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Human development and poverty reduction in developing countries

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Background

The study of human capital accumulation, and in particular the associated investment decisions (in nutrition, health and education), are a central component of the research conducted at the Centre for the Evaluation of Development Policies (EDePo) at IFS. The DFID/ESRC grant has been instrumental in financing and co-financing this research.

When it was started in 2002, EDePo's activities were mainly focused on the evaluation of large welfare programmes in Latin America. Our approach aimed not only to estimate the impact of specific programs but to understand the mechanisms behind the observed impacts of the programs under study. By identifying, for example, the way individuals reacted to relevant incentives. This approach involved the construction of rich data sets that could then be used to model individual behaviour.

The construction and analysis of data sets, as planned in our research proposal, was a sizeable part of our work over the past few years and has been funded to a large extent by the ESRC/DfID grant. Not only did the data enrich the development of the research agenda started before the grant, but it enabled the initiation of a number of completely new projects. A special mention goes to the collaboration with the UCL Centre for International Health and Development at the Institute of Child Health (UCIHD). The collaboration started with the DfID/ESRC grant has grown over the last few years and is leading to new projects and collaborations.

Objectives

The main objectives of the research financed by the DfID/ESRC grant have been: i) to better understand the processes through which human capital is accumulated in developing countries; and, ii) how this process can lead to the reduction of poverty both in the short and in the long run. More specifically, we have been studying various aspects of the process through which poor households in developing countries make decisions that affect the accumulation of human capital. These decisions can happen at different moments of the life cycle and in different contexts. We have a keen interest in the early years of childhood and how outcomes that are relevant for long run development are affected by nutrition, health and other inputs. We have also been interested in schooling decisions and how these are affected by the resources individuals have, by the availability of schools and by individual expectations. Finally, we are very interested in how public policy can and does affect these processes and influence the process through which human capital is accumulated. These overarching objectives have informed the projects that we list in the results section of this report.

Methods

The methods used in the projects developed under the current grant are many and intentionally eclectic. Indeed, some of the research projects have had an important methodological component.

Measurement tools. Economic models of human capital accumulation require strong assumptions on variables that are not observed by the econometrician. These variables are often not available in surveys. Part of our research has been devoted to develop measurement tools for variables such as expectations, information, and social capital. The availability of information on these variables allows us to relax some of the strong assumptions embedded in the economic models of human capital accumulation. For this reason, the construction and use of large data sets has become an important component of our research agenda. The impact evaluation activities we conducted necessitated the collection of large surveys. Within these surveys we have constructed and implemented a number of innovative measurement tools aimed at eliciting information about several variables that, while clearly important in individuals decision making, are rarely observed in standard surveys. These include subjective expectations, social capital, and individual information sets.

Impact evaluation. Much of the research we are doing originated in the need to evaluate the impacts of several welfare programs aimed at fostering the accumulation of human capital among poor households in several countries. Our approach to evaluation has been to go beyond the simple estimation of the impact of a programme and to identify the mechanisms behind the observed impacts. Impact estimation, however, is a first important step in this process and it constitutes an important part of our research agenda.

Structural models. The identification of the mechanisms underlying the observed impacts of an intervention can only be done through the specification and estimation of models of individual behaviour. The main issue with these models is that they can only be tractable and statistically identified with fairly restrictive assumptions. The inference that one draws from these types of models, therefore, is necessarily conditional on the assumptions one makes. On the other hand, no extrapolation of the impact evaluation results is possible without a behavioural model that predicts how households and individuals change their behaviour in response to a changed environment and changed incentives. More generally, an effective design of public policy is problematic without an understanding of the mechanisms that generate the outcomes one is interested in. Therefore we strive to construct credible structural models that, on the one hand use the variation introduced by evaluation exercises and on the other make the best possible use of rich data sources that include sophisticated and rich measurements.

Results

We now report on the research projects that have been financed by the grant. We group them by theme, starting with those around measurement issues. We then summarise work directly linked to evaluation, and then move on to research based around structural models of behaviour. Finally we report in a separate subsection on the project on networks in Nepal, which was specifically financed by the grant as a collaboration between IFS and UCIHD and that generated a completely new data set (that we are in the process of submitting to the ESRC archive). Each subsection refers in square brackets to the outputs listed in the annex.

1. Measurement tools: expectations, social capital, information.

1.1 Analysis and use of expectations data.

We have invested a considerable amount of effort in the elicitation of subjective probability distributions about future variables from respondents of our surveys. We have studied a variety of variables, ranging from expectations about future income to expectations about the returns to education. Some of this work is summarized in [7]. This paper is one of the nominated outputs and has been published in the American Economic Review.

Paper [1] analyzed subjective expectations of Colombian urban poor households, while paper [3] studies expectations of Colombian rural households. Paper[2], on rural Mexican households, includes a section where in the data on expectations are used to estimate the process for income faced by these households. This is one of the first papers to use subjective data to model household income process. A similar exercise was performed in [6], which uses data from rural India. This set of papers is in the process of being completed and submitted to academic journals.

Papers [4] and [5] use data on the subjective expectations of the return to education of Mexican youth. [4] (about to be completed) focuses on the validation of the subjective expectations used in this project. [5] uses the subjective expectations data to model education choices of the youth.

Outputs: [1]-[7]

1.2 Measuring social capital.

Another important activity has been the development of instruments that allow us to measure in a quantitative fashion what in the literature has been labelled as ‘social capital’. For this purpose we have worked with experimental economists to develop games that would allow us to construct measures of social capital based on the behaviour of subjects in a given community during controlled experiments.

1.2.1 Social Capital, Risk Sharing and Group Formation

This project uses data collected in 2006 in what is probably the largest field experiment of its kind. We now have a draft of a paper which analyses some of the data with the help of a theoretical model. The findings indicate a considerable amount of sorting, for example by risk aversion, but mediated by pre-existing networks.

Output: [8]

1.2.2 Using an Experimental Game to measure the impact of conditional cash transfers on social capital

This project aims at estimating the impact of conditional cash transfers on social capital. It was partly financed (for the data collection) with grants from the Corporacion Andina de Fomento and from the European Commission (through the programme EurosociAL).

There is anecdotic evidence that CCT have an effect on what has been loosely defined as social capital, as they have important social components. In September 2005 the Colombian government piloted the first version of a CCT in a poor neighbourhood of Cartagena. In July 2007, we organized 28 sessions (involving 25 people each) of a ‘public

good' game, of which 14 were played in this neighbourhood and 14 in a similar neighbourhood, where the programme was not operating.

A first study, [9], finds that our measure of social capital (the rate of contribution to the public good) was much higher in the neighbourhood with the CCT program (35% vs 9%). The differences in the level of cooperation observed in 2007, could be an effect of the programme, but could also be due to intrinsic differences between the two neighborhoods which turned out to be significantly different in many observable variables. However, as in September 2007 the programme started to operate in both neighbourhoods, in 2008 we went back to play the same games and observed levels of cooperation that were not different and roughly at the levels observed in 2007 in the 'treatment' community. Therefore, we find substantial effects of the conditional cash transfer programme on social capital, as measured by the level of cooperation in our games. Paper, [10], which describes these results, is being written.

Output: [9]-[10]

2. Impact evaluation projects

2.1 The impact of Conditional Cash Transfers (CCTs) and their design

EDePo, having initially specialised on the evaluation of a large CCT (in Colombia) has always been present in the debate over CCTs and has continued to work on the evaluation of this highly influential programme.

2.1.1 Children's Schooling and Work in the Presence of a Conditional Cash Transfer Program in Rural Colombia

This paper studies the effects of Familias en Acción, a conditional cash transfer programme implemented in rural areas of Colombia since 2002. The results show that the programme increased school participation of 14 to 17 years old children by between 5 and 7 percent, and had lower effects on the enrolment of younger children, in the region of 1 to 3 percent. The effects on work are largest in urban areas, particularly for younger children whose participation in domestic work decreased by around 13 percent, as compared to a decrease of 10 percent for older children in urban areas. The programme had no discernible impacts on children's work in rural areas. We also find evidence of school and work time not being fully substitutable, suggesting that some, but not all, of the increased time at school may be drawn from children's leisure time.

Output: [11]

2.1.2 Re-evaluating Conditional Cash Transfers. Is the PROGRESA Primary School Stipend Necessary?

PROGRESA was surely the most visible of the new CCT programmes. Previous work on the programme suggested that there might be cost-efficiency gains from changing the structure of the education grants offered by the programme, and in particular from increasing the secondary school grant and reducing (or removing) the primary school grant. This paper examines whether the conditional primary school transfer generates positive externalities in the household. In particular, we study the differential effects on young children's health and morbidity, household consumption and expenditures; secondary school enrolment and time use between households that have children eligible

to receive the primary school stipend and households that do not and find no difference in impact. The purpose is to provide new evidence on the existence of the conditional primary school transfer and derive implications for policy (re-)design.

Output: [12]

2.1.3 The Impact of Chile Solidario.

This project studies the effects of Chile Solidario, a comprehensive program that provides indigent households in Chile with two years of psycho-social support (administered through regular visits by a social worker), improved awareness and priority access to welfare programs, and a cash transfer. We use a regression discontinuity design, exploring the fact that in order to be eligible a family needs to have a means-test score below a given cut-off, which varies by municipality. We find that the program leads to large increases in access to subsidies. The results also suggest that the program has important impacts on the employment and income of heads of households, especially young males. We uncover dramatic heterogeneity of program impacts, and for large portions of the population we find little impact of the program.

Output: [13]

2.1.4 “Migration, violence and welfare programmes in rural Colombia”

In this work we study migration decisions of very poor households in a highly violent setting and study how conditional cash transfer programmes affect migration. A simple model shows that migration of liquidity constrained households is likely to respond differently to receiving welfare benefits depending on violence levels. The main results show that high levels of violence encourage households to leave their municipality of residence but that welfare programmes, such as the CCT programme under study, may mitigate these flows, provided that the incidence of violence is not unduly high.

Output: [14]

2.2 CCT, expenditure patterns and the role of women in the household.

There is now increasing evidence that Conditional Cash Transfers have not only an impact on the *level* of consumption but also on the *structure* of expenditure. This might not be surprising, except that the changes one observes are not consistent with what one would extrapolate by changes in total expenditure in the cross section. For instance, typically when total expenditure increases, the share that is devoted to food decreases (as food is a necessity). This does not seem to be the case for the increases in consumption induced by CCTs. For most CCTs the increase in food is at least as large, if not larger, than the increase in total consumption, so that the share of food stays constant or increases. The set of projects briefly described below documents this fact for several CCTs and starts speculating about the possible reasons for it. One possibility is that, as CCT are typically targeted to women, they change the balance of power within the family and, consequently, the allocation of expenditure.

2.2.1 The structure of consumption in rural Colombia

This project looks at expenditure patterns among poor households in rural Colombia with three main goals. First it characterizes the demand patterns for different commodities for very poor households. Second, as the data was collected for the

evaluation of a welfare program, one can assess the extent to which, given the effect on total expenditure predicted by the quasi-experimental variation in our sample, our model can predict the changes in expenditure patterns observed in the data. Specific inadequacies of the demand system in predicting how the structure of consumption changes with the policy interventions might be suggestive of the channels through which the policy operates and of richer behavioural models that can be fitted to the data.

Output: [15]

2.2.2 Expenditure patterns in urban Mexico.

This paper estimates the effect of Mexico's Oportunidades urban component on consumption and food demand. As in similar programs, households spend most of the transfer on food consumption and their marginal propensity to consume the transfer increases over time. We show the increase in high-protein food consumption is larger than the prediction from the Engel curve estimated using pre-treatment data, that the Engel curves change over time in treatment areas after the program is implemented, becoming different from the curves estimated using control households. Consumption of high-protein food increases more than predicted by Engel curves estimated on the same data, given the observed change in total consumption.

Output: [16]

2.2.3 Expenditure patterns in rural Mexico and changes in the position of women within the family.

This project starts from the fact, documented here for the rural component of the Mexican CCT *Oportunidades*, that many conditional cash transfers induce a change in the composition of consumption that contradicts the predictions of Engel curves estimated on the same data. In other words, CCTs seem to shift Engel curves rather than induce movements along the curve. In this paper we investigate whether these shifts in Engel curves are consistent with the so-called collective model of intra household allocation of resources.

Output: [17]

2.2.4 The Impact of a conditional cash transfers on prices

This project explores the effect of the Familias en Accion conditional cash transfer programme on prices. Conditional cash transfer programmes like Familias en Accion inject liquidity into relatively closed village economies. These programmes have resulted in an increase in consumption of goods such as protein-rich food and in school enrolment and have reduced child labour. The injection of liquidity in these localities, along with the conditionalities, could have led to an increase in prices.

Output: [18]

2.3 Workfare programmes Workfare programmes provide a low wage to individuals that work in selected public works. They are designed to provide insurance against job losses by informal sector workers at the possible cost of crowding out private effort. This study analyzes the a Colombian workfare program to shed light on the following issues: (1) whether or not the program crowds out labour effort by members of the

household other than the participant, (2) whether or not there are some gains from participating in the program six months after the program has finished, (3) whether or not there are gains in household consumption, which is important to assess the role of the program as an insurance mechanism.

Output: [19]

2.4 The impact of training programmes

Youth unemployment in Latin America is exceptionally high, as much as 50% among the poor. Vocational training may be the best chance to help unemployed young people at the bottom of the income distribution who have already left the formal education system. This paper evaluates the impact of a training program for disadvantaged youth introduced in Colombia in 2005 on the employment and earnings of trainees. We use originally collected data on individuals randomly offered and not offered training. We find that the program raises earnings and employment for men and women. Those offered training earn about 12% more than those not offered training. Much of the earnings gains following training are related to increased employment in formal sector jobs. Cost-benefit analysis of these results suggests that the program generates much larger net gains than those found in developed countries.

Output: [20]

3. Structural analysis of human capital investment.

3.1. The effects of risk on education and child labour: evidence from Colombia

This project analyses whether there is any evidence of income uncertainty affecting choices relating to the schooling and work of children in rural Colombia.

Output: [21]

3.2 Household head departures and schooling decisions.

In this work we investigate how the permanent departure (due to death or divorce) of the household head from the household affects children's school enrolment and work participation in rural Colombia. We find remarkably different effects for boys and girls. For boys, the adverse event reduces school participation and increases participation in paid work, whereas for girls we find evidence of the adverse event having a beneficial impact on schooling. To explain these differences, we provide evidence consistent with the effect for boys being mainly an income one, while the one for girls might be related to changes in decision making.

Output: [22]

3.3 A structural model of education choices.

The work in [25], a paper whose first draft a few years ago provided one of the first structural models of Conditional Cash Transfers, has been expanded and developed in various directions. This type of models, that are identified in part through the variation introduced by the availability of CCT for some households in the sample, can be used to simulate alternative policies and therefore help the design of a better program.

From a modelling point of view, [23] develops the approach in [25] in two directions:

- a. We consider a more realistic model that allows for liquidity constraints and non-linearities in the utility function. These features provide an important role for direct income effects, while the previous approach focussed exclusively on the substitution effects of CCT (which make education cheaper).
- b. We model the choice among different children and use, in the case of a data set from Mexico, data on ability of the children to understand how families make choices in this context.

From a policy point of view, [24] estimates a version of the model presented in [25] using the urban data from the *Oportunidades* programme. The paper then discusses the implications of our simulations for the re-design of the urban programme and makes some specific suggestions.

In the mean time, the journal to which paper [25] was submitted requested a revision of the paper for publication. In the process of revising it, we developed the model to take into account general equilibrium effects of the program on children wages, which can reduce the impact of the intervention.

Output: [23]-[25]

3.4 Nutrition and Child Care Choices:

Paper [26] considers the estimation of the impact of a community nursery programme in Colombia within the framework of a model of human capital accumulation where individual households make investment choices in terms of nutrition and child care. The paper shows how evaluating a program like the one we study is equivalent to estimating some components of a production function and how standard estimators can yield misleading results.

Paper [27] focuses on measuring the impact of the same programme, both in rural and urban areas. The results obtained in the study are remarkable: a simple comparison of children attending the nurseries to children not attending reveals that the nutritional status of these children is not different. However, once one takes into account the fact that the children attending a nursery are not necessarily comparable to those not attending (maybe because they come from a different background) it is found that the impact of the programme is positive, especially on the children from the poorest families.

Finally, [28] is a project, partly financed by the FAO and the European Commission, in which we model the choice between community nurseries and a CCT programme. This can be done because of the availability of data from towns where both programmes were available and households had to choose which to utilize.

Output: [26]-[28]

3.5 Supply- vs. Demand-Side Rationing in Developing Country Health Insurance: Evidence from Colombia's Novel 'Régimen Subsidiado'.

Thin insurance markets are usually blamed for low human capital accumulation in developing countries. Health care expenses are responsible for a sizeable amount of

uncertainty that poor households face in developing countries. Paper [29] analyzes the effects of a scheme to provide free health insurance for the poor in Colombia. The paper uses several nationally representative surveys, and a regression discontinuity design to estimate the causal effect of health insurance on health outcomes, uptake of preventive treatment and moral hazard behaviour. It finds that free health insurance improves preventive care, reduces morbidity in children under 5, and does not affect ex-ante moral hazard.

Output: [29]

3.6 Health Shocks, Household Consumption, and Child Nutrition.

Full insurance is not rejected when household consumption does not change with idiosyncratic shocks. However, this argument does not take into consideration that some items of household consumption (food, fuel,...) are part of the health production function. Under these circumstances, if the household is fully insured, consumption should increase after an adverse health shock. Using the Familias en Acción database, [30] finds that household consumption, transfers, and debt increase following an illness of the household head. This is taken as evidence of partial insurance but not full insurance as girl's weight (but not boys' weight) decrease following the illness shock. These results provide evidence that poor households make difficult intra-household choices that might jeopardize human capital accumulation when insurance markets are imperfect.

Output: [30]

3.7 Returns to Education and Increasing Wage Inequality in Latin America

Paper [31] studies a central feature that characterized the changes in wage inequality in Latin America in the 1990s: the wage gap between higher and intermediate education increased and the one between intermediate and basic education declined. The double change in the wage differentials was driven by a significant drop in the mean wage at the intermediate level. The paper develops and simulates a dynamic general equilibrium model of savings and educational choices under credit constraints and uninsurable earnings risk in which ability is an important component of individual wages. The parameters of the model are estimated using micro data from Mexico. The results show that the observed patterns were the result of changes in the supply of education. The paper shows that the general equilibrium effects are key to the explanation.

Output: [31]

3.8 Education and Wages in Brazil

[32] investigates the puzzling evidence on wages and educational attainment observed in Brazil in the 1990s: while returns to college have been rising and graduation rates at secondary and high school level have been steeply increasing, the proportion of students progressing to higher education has been decreasing. The authors present evidence that the low supply at college is not due to lack of availability in positions. They specify a joint model of education choices, labour force participation and wages. Observed changes in the returns to schooling only marginally reflect variations in the ability composition by level of education. They are mainly the result of changes in the market value of education: the educational expansion at intermediate level depressed wages at this level

dramatically. The supply increase at high school level did not translate into a proportional increase at college level due to binding credit constraints.

Output: [32]

3.9 Pre-primary education and educational performance

In poor countries, a large share of the population is excluded from the education system at an early age, well before completion of the compulsory schooling cycle. Exclusion from the school system encompasses failure to enrol, late entry, intermittent and irregular attendance, high repetition rates and eventually early drop-out. In this work, we explore whether early exposure to the school system (pre-primary education) appears as a successful policy option.

[33] and [34] look at the recent experiences of pre-primary school expansion in Uruguay and Argentina, respectively. [33], using data from a Uruguayan survey, finds small gains from preschool attendance on years of education completed and dropout rates that get magnified as children grow up.

[34] extends [33] by looking at the effect of preschool on subsequent primary test-scores, a direct measure of academic achievement, and on behavioural outcomes. We estimate that one year of pre-primary school increases average third grade test scores by 8% of a mean or by 23% of the standard deviation of the distribution of test scores. We also find that pre-primary school attendance positively affects student's self-control in the third grade.

[35] and [36] investigate the effect of preschool expansion on maternal labour supply. These papers find that although preschool expansion increases maternal employment the effect is not large enough to produce educational gains of the size we observe in Argentina and Uruguay.

Output: [33]-[36]

3.10 Heterogeneity in the Returns to Education in Indonesia

It can be argued that most programs have impacts that vary considerably across individuals. When that happens, it is important to find out whether we can target the program better, or whether expansions of the program are likely to affect high or low impact individuals. [37] estimates heterogeneity in returns to schooling in Indonesia. We estimate average and marginal returns to upper secondary schooling in Indonesia, using data from the Indonesia Family Life Survey (IFLS). In order to account for the fact that schooling is unlikely to be exogenous in the population we instrument the schooling choice with the distance to the nearest secondary school. We find that the return to upper secondary schooling varies widely across individuals with unobserved characteristics: it can be as high as 250% or as low as 0%.

Output: [37]

3.11 Family Networks and Household Behaviour

[38]-[40] present evidence on whether and how a household's behaviour is influenced by the presence and characteristics of its extended family. Using household panel data from

the Progresa program in rural Mexico, we use information on the paternal and maternal surnames of heads and spouses in conjunction with the patronymic naming convention to identify the inter and intra generational family links of each household to others in the same village. We then exploit the randomized research design of the Progresa evaluation data to identify whether the treatment effects of transfers on various household outcomes, vary according to the presence and characteristics of extended family. One in five households are isolated in the sense that none of their extended family resides in the same village. The incidence of being isolated is therefore at least as high as the incidence of female headed households. Progresa only raises secondary enrolment among households that are embedded in a family network. Eligible but isolated households do not respond. Connected households are able to better smooth consumption than isolated households.

Output: [38]-[40]

4. Social Networks and Health Seeking Behaviors: Evidence from Nepal

The collaboration with the UCIHD had started around a project ICH had in Nepal for some years. That project, involved hiring a research officer (Noemi Pace) in February 2008 who worked on the project and, while housed at ICH, collaborated consistently with the IFS team. In what follows we report on the progress of this project.

This study takes advantage of an existing surveillance system, designed around a large community trial of a women's group participatory intervention in Makwanpur, Nepal, by two main actors, the UCIHD and Mother and Infant Research Activities (MIRA, Nepal). The aim of this program was a reduction of the neonatal mortality rate through a community-based intervention mediated by women's groups. Twelve pairs of geopolitical clusters were selected within the district and one of each pair randomly assigned to intervention or control. In the intervention clusters, women's group meetings were organized to identify local perinatal problems and formulate strategies to address them at a local level. The main outcome was a substantial reduction of both neonatal and maternal deaths in the intervention clusters. In the second phase of the program the intervention was extended to the original control areas and an additional set of questions about social networks and spread of information was collected.

The main objective of the study is to understand whether stronger social ties enhanced or prevented the adoption of better health care practices. By understanding how knowledge about reproductive health spreads, this analysis would ultimately allow one to improve the targeting of the program so that it reaches as many women as possible given limited coverage, and therefore improves the health of more women and newborn infants.

We define six different measures of social networks, based on the number of: sisters, wives of brothers, husband's sisters, wives of husband's brothers living in the same cluster. The main outcome indicators are proxies of antenatal care, delivery care and postnatal care. We model the outcome variables as a function of social network, socioeconomic and demographic characteristics and geopolitical cluster fixed effects.

The results from probit regressions for antenatal check up, delivery assisted by a skilled birth attendant and institutional delivery suggest that residence either in the same household, or in the same village development committee, as a woman's affinal family

(husband's sisters, wives of husband's brothers and mother-in-law) are negatively and significantly correlated with good health care practices. The same results hold after controlling for demographic and socioeconomic characteristics and for geopolitical cluster fixed effect. We do not find any significant relationship between social networks and the other proxies of perinatal care.

Activities

We have undertaken many activities connected with the research developed under the auspices of the grant. First, we have disseminated our research widely. This was achieved through the diffusion of our papers: through working papers and publications, through presentations in conferences, through our participation and our engagement in policy debates with policy makers from developing countries and with officials from International Financial Institutions such as the World Bank and the IADB. We have also trained new researchers, who have worked as PhD scholars at IFS or visited from developing countries on various occasions.

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