how effective it is in reducing poverty. The Ghana data which we are using enables us to plot the expected transfers to combat poverty. This is provided in the Figure 5 below.

Figure 5
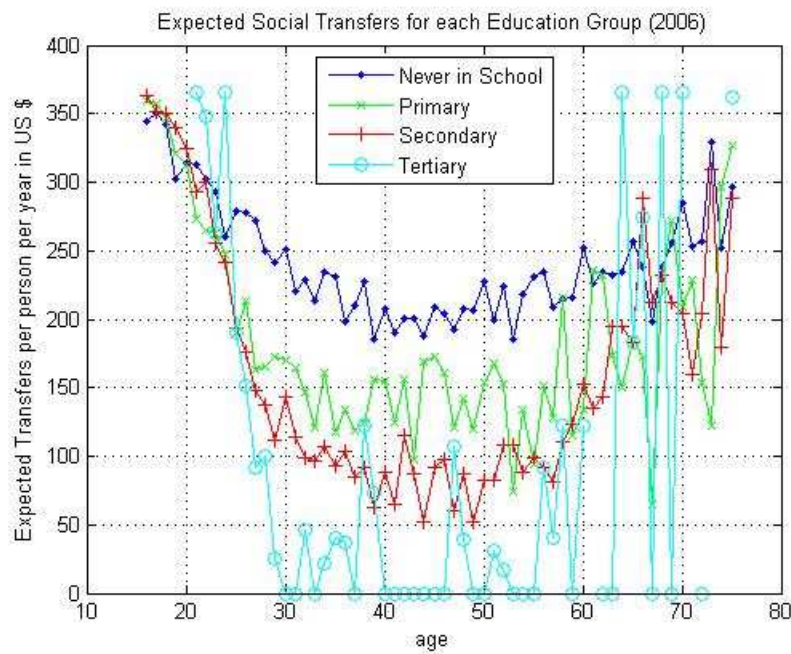
Dynamics and Two Views of the Poor

We now consider a dynamic version of the earlier simple formulation. What we will attempt to do is straightforward. We will take as given the society's current educational levels and their implied income levels. We look at the trajectory of incomes and the implications for the evolution of poverty. We then look at the dynamics where there is an increase in education levels. We then ask the simple question: Over time, is education a better lever for reducing poverty? In particular, by helping people become educated, do we teach them to be better able to stay out of poverty better?

Clearly, our results will depend upon discount factors and the current shocks in the society. Clearly the greater is the concern for the poverty today with its low values of consumption as opposed to future poverty levels, the more will be the desire to postpone investments in people which could help reduce the poverty in the future. The greater the concern for poverty today – with its low values of consumption, as opposed to future poverty levels – the greater the desire will be to postpone investments in people, which could help to reduce poverty in the future. Thus, there will be a trade-off between now and the future. Our analyses will, therefore, depend upon our assumptions about time preferences - or interest rates.

Our computations will use an analytical approach which is standard in the economics of education literature, and involves computing rates of return to education. We will discount the future (so that the present is more valued than the future), but will have a parameter which measures how much more this valuation is.

We shall consider a single representative individual. This individual lives over a number of periods t=1,2,.... until death. As before, we suppose that, in period t, the individual will have income in period t equal to some value y_t which is random. There will be at each date t an official poverty line which we denote by z_t. Following the description in the static case, the expectation of the poverty of the typical individual (or the normalised poverty of the general population) for period t is therefore given by:

$$W_t = \int_0^z w_t (z_t - y_t) g_t (y_t) dy_t \qquad (2)$$

with all relevant variables subscripted by the date ti.

Fix an interest rate r. Define the discount factor by $\delta=1/(1+r)$. The expected net present value of poverty is given by:

$$PV = -\sum_{t=0}^{\infty} \delta^t W_t \qquad\qquad (3)$$

We use a negative sign in (3) to denote the fact that it is a cost outlay or a negative utility to the government. We should stress that present value computation above has the discount factor $\delta=1/(1+r)$ embedded in it. The smaller the value of δ, or the bigger the interest rate r, the greater the importance attached to the present, rather than the future. A value of $\delta=0$ models the situation in which there is no concern about the future at all. As δ goes to 1, there is increasingly more weight placed on the future.

We shall now use superscripts (s) to denote the level of schooling. We shall look at an increase in schooling level from, say, level s to level s+1. We will let ΔC^{s+1} denotes the incremental cost of schooling - i.e., the cost of providing schooling of level s+1.

For our case study, Ghana, we obtain the cost information from the UNESCO datasets. We use 2005 data, which indicate the costs for primary, secondary and tertiary levels per student per year equal to, respectively, 0.127, 0.341 and 2.075 times GDP per capita for Ghana in 2005. (This is 570,803.75, 1,532,630.53 and 9,326,124.21 in local Ghanaian cedis, or US$62, US$167 and US$1016).

The incremental net present value of the reduction in poverty due to the increased schooling, net of costs of schooling, which we denote by $\Delta SP(s+1)$, is therefore given by

$$\Delta SP(s+1) \;=\; PV^{s+1} - PV^s - \Delta C^{s+1} \;=\; \sum_{t=1}^{\infty} \delta^t \,[W_t^s - W_t^{s+1} - \Delta C^{s+1}]. \qquad (4)$$

The term $\Delta SP(s+1)$ is the net gain or loss from increasing education to level s+1. This is equal to the lower social protection costs less the cost of providing the education.

We will use our sample from the Ghana GLSS 5 data to compute the value of the expectation above, and, in particular, the incremental social protection defined earlier. We will then compute the internal rate of return on this - the largest interest rate for which the net present value is positive. As mentioned earlier, in this exercise, we perform what is standard in the economics of education literature.

We begin with primary schooling. In particular, we obtain two numbers: (A) For those who have never been to school and are likely never to go to school, what is the social protection cost or poverty index as defined earlier; and (B) What is the benefit of primary schooling in terms of the reduction in social protection cost PLUS the cost of providing that primary schooling? As an illustration, let us suppose that the social protection cost of the individual in (A) at   age 30 with no schooling is $250; and let us suppose that it costs $60 to provide primary schooling, and that the social protection cost of someone with primary education is $170. Then, ignoring the timing issues (i.e., the fact that primary education was provided years ago), then the next benefit to that individual of primary education is the reduction in social protection costs ($250-$170) less the cost of primary education, $60, for a net sum of $20.

We need to add up all the different ages, and do the time discounting appropriately. In particular, we take as the net benefit of primary education the expected lifetime discounted sum of improvements in the social protection cost due to the higher level of education, less the lifetime cost of providing the primary education level (which is typically provided around years 6 to 12).

In Figure 6, there are two curves which correspond to the concepts described in (A) and (B) above respectively, each drawn as a function of the interest rate (which determines the rate of discounting the future versus the present). One curve is the social protection cost of those with no education, corresponding to (A) above; the other curve is a the total expected lifetime social protection cost of someone with primary education plus the lifetime cost of primary education - corresponding to (B) above. The figure shows that as long as the interest rate is not too high (i.e., the future is not discounted too much), and, in

particular, as long as it is less than 7.1%, primary education is a net benefit for social protection. The value 7.1% is, therefore, the internal rate of return to primary education when the objective maximises our measure of social protection. Clearly, there are other benefits of primary education – particularly, the possibly increased incomes of those above the poverty line. When incorporated into the calculation, this would possibly result in even higher internal rates of return. Here, however, we are focusing ONLY on the social protection aspects of education.

A benchmark interest often used is the 5% level. It is, for example, used by many foundations in their return computations on endowments. At the 5% interest rate level, the lifetime present value of social protection costs plus the cost of education is equivalent to US $2,924.48, while the social protection costs of no education is even higher, at the equivalent of US $3170.20. The difference is US $245.72; this is the net present value (NPV) per person over the lifetime in terms only of social protection investments in primary education at the benchmark interest rate of 5%. Figure 7 shows the NPV at all interest rates. The key point here is that the net present value of the investment in primary education is positive at benchmark interest rates.

Figure 6
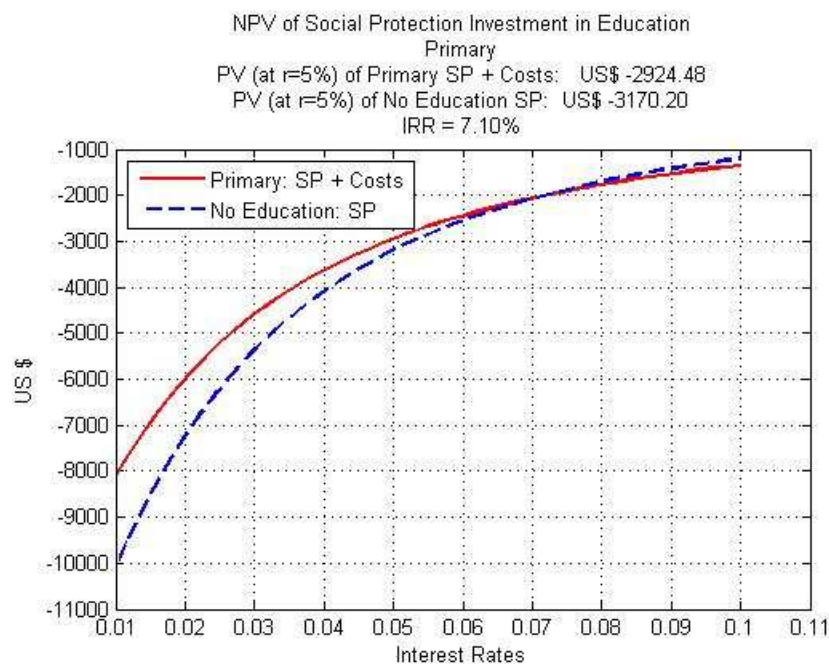
The difference between the two curves in Figure 6 is the net benefit to primary education. In Figure 7, we plot the difference between the two curves. It shows that, as long as the interest rate is in excess of 7.1%, primary education is a net benefit for social protection. The number 7.1%, in where the net present value is exactly zero, is often referred to as the internal rate of return – here, of primary education. The interpretation is that, if one can get money at an interest rate less than the internal rate of return, then there is a sense in which the project is "profitable".

Figure 7
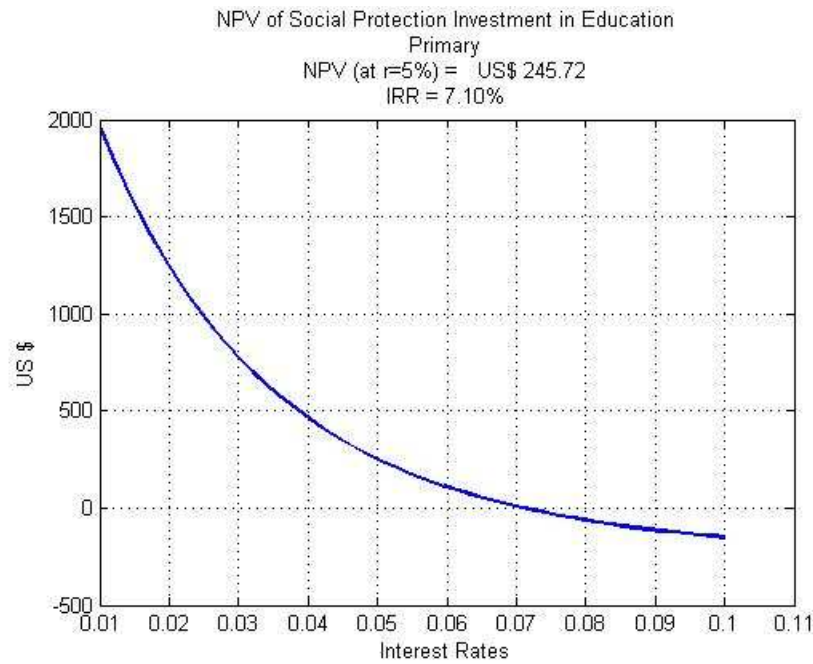
Figures 8 and 9 repeat the exercise above, but for the question of the net benefit to secondary education. In particular, they answer the question of whether the costs of secondary education can be justified in terms of the resulting reduction in social welfare costs. We find that, for secondary education, this is, indeed, the case.
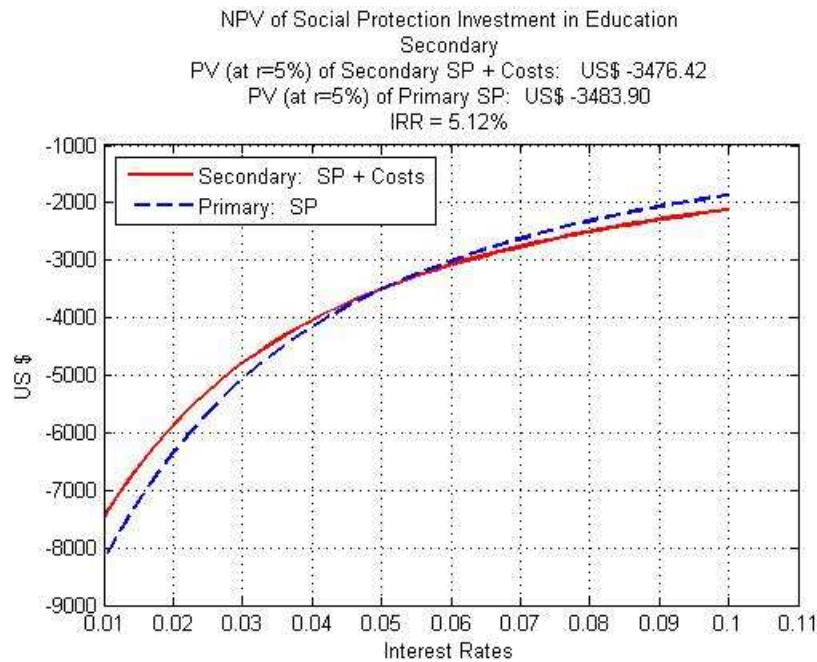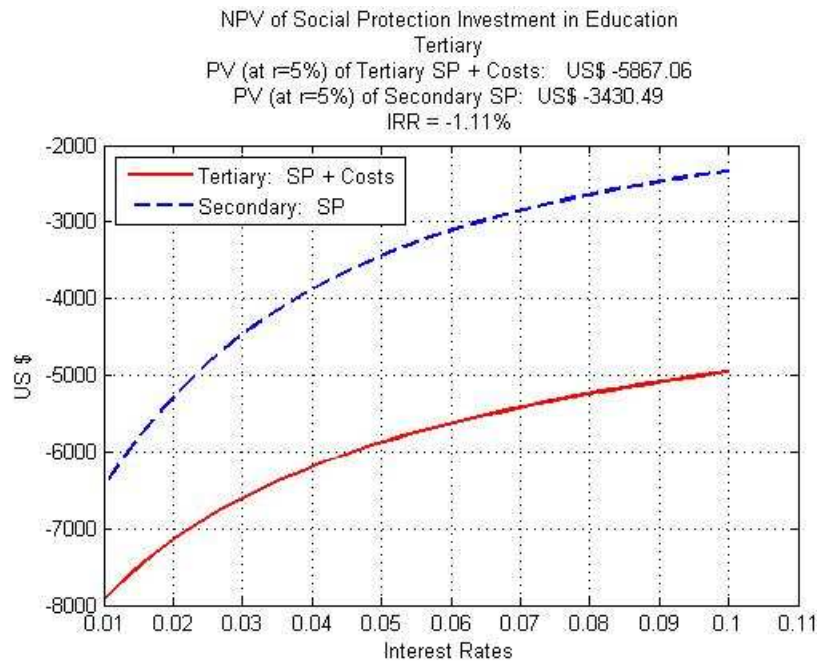
Figure 8

Figure 8 shows that as long as the interest rate is not too high, and, in particular, as long as it is less than 5.12%, secondary education is a net benefit for social protection. Again, of course, there are other benefits of secondary education, which, when incorporated into the calculation, would possibly result in even higher internal rates of return. At the benchmark 5% interest rate level, the lifetime present value of social protection costs plus the costs of secondary education is equivalent to US $3,476.42, while the social protection costs of primary education is even higher, at the equivalent of US $3,483.90. The difference is close to zero at the equivalent of US $7.48. If the added benefits of secondary education are factored in, we obtain an even higher value of the net present value of investments in secondary education.

Finally, we repeat the exercise for tertiary education. Here, we find that the social welfare benefits do NOT justify spending on tertiary education. Again, we stress here that the variable of interest is social protection. In particular, our conclusion is that, when going from secondary to tertiary education, the reduction in social costs is relatively low. Furthermore, the cost of tertiary education is relatively very high. This is reasonable, as one would not expect the goal of tertiary education to be in social protection defined via the poverty line. There are not enough people who cross from being under the poverty line to being over it with tertiary education to justify the investment in tertiary education. In Figure 9, we see that, at all interest rates, the investments in tertiary education are not justified by its impact on social protection.

Figure 9

NPV of Social Protection Investment in Education
Tertiary
PV (at r=5%) of Tertiary SP + Costs: US$ -5867.06
PV (at r=5%) of Secondary SP: US$ -3430.49
IRR = -1.11%

Adding Remittances to the Basic Equation

In the earlier section, we looked at investments in education as a means of increasing social protection. We obtained positive results for both primary and secondary education.

If education spending on individual A results in that individual helping others via remittance payments, then we obtain a second advantage from education, over and above the direct impact of the education on social protection. This channel boosts the returns to education at all levels.

Finally, if migration is correlated with education, then we obtain a third advantage of education. How do we measure the importance of remittances in the basic cost-benefit analysis? In a companion piece, we explore these remittances and migration channels (See Gyimah and Nyarko 2010). They all have the effect of boosting the social protection returns to education

Previous Studies on migration and remittances

The literature on migration and remittances in the development literature has been increasing at an exponential rate with the increase in emigration of workers from less developed countries (LDCs) to the developed world and the resultant increase in remittance flows to LDCs. In view of the rapidly expanding volume of the literature, we can only present a very limited review in this paper. The literature on migration and remittances has generally focused on three broad areas: the determinants of migration, the determinants of remittances, and the effects of remittances on the sending countries. There is a sub-division of studies into those using household and individual level data (micro studies) and those using aggregate data (macro studies). Although our approach uses both micro and macro data, we will focus mainly on the micro approach since the paper uses household data in the empirical analysis.

By far the largest number of studies on remittances focus on the effects of remittances on some measure of household welfare in the sending countries. The results are mixed; while a large number of researchers have found significant positive effects of

remittances on the welfare of the recipient households, others have found no significant effects. For example, Adams (2006a), Adams, Cuecuecha, and Page (2008a), Esquivel and Huerta-Pineda (2007), Grootaert (1987), Guzman, Morrison, and Sjoblom (2006), Litchfield and Waddington (2003), Giannetti, Federici, and Raitano (2009) and Semyonov and Gorodzesky (2008) conclude that migrant remittances have significant effects on household consumption in the recipient countries. Besides increasing household consumption, several studies (Esquivel and Huerta-Pineda: 2007, Brown, and Jimenez: 2008, and Acosta *et al*: 2008) conclude that remittances significantly reduce poverty in the recipient countries. Mazzucate (2009) has found evidence of risk pooling between migrants and their counterparts in their home countries.

While several studies have concluded that remittances decrease poverty, an overwhelming proportion of studies that have investigated the effects of remittances on inequality suggests that remittances tend to increase some measure of inequality. For example, Barhman and Boucher (1998), and Brown and Jimenez (2008) have found that remittances increase income inequality in Nicaragua, and Tonga and Fiji, respectively, while McKenzie and Rapoport (2007) have found that remittances increase education inequality among Mexican households. Although there is a general agreement on how remittances affect the level of household consumption, there is little agreement on the effects of remittances on the pattern of consumption expenditure. Castaldo and Reilley (2007) and Misllitcaia and Vakhitova (2009) have found that remittances significantly affect the pattern of household expenditure, while Adams *et al.*, (2008b) have found that remittances have no significant impact on the pattern of household expenditure, all things being equal.

Generally, studies suggest that migration and remittances, at worse, have no significant positive effect on household welfare; at best, they have significantly positive impact on the welfare of households which receive remittances. A few studies, however, have found significant negative effects. Using Australian immigration lottery data, Gibson, McKenzie and Stillman (2009) conclude that emigration has short-term significantly net-negative effects on a wide range of outcomes of households, especially emigrant households, in source countries in the Pacific. The distinguishing feature of this paper is the use of a natural experiment resulting from the introduction of the Australian immigration lottery, which allowed the authors to control for endogeneity of emigration. Similarly, McKenzie and Rapoport (2007) have concluded that migration has no significant effect on schooling for 12-15 year olds, but has strong disincentive effects on 16 to 18 year olds.

Quisumbing and McNiven (2010) use panel data from Filipino households to investigate the effects of migration and remittances on a host of outcomes. Treating the number of migrants and remittances as endogenous, they find that a large number of migrant children decreases the value of non-land assets and total expenditure, but that remittances have a positive effect on housing, consumer durables, educational expenditures, non-land assets, and total expenditure per adult equivalent. The focus of the paper is, however, on internal migration. Yang (2008) uses Filipino data to investigate the effects of exchange rate shocks on remittances, and finds that there is a positive response to remittances when the remitters' exchange rate appreciates. He calculates an elasticity of 0.6. Yang and Choi (2005) use Filipino data to investigate whether remittances act as insurance for recipients. Using panel data, the paper finds that remittances do, indeed, function as insurance. Our paper, this follows a similar pattern. Other researchers who have found positive and significant effect of remittances on poverty alleviation include Selim *et al.*, (2009) and Ang, Sugiyarto and Jha (2009) among others.

Besides consumption, researchers have investigated the effects of remittances on investment in education, health or productive assets. Kugler and Lotti (2007) have investigated the effects of remittances on education and health investment in Latin America and have found positive and significant effects on investment in these areas. Elbadawy and Roushdy (2009) have found that remittances increase the enrolment and completion rates of both men and women atuniversity level while reducing child labour (or, at least, labour

market participation). Osili (2007) has investigated the effects of remittances on savings and investment in the "home" country, and finds that, in addition to increasing the consumption of household members at home, remittances increase savings and investment in business, housing, other assets and human capital in their home countries. In addition to increasing consumption or increasing household incomes in the current period, Selim *et al.*, (2009), and Ang, Suqiyaro and Jha (2009) have found that remittances increase investment in human capital as well as in business formation. These results suggest that the benefits of emigration and remittances exceed the short-run benefit of increased consumption and may include a reduction in inter-generational poverty.

Emigrant remittance and its role as a social safety-net is apparently not new or limited to the current wave of globalisation. Magee and Thompson (2006) report that Britain was a net receiver of substantial amounts of remittances from its colonies, and that remittances in the United States of America in the Eighteenth to early Twentieth centuries amounted about 1 to 2 percent of export earnings. The amount and intensity of these remittances increases in real terms, over time, and with the increasing economic fortunes in the remitting countries, which suggests that, while the stock of emigrants in a country partly determines the amount of remittances from that country, economic conditions in the host country are equally important in determining the amount of remittances sent out. While a substantial proportion of these remittances went to support consumption and business formation, the paper argues that a substantial share of the remittances to Britain during the period went to finance further emigration to the new world and to the colonies in particular, a finding that is consistent with the idea that remittances finance the development of human capital in sending-countries besides its social safety-net role.

Kapur (2004) has provided a comprehensive review of the literature on remittances - trends, sources, destination, the determinants of its growth, and its development impact. The paper argues that remittances have been the most stable and rapidly growing source of private resource transfer to the developing world, that remittances to the developing countries have grown rapidly due to increased emigration, especially of skilled workers from the developed world, combined with increasingly frequent and intensive financial crises in the developing world, and this has meant that these emigrants will have to send money home to support their extended families at home. Although he argues that remittances may have some positive effects in reducing transient poverty, the paper is generally not optimistic about using remittances to finance development in recipient countries. The paper, nevertheless, provides some policy guidelines for making the transfers more efficient.

At the macro level, some studies have founnd remittances to have a significantly positive effect while others have found no significant effect. To the extent that increased GDP growth generates employment for those at the bottom of the income distribution chain, one can argue that increased income growth could be considered to be a social safety-net. Vargas-Silva, Jha, and Suguyarto (2009) find that remittances have a significant positive effect on income growth in Asian countries; a 10% increase in the remittances/GDP ratio is associated with a 0.9 - 1.2% increase in GDP growth rate. Gupta *et al.*, (2007) argue that remittances are an importance source of development finance that should be properly harnessed for sub-Saharan Africa's development. Glytsor (2009) find growth effect of remittances with a lag. Gapen *et al.*, (2009) conclude that, while workers' remittances have no significant growth impact on recipient countries, they nonetheless act as automatic stabilisers to cushion macro-economic shocks. In this regard, remittances act as social safety-net at the aggregate level. Sherman (2009), on the other hand, cautions against drawing broad generalisations about the macro impact of remittances, since the effects depend upon several factors, including the characteristics of migrants and the policies of both the home and host countries.

Another group of studies concerns itself with the determinants of remittances regardless of their effect on the welfare of recipients or what induces emigration to begin with. Dustman and Mestres (2010) have used panel data of immigrants in Germany to

investigate the effects of permanency of migration on the probability and amount of remittance that migrants send to their home countries. They conclude that, conditional to all other variables, the permanency of migration reduces the probability and the amount of remittances sent home. Niimi *et al.*, (2009) argue that remittances are negatively correlated with the education attainment of the immigrants; on the other hand, Bollard *et al.*, (2009) have found that the amount of remittances is positively correlated with the educational attainment of the migrant, conditional to the probability of sending a remittance. Aredo (2005) has used panel data from urban Ethiopian households to investigate the motivation for sending remittances. He finds support for the hypothesis that remittances are in response to distress in recipient families (risk-sharing hypothesis). Acosta *et al.*, (2009) have founds evidence of the Dutch disease effect of international remittances.

Conclusion

In this paper, we have studied the role of education in providing social protection. We define social protection as the probability of falling below the poverty line weighted by the value of the poverty gap. This is also the expected payment of a government which is required to provide a cash transfer to bring up to the poverty line anyone who falls below it. We have defined the net benefit of education to be the decreased social protection (or cash transfers) as defined above, less the costs of education. We have found that the social investment returns to primary and secondary education are positive, while those of tertiary are negative.

There are, of course, other benefits of primary and secondary education. Our arguments suggest that if the goal is social protection, then, instead, of setting money aside for cash transfers, nations and possibly donors may want to increase the education at the primary and secondary level. In the long-term and at the margin, trade-offs in this direction may be beneficial.

We have also observed that education has an added boost because of the role of education on increasing remittances. A companion paper (Gyimah and Nyarko (2010)) explores this channel for education in much greater detail.

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