Evidence for Policy and Practice
Information and Co-ordinating Centre

The EPPI-Centre is part of the Social Science Research Unit, Institute of Education, University of London

Main title	How effective are cash transfer programs at improving nutritional status?
Sub title	A Systematic Review of Programs' Effects on Anthropometric Outcomes
Review group	Towson University
Section	PROTOCOL
Authors IN ORDER OF CREDIT **(Please include first and surnames, institutions. Include titles – Dr, Prof – if you want them to be used.)**	James Manley, Towson University Seth Gitter, Towson University Vanya Slavchevska, American University
EPPI-Centre reference number	[To be completed by EPPI-Centre]
Month/year of publication	[To be completed by EPPI-Centre]
This report should be cited as…	
Contact details **(address, phone number, email)**	James Manley Department of Economics, Towson University Towson, MD 21252 410-704-2146 jmanley@towson.edu Seth Gitter Department of Economics, Towson University Towson, MD 21252 410-704-3275 sgitter@towson.edu Vanya Slavchevska Graduate Student American University vs4030a@student.american.edu
Institutional base	Towson University
Review Group **(with institutions)**	3ie-managed review, including subject and systematic review specialists
Advisory group **(with institutions)**	Rebecca Calder, DFID Nepal Joanna McGowan, Governance, Social Development and Conflict research team, DFID

Conflicts of interest (if any)	None
Acknowledgements	Funded graciously by the Department for International Development, United Kingdom

1. Background

1.1 Aims and rationale for review

One of the most widely implemented development policies over the past years has been the Conditional Cash Transfer (CCT) programme, implemented in as many as 35 countries as of 2008.[1] Targeted toward the poor, these programmes distribute cash payments to participants if they meet conditions typically including sending children to school and/ or getting regular health care.

In spite of achieving some successes, cash transfer programmes have notably failed to consistently achieve improvements in nutritional status, a common measure of human capital accumulation (all detailed below). This paper will summarize the state of the evidence regarding the question: Do cash transfer programmes improve recipients' nutritional status? Which intervening variables facilitate or limit the effects of transfers?

Since nutritional status is a crucial, summary measure of overall child health and development potential, this question is of considerable importance. Maximizing programme effectiveness requires identifying the characteristics of successful and unsuccessful programs, but this analysis has not previously been undertaken. While a few previous systematic reviews have mentioned the issue as part of broader surveys of the relationship between CCTs and health, none have focused on the issue per se, none have included unconditional cash transfer programmes as a comparison, and none have looked at anthropometrics beyond five programmes in Latin America. This paper will accomplish all of these goals.

1.1.1 Conditional Cash Transfer programmes

CCTs are now found all over the world, affecting millions of recipients, and they continue to grow. The programs in Mexico and Ecuador now provide income to 20% and 40% of the countries' populations respectively while Brazil's Bolsa Família covers about 46 million people (Fiszbein and Schady 2009).

CCT's have expanded so widely in part because they have made important gains in improving the well-being of recipients. Fiszbein and Schady (2009) show that in four Latin American countries (Colombia, Mexico, Honduras, and Nicaragua) CCT's have made a statistically significant impact on poverty according to the three consumption-based indices that comprise the Foster-Greer-Thorbecke measure. Studies also show clear impacts on educational enrolments (Skoufias & McClafferty 2001; Schultz 2004) and a few show positive effects on cognitive development in early childhood (Fernald, Gertler, and Neufeld 2008; Fernald, Gertler, and Neufeld 2009; Macours, Schady, and Vakis 2008; Paxson and Schady 2008).

1.1.2 Conditional Cash Transfer programmes' effects on nutritional status

Conditional cash transfer programmes' effect is less clear on child nutritional status, an important indicator of human capital accumulation. Fiszbein and Schady's 2009 report calls attention to unresolved questions: "Although there is clear evidence that CCTs have increased the use of education and health services, evidence on the impact of CCTs on 'final' outcomes in education and health is more mixed." (p. 20) Likewise, in their review

[1] Countries include Argentina, Bangladesh, Bolivia, Brazil, Cambodia, Chile, Colombia, the Dominican Republic, Ecuador, El Salvador, Honduras, Indonesia, Jamaica, Kenya, Malawi, Mexico, Morocco, Nepal, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, South Africa, Turkey, the United States, and Yemen with pilots underway as of 2008 in Burkina Faso, Guatemala, India, Nigeria, Sierra Leone, Tanzania, and Uganda (Fiszbein and Schady 2009; Fernald, Gertler, and Neufeld 2009; Gaarder, Glassman, and Todd 2010, Bassett 2008).

of the CCT literature, Glassman, Todd, and Gaardner (2007) document a "mixed result" of CCTs on nutritional status (p. 27). Studies show that the Mexican programme *Oportunidades* (formerly known as PROGRESA) improved child growth in the short run (i.e. follow-up after 2-5 years of enrollment) in rural (Gertler 2004, Rivera et al. 2004) and urban areas (Leroy et al. 2008). Height gains were apparent in the medium run of 6-10 years when returns were evaluated in terms of transfers received rather than time on the programme (Fernald, Gertler, and Neufeld 2008; Fernald, Gertler, and Neufeld 2009), though those findings have been questioned (Attanasio, Meghir and Schady 2010). Behrmann and Hoddinott (2005) find mixed results, while other authors cast doubt on the early findings of enhanced growth (Fiszbein and Schady 2009). Improvements in the height of preschool children have also been shown in analyses of CCTs in Ecuador (Paxson and Schady 2007) and Colombia (Attanasio et al. 2005) while no impacts were shown in Nicaragua (Maluccio and Flores 2005) and Honduras (Moore 2008). Negative impacts on height were shown in Brazil (Morris et al. 2004).

How could these programs increase household wealth and total consumption but not increase child nutritional status? A variety of potential proximate and ultimate barriers may play roles. Nutritionists note that in addition to needs for calories and protein, a variety of micronutrients including iron, zinc, and vitamin A can constrain growth, as can frequent infections (Rivera et al. 2003).

1.1.3 Role of Conditionalities

The conditions placed on receiving payments from CCTs are designed to incentivize household investment in human capital accumulation. High discount rates or the undervaluing of services such as education or health care are assumed to be keeping the poor from making optimal decisions. Positive externalities from education and health care also imply that the socially optimal level of investment may not be chosen by those fully cognizant of the private benefits of these services, so subsidies may be socially optimal in any case (Bassett 2008).

On the other hand, conditionalities may be ineffective or even counterproductive. A book published this year (Hanlon, Barrientos, and Hulme 2010) questions the importance of conditionalities, citing numerous cases in which unconditional handouts improved welfare. For example, in countries lacking sufficient health infrastructure, unconditional transfers may be the only realistic alternative. Fortunately, unconditional cash transfers too can be effective: Duflo (2003) has shown that unconditional cash transfers have improved child height for age in South Africa.

More ominously, programme designers may be imposing burdens on households that limit the efficacy of the transfers. For example, de Janvry et al. (2006) show that sending children to work is a strategy used by some poor households to cope with negative shocks, and if households are not permitted to cushion shocks in this way, there could be negative repercussions for at least some household members. Gitter, Manley, and Barham (2010) find that limiting the household's use of child labor to cushion shocks may have inhibited child development of younger siblings as measured by height for age in households participating in a Nicaraguan CCT. Finally, misunderstanding conditionalities can have adverse implications that may undercut a program's effectiveness. Gaarder, Glassman and Todd (2010) describe cases where this happened in Honduras, Turkey and Brazil.

In sum, conditional cash transfers have been theoretically and empirically linked to increased consumption at the household level, but a sizable literature of programme evaluations has failed to show conclusive links to improvements in an important final measurement of child development: nutritional status. As Leroy, Ruel, and Verhofstadt (2009) posit:

> Notwithstanding the enormous potential of CCT programmes to contribute to reducing childhood undernutrition, this potential has yet to be unleashed: the

programmes are far from eliminating linear growth retardation, and their impact on micronutrient nutrition is disappointingly small. (p.124)

To maximize the efficacy and efficiency of investments in child development, aid organizations need to know the factors conditioning cash transfers' success or failure in improving the nutritional status of children.

This paper seeks to fill that gap. Below, we describe the importance of the outcome height for age and consider the various pathways through which cash transfers should make a difference for anthropometric outcomes. In our paper we will compile a list of programs about which we have information regarding efficacy in terms of improving height for age, and construct a list of those programs' characteristics. In our analysis, we will look for links between programme effectiveness and those characteristics. We hope to quantitatively evaluate those links using appropriate statistical methods, whether via meta-regression analysis (if we accumulate enough data) or through a series of simpler bivariate analyses.

1.2 Definitional and conceptual issues

1.2.1 Nutritional Status

Nutritional status is an indicator of paramount significance, as noted by several authors. "Stunting or chronic malnutrition is estimated to lead to nearly 1.5 million children's deaths each year, and is a strong indicator of a broad number of factors leading to child mortality." (Yablonski 2009) "Under-nutrition in turn has negative effects on income and on economic growth. Under-nutrition leads to increased mortality and morbidity, which lead to loss of economic output and increased spending on health. Poor nutrition means that individuals are less productive (due to both physical and mental impairment), and that children benefit less from education…. Achieving goals in primary education, reducing child mortality, improving maternal health, and combating HIV/AIDS, malaria, and other diseases all depend crucially on nutrition." (Horton, Alderman, and Rivera 2009).

Many programmes specifically list nutritional status as an outcome of interest. The Mexican CCT PROGRESA (now called Oportunidades) aimed to improve the nutritional status of poor children (Behrman and Hoddinott 2006). The Nicaraguan *Red de Protección Social* listed increasing the health and nutritional status of children under 5 as an objective (Maluccio 2009). Malawi's Mchinji Social Cash Transfer Pilot Scheme was designed in part to reduce malnutrition (Miller Tsoka and Reichert 2008).

1.2.1.1 Height for age

This paper will focus on use of height for age, a main indicator of nutritional status, as its main outcome measure. Growth patterns of children under age 5 are similar for all ethnic groups (WHO 1995) and growth charts allow the conversion of child height into z-scores based on observed means and standard deviations for children of a given age and sex. These height for age z-scores reflect long-term health. While adverse health events are known to affect growth in the short term, most people are able to recover once they return to health (Tanner 1986, p. 168). However, repeated insult such as frequent illness or malnutrition may limit the capacity for "catch-up growth" (Tanner 1986, p. 176) leading to diminished height. Growth is affected by diet, physical activity, and health status (Johnston 1986). Data from Gambia to Guatemala have shown that height deficits are established early in life and often persist into adulthood (Coly et al. 2006).

These standards are used without regard to race or ethnicity, as it is widely agreed upon in the health literature that over multiple generations, nutritional status and health are the main determinants of height. Although different racial and ethnic groups have different average heights, this is largely attributed to their historical nutrition levels. The World Health Organization notes that standards for height "can be applied to all children

everywhere, regardless of ethnicity, socioeconomic status, and type of feeding" (WHO 2006).

Height for age is also one of the most comprehensive and widely used measures of overall long-term health. Height for age is often described as an indicator of long-term nutritional status among children (Waterlow et al. 1977, Strauss & Thomas 1998). It is also an indicator of a child's underlying health status, and children showing lower levels of physical development for their age are often delayed in their mental development as well (Hoddinott & Kinsey 2001, Grantham-McGregor et al. 2007). Many studies have evaluated children's growth with reference to such a standardized population in order to estimate the health effects of natural disasters and various policy interventions, (see e.g. Balk et al. 2005, Hoddinott & Kinsey 2001, Goncalves-Silva et al., 2005). After evaluating a number of measures, one study concludes "Height for age at 2 years was the best predictor of human capital…." (Victora et al. 2008).

1.2.1.2 Weight for age

Another measure of nutritional status is weight for age. Weight for age indicates short-term nutritional status, where height for age reflects the longer term. It is useful in evaluating undernutrition, though not as predictive of human capital as height for age (Victora et al. 2008). We hope to use this measure in examining the effectiveness of interventions that have only been in effect for a short time.

1.2.2 Theories linking CCTs to nutritional status

Nutritional status, including height for age and weight for age, directly depends on two factors: sufficient nutrition and the body's ability to absorb it (Agüero, Carter, and Woolard 2006). In other words, what matters are the quantity and quality of food coupled with the health status of the person consuming it. Behind those two directly relevant factors can be found a host of underlying factors. In the subsection we summarize some of the literature on the topic, laying the foundation for the next subsection in which we outline our approach.

1.2.2.1 CCT-nutritional status links in the literature

Previous systematic reviews have described pathways linking CCTs to health. Diagrams in Leroy, Ruel, and Verhofstadt (2009) and Gaarder, Glassman, and Todd (2010) show the relationship by means of a total of 26 factors.

In their meta-analysis, Charmarbagwala et al. (2004) note that although income and/ or consumption expenditures are strong predictors of nutritional status, final determination of outcomes such as nutritional status also depends on child and household characteristics such as the presence of siblings and supply side issues such as local water quality and the availability and quality of health services. Thus, we must track whether programme evaluations consider these potential mediators of the income/ nutritional status relationship.

Bassett (2008) draws attention to some other factors that may limit CCT effectiveness re: height for age. She notes that:

> many critical behavior changes that lead to sustainable improvements in nutritional status – such as exclusive breastfeeding, appropriate pregnancy rest, or hand-washing after defecation- are intimate, complex, and difficult to change, and therefore CCTs are not set up to address these behaviors directly. (p. 9)

Hoddinott and Bassett (2008) advocate enhancing CCTs by adding counseling on improved hygiene and sanitation and the provision of nutrient supplements for pregnant women and young children.

In an earlier review, Gaarder, Glassman and Todd (2010) identify some assumptions undergirding CCT effectiveness. They include:

- CCTs improve health by increasing utilization of health services, particularly preventive health services
- Cash improves health by ensuring service utilization and improving food consumption
- Providing information to poor women will induce behavioral changes
- Conditionality is key to increasing service utilization
- Some programs also add a food supplement
- Poor health status is attributable to demand side factors; supply is sufficient or will increase to meet an increased quantity of demanded care
- The outcomes evaluated are relevant

One input worth highlighting is the importance of care practices. As illness inhibits the body's acquisition of nutrition, access to health care and the quality of available health care play an important role in keeping children on track. Cash transfer programmes that improve food consumption may not be effective in locales lacking accessible, quality health care.

Finally, some heterogeneity in reported outcomes may stem from different study techniques. Lagarde, Haines, and Palmer (2007) report that five different studies of the same data (from Mexico's PROGRESA/ *Oportunidades* program) reported different analyses and results and failed to cite each other. They note that unplanned subgroup analyses of trials can lead to spurious conclusions.

1.2.2.2 Our formulation of the CCT-nutritional status relationship

Figure 1 depicts the factors affecting child nutritional status. Household wealth is subject to a variety of demands, only two of which are food and health care for family members. We use the economic concept of an "efficient input" to characterize household resources. (Just as only a limited share of water applied to a field reaches the roots of the plants for which it is intended, only a limited share of household resources can be spent on inputs that lead to improvements in nutritional status.) Relevant inputs include health care utilization, food quantity, and food quality. Effective food is that portion of household consumption that contributes to child growth, and in addition to the inputs noted it is modified by the size and demographic characteristics of the household in which the child receives the food. Health care utilization, modified by health care quality, helps prevent child illness. Illness comes about in part due to the local disease environment, though that too is modified by any number of health-related behaviors which can range from smoking in the household to choices about water, sanitation, and breastfeeding. Effective food combines with child illness in the context of child-specific characteristics such as age and maternal height to produce nutritional status. Finally, the nutritional status observed in data and the outcomes analyzed in research are themselves subject to any number of biases from measurement bias to study characteristics. We denote this bias by the difference between "measured nutritional status" and "nutritional status."

Figure 2 expands Figure 1 to show the roles of several potential interventions. First, child nutritional status can be improved by providing households with cash transfers. This transfer can become effective resources depending on the amount, modality of the transfer, and which household member receives the transfer. Conditionality, depending on enforcement, can have a few effects. It can contribute to nutritional status by increasing utilization of health care, or it can lead to health education. Health care utilization is effective if the quality is there. Health education can contribute to improved child nutritional status by improving health-related behaviors, whether hand-washing, breastfeeding, or choices about fuel use, drinking water, or sanitation. Health education can also affect children's food consumption by improving food quality or quantity.

Bonvecchio et al. (2007) show that education improves the effectiveness of a nutritional supplement in the context of a CCT in part by decreasing consumption of the supplement by other family members. This brings us to the final means of improving nutritional status, which is the provision of food supplements. Bhutta et al. (2008) find that education on complementary feeding improves height for age scores by 0.25, and supplements increase height for age by 0.41.

1.2.3 Theoretically generated hypotheses regarding CCTs' links to nutritional status

To investigate the issues raised by Charmarbagwala and Bassett, we need first to check the sets of covariates included in impact analyses. Do analyses control for household size and community characteristics (such as water quality and availability of health care)? Which age groups are being considered? While exclusive breastfeeding and rest during pregnancy may affect nutritional status, limiting the analyzed population to children of over a year or two in age will limit the degree to which these are relevant. Hand-washing and personal hygiene can be an issue at any age, but again the youngest children may be the most likely to be affected, so tracking ages of children in the sample is key.

Tracking a large set of covariates included in impact analyses should help us answer many questions. Do impact evaluations report increased attendance at clinics and specifically do they report increased use of preventive health care? Is there a correlation between programs with identified impacts on height for age and programs with identified effects on participation in health care? Similarly, do impact evaluations report changes in consumption? If so, do they report improvements in child nutritional status? Does conditioning payments on participation in an overtly educational component for mothers (such as the "pláticas" in Mexico's *Oportunidades* program) make a difference for nutritional status? Are programs providing food supplements or fortified food products more effective at improving child height for age? Is there evidence that CCTs increase dietary diversity? Few studies that we are aware of have looked at dietary diversity, so perhaps we can look to see if studies show at least increased consumption of food rather than other goods. Obviously our ability to test these hypotheses hinges on the availability of relevant data, i.e. of previous CCT impact analyses that investigated these issues.

Payment sufficiency can come into play through a variety of means. First, the coarsest measurement: does payment size matter? Second, are payments affected by household size? Programs that pay at a flat rate or which impose a broadly binding constraint on household payments may be less adequate for larger households. (Such constraints were deliberately imposed in some cases to disincentivize fertility (Stecklov et al. 2007).)

Bassett (2008) concludes that CCTs are a best response to issues of poor nutrition if and only if they can be introduced along with high quality and accessible services AND if such services would be underutilized in the absence of cash incentives and conditionalities (p. 44). If this is so, then unconditional transfers are as likely or even more likely to be effective, though CCTs may be more politically palatable regardless.

1.3 Policy and practice background

CCTs are targeted interventions that provide cash to selected beneficiaries contingent upon the recipients' having engaged in certain specified actions such as sending children to school, attending educational talks, or getting health care. Mexico and Brazil started the first CCTs in the late 1990s, and almost 15 years later both Mexico's PROGRESA and Brazil's Bolsa Escola have grown into huge national programs servicing millions of people. Because they require complementary supply-side inputs such as schools and clinics, middle income countries were the first to provide such services, but as noted in section 1.1 the programs are now found in many countries all over the world. Even many states within the United States have begun implementing CCTs in an attempt to improve educational outcomes (Bassett 2008, Fryer 2010).

Since data collection for evaluation purposes has been incorporated into many CCT programs, there is abundant data that has been analyzed by a variety of researchers. Fiszbein & Schady (2009) point out that just one CCT, the Mexican programme Oportunidades, has been the basis for "hundreds of papers," and their 21-page References section is further testament to the vast literature that has sprung up on the topic. Other reviews of the literature, such as Glassman, Todd, and Gaarder (2007) and Rawlings and Rubio (2003) include many more citations on the topic of CCTs in general.

As discussed in section 1.1, impact evaluations of programs, most in Latin America, have come to different conclusions. Most link programs to increased consumption and often to educational outcomes, but fewer studies report impacts on nutritional status, and the reports we do have are mixed. As Glassman, Gaarder, and Todd (2006) put it:

> [C]ash transfers, accompanied by information, social support, weight monitoring and micronutrient supplementation, can stimulate healthier feeding practices and improve young children's nutritional status dramatically, particularly the incidence of stunting…. However, the mixed picture with respect to… nutritional status… suggest[s] that encouraging utilization when services are of poor quality may not produce the expected effects. Moreover, the mixed results suggest that assumptions about needs, household decision-making and causal relationships might not be entirely correct and thus our expectations for impacts, given the program designs, may be incorrect. (p. 22-23)

Are the conditionalities having unforeseen effects? Are some programs simply not effective at improving human capital? Little is known.

1.4 Research background

Several papers have addressed the broad issue of heterogeneity in impacts across CCT programs. None have focused exclusively on nutritional status, none have used meta-analysis, and none have included unconditional cash transfers. No study has looked at more than five programmes, and none have looked outside of Latin America. We are confident that we can at least double that total, in part by looking in other regions and including unconditional programmes.

Our paper is designed to answer a specific question- why cash transfer programmes have had differential effects on nutritional status- rather than to make broader claims about the links between such programmes and other outcomes. With our narrower topic, we hope to a) find more previously disseminated research on the topic than previous efforts, and b) quantitatively evaluate the correlations between various programme characteristics and nutritional status.

The below systematic reviews contribute to the theoretical basis of this paper. They highlight some of the factors that intervene between cash transfers and efficacy in terms of nutritional status. None have made the comparisons we hope to make, specifically contrasting programme characteristics and programme effects on nutritional status.

1.4.1 Fiszbein and Schady (2009)

Fiszbein and Schady's 383 page book summarizing the experiences of CCTs around the world begins with a review of the economic rationale behind CCTs and then moves through describing the design and implementation process. They devote two subsequent chapters to surveying the evidence of programme effects on a variety of outcomes, including the use of education and health services, infant mortality, and the physical and cognitive development of children (including nutritional status). For example, they list the assessed effects of 13 programs on school enrollment and attendance (p. 128-9). They do not describe a systematic search mechanism but they cover a large amount of ground and they cover it thoroughly.

1.4.2 Gaarder, Glassman and Todd (2010) (and their earlier work, Glassman, Gaarder, and Todd (2006) and Glassman, Todd, and Gaarder (2007))

The most recent iteration of this work is the most systematic of the reviews that we have seen. They combed through the literature listing their search criteria and ultimately summarizing 41 studies linked to 11 programmes/ interventions (p. 7), looking at a variety of outcomes including clinic visits, DPT immunization, full immunization, and nutritional status. (Just 5 interventions, all CCTs, are described in terms of impacts on nutritional status.) In attempting to isolate the pathways through which CCTs are effective, they lay out a number of assumptions implicit to the CCT intervention, discussed in 1.2.2 above. They conclude that the mixed results on the nutritional status outcome may indicate supply side problems or problems with unanticipated pathways from programme to observed outcomes, such as the role of men in purchasing food (since only women are targeted for education) and the effects of transfers on mental health.

1.4.3 Hoddinott (2010), Hoddinott and Bassett (2008) and Bassett (2008)

These papers evaluate only Latin American CCTs. The first two look at four programs, while the last adds a fifth. The first two begin with information on stunting and micronutrient deficiencies across Latin America and the Caribbean. They note that CCTs seek to improve outcomes in three ways: through the provision of financial resources to households, through educating mothers, and via food supplements provided directly to children. They describe the details of implementing the programs and the evaluations. As far as results, they conclude that PROGRESA's impact on child height for age show an apparent treatment effect. Nicaragua's RPS shows stronger effects, while Honduras' and Brasil's programs show none. They also evaluate effects on anemia, finding that only in Mexico did the CCT achieve any alleviation of iron deficiency. They call attention to the difficulty of identifying pathways through which the programs are effective, and note that the task is important.

Bassett (2008) considers ways of improving CCT effectiveness as far as nutritional outcomes. She notes that good nutrition is achieved through a combination of assuring micronutrient intake (including iron, vitamin A, and iodine), exclusive breastfeeding for 6 months followed by appropriate complementary feeding up to the 24th month of age, and appropriate nutritional care of sick and malnourished children. Assuring good nutrition can be achieved through education, provision of supplements, and a reduction of the disease burden, and CCTs are in a good position to provide these services. She next reviews the specifics of five CCTs and concludes that although disentangling the causative mechanisms is difficult, it appears that larger transfers are more effective, the quality of the supply side factors is important, and education in smaller groups as well as frequent supplement distribution help improve outcomes. Best practices include growth monitoring and promotion (education), nutrition education, micronutrient supplementation, and delayed umbilical cord clamping. She notes that focusing CCTs on nutritional issues may require a shift in strategy particularly related to targeting, conditionality, and provision of services. Some new CCTs in Panama, Peru, and Bolivia are including a larger nutritional component than have past programs.

1.4.4 Lagarde, Haines, and Palmer (2007)

This systematic review examines the link between two inputs, CCTs and health services, and outcomes including anthropometrics. They find ten articles on six studies which they summarize in a series of informative tables. Like others they conclude that indications are positive but that barriers to successfully improving outcomes should be clarified and pathways to improved effectiveness disentangled through further research.

1.4.5 Leroy, Ruel, and Verhofstadt (2009)

These authors systematically review the evidence on nutritional outcomes in CCTs, ultimately summarizing outcomes in Brazil, Colombia, Honduras, Mexico, and Nicaragua

(the same five programmes evaluated in Gaardner, Glassman, and Todd (2010)). They found that impact evaluations looking at micronutrient status found a variety of problems with the interventions and identified only limited impacts on iron status and anemia. With respect to anthropometry, they found effects in Mexico, Nicaragua, and Colombia, but none in Honduras or Brazil. They found an association between larger transfer sizes and greater effects, and also a tendency for younger age groups to benefit more. They also investigated some possible pathways through which the CCTs may have affected nutritional status, noting that all CCTs for which information was available were effective in increasing use of health care services and decreasing child illness. They conclude that CCTs address the underlying causes of poor nutritional status, but note that to maximize programme impact, attention must also be paid to the immediate causes such as provision of adequate micronutrients and alleviation of the burden of childhood illnesses such as diarrhea.

1.5 Objectives

We were tasked with addressing the overarching research question of, "Under what conditions are social protection initiatives and systems effective and efficient in reducing poverty and vulnerability?" We limit our focus to the effect of cash transfer programs on nutritional status. We focus on height for age for longer term interventions and weight for age for shorter. Height for age is a final outcome rather than an instrumental outcome, measuring whether programs are actually creating the human capital they strive to create rather than an intermediary goal. Unlike weight for height or other anthropometric measurements, it reflects long-term human capital status. Weight for age is also widely used but it reflects only short term nutritional status. In the case of short-term interventions such as emergency cash transfers, it is more appropriate than height for age.

As an outcome reflecting crucial investments in children, it is disappointing to see such a high degree of heterogeneity in the estimated effects of cash transfer programmes on height for age, as this implies that programs that are successful in meeting other goals sometimes fail to accomplish their primary end of improving child nutritional status. If household consumption is increasing, why is there no accompanying increase in child anthropometrics?

To answer these questions, we will undertake a systematic review and meta-analysis, using appropriate quantitative means, including meta-regression analysis if possible. We will gather reports of impact (and a large set of covariates) from the programme evaluation literature and use regression analysis (or simple bivariate analysis, if sample size is insufficient to permit regression analysis) to identify correlations. This project may potentially provide us the opportunity to test many relevant hypotheses, which we list below. This list is written as generally as possible: we cannot guarantee that we will find enough information in the literature to address all of these questions, but we propose to seek it out.

1) Do community characteristics (such as supply side service availability and quality, food availability and quality, and water availability and quality) constrain programme effectiveness? Is it possible to identify which characteristics are the most relevant?
2) Do covariates such as household size and child age constrain effectiveness? Are programs less helpful to large families? Do they help younger and older children equally?
3) Does programme effectiveness in encouraging use of health care correlate with programme effectiveness in improving child nutritional status?
4) Does programme effectiveness in increasing overall household consumption expenditures correlate with effectiveness in improving child nutritional status?

5) Does programme effectiveness in increasing food diversity or at least in increasing household *food* consumption expenditures translate to improved child nutritional status?
6) Does conditionality of any kind predict increases in child height for age?
7) If conditionality matters, what types of conditions matter? Does conditioning payments on maternal participation in educational talks correlate with increases in child height for age?
8) Does the provision of food supplements correlate with improved child nutritional status?
9) Does total payment size matter? Is per capita payment size the most relevant way to analyze this? How about payment timing (i.e. every 2 months, during certain seasons only, etc.) or modality (i.e. cash, bank transfer, etc.)
10) How do the means of analysis affect the estimated impact?

One deliverable we hope to provide is a detailed chart depicting a large set of programs and summarizing their characteristics and assessed benefits. Other reviews listed above have provided partial such lists, including Fiszbein & Schady (2009); Leroy, Ruel, and Verhofstadt (2009); Lagard, Haines, and Palmer (2007); and Gaarder, Glassman, and Todd (2010). None included unconditional cash transfer programs, however, and none included as many covariates as we hope to. The chart will cover all information germane to Cochrane's PICO (Population, Intervention, Comparison, Outcome) characterization to clarify the difference between treatment and control groups as well as the other covariates of interest.

All previous reviews call for further investigation of the pathways through which programs are taking effect. The best way to identify pathways and explain heterogeneity of impact is to maximize the detail included in the data collection process. Controlling for a large number of programme and study characteristics maximizes the likelihood that we will be able to identify factors influencing the outcome of CCTs as well as the degree to which each matters. For example, programs like Mexico's Oportunidades required the presence of local institutions such as secondary school and health clinic within a certain distance before participation was permitted (Skoufias 2005). By first charting programme characteristics using survey articles, we will be able to easily supplement the data collected from impact evaluations with these characteristics, enabling statistical analysis. Meta-analysis offers the further advantage of potentially identifying the role that research design plays in affecting the outcomes observed. Inclusion of variables indicating use of regression discontinuity designs or difference-in-difference methods may help identify research design effects.

2. Methods used in the review

2.1 User involvement

2.1.1 Approach and rationale

By working with the DFID and 3ie, we are connected already to one set of potential users of the review. Dialogue with our advisory group will keep us focused on questions relevant to aid providers. Beyond this, we look forward to presenting our review at the World Bank and/ or Inter-American Development Bank, where we have previously been invited speakers. One of us lives in the Washington, D.C. area, permitting easy access to the aid providers there. We will also offer to present our work at USAID, DFID's sister institution.

We also hope to publish some version of our review in a field journal, facilitating access by a greater proportion of the development community, including academia, research-oriented non-governmental organizations such as ODI and IFPRI, and government research groups. We are open to other ideas for disseminating our work, which would be to our advantage as well as DFID's and 3ie's.

We will also contact development professionals in countries with CCT programs. One of us worked at Mexico's National Institute for Public Health, and has contacts there to whom we will send our finished product. We will also share our work (by sending the report and offering to present) with relevant non-governmental organizations such as Save the Children. Finally, we will endeavor to identify and contact relevant agencies in each country implementing a CCT to share with them the results of our inquiry once it becomes available.

2.2 Identifying and describing studies

2.2.1 Defining relevant studies: inclusion and exclusion criteria

Chapter 1.5 detailed the questions which we will attempt to answer. Below we specify the constraints under which we intend to address them.

1) As noted, we will define our search in terms of the outcome height for age. Following Charmarbagwala et al. (2004) the primary inclusion criterion will be use of height for age or stunting as an outcome. One reason we choose this is that other indicators of nutritional status are more likely to reflect short-term rather than long-term characteristics. If other outcomes are often reported in the same articles, we may be able to expand our scope to consider BMI for age or other nutritional outcomes such as the incidence of micronutrient deficiency. However, we do not anticipate finding a sufficient literature to address these issues effectively given our choice of analytical tool, i.e. meta-analysis. Papers reporting only impacts on education will not be considered. Papers reporting "instrumental" outcomes such as increased use of health care, i.e. programme effects that may have contributed to improved nutritional status and that we therefore wish to include as covariates, may contribute to the general summation of evidence in the form of our program chart. These papers may thereby contribute indirectly to the dataset used for our final meta-analysis. Examples of papers we will include are Macours, Schady, and Vakis (2008); Maluccio and Flores (2005); Duflo (2003) and Rivera et al. (2004).
2) We choose to limit our scope to cash transfer programs, i.e. programs of which at least one major component is the provision of cash. In hopes of responding to an aid provider's question on the importance of conditionality, we will include the

effects of unconditional cash transfer programs as well as conditional cash transfer programs. Programs providing only in-kind transfers, worker training programs, or educational programs will not be considered. Papers providing information about height for age outside the context of some type of social assistance program will also not be included. We will take numbers only from impact evaluations, not from summary articles. Examples of excluded papers include de Janvry et al (2006) which reports on a CCT but doesn't include height for age; Goncalves-Silva et al. (2005) which reports on height for age but not in the context of a cash transfer program; and Strauss and Thomas (1998) is a survey article rather than an impact evaluation.

Initially, we will include studies using all types of identification strategies, including randomized control trials, quasi-experimental designs such as difference-in-difference and propensity score matching, and even non-experimental single difference studies. However, we will also evaluate the quality of studies using criteria specified by the Cochrane handbook. We will perform analyses including and excluding studies deemed to be of low quality or possibly weight studies by quality, depending on the number of studies we find.

2.2.2 Identification of potential studies: Search strategy

We will begin by examining the sources listed in this protocol, including screening references of review papers and citations from the literature reviews of impact analyses identified here. This "reference snowballing" gives us a solid base to start from before we enter terms into any databases.

We augment this through an extensive bibliographic search. Our inclusion and exclusion criteria are listed in the next section and in Figure 3. We propose to implement this search in the following bibliographic databases: EconLit, EBSCO (which includes CINAHL, African Healthline, and the International Bibliography of the Social Sciences (IBSS)) PsycInfo, PubMed, Google Scholar, Eldis (and ID21, which has merged with it), Inter-Science, Science Direct, Medline, IDEAS (REPEC), the Cochrane Central Register of Controlled Trials, the Database of Abstracts of Reviews of Effectiveness, JOLIS, POPLINE, CAB Direct, Ovid.com (AKA Healthcare Management Information Consortium and FRANCIS), WHOLIS (World Health Organization Library Database), British Library for Development Studies (BLDS), Journal Storage (JSTOR), Latin American and Caribbean Health Sciences Literature (LILACS), MEDCARIB, Virtual Library in Health (ADOLEC), Pan American Health Organization (PAHO), the Social Science Research Network (SSRN), Social Sciences Citation Index + Conference Proceedings Citation Index, ProQuest Dissertations & Theses Database, the System for Information on Gray Literature in Europe (SIGLE), the ntis.gov search engine of U.S. Government docutments, and the Effective Practice and Organization of Care Group (EPOC) Register. To get information on books as well as articles, we will search Worldcat.org.

Third, we will look by hand through key journals such as the Journal of Nutrition, IDS Bulletin, Journal of Development Studies, Journal of Development Economics, World Development, the Journal of Development Effectiveness, Economic Development and Cultural Change, Economic Development, and Social Science and Medicine from the present back through 1995 or the earliest available, whichever is later. Since PROGRESA, the first CCT, began in 1997 this should assure us some degree of homogeneity in world economic conditions when we consider unconditional programs as well. (Since Worldcat is more comprehensive than any individual library's collection of books, we will consider that search to accomplish a "virtual" bookshelf search.)

We will also search websites of organizations such as the World Bank, Inter-American Development Bank, the Center for Global Development, the International Food Policy Research Institute, the ILO social transfer impacts database on the ILO GESS website, the

DFID's research4development.info website, the Overseas Development Institute's website, and chronicpoverty.org.

We will also contact experts asking for additional suggestions. We have assembled a large list of experts in the field and after showing them our accumulated bibliography, we will ask them for suggestions. We know of no listserv or other way to contact a large number of experts at once, and we hope that directly contacting everyone recommended to us will generate additional useful information.

All searching will be tracked and a unified database of reviewed publications maintained. A database system will be set up to keep track of and code studies found during the review. Titles and abstracts will be imported and entered manually into EndNote.

2.2.3 Screening studies: applying inclusion and exclusion criteria

We will include results published in books, peer-reviewed journals, unpublished working papers, and documents disseminated by governments or NGOs. Studies will be included if they use rigorous impact evaluation techniques and report impacts on anthropometrics such as height for age.

After going through the source "snowballing" described in section 2.2.2, the bibliographic search described in that section will proceed. Our search strategy is based on the division of our search into two basic units. We seek analyses of cash transfer programs that include anthropometric information, so each search will include a term that refers to the programs and a term referring to anthropometrics. In the former group we will include seven terms: "cash transfer," "social safety net," "family allowance program," "child grant," "child support grant," "social transfer" and "social assistance." In the latter group, we have "height and child," "nutritional status," "child growth," "anthropometric," or "child weight." Thus, in each search engine (listed below) we will search all 35 combinations of terms from the former and latter groups. For example, we will first search "cash transfer and height and child" and our last search will be "child support grant and child weight." See Figure 2 for an illustration. When a search yields over 1000 references, we limit the search to citations dated after 1990. Searches will be carried out both in Spanish and English.

Within the set of citations returned by each search engine (from each of the 35 searches), we will look through the titles and abstracts to see if the article cited is likely to contain numerical anthropometric information on the impact of a cash transfer program. Full reports will be obtained for those studies that appear to meet the criteria or where we have insufficient information to be sure. In practice, this has become a simple exclusion criterion: "Does the article report numerical anthropometric impacts?" The criteria are re-applied to the full reports and those that fail to meet the criteria will be excluded. Data from reports that meet the criteria are compiled into an Excel spreadsheet.

We will address publication bias by including unpublished works.

2.2.4 Characterising included studies

Upon finding an article reporting on a given programme's impact on anthropometry, we will include that article in our database. From each article, we will extract data on and statistically control for impact heterogeneity associated with two sets of factors. First are the specific features of the CCT, including the country observed, size of the transfer, the type of conditionalities, whether a nutritional supplement was provided, program duration at time of measurement, and design characteristics of the evaluation sample. Second are the characteristics of the study such as the identification strategy; sample size; sample characteristics such as age, household size, and baseline wealth; the explanatory variable of interest (i.e. transfer funds vs. overall program participation); and an identifier for whether the study is a peer-reviewed publication or not. Two of us will independently extract the data from the chosen articles, and each will evaluate the evidence quality.

Evidence quality will be evaluated using guidelines set forth in the Cochrane handbook. See section 2.3.1 for details.

2.2.5 Identifying and describing studies: quality assurance process

As with the search, application of the inclusion/ exclusion criteria will be carried out separately by two team members. Any questions that may arise will be discussed and dealt with by the whole team at meetings held about weekly. Once the relevant papers are identified, coding too will be done by two people independently and differences discussed.

2.3 Methods for synthesis

2.3.1 Assessing quality of studies

For a given paper to be added to the database, it must have a quantitative estimate of the impact of a cash transfer program on child height for age. Such estimates may be from controlled difference estimates, difference-in-difference estimates, regression discontinuity estimation, or other more advanced econometric techniques. Papers meeting this criterion will be labeled as to whether or not they are published in peer reviewed journals. If there remains a substantial apparent quality differential, we may deal with it by creating an additional "quality" variable in the database. We hope to avoid this, relying instead on the simple fact that obtaining numerical estimates of program effect on height for age is usually not attempted casually. Data permitting, we also hope to control for estimation techniques.

The Cochrane handbook delineates a number of criteria which can be used to objectively evaluate the quality of a given piece of research. For randomized control trials, we will evaluate studies on the below criteria (Risk of bias 2009).[2] These are:

1) truly random base for randomization, i.e. number chosen from random.org;
2) similarity in baseline characteristics;
3) similarity in outcome measures;
4) whether missing observations were equally likely in treatment and control groups
5) the extent to which the control group may have received benefits from the treatment
6) whether all outcomes in the methods section are reported in the results section
7) Was the intervention independent of other changes?
8) Was knowledge of the designated outcomes prevented during the study, or are outcomes objective and difficult to manipulate?
9) Were the analyzed subgroups so designated prior to the analysis?
10) Is seasonality of the intervention an issue?
11) Are evaluators independent of project sponsors?

2.3.2 Overall approach to and process of synthesis

For the first deliverable, the program chart, information will be compiled from other systematic reviews coupled with ad hoc searches of published studies as needed to fill in program characteristics.

[2] The Cochrane criteria list others more relevant to medical trials, such as whether treatment/ control status was adequately concealed. It is unlikely that payment information could be secret, particularly in the context of a rural community in which many CCTs are implemented.

The main outcome, though, will be a meta-regression analysis. After having compiled study and program characteristics into a spreadsheet, we will apply regression analysis in hopes of discerning which program or study characteristics influence estimated effects. Specifically, the factors identified in section 2.2 will be controlled for in a Meta-Regression Analysis (MRA) similar to that in Waddington et al. (2009) or Hunter (2009). By including factors deemed potential pathways of program effectiveness in our regressions and using the reported change in height for age as our dependent variable, we hope to identify which covariates demonstrate statistical links between with nutritional status. For example, if we find that programs linked to increased utilization of health care are not statistically more likely to improve children's height, we know that either food access is a binding constraint, supply side issues such as health care quality may be hampering program effectiveness, or study quality or other contextual factors are at issue.

Building on the chart produced by Gaarder, Glassman, and Todd (2010) we will also make a forest plot showing estimated effects with 95% confidence intervals. and we will check for heterogeneity and inconsistency using statistical tests described in the Cochrane handbook section 9.5.

2.3.2.1 Selection of studies for synthesis (if not all studies that are included in the synthesis)

All studies providing quantitative estimates of effects on child height for age will be included. We may use other articles as well for producing the programme chart and to fill in the gaps on programme characteristics needed to perform our quantitative analysis. Further, if covariates are not available in accessed articles, we may supplement our data with outside sources such as the World Development Indicators. This will enable us to at least get some idea about the extent to which variables such as overall disease environment and/ or availability of health care mediate the relationship in question.

2.3.2.2 Process used to combine data

If information on a given programme is not provided in an impact assessment, we may incorporate information taken from other sources to describe the program. For example, we know that PROGRESA/ Oportunidades (the Mexican CCT) requires women in transfer-receiving households to attend educational talks. All articles assessing impacts of that programme will be coded appropriately as pertains to this programme characteristic.

Once the information is combined into one chart, and thereafter a single dataset, we can begin the quantitative analysis. Our approach to the data will be determined to a large extent by the type of data we are able to extract. For instance, if we find a large number of articles report outcomes in terms of height in centimeters or height for age, we will be able to describe effect sizes in terms of standardized mean differences. If stunting is more common, we will use risk ratios. If we get sufficient data on more than one measure, we will evaluate all, and potentially calculate programmes' combined effects.

Regardless of which sort of effect size we end up working with, we anticipate performing an inverse variance weighted random effects analysis. The use of random effects allows us to seek an average outcome while maintaining the assumption that different interventions are likely associated with differential outcomes (Borenstein et al. 2009). Subgroup analyses will be treated as distinct studies, with accompanying reductions in weights.

After estimating the mean effect size, we hope to use meta-regression analysis to identify significant covariates. However, the feasibility of this undertaking depends on the number of studies we are able to find. Given sufficient studies, we hope to continue to use random effects models as we test covariates. We will follow Hunter (2009), who tests covariates separately and then combines those demonstrating statistical significance (actually near significance, i.e. those with p-values below 0.2) into one larger model.

These means of combining data allow us to combine data from all studies, whether large or small, whether they find precise or imprecise effects.

2.3.3 Test for bias

Including databases of grey literature, conference proceedings, and dissertations in our search should mitigate any publication bias. However, programs that failed to reach objectives may not follow through with impact evaluations, which might lead to the suppression of results. Second, even if impact evaluations are carried out, they might not be made available to the public because of potential political backlash (see Pritchett 2002). Thus we will generate a funnel plot (plotting standard errors on the vertical axis and effect size on horizontal axis) to test for such bias. We also hope to use Begg-Mazumdar tests (per Stata's metabias command) to statistically investigate the potential for bias. If detected, we will use Formann's (2008) correction.

2.4 Deriving conclusions and implications

Our previous research has highlighted the fact that there are very few "one size fits all" solutions (Gitter, Manley, and Barham 2010). What works in one country may not work in another. Small programmatic changes can lead to large differences in observed outcomes. While the impacts of cultural heterogeneity are not something we can hope to identify, the implications of programmatic shifts should be identifiable through this analysis. Do changing conditionalities make a difference for nutritional status? Are increases in food diversity or household meat consumption sufficient to improve child nutritional status? Which other household or community-level factors make a difference? After carefully compiling data from the programme impact evaluation literature, we hope that statistical analysis will answer these questions.

References

Agüero, Jorge, Michael Carter, and Ingrid Woolard. 2007. "The Impact of Unconditional Cash Transfers on Nutrition: The South African Child Support Grant." International Poverty Center Working Paper Number 39. September. 30pp.

Attanasio, Orazio, Erich Battistin, Emla Fitzsimons, Alice Mesnard, and Marcos Vera-Hernández. 2005. *How effective are conditional cash transfers? Evidence from Colombia.* Available at http://www.ifs.org.uk/bns/bn54.pdf. London: Institute for Fiscal Studies, Briefing Note No. 54, 2005.

Attanasio, Orazio, Costas Meghir, and Norbert Schady. 2010. "Mexico's Conditional Cash Transfer Programme," *Lancet* 375 (March 20): 980.

Balk, Deborah, Adam Storeygard, Marc Levy, Joanne Gaskell, Manohar Sharma, and Rafael Flor. 2005. "Child Hunger in the Developing World: An Analysis of Environmental and Social Correlates." Food Policy 30: 584-611.

Bassett, Lucy. 2008. "Can Conditional Cash Transfer Programs Play a Greater Role in Reducing Child Undernutrition?" World Bank SP Discussion Paper Series #835. Washington, DC: World Bank. 84pp.

Behrman, Jere R., and John Hoddinott. 2005. "Programme Evaluation with Unobserved Heterogeneity and Selective Implementation: The Mexican PROGRESA Impact on Child Nutrition." *Oxford Bulletin of Economics and Statistics* 67 (4): 547–69.

Behrman, Jere R., and John Hoddinott. 2005. "Programme Evaluation with Unobserved Heterogeneity and Selective Implementation: The Mexican PROGRESA Impact on Child Nutrition." *Oxford Bulletin of Economics and Statistics* 67(4): 547-569.

Bhutta, Zulfiqar A., Tahmeed Ahmed, Robert E. Black, Simon Cousens, Kathryn Dewey, Elsa Giugliani, Batool A. Haider, Betty Kirkwood, Saul S. Morris, H. P. S. Sachdev, and Meera Shekar for the Maternal and Child Undernutrition Study Group. 2008. "What Works? Interventions for Maternal and Child Undernutrition and Survival." *Lancet* 371: 417-40.

Bonvecchio, Anabelle, Gretel H. Pelto, Erika Escalante, Erick Monterrubio, J. P. Habicht, Fernanda Nava, Maria-Angeles Villanueva, Margarita Safdie, and J. A. Rivera. 2007. "Maternal Knowledge and Use of a Micronutrient Supplement Was Improved with a Programmatically Feasible Intervention in Mexico." *Journal of Nutrition* 137(2): 440-446.

Borenstein, Michael, Larry V. Hedges, Julian P. T. Higgins, and Hannah R. Rothstein. 2009. *Introduction to Meta-Analysis*. West Sussex, UK: John Wiley and Sons, Ltd.

Charmarbagwala, Rubiana, Martin Ranger, Hugh Waddington, and Howard White. 2004. "The Determinants of Child Health and Nutrition: A Meta-Analysis." World Bank working paper. 62pp.

Coly, Aminata Ndiaye, Jacqueline Milet, Aldiouma Diallo, Tofène Ndiaye, Eric Bénéfice, François Simondon, Salimata Wade, and Kirsten B. Simondon. 2006. "Preschool Stunting, Adolescent Migration, Catch-Up Growth, and Adult Height in Young Senegalese Men and Women of Rural Origin." Journal of Nutrition (136, September): 2412-2420.

de Janvry, Alain, Frederico Finan, Elisabeth Sadoulet and Renos Vakis. 2006. "Can Conditional Cash Transfers Serve as Safety Nets to Keep Children at School and out of the Labor Market?" *Journal of Development Economics*, 79(2): 349-373.

Duflo, Esther. 2003. "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa." The World Bank Economic Review **17**(1): 1-25.

Fernald, Lia C. H., Paul J. Gertler, and Lynnette M. Neufeld. 2008. "The role of cash in conditional cash transfer programmes for child health, growth and development: an analysis of Mexico's Oportunidades," *The Lancet* 371:828–37.

Fernald, Lia C. H., Paul J. Gertler, and Lynnette M. Neufeld. 2009. "Ten-year impact of *Oportunidades* – Mexico's conditional cash transfer program – on child growth, cognition, language and behaviour," *The Lancet* 374(9706): 1997-2005.

Fiszbein, Ariel, and Norbert Schady. 2009. Conditional Cash Transfers: Reducing Present and Future Poverty. Washington, DC: The International Bank for Reconstruction and Development. 383pp. Downloadable from http://siteresources.worldbank.org/INTCCT/Resources/5757608-1234228266004/PRR-CCT_web_noembargo.pdf as of July 3, 2010.

Formann, Anton K. 2008. "Estimating the Proportion of Studies Missing for Meta-Analysis due to Publication Bias." *Contemporary Clinical Trials* 29: 732-739.

Fryer, Roland G., Jr. 2010. "Financial Incentives and Student Achievement: Evidence from Randomized Trials." NBER Working Paper 15898. April: 91 pp.

Gaarder, Marie M., Amanda Glassman, and Jessica E. Todd. 2010. "Conditional Cash Transfers and Health: Unpacking the Causal Chain." *Journal of Development Effectiveness* 2(1, March): 6-50.

Gertler, Paul J. 2004. "Do conditional cash transfers improve child health? Evidence from PROGRESA's controlled randomized experiment." *American Economic Review* 94(2):336-41.

Gitter, Seth R., James Manley, and Brad Barham. 2010. "The Coffee Crisis, Early Childhood Development, and Conditional Cash Transfers." Working Paper, Inter-American Development Bank. 37pp.

Glassman, Amanda, Marie Gaardner, and Jessica Todd. 2006. "Demand-Side Incentives for Better Health for the Poor: Conditional Cash Transfer Programs in Latin American and the Caribbean." Inter-American Development Bank Economic and Sector Study Series RE2-06-033. December. 62pp.

Glassman, Amanda, Jessica Todd, and Marie Gaardner. 2007. "Performance-Based Incentives for Health: Conditional Cash Transfer Programs in Latin America and the Caribbean." Center for Global Development Working Paper #120, April. 60pp.

Goncalves-Silva, Regina M. V., Joaquim G. Valente, Márcia G. F. Lemos-Santos, Rosely Sichieri. 2005. "Household Smoking and Stunting for Children Under Five Years." Cadernos de Saúde Pública, 21(5, Sept./Oct):.1540-1549.

Grantham-McGregor, Sally, Yin Bun Cheung, Santiago Cueto, Paul Glewwe, Linda Richter, Barbara Strupp, and the International Child Development Steering Group. 2007. "Development Potential in the First 5 Years for Children in Developing Countries." *Lancet* 369 (January 6): 60-70.

Hanlon, Joseph, Armando Barrientos, and David Hulme. 2010. *Just Give Money to the Poor: The Development Revolution from the Global South*. Kumarian Press: April. 288 pp.

Hoddinott, John. 2010. "Nutrition and Conditional Cash Transfer Programs." Chapter 10 in *Conditional Cash Transfers in Latin America: A Magic Bullet to Reduce Poverty?* Ed. By M. Adato and J. Hoddinott (Baltimore: Johns Hopkins University Press).

Hoddinott, John, and Lucy Bassett. 2008. "Conditional Cash Transfer Programs and Nutrition in Latin America: Assessment of Impacts and Strategies for Improvement." IFPRI working paper. November 21: 34 pp. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1305326 as of July 4, 2010.

Hoddinott, John, and Bill Kinsey. 2001. "Child Growth in Time of Drought." Oxford Bulletin of Economics and Statistics 63(4): 409 - 436.

Horton, Sue, Harold Alderman, and Juan A. Rivera. 2009. "Hunger and Malnutrition," in *Global Crises, Global Solutions*, edited by Bjorn Lomborg. New York: Cambridge University Press. Pp. 305-333.

Hunter, Paul R. 2009. "Household Water Treatment in Developing Countries: Comparing Different Interventions using Meta-Regression." *Environmental Science and Technology* 43: 8991-8997.

Johnston, Francis E. 1986. "Somatic Growth in Infancy and Preschool Years." In Human Growth: A Comprehensive Treatise Second Edition edited by Frank Falkner and J.M. Tanner. New York: Plenum Press, 1986. Volume 2, pp. 3-24.

Lagarde, Mylene, Andy Haines, and Natasha Palmer. 2007. "Conditional Cash Transfers for Improving Uptake of Health Interventions in Low- and Middle-Income Countries." *Journal of the American Medical Association* 298(16): 1900-1910.

Leroy, Jef L., Armando García-Guerra, Raquel García, Clara Dominguez, Juan Rivera, and Lynnette M. Neufeld. 2008. "The Oportunidades program increases the linear growth of children enrolled at young ages in urban Mexico." *Journal of Nutrition* 138(4):793-8.

Leroy, Jef L., Marie Ruel, and Ellen Verhofstadt. 2009. "The impact of conditional cash transfer programmes on child nutrition: a review of evidence using a programme theory framework." *Journal of Development Effectiveness* 1(2, June): 103-129.

Macours, Karen, Norbert Schady, and Renos Vakis. 2008. "Cash Transfers, Behavioral Changes, and the Cognitive Development of Young Children: Evidence from a Randomized Experiment." Policy Research Working Paper 4759, World Bank, Washington, DC.

Maluccio, John. 2009. "Household Targeting in Practice: The Nicaraguan Red de Protección Social," *Journal of International Development* 21(1, January): 1-23.

Maluccio, John A., and Rafael Flores. 2005. "Impact Evaluation of a Conditional Cash Transfer Program: The Nicaraguan *Red de Protección Social.*" Research Report 141, International Food Policy Research Institute, Washington, DC. 78pp.

Miller, Candace, Maxton Tsoka, and Kathryn Reichert. 2008. "Impact Evaluation Report: External Evaluation of the Mchinji Social Cash Transfer Pilot." Downloaded August 23, 2010 from http://www.childresearchpolicy.org/images/Impact_Evaluation_Report_Final_August.pdf. 56pp.

Moore, Charity. 2008. Assessing Honduras' CCT programme PRAF (Programa de Asignación Familiar): Expected and unexpected realities. Available at http://www.undp-povertycentre.org/pub/IPCCountryStudy15.pdf. Brasilia: International Poverty Center, Country Study.

Morris, Saul S., Pedro Olinto, Rafael Flores, Eduardo A. F. Nilson, and Ana C. Figueiró. 2004. "Conditional cash transfers are associated with a small reduction in the rate of weight gain of preschool children in northeast Brazil." *Journal of Nutrition* 134(9):2336-41.

Paxson, Christina, and Norbert Schady. 2007. "Does Money Matter? The Effects of Cash Transfers on Child Health and Development in Rural Ecuador." World Bank Policy Research Working Paper 4226. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=984618.

Pritchett, Lant. 2002. "It Pays to be Ignorant: A Simple Political Economy of Rigorous Program Evaluation." Journal of Economic Policy Reform 5(4): 251-269.

Rawlings, Laura B., and Gloria Rubio. 2003. "Evaluating the Impact of Conditional Cash Transfer Programs." *World Bank Research Observer* 20 (1, Spring): 29-55.

Risk of bias. 2009. "Risk of bias." Cochrane Effective Practice and Organization of Care Group website. Downloaded from http://epoc.cochrane.org/epoc-resources-review-authors on August 23, 2010. 3 pp.

Rivera, Juan A., Christine Hotz, Teresa González-Cossio, Lynnette Neufeld, and Armando García-Aranda. 2003. "The Effect of Micronutrient Deficiencies on Child Growth: A Review of Results from Community-Based Supplementation Trials." Journal of Nutrition 133 (11) (Supplement 2): 4010S–4020S.

Rivera, Juan A., Daniela Sotres-Alvarez, Jean-Pierre Habicht, Teresa Shamah, and Salvador Villalpando. 2004. "Impact of the Mexican program for education, health, and nutrition (Progresa) on rates of growth and anemia in infants and young children: a randomized effectiveness study." *JAMA* 291(21: June 2): 2563-70.

Schultz, T. Paul. 2004. School subsidies for the poor: evaluating the Mexican Progresa poverty program. *Journal of Development Economics.* 2004;74(1):199-250.

Skoufias, Emmanuel, and Bonnie McClafferty. 2001. "Is PROGRESA Working? A Summary of the Results of an Evaluation by IFPRI." Food Consumption and Nutrition Division Discussion Paper No. 118. Accessed on February 29, 2008 at http://www.ifpri.cgiar.org/divs/fcnd/dp/papers/fcndp118.pdf

Stecklov, Guy, Paul Winters, Jessica Todd, and Ferdinando Regalia. 2007. "Unintended Effects of Poverty Programmes on Childbearing in Less Developed Countries: Experimental Evidence from Latin America." *Population Studies* 61(2): 125-140.

Strauss, John, and Duncan Thomas. 1998. "Health, Nutrition, and Economic Development." Journal of Economic Literature 36(2, June): 766-817.

Tanner, J.M. 1986. "Growth as a Target-Seeking Function: Catch-up and Catch-down Growth in Man." In Human Growth: A Comprehensive Treatise Second Edition edited by Frank Falkner and J.M. Tanner. New York: Plenum Press, 1986. Volume 1, pp. 167-179.

Victora, Cesar G., Linda Adair, Caroline Fall, Pedro C. Hallal, Reynaldo Martorell, Linda Richter, and Harshpal Singh Sachdev, for the Maternal and Child Undernutrition Study Group. 2008. "Maternal and Child Undernutrition: Consequences for Adult Health and Human Capital." *Lancet* 371: 340-57.

Waterlow, J.C., R. Buzina, W. Keller, J.M. Lane, M.Z. Nichaman, and J.M. Tanner. "The Presentation and Use of Height and Weight Data for Comparing the Nutritional Status of Groups of Children Under the Age of 10 Years." Bulletin of the World Health Organization 55(4): 489-498.

WHO (World Health Organization), 1995. "Physical Status: The Use and Interpretation of Anthropometry." WHO Technical Report Series No. 854, Geneva.

WHO (World Health Organization) 2006. Infant and Young Child Nutrition: The WHO Multicentre Growth Reference Study. Quote is online at http://www.who.int/childgrowth/faqs/applicable/en/index.html, accessed July 3, 2010.

Yablonski, Jennifer, and Michael O'Donnell. 2009. "Lasting Benefits: The Role of Cash Transfers in Tackling Child Mortality." mimeo, published by *Save the Children UK*. 66pp. Downloaded from http://www.savethechildren.org.uk/en/54_8358.htm on August 23, 2010.

Appendices

Appendix 1.1: Authorship of this report

James Manley

Department of Economics, Towson University

Towson, MD 21252

410-704-2146

jmanley@towson.edu

Seth Gitter

Department of Economics, Towson University

Towson, MD 21252

410-704-3275

sgitter@towson.edu

Vanya Slavchevska

Graduate Student

American University

vs4030a@student.american.edu

Advisory Group:

Rebecca Calder, DFID Nepal

Joanna McGowan, Governance, Social Development and Conflict research team, DFID

Review Group:

3ie-managed review, including subject and systematic review specialists

Acknowledgements

This report was graciously funded by DFID. All opinions expressed are those of the authors, not necessarily of DFID.

Conflicts of interest

Both primary reviewers have published on the topic. In addition, Manley was for four years involved with data analysis of the Oportunidades programme that culminated in the Fernald, Gertler, and Neufeld papers published in 2008 and 2009. Manley and Gitter have a working paper looking at the effectiveness of the Honduran, Nicaraguan, and Mexican CCTs in protecting children's nutritional status from the coffee shock in 2000-2002, a paper that will be included in the review.

Appendix 1.2 Curricula vitae of authors

JAMES MANLEY

Department of Economics
101 P Stephens Hall
Towson University
Towson, MD 21252-3310

Office phone: (410) 704-2146
Fax: (410) 704-3664
jmanley@towson.edu
http://pages.towson.edu/jmanley

RESEARCH AND TEACHING INTERESTS

Microeconomics; Environmental, Development, and Health Economics

EDUCATION

Ph.D. University of California, Berkeley. Agricultural and Resource Economics, 2008.
M.S. University of Nevada, Reno. Applied Economics and Statistics, 2002.
M.A. Andover Newton Theological School. Christian Theology and Environmental Ethics, 1996.
B.A.x2 University of Nevada, Reno. Majors in Social Psychology and Speech Communication, with minors in Computer Science and Mathematics. Graduated *summa cum laude*, 1993.

PUBLICATIONS

"**The Overdevelopment of Water Resources**," Peter Berck and James Manley. Chapter 4 in Ayal Kimhi and Israel Finkelshtain (eds.), *The Economics of Natural and Human Resources in Agriculture*, New York, NY: Nova Science Publishers. 2009.

"Effects of a Conditional Cash Transfer Program on Children's Behavior Problems," Emily J. Ozer, Lia C. H. Fernald, James G. Manley, and Paul J. Gertler. *Pediatrics* 123 (4) 2009 e630-e637.

"Creating carbon offsets in agriculture through no-till cultivation: a meta-analysis of costs and carbon benefits," James Manley, G. Cornelis van Kooten, Klaus Moeltner, and Dale Johnson. *Climatic Change* 2005 (68) 41-65.

"How costly are carbon offsets? A meta-analysis of carbon forest sinks," G. Cornelis van Kooten, Alison J. Eagle, James Manley, and Tara Smolak. *Environmental Science and Policy* 2004 (7): 239-251.

RESEARCH EXPERIENCE

Investigador Invitado, Centro de Investigación en Evaluación y Encuentas, Dirección de Economía de la Salud. Instituto Nacional de Salud Pública (National Institute of Public Health), Cuernavaca, Mexico. July 2009.

Graduate Research Assistant, University of California, Berkeley. Aug. 2002 – 2008. Extensively analyzed Mexican Oportunidades program with Dr. Paul Gertler and Dr. Lia Fernald.

World Bank and Inter-American Development Bank. Consultant, summer 2003. Supervised by Paul Winters (now at American University), Leonardo Corral (IDB), and Peter Lanjouw (WB).

CONFERENCES & SEMINAR PRESENTATIONS

Towson University Economics Department Seminar, 2008 & 2009.
Pacific Development Conference, 2007.
UC Berkeley Environment and Resources Seminar, 2007.
UC Berkeley Economics Department Development Lunch, 2005, 2006, 2007.

WORKING PAPERS

"The Coffee Crisis, Early Childhood Development, & Conditional Cash Transfers" with S. Gitter
"Just give money to the poor: does the 'conditional' in Mexico's 'conditional cash transfer' make a difference?" with Lia Fernald and Paul Gertler
"Wealthy, healthy, and wise: does money compensate for being born into difficult conditions?" with Lia Fernald and Paul Gertler
"The Allocation of Merit Pay in Academia" with Finn Christensen, under review at *Applied Economics*
"Care Quality and the Utilization of Pre-natal Care in Indonesia"
"Cooking Down: Indoor Cooking Fuels and Child Height in Indonesia"

GRANTS

United Kingdom Department for International Development. 2010. Principal Investigator with Seth Gitter (Co-PI). "How effective are cash transfer programs at improving nutritional status? A Systematic Review." $40,000.

Inter-American Development Bank. 2009. Co-PI with Seth Gitter (Towson University) and Brad Barham (University of Wisconsin). "The Coffee Crisis, Early Childhood Development, and Conditional Cash Transfers." $30,000.

Faculty Development and Research Committee, Towson University. 2009. One of 13 faculty university-wide awarded funding to complete research project, "The Effects of *Oportunidades* on Child Behavior." $3000.

TEACHING

Assistant Professor of Economics, Towson University. "Statistics for Business and Economics I," "Natural Resource Economics," and "Microeconomic Principles." 12 semester long 3-credit classes taught and one independent study supervised. 2008-2010.

Graduate Student Instructor, University of California, Berkeley. "Environmental Economics," upper division undergraduate, Spring 2005, and "Introduction to Environmental Economics and Policy," lower division undergraduate, Fall 2005.

AWARDS

University of California, Berkeley. Outstanding Graduate Student Instructor. May 2006.

University of Nevada, Reno. Outstanding Graduate Student in department. May 2002.

Seth R. Gitter
Phone: (410) 704-2191 · E-mail: sgitter@towson.edu

EMPLOYMENT HISTORY

Towson University, Assistant Professor, *Department of Economics* Aug. 2007 -current
Beloit College, Visiting Professor, *Department of Economics & Management* 2006-2007

EDUCATION

Ph.D. Agricultural and Applied Economics, University of Wisconsin-Madison. August, 2006
B.A. Economics, Grinnell College. May, 2002.

PUBLICATIONS

B. L. Barham, M. Callenes, S.R. Gitter, J. M. Lewis, and J. Weber (Forthcoming) "Fair Trade/Organic Coffee, Rural Livelihoods, and the 'Agrarian Question': Southern Mexican Coffee Families in Transition" *World Development*

S.R. Gitter and T. A. Rhoads (Forthcoming) "Determinants of Minor League Baseball Attendance" *Journal of Sports Economics*

S.R. Gitter and B. L. Barham (2009) "Conditional Cash Transfers, Shocks, and Education: An Impact Evaluation of Nicaragua's RPS." *Journal of Development Studies*, vol. 45, pages 1-21

S.R. Gitter and B. L. Barham (2008) "Women and Targeted Cash Transfers in Nicaragua" *World Bank Economic Review*, vol. 22(2), pages 271-290

S.R. Gitter, R.J. Gitter and D. Southgate (2008) "Impact of Return Migration to Mexico" *Estudios Económicos*, vol. 23(1), pages 3-23.

S.R. Gitter and B. L. Barham (2007) "Credit, Natural Disasters, Coffee, and Educational Attainment in Rural Honduras," *World Development*, 35(3): pages 498-511.

WORKING PAPERS

"Food Security, Conditional Cash Transfers, and Child Health Outcomes in Nicaragua"
with Natalia Cáldes .

"Fairtrade-Organic Coffee Cooperatives, Migration, and Secondary Schooling in Southern Mexico."
with Jeremy Weber, Bradford L. Barham, Mercedez Callenes, & Jessa Lewis.

RESEARCH GRANTS

UK Department for International Development 2010. Co-PI with James Manley (Towson University). "How effective are conditional cash transfer programs on nutritional status (height for age)? A Meta-Analysis" ($40,856)

Inter-American Development Bank. 2009. Co-PI with James Manley (Towson University) and Brad Barham (University of Wisconsin). "The Coffee Crisis, Early Childhood Development, and Conditional Cash Transfers." ($30,000)

CONSULTING EXPERIENCE

The World Bank *December 2006 – March 2007*

Responsible for analyzing data collected on a Laotian social protection fund, constructing social indicators, and comparing treatment and control groups to measure program impacts.

International Food Policy Research Institute (IFPRI) *August, 2006*

Aided in writing a proposal to evaluate a conditional cash transfer program in El Salvador. Coordinated sampling methods & survey design. Reviewed materials in English and Spanish.

HONORS and AWARDS

Towson University CIEE Travel Grant ($4,300)

Towson University Faculty Research Mentor Grant ($6,000)

Grinnell College Alumni Scholars

American Agricultural Economics Association Graduate Student Travel Grant, July 2006.

Institute for Research on Poverty (IRP) Graduate Research Fellow, University of Wisconsin-Madison, 2005-2006.

Tinker-Nave Research Travel Grant for travel to Honduras, University of Wisconsin-Madison, February 2005.

Rosenfield Program Internship Grant to work at Economic Commission for Latin America and the Caribbean, United Nations, Grinnell College, Summer 2001.

CONFERENCES and PRESENTATIONS

2010: Western Economics Association Meetings

2009: Society for American Baseball Research, Western Economics Association Meetings, Midwest Economics Association Meetings

2008: Grinnell College, Midwest International Development Conference, Midwest Economics Association Meetings

2007: Towson University (March, December), Colorado State University, International Food Policy Research Institute, Midwest Economics Association Meetings, Macalester College

RELEVANT SKILLS

Computer, Statistical, and Mathematical Software: STATA, GAUSS, SPSS, SAS, Excel, Word.

Languages: Spanish (Speaking 2, Writing 1) 1 = basic; 2 = intermediate; 3 = fluent

Vanya Slavchevska

9918 Shelburne Ter. Apt 103
Gaithersburg, MD 20878
(240) 370 - 5560
vs4030a@student.american.edu

EDUCATION

Ph. D. in Economics — **Expected May 2013**

American University — *Washington, D.C.*

- Overall GPA 4.00

B.A. in Economics — **May 2008**

Hood College — *Frederick, MD*

- Minor in Mathematics
- Graduated Summa Cum Laude with a GPA of 3.99 on a scale of 4.0

RELEVANT COURSES (Ph.D. Level)

- **Advanced Econometrics I and II**
- **Macroeconomics I and II**
- **Microeconomics I and II**
- **Project Evaluations**
- **Banking and Development**

RELEVANT COURSES (Undergraduate Level)

- **Applied Statistics**
- **Probability and Statistics**

HONORS

Doctorate Fellowship – American University **2009-2012**
Doctorate Fellowship – University of Pittsburgh **2008-2009**
Dean's List – every semester **2004-2008**
Member, Omicron Delta Epsilon – International Honor Society in Economics
Member, Phi Kappa Phi Honor Society – Multidisciplinary Honorary Society
Member, Pi Mu Epsilon – National Honorary Mathematics Society
Presidential Scholarship – Hood College **2004-2008**
Departmental Honors Paper and Presentation
August 2007- May 2008

- "The Impact of Immigrants on the Wages and Unemployment Rate of Native Workers."
- An empirical study of the effect of foreign-born workers on the wages of native workers in the U.S..

EXPERIENCE

Teaching Assistant — **August 2006-Present**

- Principles of Microeconomics
- Principles of Macroeconomics
- Intermediate Microeconomics
- Business Statistics

Duties

- Help students with homework assignments
- Correct and grade homework problems and papers
- Help grade exam problems
- Hold review sessions
- Conduct lectures on specific topics

Research assistant – City of Frederick, Department of Economic Development
June-August 2007

- Conduct a feasibility study for the establishment of a mezzanine level business incubator in Frederick, Maryland

Research assistant – Prof. Mieke Meurs, Department of Economics, American University, Washington, D.C. January-April 2010

- **Transcribe interviews**
- **Organize the interviews by responses relevant to the research questions.**

LANGUAGES

English, Bulgarian – fluent
German – good reading and writing command of the language
Spanish – beginner level

SKILLS

- Knowledge of Latex, Microsoft Word, Excel, PowerPoint, and STATA software.
- Basic skills of Gauss and Matlab.
- Effective written, verbal and interpersonal communication skills.
- Strong research and analytical skills.
- Strong mathematics and statistics background
- Experienced at working both independently and in a team-oriented, collaborative environment

Appendix 2.1: Inclusion and exclusion criteria

(from 2.2.1)

1) As noted, we will define our search in terms of the outcome height for age. Following Charmarbagwala et al. (2004) the primary inclusion criterion will be use of height for age or stunting as an outcome. One reason we choose this is that other indicators of nutritional status are more likely to reflect short-term rather than long-term characteristics. If other outcomes are often reported in the same articles, we may be able to expand our scope to consider BMI for age or other nutritional outcomes such as the incidence of micronutrient deficiency. However, we do not anticipate finding a sufficient literature to address these issues effectively given our choice of analytical tool, i.e. meta-analysis. Papers reporting only impacts on education will not be considered. Papers reporting "instrumental" outcomes such as increased use of health care, i.e. program effects that may have contributed to improved nutritional status and that we therefore wish to include as covariates, may contribute to the general summation of evidence in the form of our program chart. These papers may thereby contribute indirectly to the dataset used for our final meta-analysis. Examples of papers we will include are Macours, Schady, and Vakis (2008); Maluccio and Flores (2005); Duflo (2000) and Rivera et al. (2004).

2) We choose to limit our scope to cash transfer programs, i.e. programs of which at least one major component is the provision of cash. In hopes of responding to an aid provider's question on the importance of conditionality, we tentatively propose to include the effects of unconditional cash transfer programs as well as conditional cash transfer programs. Programs providing only in-kind transfers, worker training programs, or educational programs will not be considered. Papers providing information about height for age outside the context of some type of social assistance program will also not be included. We will take numbers only from impact evaluations, not from summary articles. Examples of excluded papers include de Janvry et al (2006) which reports on a CCT but doesn't include height for age; Goncalves-Silva et al. (2005) which reports on height for age but not in the context of a cash transfer program; and Strauss and Thomas (1998) is a survey article rather than an impact evaluation.

Appendix 2.2: Search strategy for electronic databases

(from 2.2.2)

We will begin by examining the sources listed in this protocol, including their citations.

We will search the following bibliographic databases (compiled from previous reviews): EconLit, CENTRAL, CINAHL, PsycInfo, PubMed, Google Scholar, Eldis, ID21, Inter-Science, Science Direct, Index Medicus, Social Sciences Citation Index + Conference Proceedings Citation Index, ProQuest Dissertations & Theses Database, IDEAS [Repec], the Cochrane Central Register of Controlled Trials, the Database of Abstracts of Reviews of Effectiveness, JOLIS, EMBASE, POPLINE, CAB Direct, Healthcare Management Information Consortium, WHOLIS (World Health Organization Library Database), African Healthline, International Bibliography of the Social Sciences (IBSS), British Library for Development Studies (BLDS), Journal Storage (JSTOR), Latin American and Caribbean Health Sciences Literature (LILACS), MEDCARIB, Virtual Library in Health (ADOLEC), Pan American Health Organization (PAHO), the Social Science Research Network (SSRN), the System for Information on Gray Literature in Europe (SIGLE), FRANCIS, and the Effective Practice and Organization of Care

Group (EPOC) Register. (Cf. Gaarder, Glassman, and Todd 2010; Leroy, Ruel, and Verhofstadt 2009; Lagarde, Haines, and Palmer 2007).

The following key terms and/or their combinations will be used in the search: (conditional) cash transfer, (monetary) incentives, social protection, social safety nets, family allowance programme, developing countries, low-income countries, height, height for age, nutrition, nutritional status, child growth, child development, impact evaluation, poverty. We will also use the names of the various cash transfer programs as search terms, such as PROGRESA, Bolsa Familia, Familias en Acción, etc. No limitation regarding publishing date will be used, and searches will be carried out both in Spanish and English.

We will also search websites of organizations such as the World Bank, Inter-American Development Bank, the Center for Global Development, the International Food Policy Research Institute, the DFID's research4development.info web site, and chronicpoverty.org.

We will also contact experts directly asking for additional suggestions.

All searching will be tracked and a unified database of reviewed publications maintained. A database system will be set up to keep track of and code studies found during the review. Titles and abstracts will be imported and entered manually into RefWorks.

Inclusion and exclusion criteria will be applied successively to (i) titles and abstracts and (ii) full reports. Full reports will be obtained for those studies that appear to meet the criteria or where we have insufficient information to be sure. The inclusion and exclusion criteria will be re-applied to the full reports and those that do/did not meet these initial criteria will be excluded. Data from reports that meet inclusion criteria will be compiled into an Excel spreadsheet.

Appendix 2.3: Journals to be handsearched

IDS Bulletin, Journal of Development Studies, Journal of Development Economics, World Development, the Journal of Development Effectiveness, Economic Development and Cultural Change, Economic Development, and Social Science and Medicine

Appendix 2.4: Draft coding tool

We will take the following information from each article reporting height for age impacts: baseline height for age, impact, p-value, standard error, baseline height for age<-2 (stunting), impact on height for age<-2 (stunting), p-value, standard error, sample size, baseline height in cm, impact on height in cm, p-value, standard error, whether the sample is all female, whether the sample is all male, mean age (in months), min age (in months), max age (in months), country, program name, baseline survey year (if panel data used) or survey year (if only one cross-section data used), baseline household income, baseline per capita income, baseline consumption, baseline asset position (qualitative variable), type of conditionality, level of participation in conditionality, study id strategy, control/treatment study or transfer amount study (i.e. explanatory variable of interest), peer viewed or not, size of total transfer, size of monthly transfer (whichever is reported), currency, recipient gender, whether the program includes a nutritional supplement, program duration at measurement, whether it is randomized evaluation, income fixed effects, age fixed effects, additional control variables included in analysis, source id, author and year, important notes from the article.

Figure 1. Origins of Child Nutritional Status

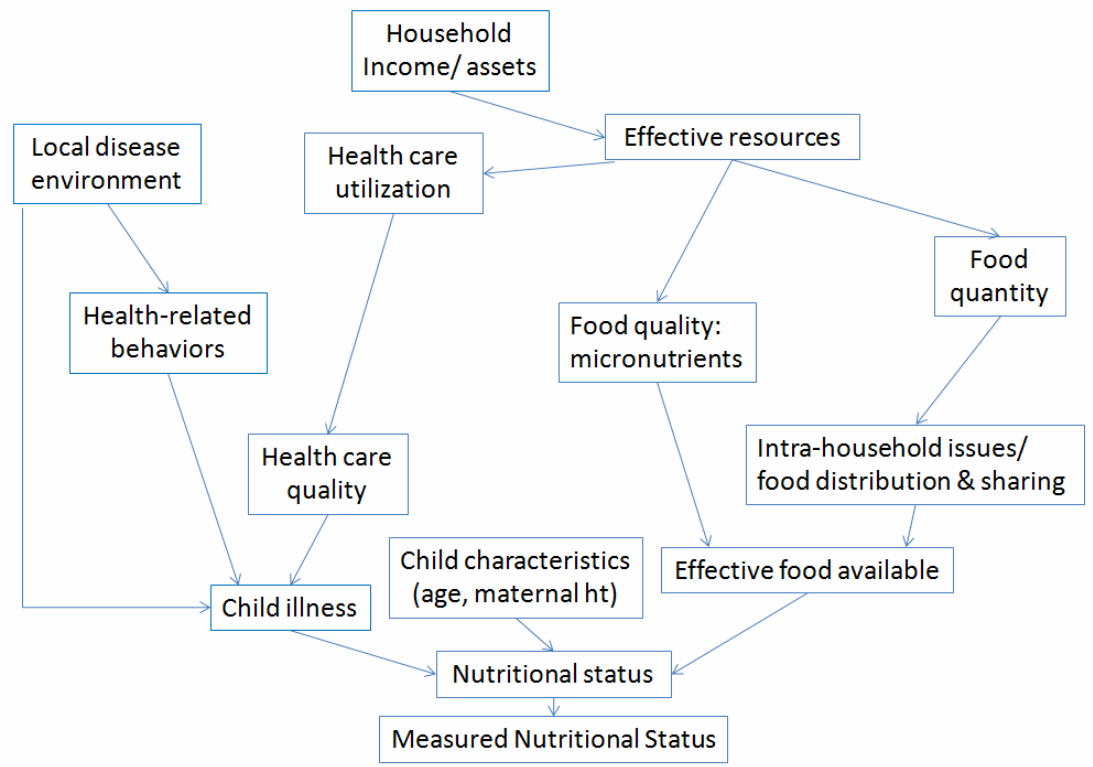

Figure 2. Origins of Child Nutritional Status and Potential Interventions

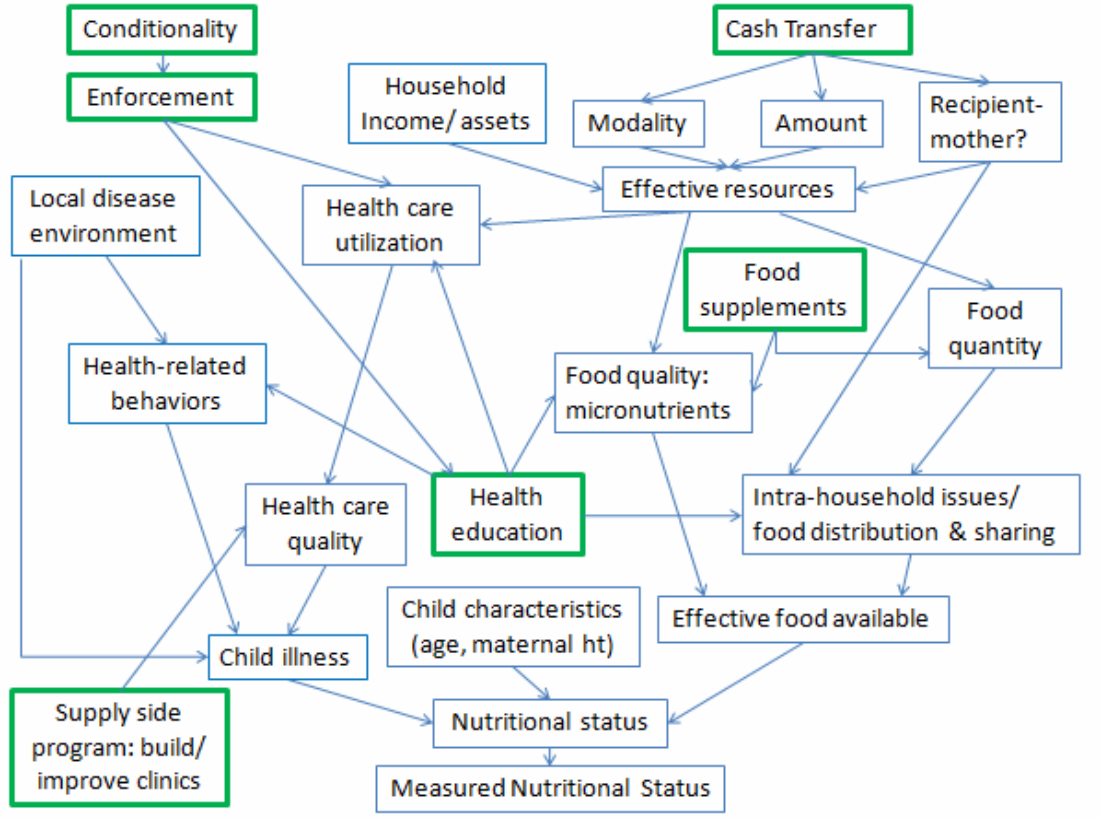

Figure 3. Search strategy for research databases