Making Sustainable Reductions in Extreme Poverty:
A Comparative Meta-Analysis of Livelihood, Cash Transfer and Graduation Approaches *

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Abstract

Eliminating extreme poverty by 2030 will require targeted interventions that can make sustainable improvements in the lives of the poorest. Moving people out of extreme poverty is challenging and costly since the poorest households tend to be physically and socially isolated, and face disadvantages across multiple dimensions. We compare the cost-effectiveness of three strands of social protection interventions: livelihood development programs, lump sum unconditional cash transfers (the transfer of a large sum of cash with no restrictions on use) and Graduation programs (holistic suite of interventions encompassing consumption support, access to finance and coaching). After screening, 48 programs are included in this review, some focused solely on the extreme poor, others reaching a broader set of beneficiaries. Annual household consumption or income gain as a proportion of total program cost was used as a benchmark indicator for cost-effectiveness across programs. Overall, lump-sum cash transfers are found to have the highest impact-cost ratio, followed by livelihood and Graduation programs. However, Graduation approach has the most rigorous evidence of long-term (at least a year after end of intervention) impacts and more consistent in producing positive changes than both livelihood approach and cash transfers. Graduation initiatives have higher cost-effectiveness than livelihood programs that have long-term impact estimates and target extreme poor. There are only two cases of lump-sum cash transfers programs that target the extreme poor and measure long-term impacts. Additional evidence is needed to make a more robust comparison between the Graduation Approach and lump sum cash transfers in sustainable poverty reduction among the extreme poor.

Keywords: Extreme poor, livelihood, cash transfer, cost-effectiveness

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About the Author

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1. Introduction

The share of the world's poor living in extreme poverty has seen spectacular reductions since the 1990s. Between 1990 and 2008, the share of population in developing countries living on less than $1.25 a day dropped by 50% followed by a further decline of 22% by 2011 (World Bank and IMF, 2014). But hundreds of millions still live on less than $1.25 a day, and further improvements pose new challenges. Much of this progress was driven by the stable economic growth in East Asian, and to a lesser degree in South Asian, countries. Progress in Latin America and Caribbean has slowed and the reductions in extreme poverty have consistently been very low in Sub-Saharan Africa. It would be practically impossible to reach the World Bank target of reducing extreme poverty to 3% by 2030 through growth alone as it would require accelerating growth rates to unprecedented levels for most of the countries while keeping inequality unchanged (Yoshida et al, 2014). Continued reduction of extreme poverty will therefore require targeted interventions to help the poorest households increase their standard of living.

Identifying effective social protection programs will be critical to this effort. Social protection programs address various constraints faced by the extreme poor, including poverty, skill gaps, and shocks. While most social protection initiatives have the common goal of reducing extreme poverty, the specificity of interventions and the intended pathways out of extreme poverty differ. For example, cash and in-kind transfers can be intended as a safety net against vulnerability or to encourage investment; training and technical supports are often designed to improve productivity; community mobilization programs that encourage collective actions may mitigate coordination failure or facilitate attaining economies of scale; or value chain initiatives to create new economic opportunities. In recent years, a number of innovative approaches have been adopted and scaled to improve these programs by combining livelihood protection and promotion (Grosh et al, 2008). Such approaches recognize the linkages between the constraints faced by the very poor who often have little economic and social capital, few assets, and limited technical skills.

Broadly speaking, three categories of approaches have emerged with promising potential to help increase incomes of those in extreme poverty. **Graduation Programs** take a holistic and integrated approach to extreme poverty reduction by simultaneously tackling the interrelated challenges faced by the very poor. **Livelihood development programs** take a wide range of approaches to helping the poor acquire productive assets and build the skills to use them. Cash transfers are often associated with small regular payments to the poor for consumption support, but larger **lump-sum cash transfers** (e.g., as implemented by the NGO GiveDirectly) have shown potential to help the poor invest in income-generating assets with substantial returns.

There is significant variation in the amount and quality of evidence on the effectiveness of these social protection programs. Although there are relatively fewer examples of Graduation Programs and lump-sum cash transfers, their impacts have been assessed more rigorously than livelihood programs. The CGAP-Ford Foundation Graduation Program coordinated ten implementations of the program, eight of which conducted a randomized control trial (RCT) to evaluate its impact. Lump-sum cash transfers are unusual in that they have mostly been delivered in the context of RCT to learn about returns to capital among poor households and their enterprises (e.g. de Mel et al, 2009; Karlan et al, 2014; Fafchamps et al, 2013; Beaman et al, 2014). In particular, the NGO GiveDirectly that specializes in unconditional cash transfers, was founded by economists who incorporated rigorous research from the outset. However, livelihood development programs, though they have the longest history of implementation (typically since the 1970's) and diversity of programs, have rarely been rigorously evaluated.

With strong impacts across all three models a key question for policymakers will be: what is the greatest impact they can achieve given a limited budget? The clearest way to answer this question is through a cost-effectiveness analysis. However, the answer will depend on the objectives of the policymaker: the cost-effectiveness of a program can vary greatly depending on the population served

and the type of outcomes measured. While the cost of some interventions can appear quite high (the CGAP-Ford Graduation initiatives ranged between US $300 and $2,600 per household, depending on the site) it tells us very little without knowing how much impact one can achieve for this amount of money, whether through the Graduation Approach or other programs. A cost-effectiveness analysis compares impacts on a particular domain achieved per dollar of delivery cost. This paper conducts such a comparative analysis of poverty alleviation programs, with a focus on Graduation, livelihood, and cash transfer programs. We take income and consumption as the primary metric of impact, with a primary interest in long-term outcomes (long-term being defined as over two years). From a review of meta-analyses and review papers, we identify 50 livelihood and cash transfer initiatives with both impact evaluations and project-specific cost data. These cases are used to develop a distribution of cost-effectiveness to identify the best options in increasing income for the poor.

We find that targeting the extreme poor is not a common feature for the livelihood and lump-sum cash transfer programs while the Graduation Approach deliberately targets the extreme poor. While livelihood programs have a large diversity in per beneficiary cost, median cost is the highest for Graduation programs and the lowest for cash transfers. In terms of impact, Graduation programs are the most consistent in making significant positive impacts across sites, and livelihood programs lack in sustainability of the impacts. In our meta-analysis, the annual household consumption gain as a proportion of total program cost is the highest for cash transfers (0.27) followed by the Graduation Approach (0.11) and livelihood programs (0.09). The rank order between approaches differs if we relax our restrictions on targeting and length of follow-up, and if we restrict our analysis to randomized evaluations or if we include quasi-experimental evaluations.

We find the Graduation Approach has the largest body of evidence with seven cases meeting our criteria, while the large benefit-cost ratio of cash transfers calls for further long-term evidence of the impact of unconditional lump-sum cash transfers on the extreme poor.

The next section provides background on the types of programs considered and a review of their impacts. Section 3 describes the methods adopted for this comparative analysis. Section 4 discusses the nature of the selected programs to understand their comparability with the Graduation Approach. Section 5 makes a simple cost comparison of different types of intervention. Section 6 presents results of meta-analysis of impact on consumption and income. Section 7 briefly discusses impacts on other livelihood and human development indicators. Section 8 concludes the paper.

2. Program Types and Impacts

Graduation Approach: Small cash transfers, capital transfers, skills development and financial services are carefully sequenced in the Graduation Approach to make sustainable improvement in the livelihoods of the extreme poor. The program was initiated by BRAC in Bangladesh in 2002. The NGO has reached over half a million households with the program by 2013. Motivated by the initial success of the model, CGAP and the Ford Foundation launched a major initiative to pilot the model in 10 sites to learn how well it could be adapted outside Bangladesh between 2006 and 2014. The CGAP-Ford Foundation Graduation Pilots were typically delivered over an 18-24 month period per households, following a local market assessment to identify potential livelihood activities that very poor beneficiaries can engage in. Beneficiaries were selected through a targeting process to identify the poorest: a participatory wealth ranking in which the community identifies the poorest households, along with a proxy means test to ensure better-off households are not enrolled in the program. The intervention started with cash stipends to support subsistence while beneficiaries develop new livelihoods. Through a consultative process with the household members, appropriate enterprises for each household were determined. Following initial training on the selected enterprise, the assets required to start the livelihood were transferred. The assets or enterprises are primarily livestock and other small non-farm businesses. This asset transfer is followed by regular coaching to provide

technical assistance on enterprise management as well as assisting beneficiary households in coping with shocks and various social pressures. Depending on the site, beneficiaries were provided with bank accounts as a secure place to save their revenues or in some sites the beneficiaries in each village are mobilized as a group to manage their savings or facilitate access to financial services. In some cases, a component of mobilizing community elites was added to create a more supporting environment for the extreme poor.[1]

RCT results of the Graduation Approach conducted in six sites demonstrate significant positive impacts on employment, income and welfare.[2] While there are some variations in the magnitudes of the impacts across the sites, the pooled estimates demonstrate substantially large impacts on a range of livelihood outcomes. Among the economic indicators, the program increased per-capita consumption by 0.12 standard deviations (or 5.8%) compared to the control group, household income by 0.38 standard deviations, assets by 0.26 standard deviations, time spent in earning activities 0.10 standard deviations, food security by 0.11 standard deviations and financial inclusion by 0.21 standard deviations (Banerjee et al, 2015). Critically, most of these impacts are sustained or even increased a full year after households completed the program. There are also positive impacts, although relatively less strong, on health status, political involvement and women's empowerment. A different RCT by Bandiera et al (2013) of the program implemented at a much larger scale by BRAC in Bangladesh also finds similar positive impacts on employment, income, assets and consumption that are sustained after two years from the end of intervention.

Lump-Sum Cash Transfers: A number of researchers have investigated the impact of simply giving lump sums of cash to poor people. In Sri Lanka de Mel et al (2008 and 2009) found cash transfers of $100 and $200 increased business revenue by around 60%, and these profits persist over three years. But there was substantial heterogeneity in the returns, especially for women. 20% of men and 60% of women earned returns lower than the cost of capital (at commercial borrowing rates) and half of women earned negative returns. In Ghana, Fafchamps et al (2011) compared cash and in-kind transfers and transfers made to men and women. Again they found very high returns to capital, averaging 15% per *month* after one year, but heterogeneous returns. Men showed high returns whether provided cash or in-kind grants while women only benefited when provided in-kind grants. A possible explanation is in-kind transfers prevented women from spending cash on immediate family needs rather than investing it. However, poorer women (those with below-median baseline profits) saw no benefit from either form of grant.

More recently, there has been growing interest in adopting unconditional cash transfers as a social protection tool. The relative simplicity of such lump sum cash grants and the potential for ICT to facilitate scaled delivery at a low operations cost are the key attractive features of such unconditional lump-sum cash transfers. The NGO GiveDirectly has multiplied their scale of operations between 2013 and 2014 by increasing their disbursement from $1.8 million to $6.6 million in Kenya and Uganda. An RCT of GiveDirectly in Kenya showed positive impacts from cash transfers averaging $513 on consumption, assets, and food security. Households were randomized to be surveyed 1-14 months after receiving their last transfer. On average they were followed up after 4.3 months. There is suggestive evidence that the impacts may dissipate relatively quickly, as the point estimates on total non-durable consumption decline over time, though the reduction is not statistically significant (Haushofer and Shapiro, 2013).

Livelihood Development Programs: With much longer history in poverty reduction strategies, there is a wide variety in specific interventions covered by livelihood development programs. Usual

[1] For more details on the program and its adaptations, see de Montesquiou et al (2014); Hashemi and de Montesquiou (2011) and other resources on http://www.microfinancegateway.org/topics/graduation-sustainable-livelihoods

[2] There are two randomized evaluations of Graduation Programs not included here: one in India of SKS' program does not have sufficiently comparable data; another of a pilot in Yemen is underway.

interventions for these programs in rural contexts include trainings and technical assistance promoting new farming technologies, organizing farmer groups to encourage collective actions and creating linkages in agriculture supply chain. These are sometimes combined with cash grants or in-kind (usually seeds and fertilizers) supports and access to financial services. Community infrastructure creation such as small irrigation schemes and land security in terms of land titles also fall with livelihood development programs. These programs typically use combinations of such interventions.

Prominence of targeting the extreme poor varies according to the objectives in these livelihood programs. Rural Business Program of the Millennium Challenge Corporation in Nicaragua is an example of a 'typical rural livelihood program'. By organizing both farmers and non-farmers into groups, this program offers technical advice on project development and matching investment grants. Targeting extreme poor is not prioritized in this program as the objective is to reach individuals with relative higher potential of success from the supports, and consequently majority of the beneficiaries in this program are from upper 50% of rural income distribution (Carter and Taledo, 2011). The study also finds that the impacts are more strongly visible among the less poor at midline, and the overall impacts become weaker one year after their midline. Similar differential impact of livelihood programs is observed for an irrigation scheme in India (IEG, 2008). The evaluation finds that the income gain for households in the richest was about three times that of the household in middle quartiles, and almost zero for the poorest quartile. The need for greater targeting is highlighted in many livelihood programs in the rhetoric of avoiding 'elite capture' or programs ostensibly meant for the poor going to the better-off households. There are also examples of livelihood programs generating more equitable impacts. In the evaluation of Women's Income Generating Support (WINGS) program for extreme poor in Uganda, Blattman et al (2013) find an overall 33% increase in consumption, over 60% increase in labor hours and over 4 times increase in savings. Although the program impacts are lower for the households at the lower end of initial consumption distribution when measured in absolute increase in consumption, the impacts are comparable in terms of percentage gains.

3. Inclusion Criteria

For our comparative analysis of cost-effectiveness, we use annual household consumption gain as a proportion of total program cost as the main indicator. For impacts we use indicators that measure poverty reduction across different contexts but do not require imputing values. Therefore, we use the programs' effect on consumption (and income where consumption measures are not available). Although this is a restrictive definition of impacts for many of the programs (which may have impacts on other indicators such as assets or food security, for example), it has the advantage of comparability over more comprehensive cost-benefit analyses, which require a wide range of assumptions in measuring benefits. Given the diversities in the type of livelihood interventions and in their lower quality of evidence on impacts for livelihood programs compared to unconditional lump sum grants and the Graduation programs, we adopted different strategies for screening these three types of programs. For livelihood programs, we used existing systematic reviews to identify papers that are pre-screened for quality. We did a primary screening for evaluations of lump sum cash grants while the seven Graduation cases come from two papers (Banerjee et al, 2015; and Bandiera et al, 2013). The filtering and data compilation process used for livelihood programs is the following:

- *Step 1: Identify initial case sources*
  We use five systematic reviews. These reviews are focused on food security and agriculture sector development through farmers and business training. The references are IOB (2011), IFC (2013), Masset et al (2011), ODI (2011), WB (2011) and Phillips et al (2014).[3] This led to 198 studies

[3] The IOB study (by Bodnár and Piters, 2011) shortlists 38 studies of interventions in agriculture production, value chains, market regulations and land Security. The IFC review (by Nankhuni and Paniagua, 2013) looks into papers evaluating farmer training interventions published between 2009 and 2012. Although this review also focused on financial access initiatives, those were not considered in our review. Masset et al (2011) review agricultural interventions that target nutritional outcomes. ODI review by Hangen-Zanker et al (2011) is

evaluating 182 programs (we refer to all the case studies covered in our comparative analysis as "case").

- *Step 2: Screen program evaluations*
  We excluded 63 evaluations because they did not involve working directly with households (instead they were macro-economic policy reforms, trade reforms, etc.). We excluded 22 evaluations of microcredit interventions. Credit is often a component of livelihood programs, but we excluded purely microcredit evaluations because of our focus on comparing cost effectiveness of programs that can reach extreme poor. There is ample evidence of microcredit not reaching the extreme poor and the impacts are much limited.[4]

  We assess whether a program is reaching the extreme poor using descriptive statistics of the profile of the beneficiaries relative to the general population of the country (or community if available). We document our targeting assessment in Annex 2.

- *Step 3: Screen for impact and cost information*
  To meet our objective of conducting a simple impact-cost analysis, we look for information that allows us to estimate annual consumption or income gain and the cost of interventions per household. If such information is not available in the cited report, we extend our search for other evaluations or reports of the same program. For 18 cases, we collected cost information from various web resources containing program budget and outreach. We dropped 56 programs for which impact estimates of either consumption or income is not available (nine cases), or cost data could not be obtained (12 cases) or both (35 cases). In addition, seven cases were dropped for other reasons such as impact estimates use aggregate data or only trend analysis without any comparison group. Annex 3 (serial 1 to 63) details the excluded cases and a brief explanation for each. After this screening, we included 33 livelihood cases.

After livelihood case selection following this protocol, we conduct a primary search to find cash transfer programs that involve an unconditional lump sum grant. Although there are several good reviews of conditional cash transfers (typically involving small regular payments with the condition or expectation that households will meet certain goals such as school attendance and immunizations), they are not included in this review given our focus on investment and livelihood development.[5] We used the projects listed on J-PAL, IPA and 3ie sites to find such cases (in June, 2014). During this search, we screened 23 studies that met the screening criteria specified in step 2 above, of which 14 met the screening criteria of step three (see reasons for exclusion in Annex 3: serial 64-72). However, ten of these studies are considered as unconditional lump sum cash grants while four studies are included as livelihood cases since they are more similar to livelihood programs than an unconditional cash grant. Finally, we added two more cases beyond these sources - one is a livelihood case which is a

a systematic review of cash transfers for the poor. The review by Independent Evaluation Group at WB (2011) contains the longest list of 85 studies with links to agriculture. Finally, Phillips et al (2014) is a meta-analysis of the role of targeting in reducing poverty through farmer field schools.

[4] Although there is a vast literature on the impacts of microcredit with a large diversity in their conclusions, Banerjee et al (2015) review randomized evaluations of microcredit to find that it has limited impact on poverty reduction. More importantly, there is extremely little information on the costs of these microcredit interventions for our cost-effectiveness analysis. Only one of the six studies in Banerjee et al (2015) looks into the costs of marginal loans for the lenders in terms of (un)profitability. We also explored feasibility of conducting cost-effectiveness analysis of access to credit using studies beyond these experimental evaluations. In our review of 14 evaluations of credit and savings products in Stewart et al (2012) and 12 evaluations of credit on economic outcomes in Duvendack (2011), we found only one study (Chemin, 2008) that looks into the costs (of late repayment) for lenders.

[5] There are also new evaluations coming out that assess impact of conditional cash transfers on livelihood outcomes (e.g. Mochiah et al, 2014; Gertler et al, 2012). We did not include such cases in our review since livelihood development is of secondary objective to these programs and the continuity of cash transfers in CCT programs makes cost comparison difficult.

predecessor of Graduation Pilots (Case # L26), and the other study is a relatively recent RCT of lump-sum unconditional cash transfer (Case # C7) – because of their prominence and direct relevance to our analysis. Through this screening process we found a total of 39 livelihood and 11 cash transfer cases. However, nine of the livelihood cases cannot be included in the meta-analysis due to the studies not reporting statistical significance of the impacts. After dropping these cases, we finally include **30 livelihood and 11 cash transfer case** in our comparative analysis.

Table A1 lists all these 41 cases, case location and source for selection.[6] Our case selection process did not have any requirement to attain geographical diversity. The selected livelihood cases are from 19 countries covering all the major regions of developing countries. There is a concentration of programs from Eastern Africa with 13 cases (43%). The other cases are quite evenly distributed in South America (five cases), Southern Asia (three cases), Central America (three cases), Western Africa (three cases) and South-East Asia (two cases). There is only one case from Western Asia. The cash studies include four cases from Eastern Africa, three cases from Western Africa, and two cases each from Central America and Southern Asia. The **seven cases of Graduation programs** are located in South Asia (three cases), Africa (two cases), and Latin America (two cases).

3.1 Conversion of impact and costs to a comparable metrics

Even within the limited scope of impacts measured on consumption and income, there are important differences in the variable construction across the studies. For instance, using log value instead of monetary units or per capita vs. household-level measures. We convert all these different measures into annual household-level impact in US dollars, using the exchange rate for the respective years. If a program evaluation contains both income and consumption, we prefer the consumption measure as consumption tends to be more accurate and comprehensive (including transfers and home production, for example). For livelihood cases, we use impacts on household consumption (13 cases), total household income (eight cases) and income from specific activity supported by the respective interventions (nine cases). This distribution for lump sum cash transfer cases are four, one and six respectively. We use consumption for all the Graduation cases.

For costs, we use the same exchange rates used in converting impacts. Per-beneficiary cost is measured by dividing the total implementation budget by the number of direct beneficiaries (14 cases) where per household cost estimates are not reported in the evaluations.[7] We use these two variables to measure the ratio of impact to every dollar spent as our benchmark indicator of cost-effectiveness. For standard errors (or t-stat/p-value) of the impacts, we use the same factors to rescale the standard errors of respective impact estimates.

[6] Only one source is specified for studies that are cited in multiple reviews.

[7] There is a key difference between the cash and livelihood programs in cost estimation. For all the cash transfer cases, cost is measured in the amount of grant that is provided to the beneficiary and do not include any operational cost. In our comparative analysis, we impute a 10% operations cost, which is discussed in the subsequent section.

4. Overview of the selected programs

The objective of this section is to give an overview of the livelihood programs to get a perspective of their similarities and differences with the cash transfer cases and Graduation Approach in terms of interventions, type of initiative and target group.

4.1 Interventions

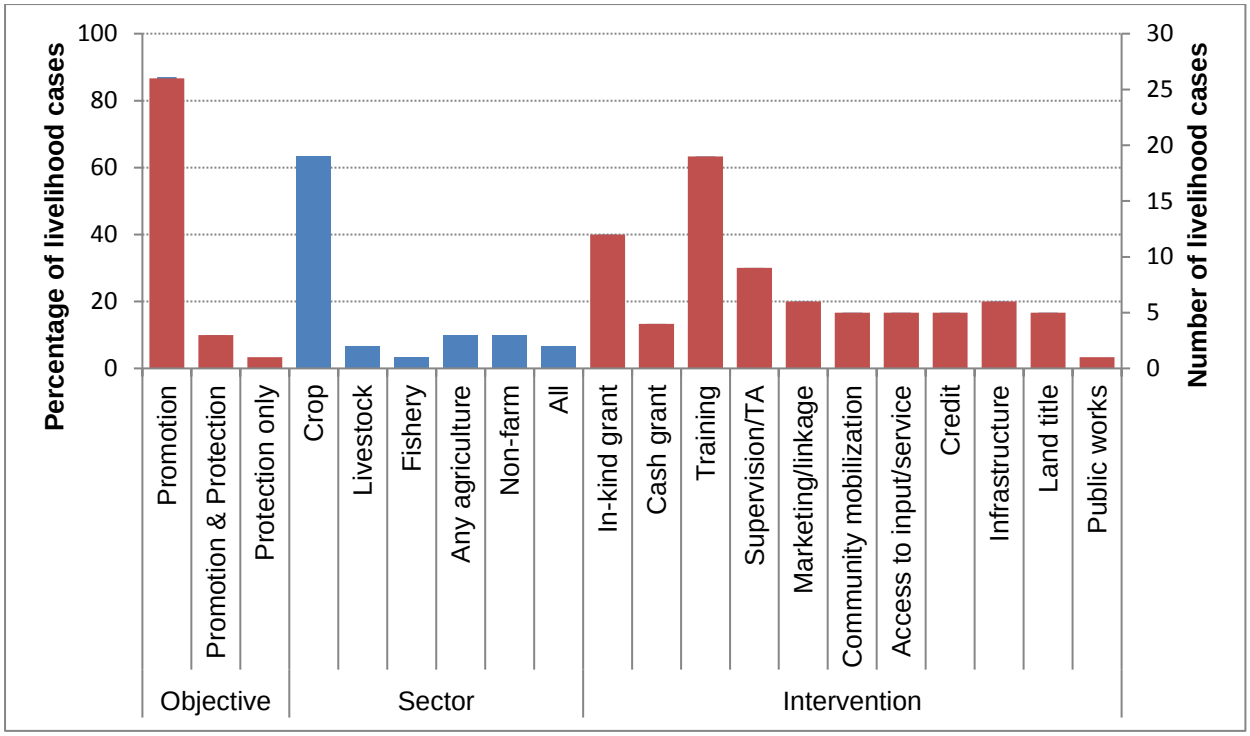
Although the livelihood programs (30 cases) vary substantially in their specific intervention, there is less diversity in their objectives or sectoral focus (Figure 1). All the selected livelihood cases have direct or indirect links to the objective of increasing income of their beneficiary households with some variations in prioritizing the goal of sustainable livelihood development. Considering the distinction between protection and promotion in safety nets[8], over 80% of the cases (26 out of 30) are primarily driven by livelihood promotional objectives. The prominence of livelihood promotion in these cases is similar to both the Graduation Approach and cash transfers. Although the consumption and health supports have protective notions, the overwhelming objective of Graduation Approach is livelihood promotion. Of the remaining livelihood cases, three programs deliberately combine elements of both protection and promotion while only one case can be identified as having exclusive focus on protection - the Agriculture Recovery Program (ARP, case # L8) in Zimbabwe.[9] ARP is an emergency program implemented by the Government of Zimbabwe to help smallholder farmers recover from repeated severe droughts in 1990s. More recent versions of ARP include additional promotional components.

Among all the other 30 cases, the Productive Safety Net Program (PSNP, case # L4) in Ethiopia is one of the most comprehensive social protection programs in Sub-Saharan Africa. This program has a number of intervention components including public works and direct supports (cash and food transfers) as protection; and credit, training on new agriculture technology and irrigation development for productivity enhancement of rural agriculture. There are several evaluations done by IFPRI on various components of PSNP, and we take the evaluation measuring impacts of direct transfer over public works (Gilligan et al, 2009). Among the other examples of combining protection and promotion, the Income Generation for Vulnerable Group Development (IGVGD, case # L26) in Bangladesh is in several ways a predecessor of the Graduation Approach. Although less comprehensive than the PSNP, the IGVGD program also combined food transfer with skill development and access to financial services in order to create a pathway out of extreme poverty. Development of the Graduation Approach has drawn from the lessons learned from implementation shortfalls of and limitations in the IGVGD (Hulme and Matin, 2003).

In terms of sector, two-thirds of the livelihood cases (19 out of 30) involve crop production. This sectoral focus in livelihood cases is natural given that agriculture is the main source of employment for three-quarter of the world's rural poor (WDI, 2000). While the specific crops covered in these programs are primarily staples (rice or maize), there are a few cases that focus on cash crops such as coffee or sunflower. A few livelihood programs are specific to livestock rearing (two cases), fishery (one case) and non-farm businesses (three cases). The remaining two cases do not have any particular sectoral focus. The cash transfer programs, on the other hand, are primarily related to non-farm micro-enterprises. Livestock is the predominant sector for all the Graduation cases. Despite these differences, an important similarity among the three groups of selected cases is that they all take *self-employment* as the primary means of improving productivity and accelerate income growth.
Figure 1. Distribution of comparison livelihood programs

[8] Our functional definitions for protection and promotion are "guarantee relief from deprivations" and "enhance real income and capabilities" respectively (Devereux and Sabates-Wheeler, 2004).

[9] The three categorized as combining promotion and protection are Productive Safety Net Program (PNSP, Case # L4) in Ethiopia, Ruti Irrigation Scheme (Ruti, Case # L12) in Zimbabwe and Income Generation for Vulnerable Group Development (IGVGD, Case # L20) in Bangladesh.



In terms of the specific interventions, livelihood cases have more variations than cash and Graduation. The cash transfer cases are relatively simple in their theory of change, and all of them involve transferring lump sums of cash with very little or no additional intervention component. Although the Graduation initiatives have a standard program design and commonalities in intervention packages, there are some variations in particular components. The more prominent variations are in the types of savings and health services (Banerjee et al, 2015). The savings services in Graduation programs range between simple encouragements to save in local savings groups in Pakistan to requirements of saving a pre-specified amount ($0.25 per in India and about $300 over 2 year in Ethiopia). Similarly for health services, the Graduation program in Bangladesh provided both primary and curative services to all the members of beneficiary households for the duration of the intervention, and there was no health service in Ethiopia since participants had access to government health services. The general approach of health services in Graduation Approach is to provide training on primary healthcare, nutrition and hygiene and fostering linkages to existing health services where possible. In Ghana, the beneficiaries of Graduation program were linked with their national health insurance scheme. Besides these variations, a standard package in Graduation Approach includes an in-kind transfer of a productive asset (most often livestock), technical skills training on managing the asset, consumption support and individualized 'coaching' through household visits.

All the lump sum cash transfer cases involve a lump sum unconditional cash grant. Since most of these cash transfer cases are research initiatives, several of them compare impacts of different intervention models. The variations are cash vs. in-kind transfer (case # C4, C5, and C11), credit vs. grant (case # C1 and C7), and conditional on training or a business proposal (case # C7 and C9). For all these cases with multiple intervention arms, we focus on the particular treatment group receiving a cash grant with relatively thin or no other supports with the objective of assessing impacts of unconditional lump sum cash grants. Our selected livelihood programs, on the other hand, have a much wider mix of interventions.

We identify 11 classes of interventions done by the livelihood programs. Table A1 gives specific program composition involving these interventions. Figure 1 shows that training is the most common element of the livelihood programs. More than 60% of our livelihood programs offer some sort of training related to income generating activity to their beneficiaries. It is also important to note that

there is a wide range in the contents and modalities of the training interventions. Examples of trainings include teaching new technology at farmer field schools (FFS), visits to demonstration plots, natural resource management in participatory action research, classroom training on micro-enterprise development, and management of group enterprises. Some of the trainings on technology are general productivity-enhancing techniques and a few are specific to a new crop variety.

The second most frequent intervention is in-kind transfers as 40% of the livelihood cases involve such transfers. About half of these transfers are "crop packs" composed of seed and fertilizer. The value of these crops packs vary substantially across the cases: the Zimbabwean agriculture recovery program transferred crop packs of $20 to $40 in different years (Case # L8), an input subsidy program in Mozambique charged farmers $32 for a pack worth $117 (Case # L24), and the Millennium Development Authority's (MiDA) program for farmers in Ghana transferred a 'starter pack' of $230 (Case # L1). These crops packs are typically combined with training to promote a new technology, e.g., MiDA provides 29 hours of training on new technology to farmer groups through 9 modules over 9 weeks followed by a starter pack of seed and fertilizer (case # L1). Other in-kind transfers related to agriculture include tools and livestock, and on rare occasions land. It is not common to have in-kind transfer for non-farm enterprises among these livelihood cases. Only one case in our review, the Micro-Entrepreneurship Support Program (MISP, case #L28) in Chile, provided in-kind transfer for non-farm businesses. The assets transferred in this program are equipment and inventory.

Cash transfers are usually done in livelihood cases that focus on non-farm enterprise development. Only four of our selected livelihood programs provide cash grants. The Rural Business Program (RBS, case # L2) in Nicaragua provides business training to farmers and non-farm business owners to develop projects and gives matching investment grant for the proposed projects. Besides the training and grants, nine of the programs also include periodic supervision and follow-up visits offering technical assistance. There is a wide range in the intensity of this supervision. For example, field technicians conduct weekly visits for two years to promote horticulture crops in Farmer Training and Development project (FTDP, case # L15), monthly mentoring visits for three months for non-farm enterprises (micro-entrepreneurship support program, case # L28) or periodic visits by extension agents promoting better livestock rearing practices (participatory livestock development project, case # L18). Some of the cases offering such technical assistance also report customizing their services to the needs of their beneficiaries although the nature of customization is never specified.

Among the other common interventions, creating market linkages or value chain development is done by six livelihood programs. This intervention is primarily used as part of a package, and none of the programs actually implements market linkage on its own without any other intervention. Examples of value chain initiatives are promoting export of organic coffee in Uganda by Kawacom Uganda Limited (Sipi Coffee Promotion, case # L5), support to potato growers in Ecuador (Plataformas, case # L16) and support for export crop in Kenya (DrumNet, case # L22). Kawacom connects small-scale coffee growers with the organic coffee market in Europe by providing supports for attaining certification, regular price information and advice on improving productivity. The Plataformas program creates an alliance between farmers and agriculture service suppliers, NGOs, and research institutes. With an objective of creating direct linkage between potato farmers and high-value markets by avoiding traditional intermediaries, this program provides training on integrated pest management at farmer field schools and establishes a collective distribution chain. DrumNet provided a four-week orientation course on specific export crops (beans, baby corn or passion fruit), in-kind loans to purchase inputs, and marketing services (collection, export etc.) meeting EurepGap requirements. This particular program, however, discontinued a year after the evaluation ended since the farmers failed to maintain quality requirements.

Similar to these market linkage interventions, community mobilization, access to agriculture inputs and credit supports are also used as livelihood development tools in conjunction with other interventions. Although seven programs specify community mobilization (mostly organizing farmers

into groups for collective actions) as an intervention component, many of the other programs also use some element of village group formation in rolling out their interventions.

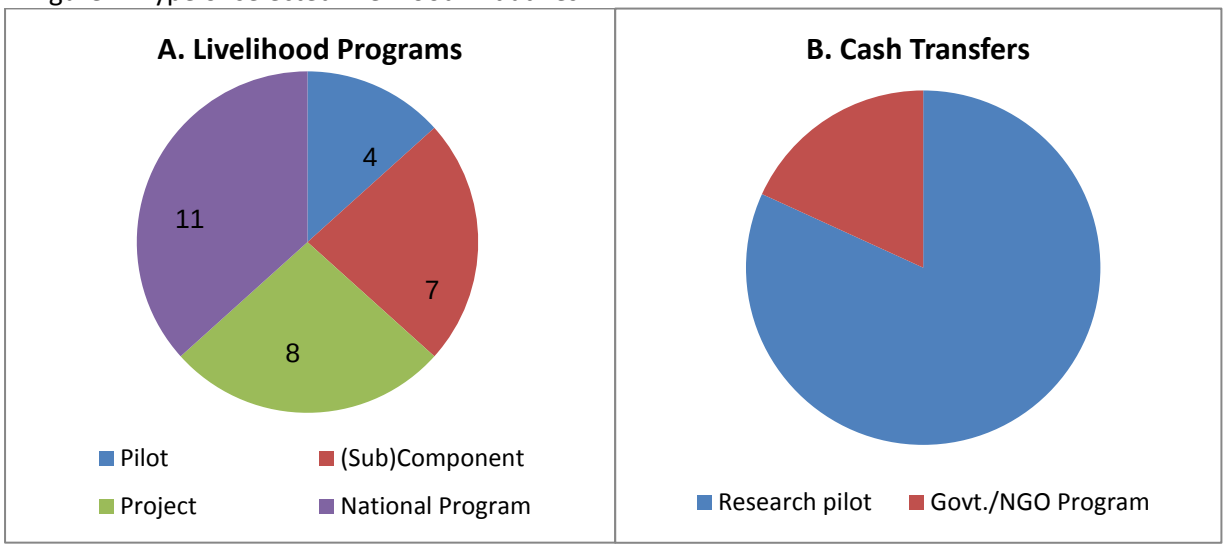
Among the six programs with infrastructure development as an intervention, three cases are irrigation projects. These irrigation interventions include building new irrigation canals, rehabilitation of old canals and constructing small-scale dams. These cases also include formation of water management committees at community level. There are five programs providing land and land titles. While all five programs are part of national land reform agenda, two of these programs also transfer land to smallholder farmers and landless households. The Agriculture Reform in the Philippines (Agri Reform, case # L7) is a 30-year national program implemented since 1988 and the Community Based Rural Land Development in Malawi (Land distribution, case # L26) is a pilot project in four districts of the country. Finally, public works intervention, as mentioned earlier, is part of the Ethiopian PNSP programs (PSNP, case # L4).

The key aspect that comes out of this discussion of interventions is the diversity in composition of these programs even within this limited scope of agribusiness and food security. A few of these programs are actually not very different from the Graduation Approach in their intervention composition. The key features that make the Graduation Approach somewhat unique within this spectrum of livelihood programs are the comprehensiveness of the package with careful sequencing of specific interventions to build new livelihood opportunities for the extreme poor.

4.2 Type of Initiative

Unlike the evaluations of Graduation Approach included in this review, which are primarily at pilot stage, about three quarters of the livelihood cases are either a national program or a relatively longer term project (Figure 2). The national programs are, by our definition, managed by the government and implemented throughout their respective countries. All of the eight project initiatives are implemented by a single NGO or consortium of NGO and/or government partners. There are a few pilot programs (four cases) and the remaining seven cases are evaluations of a particular component of a larger program.

Figure 2. Type of selected livelihood initiatives



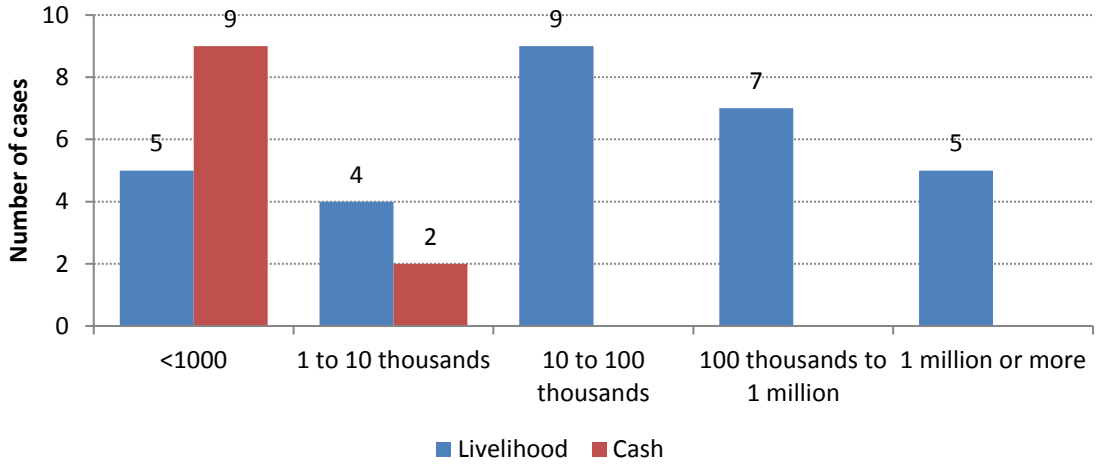
With a couple notable exceptions, the lump-sum cash transfer programs were primarily initiated as part of an evaluation or research project. Out of the 11 cash transfers, only two cases are run by a government or NGO. The Youth Opportunity Program in Uganda (YOP, case # C8), which is a component of the Northern Uganda Social Action Fund is one such lump-sum cash transfer program. This program provided cash grant as start-up capital to group of youth who submitted grant

applications along with a business plan. The second 'non-research' cash transfer program (though it has been evaluated) is implemented by GiveDirectly in Kenya (Givedirecly, case # C6). GiveDirectly provides an especially simple form of cash transfers where the grants are disbursed over mobile phones at a very low operations cost, and no additional services (e.g., training) are offered to recipients.

4.3 Program Scale and Duration

As research pilots, the lump-sum cash transfer programs are quite small in terms of the number of beneficiaries (Figure 3). Nine out of the 11 cases reach fewer than 1000 households or entrepreneurs (and eight cases reach less than 500 beneficiaries). Ugandan YOP program (YOP, case # C8) is the largest among the lump-sum cash transfers cases included in this review, reaching about 6,000 beneficiaries. The second-largest lump-sum cash transfer is the research pilot in Mali by Beaman et al (2014) with over 1,300 farmer households. In operational scale, these cash transfer cases are more comparable to the Graduation Pilots than the livelihood programs which are much broader. Six of the Graduation evaluations had less than 1,000 households as beneficiaries. The only large-scale Graduation program included in this review is by BRAC in Bangladesh reaching over 400,000 households.[10]

Figure 3. Number of households supported



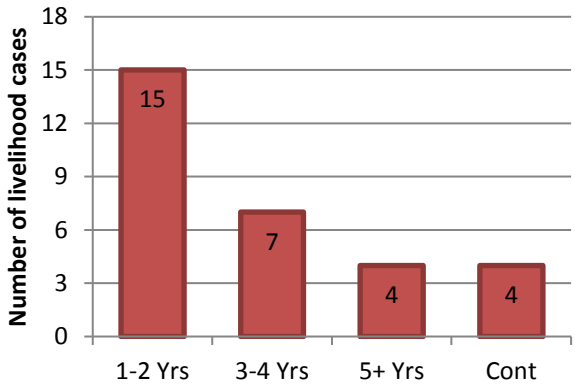
The livelihood programs of this review, on the other hand, range between a mere 237 households (Plataformas in Ecuador, case # L16) to about 11 million households by Vietnam's Land Certification program (Land Certificate, case # L11). The other larger programs with over a million beneficiaries are PSNP in Ethiopia (case # L4), Farm Input Subsidy Program (FISP, case # L6) in Malawi, Agriculture Reform in the Philippines (case # L7) and Agriculture Development or Fadama program (Agriculture Development, case # L30) in Nigeria. All these large-scale cases are government programs. In fact, six out the seven cases with 100,000 to 1 million beneficiaries are also implemented by the government as national program. The largest non-government livelihood case is Participatory Livestock Development Project (PLDP, case # L18) implemented by various NGOs with funding from Asian Development Banks to reach 360,000 households.

In terms of intervention duration, the lump-sum cash transfers are short-term projects. Intervention duration is defined by the length of time between selection and end of interventions for a specific household. Although a few of cash transfer cases involve activities other than a one-off grant transfer, such as approval of business proposal or a second follow-up grant, the interventions are typically

[10] More recently, the Graduation model is being substantially scaled up in a number of countries including Afghanistan, India, Pakistan and Peru. In Pakistan, the outreach is expected to be about 800,000. Following the evaluation, the GiveDirectly program has also achieved substantially large scale in recent years.

completed within one year. The one-off nature or short duration of the intervention combined with the possibility of using ICT for the transfer itself explains the low cost associated with this type of program.

Figure 4. Intervention duration of livelihood programs



Understandably, intervention durations for livelihood programs are much more diverse (Figure 4). Half of the programs complete their interventions for a specific beneficiary within one to two years. Intervention lasting for five or more years is found for four cases while four other programs do not have specified intervention duration (i.e. implemented as a continuous program). The livelihood cases with interventions lasting one to two years are similar to the Graduation Approach, under which households generally complete within 18 to 24 months.

4.4 Targeting

Rigorous targeting through a comprehensive multi-stage process is one of the key features of the Graduation Approach. This focus on targeting is driven by the objective of reaching the extreme poor and the high cost of erroneous inclusion given the value of services per beneficiary. Very few of the livelihood programs have similar emphasis on targeting. Since there is no common indicator available for these programs to measure targeting effectiveness, our assessment of the programs' focus on targeting is based on qualitative assessment of their emphasis on reaching the poorest and/or descriptive statistics from the evaluation reports.

Based on this assessment, three (27%) of the cash transfer and 10 (33%) of the livelihood programs are found to have been reaching the extreme poor.[11] The cash transfer evaluations targeting the extreme poor are Macours (2013) in Nicaragua (Transfers, Diversification and Risk Strategies, case # C3), GiveDirectly by Haushofer and Shapiro (2013) in Kenya (GiveDirectly, case # C6) and de Mel (2014) in Sri Lanka (SIYB, case # C10). The Nicaraguan cash transfer is an experiment layered on a conditional cash transfer program that uses proxy means testing for determining eligibility. GiveDirectly use simple housing characteristics (whether the house has a thatch roof) to identify eligible households. The study by de Mel (2014) has two distinct samples: business owners earning less than 2 dollars a day and women without a business but interested in starting.

Among the 10 livelihood cases targeting the extreme poor, very few have as substantial focus on targeting as it is in the Graduation Approach. The Ruti irrigation program (Ruti, case # L12) in Zimbabwe has adopted a combination of geographical and household targeting with majority of the beneficiaries living below GBP 1 per capita per day. This case also has strong focus on targeting women farmers. A second example of reaching a specific vulnerable group is a program in Liberia (Ex-combatant Reintegration, case # L29) that targets young (<30 years old) ex-combatants with very little

[11] Although we define extreme-poor as those living on less than 1.25 PPP dollars a day, we could not apply this definition in categorizing targeting of programs. Annex 2 gives the details used for each program in our classification of targeting.

education and engaged in casual labor. The baseline survey for this program evaluation shows that average monthly income of the beneficiaries was less than 50 dollars per month.

Table 1 gives a basic comparison of the livelihood programs by their focus on targeting the extreme poor. Programs targeting the extreme poor are less likely to focus on productivity improvement and income increase through crop production. Since most of the crop-sector interventions require the households to own sufficiently sizeable land to adopt the promoted new technology and financial capacity to make the required investments, extremely poor households are less suited for such interventions. However, programs that offer in-kind grants are more likely to have focus on targeting. While only 25% of the non-targeted programs offer in-kind grants, the ratio is 70% for targeted programs.

Table 1. Targeting in livelihood programs

	Target extreme poor		All
	Yes	No	
Interventions focusing on crop(s)	4 (40%)	15 (75%)	19 (63%)
Intervention package include in-kind grant	7 (70%)	5 (25%)	12 (40%)
Short duration interventions [<2 years]	8 (80%)	7 (35%)	15 (50%)
Program started before 2001	3 (30%)	8 (40%)	11 (37%)
Program started during 2001 to 2005	2 (20%)	8 (40%)	10 (33%)
Program started since 2006	5 (50%)	4 (20%)	9 (30%)
Per beneficiary cost USD 300 or more	8 (80%)	9 (45%)	17 (57%)
Number of programs	10	20	30

Programs targeting the extreme poor are more likely to be short-duration interventions (less than two years) than non-targeted ones. Interestingly, we observe targeting being more prominent in more recent programs. While 38% of the cases targeting the extreme poor launched the program after 2006, only 20% of the other livelihood cases were started during this period. Although it is plausible that the more recent evaluations focused disproportionately more on targeted programs creating this distribution, this pattern is encouraging for the agenda of reducing extreme poverty. Finally, we find that programs targeting the extreme poor are more likely to be the expensive interventions (with a cost per-beneficiary of more than 300 dollars) than non-targeted interventions. We have more detailed discussion on costs in subsequent sections, but this difference in cost clearly shows the importance of considering the differences in target population in interpreting results from our cost-effectiveness measures. We can narrow our comparison to programs reaching the very poor to identify the programs most cost effective at helping this target group.

5. Cost of interventions

In this section, we explore the associations between the costs and various program features discussed above. These associations are used in their cost comparison with the Graduation programs. The costs reported here are in US dollars using the exchange rates prevailing at the time of program implementation. For half of the livelihood programs, costs per beneficiary have been calculated using the total program expenses and the number of direct beneficiary households. The other livelihood program evaluations reported costs per beneficiary. In cases where both are available, we used per beneficiary costs reported in the evaluation. Cost of cash transfer programs, on the other hand, is the size of cash grants made to the beneficiaries. Since most of the cash transfer interventions are done as part of research project, the operational costs are rarely discussed. Even if the actual transaction costs for making these grants could be obtained, they are not going to be comparable to a regular development intervention model. One of the key features of the GiveDirectly programs is the very high cost efficiency in selecting poor households (done remotely using satellite imagery of roofing materials) and transferring the grants to them via mobile money. GiveDirectly is able to do this with an average cost per households of 10% of the grant size. To make the “research” cash transfers better reflect real-world costs of running programs we increase the cost of other cash transfer projects by

10% of their average grant size. Although this provides a practical guideline, we recognize that the transaction cost in other contexts may not be the same as GiveDirectly's experience in Kenya. Nonetheless it is a convenient lower bound.

Table 2. Average costs of programs

Type of Program	**Average Cost**
Lump Sum Cash Transfers	$232
Livelihood Programs	$779
Graduation Programs	$1,147

With this key distinction in inclusion of operational costs, the average cost of cash transfer programs is much lower (at USD 232) than the livelihood programs (USD 779). As expected, the range in cost per beneficiary is much wider for livelihood programs - starting as low as USD 2.36 and going as high as over USD 3,700 - than the cash transfer cases. The size of cash grants in these 11 evaluations range between USD 84 and USD 480. The three least expensive livelihood programs are land certification (Land-use Certificate, Case # L11) as part of economic reform in Vietnam with USD 2.36, support for export crop in Kenya (DrumNet, case # L22) with USD 12, and Participatory Livestock Development Project (PLDP, case # L18) in Bangladesh with USD 81. At the higher end, two livelihood programs spend more than USD 3,500. These most expensive programs are Productive Business Services (PBS, case # L13) in El Salvador and Farmer Training and Development Project (FTDP, case # L15) in Honduras with USD 3,721 and USD 3,655 respectively. With a comprehensive package of interventions, the average cost of the seven Graduation initiates is the highest (USD 1,147) among the three.

Table 3. Correlates of program costs

	Cost in USD	
Located in Africa [1=yes]	-157.89	(392.845)
Located in Central/South America [1=yes]	2,250.64	(276.497)***
Medium scale [10,000 to 100,000 beneficiaries]	611.42	(259.912)**
Large scale [More than 100,000 beneficiaries]	-415.16	(314.589)
Intervention lasts for 1-2 years [1=yes]	-364.45	(375.258)
Number of intervention components	111.90	(162.074)
Involves in-kind transfer [1=yes]	897.10	(339.727)**
Involves cash grant [1=yes]	158.03	(397.672)
Involves supervision [1=yes]	620.83	(294.588)*
Target extreme poor [1=yes]	694.66	(282.205)**
Program started in 2001-2005 [1=yes]	-439.15	(304.627)
Program started after 2005 [1=yes]	-483.99	(607.997)
Per capita GDP (in Current '00 USD)	-22.79	(3.145)***
PPP conversion factor	0.09	(0.066)
Constant	67.70	(431.746)
Observations	30	
R-squared	0.85	

Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses.

Table 3 presents regression analysis of the 30 livelihood cases to explore how the costs (in exchange rate USD) correlate with various program features. It is clear that the programs in Central and South America cost substantially more than the programs in Asia and Africa. Per beneficiary cost of a program is about USD 2,250 higher in Latin America than in Asia after controlling for other characteristics including per capita GDP and purchasing power conversion factors. Although we do not have detailed data on the cost items, it is likely that this geographical difference in cost is at least partially driven by the differences in staff salaries and travel costs due to low population density. A similar pattern in costs is also observed for the Graduation Pilots (Banerjee et al, 2015).

We do not see a significant linear association between scale of the programs and per beneficiary costs among these livelihood cases. Although we expect per beneficiary cost to go down as a program scales up due to sharing the management costs over larger number of households, there is also a possibility that the relatively cheaper programs in our study had larger scales. Most of the other characteristics included in this analysis show predictable directions of their association with costs although the majority are not statistically significant (i.e., we are unable to rule out the possibility that the differences in costs are due to the particular programs that happen to be in our sample). With only 30 specially selected observations, the objective is not to identify statistically significant associations. In terms of major determinants of costs, in-kind transfers and supervision/follow-up visits increase per beneficiary cost significantly after controlling for the total number of interventions.[12] Among the other variables, it is important to highlight the positive coefficient for programs that target extreme poor which tend to be costlier. A simple comparison of average livelihood program costs, that target (USD 1,148) and do not target (USD 596) the poorest, shows that targeted programs are comparable to Graduation in terms of per household cost. In light of this discussion on determinants of costs, it is important to reiterate that the Graduation Approach has attributes that increase costs – includes in-kind transfer, focuses strongly on regular supervision and follow-up visits, is extremely diligent in targeting the extreme poor, and has been implemented primarily as small scale pilots so far.

Figure 5. Scale and cost by the type of program

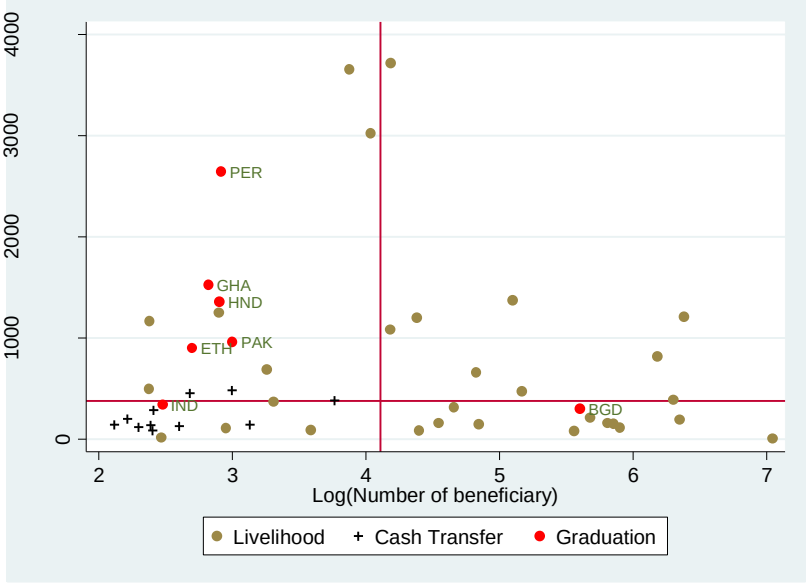


Figure 5 plots the cost and scale of all the cases. On the horizontal axis of the graph, the number of beneficiaries is presented in log scale. Therefore, a change from 4 to 6 represents a 100-fold increase in the number of beneficiaries. The red lines show median values for all the observations plotted. Given the relatively larger number of livelihood programs in this pool of cases, the median values divide these cases roughly into equal size. We see that most of the Graduation Programs have higher than median cost. Cash transfer cases, by the nature of research projects, have been implemented at relatively small scales. Many of the costlier livelihood programs are also implemented at quite large scales. Obviously these cases have very large total program budgets.

6. Evidence of impact on consumption or income

6.1 Impact estimates of the case studies

[12] Total number of interventions is measured as how many of the previously discussed 11 types of interventions are included in the package.

In this section, we look into the evidence on impacts of our selected livelihood and cash transfer cases on income and consumption of their beneficiaries. As discussed in the methods section, all the point estimates of the impact evaluations have been converted into annual gain in consumption or income. For programs with impact estimates available for both income and consumption, we took the consumption estimates since these tend to be more reliable for poor households with irregular sources of income. These impact estimates have been converted into USD using the same exchange rate used for respective cost calculations. Figure 6 plots these impact estimates and per beneficiary costs. There are a couple of programs (both from livelihood cases) with extremely large impact values, which are not presented in the graphs to keep the scales within meaningful range.[13]

Surprisingly, there is no clear trend between per beneficiary cost and impact. Most of the cash transfer cases are located around the median impact value except for a couple of studies showing very large impacts (over USD 400). Further discussion in this section shows that both these estimates are imprecise and not statistically significant. Out of the seven Graduation initiatives, four have impact estimates above median. Overall, this simple comparison of cost and impact does not reveal superiority of any of our three groups of cases over the others. In the second plot, only those cases with impacts measured at least one year after the end of intervention are shown. In this graph, Graduation cases become predominant in the high cost-high impact quadrant.

Figure 6. Cost and impact by program types

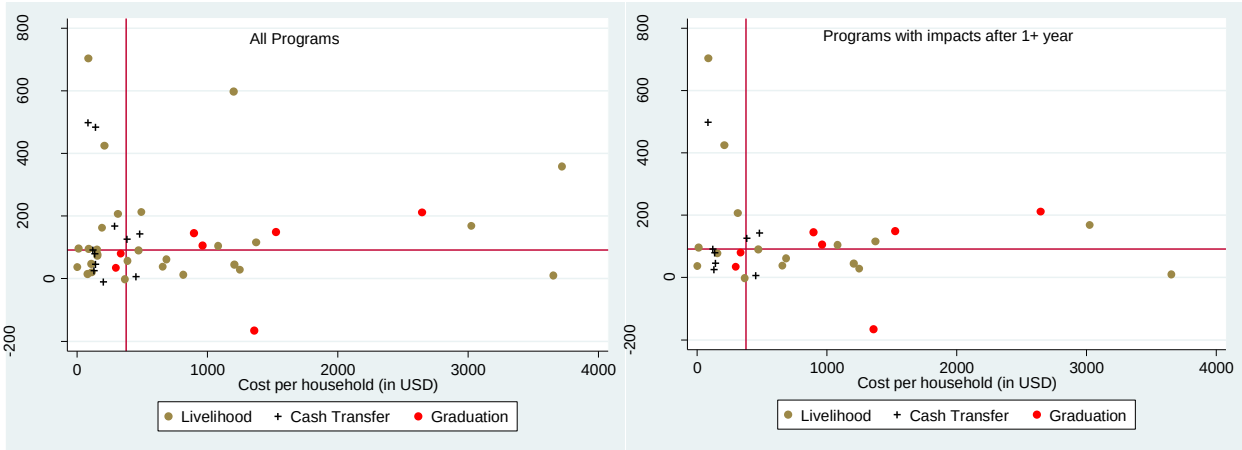


Figure 7 shows the 95% confidence intervals for all the impact estimates in ascending order. As we can see, the cases with the eight largest impact estimates (six of which are livelihood programs and two cash transfers) have very large confidence intervals. In other words, we have very little confidence that these estimates are statistically different from no impact. (Any confidence interval band going through the X axis includes the possibility of no impact.) The fact that the highest eight point estimates also have starkly larger confidence intervals points to an underlying reporting bias problem driven partly by the tendency of small studies being more likely to generate large (but false) treatment effects.

Figure 7. Impact estimates with confidence interval

[13] The two cases are Dairy Sector Development in Kenya (KDDP, case # L17) with estimated impact of USD 2,112 and Ruti Irrigation program (Ruti Irrigation, case # L12) in Zimbabwe with impact estimate of USD 1,147. As we discuss below, both these estimates are also very imprecise with a large standard error.

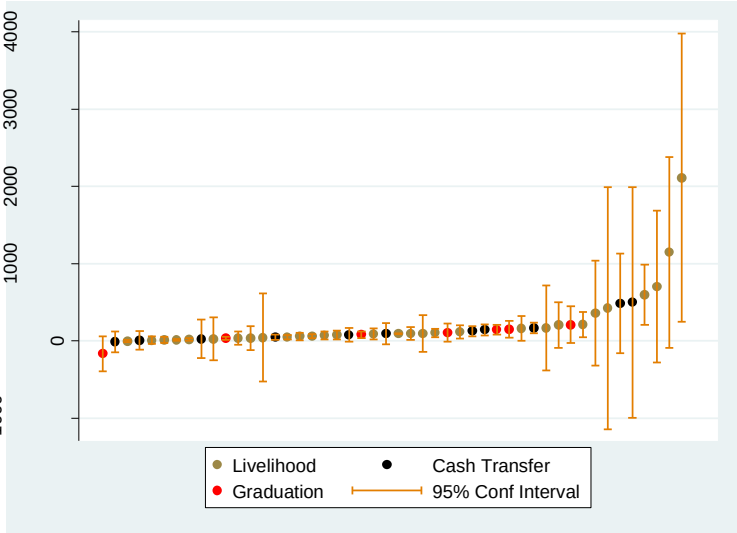
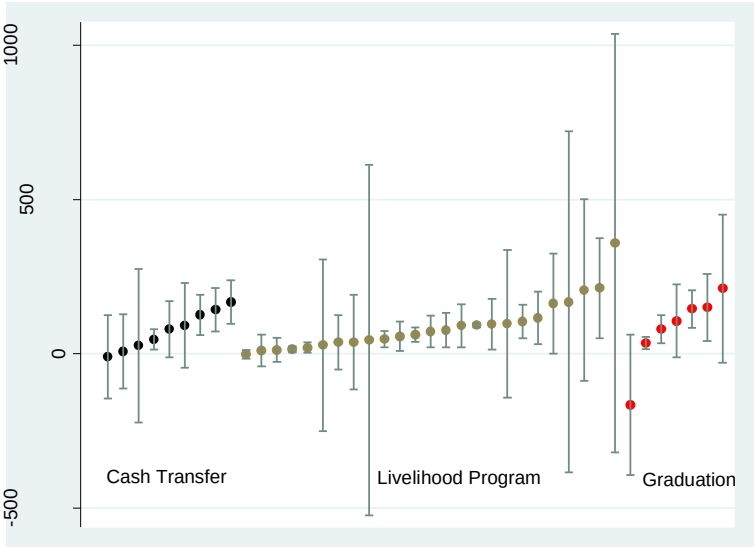


Figure 8 reproduces the same distribution after dropping the eight estimates of impact (two for cash transfer and six for livelihood cases) with the widest confidence intervals. Only one of these eight cases shows statistical significance at the 5% level. We briefly discuss implications of this issue of imprecise estimates influencing meta-analysis in Annex 1. Overall, both lump-sum cash transfers and Graduation have precise impact estimates whereas that is not the case for livelihood programs. We also cannot rule out possible upward bias for livelihood programs. This graph shows that the Graduation initiatives are more consistent in generating impact than both the cash transfer and livelihood cases according to a simple count of how often they show statistically significant positive impact. Out of the 11 cash transfer cases, four find positive impacts that are statistically significant at 1% level, one is significant at 10% and the other six are not statistically significant. Among the 30 livelihood programs, there are only nine cases that yield positive impact significant at the 1% level and 13 are not significant. On the other hand, among the seven Graduation programs, six cases find such statistically significant positive effects (four at 1% and two at 10%).

Figure 8. Impact measures by program type



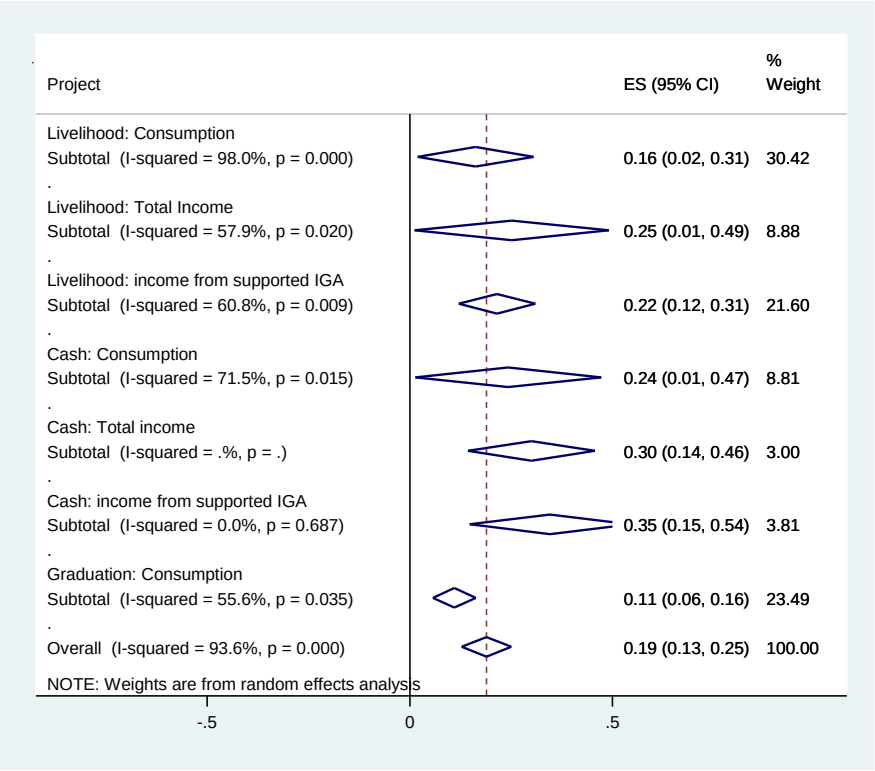
It is important to note a few points with respect to the results shown here from the Graduation programs. All the impact measures used here for these initiatives are consumption. In fact the Graduation program without significant positive impacts, the pilot in Honduras, actually shows significant positive impacts on income as does all the other 6 cases. Moreover, our subsequent meta-analysis also indicates that programs that measure impact in consumption show lower estimates than those with income measures. The Graduation pilots also show statistically significant impacts on a

range of additional outcomes, including food security, assets, savings balances, and physical and mental health.

6.2 Meta-analysis of impacts

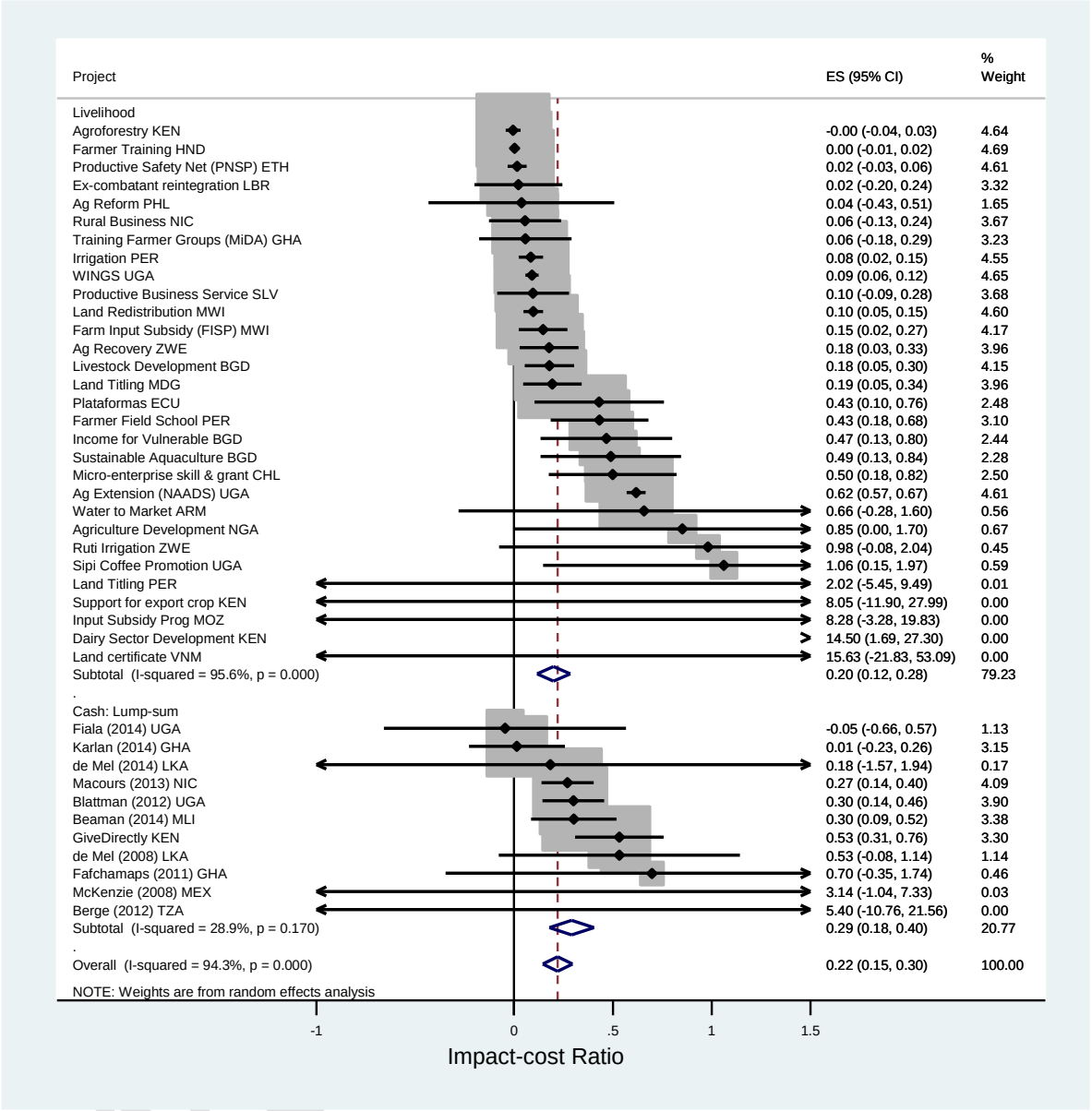
One of the key attractions for conducting meta-analysis is the increase in statistical power to detect impacts of a particular intervention by pooling results from individual studies (Cohn and Becker, 2003). This essentially estimates a weighted average of the impacts, where the weight is the inverse of the standard error.[14] In other words, greater weight is put on the more precise estimates. Figure 9 gives a summary plot of meta-analysis for the three types of cases by the impact indicators used. The graph shows that average impact-cost ratio is lower for consumption measure than income for both livelihood and cash transfer cases. The figure also shows the impact-cost ratios for Graduation program is more precisely estimated than the other two types of programs. In our analysis, we use consumption and income (total or from supported income generating activity) in creating a single metric of comparison. Figure 10 is a forest plot of the meta-analysis of cash transfer and livelihood programs respectively.

Figure 9. Summary plot of cases by program types and impact indicators



[14] There are two main approaches of meta-analysis, viz. fixed-effects and random-effects analysis. The key assumption for fixed-effect analysis is that the effect sizes in individual studies are homogenous and measure a single population parameter. On the other hand, a random-effects meta-analysis assumes that the effect sizes of the studies included in the review are heterogeneous and sampled from a *distribution* of population effect sizes. Therefore, a random-effects analysis estimates the mean of the distribution of effects and its variance.

Figure 10. Forest plot of livelihood and cash transfer cases



The outcome variable in this analysis is annual household consumption (or income) gain as a proportion of total program cost. Since the cost of the lump-sum cash-transfer programs is measured by only the actual transfer amount, an additional 10% has been as operational cost. The GiveDirectly model probably has the cheapest cash transfer model, where they transfer 92% of the donations they receive after paying for operational costs of beneficiary selection and transfer fees to mobile money agents. The average estimate, combining cash and livelihood programs, is 0.22 meaning that these programs increased annual income or consumption by 22 cents for every dollar spent in interventions. One feature to notice from the graph is that the cash transfer cases have a lower level of heterogeneity among them than the livelihood evaluations.[15] Given greater diversity in the approaches of the livelihood cases compared to the unconditional lump-sum cash transfers, this difference in impact heterogeneity is understandable.

[15] I-square measures the percentage of total variation across studies that is due to heterogeneity rather than chance (Higgins et al, 2003).

Despite the similarity in theory of change, the lump-sum cash-transfer cases also have several important differences. One of these key areas of such difference is the timing of measuring impacts. Out of the 11 cash transfer cases, three evaluations measured impact within one year after the transfer and two studies measured effects beyond two years with the rest between one and two years. Figure 11 shows meta-analysis results by the timing of measuring impacts. The average weighted impact-cost ratio for the three cases that measured impact shortly after (within one year) the transfer is 0.36 compared to overall mean of 0.29. This difference is critical considering the sustainability of the impacts. Since the impact-cost ratio is lower than one, for the interventions to be worthwhile the effects must be sustained over multiple years. Whether this is the case or not is unknown given the lack of longer-term follow-up data on these transfers.

Figure 11. Impact-cost ratio of cash transfer program by timing of impact

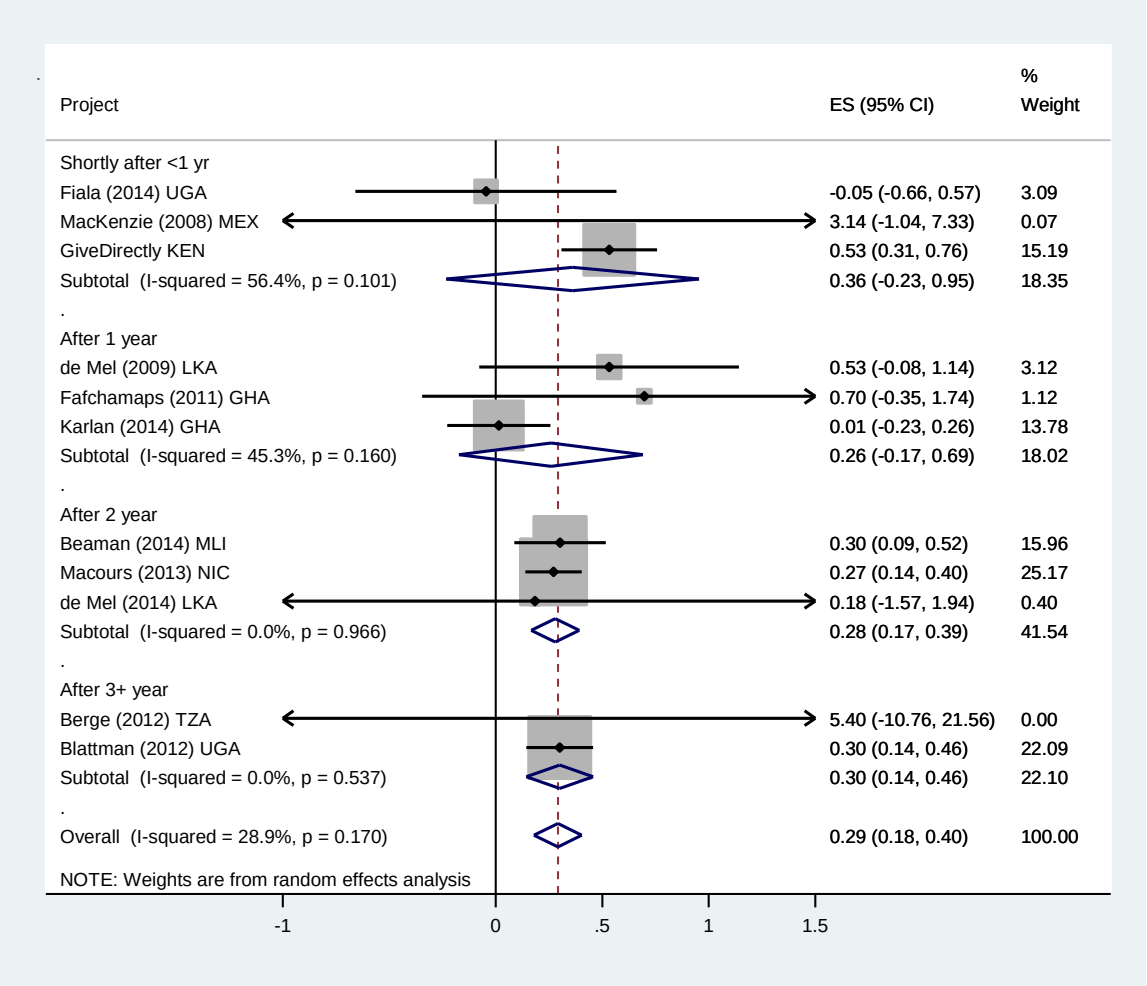


Figure 12 gives a summary plot of the livelihood programs by similar classification in timing of impact measurement. The differences in average impact are even sharper for livelihood cases. Livelihood programs that were evaluated during or shortly after the interventions ended have much higher average impact-cost ratios (0.32 and 0.38 respectively) compared to the ones evaluated after a year or more than a year after end of interventions (0.11 and 0.05 respectively). These are evaluations of different cases, and hence we cannot conclude that impacts of livelihood programs go down over time. It is possible that the livelihood programs evaluated for longer-term impacts are systematically different from the ones with short-term evaluations. However, the trends raise important concern about the sustainability of impacts.

Figure 12. Summary plot of livelihood impact-cost ratio by impact timing

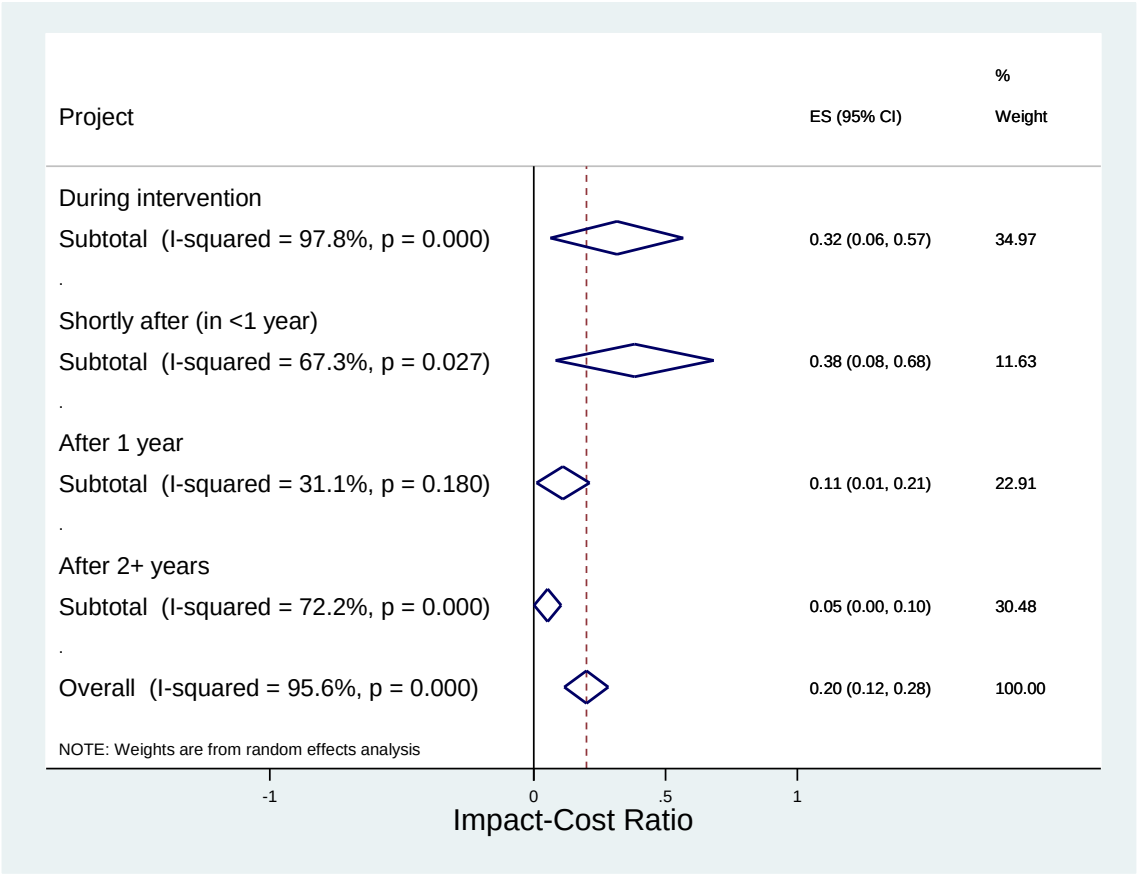


Table 4. Meta-regression of livelihood programs

Variables	Impact-cost ratio					
Poorest	-0.07	(0.092)	-0.08	(0.086)	-0.08	(0.097)
Impact during intervention	0.18	(0.093)*	-0.06	(0.104)	-0.09	(0.117)
Impact shortly (<1 year) after intervention	0.27	(0.145)*	0.27	(0.120)**	0.30	(0.144)*
Impact measured by RCT			-1.04	(0.564)*	-1.02	(0.578)*
Program cost above median			-0.39	(0.117)***	-0.42	(0.138)***
Impact measured in Total Income			0.21	(0.138)	0.19	(0.150)
Impact measured in activity specific income			-0.03	(0.078)	-0.04	(0.088)
Program launched before 2001			-0.99	(0.561)*	-0.96	(0.575)
Program launched between 2001 and 2005			-0.86	(0.559)	-0.84	(0.572)
Program site is in Asia					-0.05	(0.128)
Program site in Latin/Central America					-0.05	(0.101)
Constant	0.13	(0.066)*	1.43	(0.565)**	1.46	(0.580)**
Observations	30		30		30	

Note: *** p<0.01, ** p<0.05, * p<0.1; Robust standard errors in parentheses.

Given the systematic differences in impact within these studies, Table 4 presents meta-regression results to identify correlates of impact-cost ratio for the livelihood programs. Its association with measurement period sustains when we control for other characteristics. Clearly the programs with impact measured shortly after end of intervention have the highest impact-cost ratio. Although this analysis does not claim that average impact-cost ratio of these livelihood programs will go down if we could obtain longer-term evaluation results, the observed pattern definitely raises a question about sustainability of the impacts of many livelihood programs. The method of measuring impact is also

important to highlight. After controlling for the other variables, programs that are evaluated by randomized control trials have substantially lower impact-cost ratio, which is statistically significant at the 10% level. A simple mean comparison within livelihood cases gives average annual household consumption gain as a proportion of total program cost of 0.23 for non-RCT cases compared to 0.10 for RCT cases.

Among the other variables, more expensive programs have significantly lower impact-cost ratios. Although not statistically significant, programs targeting the poorest have lower impact-cost ratios compared to those serving better-off households. The choice of indicator also seems to matter as the studies with income as the outcome indicator have higher impact-cost ratios than the programs that use consumption indicator (see discussion above). However, this is not statistically significant.

6.3 Cost-effectiveness comparison

The core purpose of our analysis is to assess the cost-effectiveness of the three alternative approaches in creating sustainable reduction in extreme poverty. As we have observed in the previous discussions, there is considerable variation among our cases in terms focus on targeting, outcome indicators and the timing of measuring impacts. Our primary comparison is among programs that target the extreme poor and for which there is long-term evidence (greater than two years) of impact.

Figure 13 presents the overall meta-average of impact-cost ratios of the three groups of cases and the sub-groups of livelihood cases. These ratios do not make any assumption of continuation of the impacts in future to estimate net present values.[16] Overall benefit cost-ratios are 0.29 for cash transfer cases, 0.20 for livelihood cases and 0.11 for Graduation cases. However, when we restrict the comparison to livelihood cases that target extreme poor or measure 'long-term' effects, the Graduation Approach has similar impact-cost ratios. The 18 livelihood cases that measure impacts at least one year after the end of intervention yield an average benefit-cost ratio of 0.07 and the 11 programs that target the poorest have an average impact-cost ratio of 0.1, both are not significantly different from the meta-average of Graduation programs. Given the large benefit-cost ratio of cash transfers, even though they have mostly targeted micro-entrepreneurs who are not among the extreme poor, it will be important to directly compare Graduation approach against cash transfers. Future scale-ups of Graduation can conduct such comparative assessment.

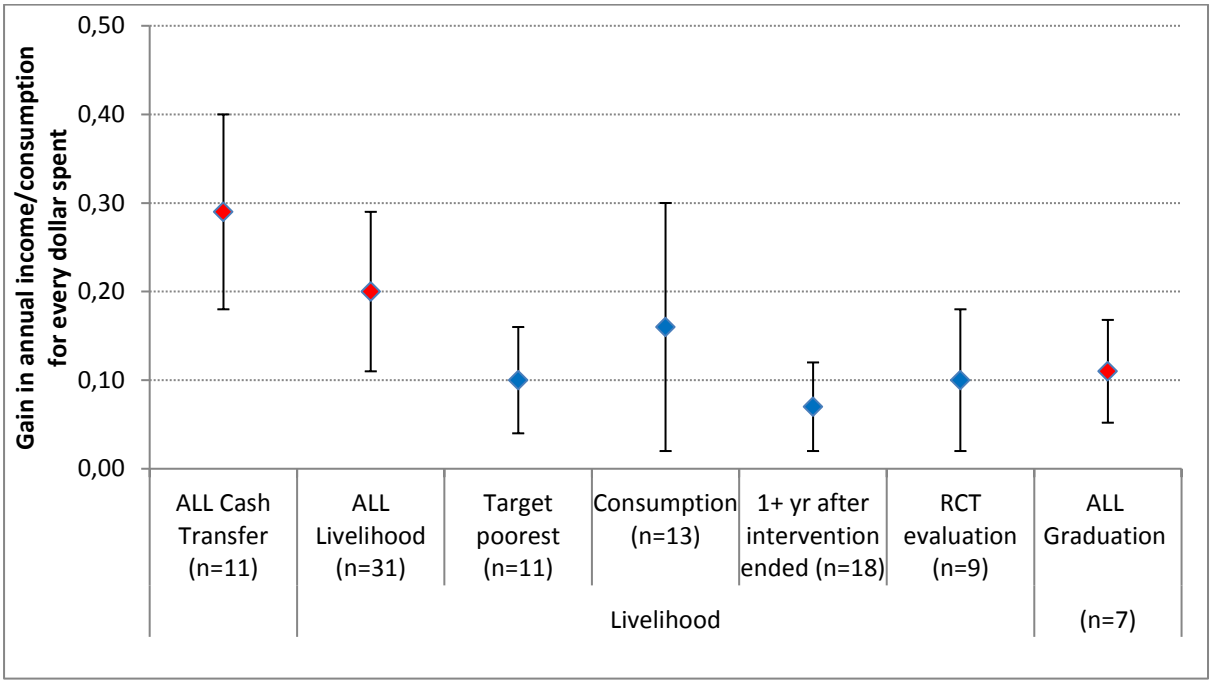
Looking at the five livelihood cases that target extreme poor and have long-term impacts, we get a meta-average of 0.09 for impact-cost ratios (result not shown in Figure 13). However, this average is essentially reflective of two cases - WINGS (Case # L21) in Uganda and Land development (Case # L26) in Malawi. In the meta-average, WINGS case gets a 67% weight and the Malawi case gets 31% weight. This brings the challenge of having to compare individual cases where WINGS has strong similarities with the Graduation approach, and the comparison essentially ends up with a Graduation approach with an 'almost Graduation' approach.

Similar challenges exist for doing subset analysis of cash transfer case. There are only two cash transfer cases that target extreme poor and have long-term results. The transfer in Nicaragua (case # C3) has an impact-cost ratio of 0.27 (significant at <1% level), and the cash grant for business start-up by female entrepreneurs in Sri Lanka (case # C10) has the ratio of 0.18 (not significant). The Nicaragua study by Macours et al (2012) show that the impacts on annual household income is about USD 40 (USD 30 from non-farm businesses and USD 10 from livestock rearing) compared to the estimated

[16] A more complete cost-benefit analysis projecting a stream of returns over future years is more likely to show a positive return on investment (benefit-cost ratio above 1) for a given program. See Banerjee et al (2015) for examples.

annual household consumption gain of USD 142. Moreover, with relatively small effect on productive assets (about USD 15), the long-term change in consumption expenditure appears unrealistically high.

Figure 13. Cost-effectiveness Comparison



An alternative way of reflecting on sustainability is assessing how the impact estimates change for individual evaluations over time. While a few of the livelihood and cash transfer cases in our review have impact assessments done at different points of time, the Graduation initiatives have strong evidence of sustainability of the impacts. All the six CGAP-Ford Foundation pilot initiatives have impacts measured both at the end of interventions and a year after. The Graduation case in Bangladesh was evaluated at the end of intervention and two years after.[17] These evaluations demonstrate that impact on economic indicators (including consumption) persists in these follow-up surveys. In Bangladesh, the results are more encouraging since the estimated impact on total consumption significantly increases between the end of intervention and 2-years after. On the other hand, the livelihood and cash transfer cases show a reverse trend. There are four cases (two livelihoods and cash transfers each) with impact estimates at multiple points of time. These show a declining trend between their respective midlines and endlines. The livelihood cases - Rural business program in Nicaragua (Rural Business, case # L2) and input subsidy program in Mozambique (Input Subsidy Program, case # L24) – show substantial decline in effect sizes. The cash grant experiment by De Mel et al (2009) in Sri Lanka (Returns to Capital, case # C4) find that the impacts are much higher in the four quarters immediately after transfers than a year later. The de Mel et al (2014) experiment involving training and grant transfer in Sri Lanka (SIYB, case # C10) also show that the initial improvements in business practices dissipate after two years. Based on this analysis, the Graduation Approach clearly has an advantage in sustainability.

Similar within-case variations can be used for assessing equitability of the impacts. Some of the evaluations measure heterogeneity of impacts within study by initial poverty status of the beneficiaries. The results are somewhat mixed for livelihood and cash transfer cases. For example,

[17] More recent evidence by Bandiera et al (2016) indicates that the impacts on consumption and assets could be even higher after seven years from baseline. However, this estimate uses the trends for control group between baseline to the two follow-ups (two and four year after) to construct seven year counterfactual since the control group received treatment after fourth year from baseline.

agroforestry program in Kenya (Agroforestry, case # L9) find that adoption of their promoted technology was similar between poor and non-poor. On the other hand, Munro (2003) report that asset rich households are more likely to have benefitted from the crop pack interventions under the agriculture recovery program (ARP, Case # L8) in Zimbabwe. In the cash transfer experiment by Fafchamps et al (2011), there was no effect of capital transfers to the extreme-poor women (Returns to Capital, case # C11). Quantile treatment effects of the Graduation approach find large variations in the magnitudes of impacts, but all groups in the sample show increase in consumption after one to two years from end of interventions. Although discussion of these individual cases *indicate* the superiority of Graduation approach as a tool for sustainable economic development for the extreme poor over both livelihood and cash transfers, we emphasize the need for more evidence - especially on long-term impacts of cash transfers – before drawing a firm conclusion.

7. Access to finance, assets and other human development impacts

Our case screening was based on availability of impact estimates on consumption or income. Consequently, we cannot conduct similar analysis of impacts on other livelihood outcomes based on these cases. Although we have impact estimates on additional indicators from the Graduation evaluations, most of the livelihood and cash transfer cases do not report these outcomes. In this section, we present a simple counting of the number of cases that show positive, negative or no impact on these additional indicators. We consider only those estimates for which statistical significance are reported.

Figure 14. Impacts on financial access and assets

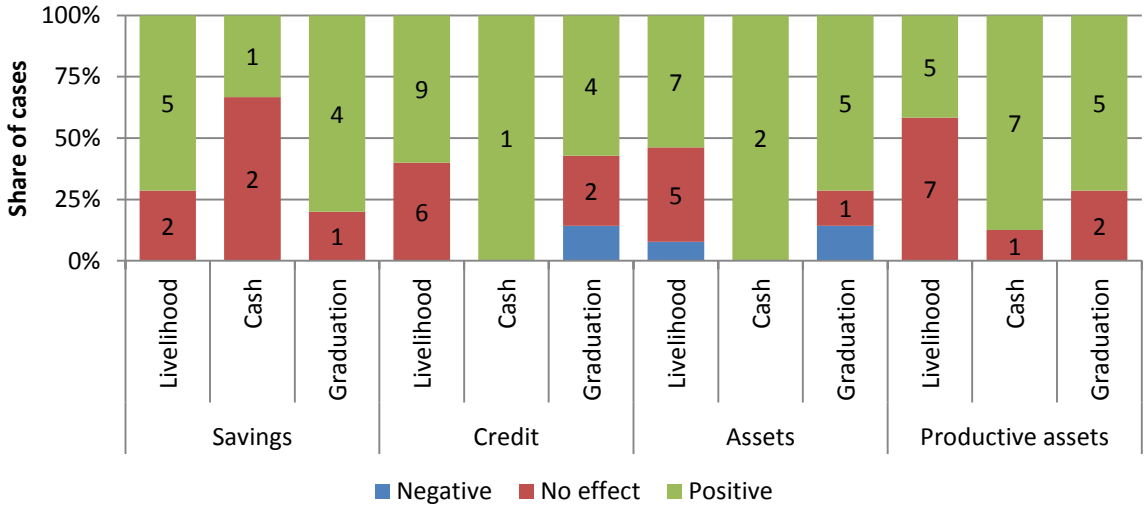
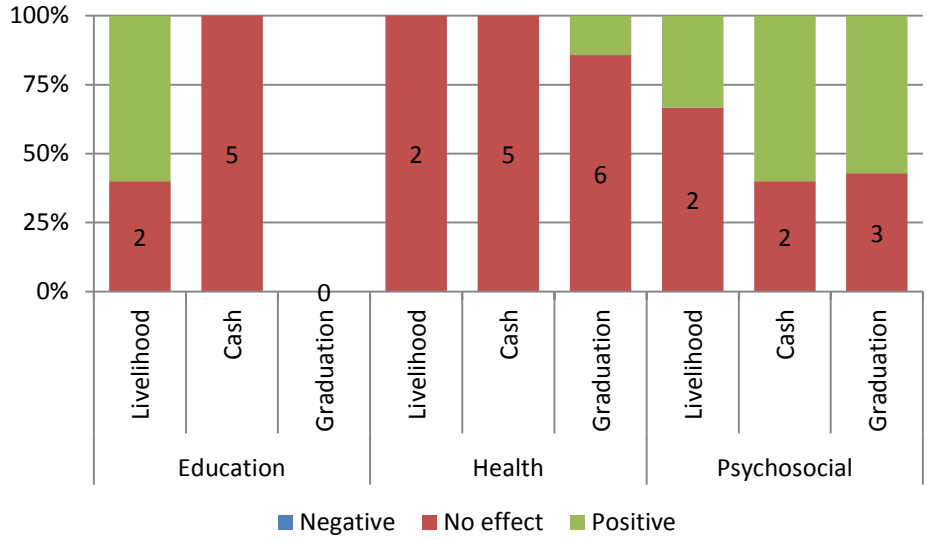


Figure 14 presents the distribution of cases for impacts on saving, credit, household assets and productive assets. Out of the 30 livelihood cases, we could gather information of impact on savings for only seven cases, out of which five are positive impacts (i.e. higher savings). In terms of magnitudes of the positive effect, IGVGD finds an impact of about 24 dollars (IGVGD, case # L20), WINGS in Uganda finds that treated households have over four times higher savings than control (WINGS, case # L21), DrumNet evaluation in Kenya find 4 percentage points effects on the likelihood of having formal savings by the beneficiaries (DrumNet, case # L22), ISP in Mozambique find an impact of about US$ 90 (ISP, case # L24). The two cases reporting no effect are the agriculture reform program in the Philippines (Ag Reform, case # L7) and the ex-combatant reintegration program in Liberia (Ex-combatant Reintegration, case # L29). It is somewhat surprising to observe impacts on savings being reported so infrequently. In fact, six of the livelihood cases specify creating access to financial services as one of their components, but do not report impacts on either savings on credit. Among cash transfer

cases, only three out of 11 report impacts on savings and one estimate is positive. For Graduation, four of the five cases with data show positive impacts, and the effect size for positive estimates range between $45 in Peru and $272 in Ethiopia where savings where compulsory. It is not feasible to generate any conclusion on the relative performance of the three types of cases in generating impacts on savings based on this limited information.

Although reporting impacts on credit is more common for our livelihood cases, we do not observe any notable difference between those and the Graduation cases. However, some distinctions are observed in terms of impacts on assets. Both cash transfer and Graduation cases seem to perform better than livelihood programs in creating impacts on productive assets. For cash transfers, the impacts on productive assets are mostly measured by change in business capital whereas productive assets in Graduation are in the form of livestock. Graduation program shows the most consistent increases in other household assets compared to both livelihood and cash transfer cases. A quick comparison of the magnitudes of impact on productive assets demonstrates potentially strong influence of impacts on productive assets and savings in cost-effectiveness. For example, the Graduation initiative in Bangladesh finds positive impacts on savings and assets which is 82% of the total cost per beneficiary. On the other hand, this ratio for GiveDirectly is 67% (within one year of cash transfer, case # C6) and only 3% for cash transfer in Nicaragua (case # C3). Given the concerns of sustainability of the impacts in social protection, asset indicators are probably more reliable measures of long-term trajectory of change. These are indicative evidence at best given the limited information available.

Figure 15. Impact on human development indicators



We also explored possibility of analyzing impacts on additional well-being outcomes. There is even large gap in information on such indicators. The available information indicates that these programs are not very successful in causing significant improvements in education or health outcomes (Figure 15). Five of the Graduation pilots find statistically significant impacts on at least one of three indicators of physical health at the end of interventions, the effects persists after one year in only one case (Peru). Although the interventions in our selected programs are not aimed towards creating impacts on these domains, there is potential of embedding such components in programs that aim livelihood development.

8. Conclusion

With the objective of a comparative assessment of alternative approaches of making sustainable reductions in extreme poverty, this review compiled data from three strands of social protection tools. We find that targeting the extreme poor is not a common feature for the livelihood and lump-sum

cash transfer programs. Median delivery cost is the highest for Graduation programs and the lowest for cash transfers, while livelihood programs have a large diversity in per beneficiary cost. In terms of impact, Graduation programs are the most consistent in making significant positive impacts across sites and in the longer-term, while livelihood programs and cash transfers generally lack evidence of sustainability of impacts among the extreme poor.

Nonetheless, in our meta-analysis, the annual household consumption gain as a proportion of total program cost is the highest for cash transfers followed by the Graduation Approach and livelihood programs. However, the estimates for livelihood programs are lower if we restrict to the programs that target extreme poor or measure impacts at least one year after the end of interventions. This evidence is in line with individual studies that find differentially lower effects on poorer households or declining effects after interventions are phased out.

For our outcome of interest, long-term impact on the extreme poor, both Graduation and livelihood cases show positive impact with similar benefit-cost ratios. The livelihood programs meeting these criteria are widely varied, including agricultural reform, irrigation, a women's income-generation program, land redistribution, and ex-combatant reintegration. The breadth of these programs supports no clear policy recommendation for scaling programs. On the other hand, more evidence is needed to make a comparison between the Graduation Approach and lump-sum cash transfers. Based on current evidence lump-sum cash transfers have perhaps the most *potential* to reduce poverty, while the Graduation Approach has the largest and most consistent body of evidence to support its impact on extreme poverty. Direct comparisons of long-term impact between Graduation, lump-sum cash transfers, and specific livelihood development interventions serving the extreme poor would provide critical additional evidence.

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Table A1. Livelihood and cash transfer programs included in the study

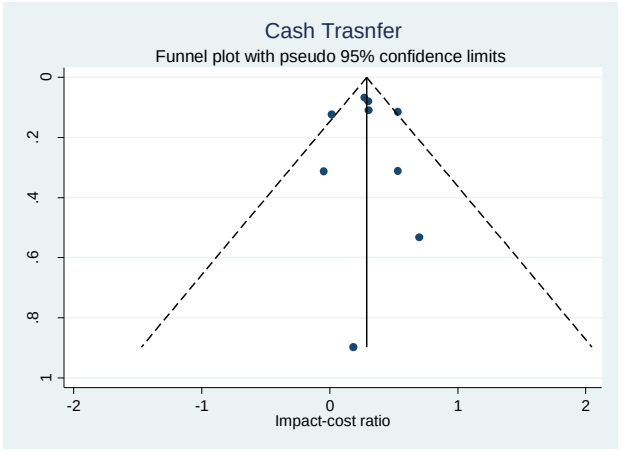
Sl	Case Title	Country	Case source
L1	MiDA Farmer Based Organization (FBO) Training	Ghana	IFC (2013)
L2	Rural Business Program	Nicaragua	IFC (2013)
L3	National Agriculture Advisory Services (NAADS)	Uganda	IFC (2013)
L4	Productive Safety Net Program (PSNP)	Ethiopia	ODI (2011)
L5	Sipi organic coffee contract farming scheme	Uganda	IOB (2011)
L6	Farm Input Subsidy Program (FISP)	Malawi	IOB (2011)
L7	Comprehensive Agrarian Reform Program (CARP)	The Philippines	IOB (2011)
L8	Agricultural Recovery Program (ARP)	Zimbabwe	IOB (2011)
L9	Agroforestry in Western Kenya	Kenya	IOB (2011)
L10	National Titling and Registration Program in Peru (PETT)	Peru	IOB (2011)
L11	Land-Use Certificate	Vietnam	IEG WB (2011)
L12	Ruti Irrigation Scheme	Zimbabwe	IFC (2013)
L13	Productive Business Services (PBS)	El Salvador	IFC (2013)
L14	Water to Market (WtM)	Armenia	IFC (2013)
L15	Farmer Training and Development Project (FTDP)	Honduras	IFC (2013)
L16	Plataformas	Ecuador	IFC (2013)
L17	Kenya Dairy Development Project (KDDP)	Kenya	Masset et al (2011)
L18	Participatory Livestock Development Project (PLDP)	Bangladesh	Masset et al (2011)
L19	Farmer Field Schools in Cajamarca	Peru	Phillips et al (2014)
L20	Income Generation for Vulnerable Group Development (IGVGD)	Bangladesh	Authors
L21	Women's Income Generating Support (WINGS)	Uganda	IPA
L22	DrumNet	Kenya	JPAL (Theme: Agri)
L23	Development of Sustainable Aquaculture Project (DSAP)	Bangladesh	Masset et al (2011)
L24	Input subsidy program	Mozambique	JPAL (Theme: Agri)
L25	Land title reform by SOMALAC	Madagascar	IEG WB (2011)
L26	Community Based Rural Land Development Project	Malawi	IEG WB (2011)
L27	Peruvian Irrigation Subsector Project	Peru	IEG WB (2011)
L28	Micro-entrepreneurship support program	Chile	JPAL (Theme: Fin)
L29	Ex-combatant reintegration program	Liberia	IPA
L30	Agriculture Development (Fadama)	Nigeria	IEG WB (2011)
Cash transfer (unconditional lump-sum) cases			
C1	Self-selection into credit markets in Mali	Mali	JPAL (Theme: Agri)
C2	Agricultural decisions after relaxing constraints	Ghana	JPAL (Theme: Agri)
C3	Transfers, diversification and household risk strategies	Nicaragua	JPAL (Theme: Fin)
C4	Returns to capital in microenterprises	Sri Lanka	3ie
C5	Experimental Evidence on Returns to Capital and Access to Finance	Mexico	3ie
C6	Unconditional cash transfer	Kenya	IPA
C7	Stimulating Microenterprise Growth	Uganda	Authors
C8	Youth opportunities program in Northern Uganda	Uganda	JPAL (Theme: Fin)
C9	Human and financial capital for microenterprise development	Tanzania	3ie
C10	Business training and female enterprise start-up	Sri Lanka	3ie
C11	Returns to capital in microenterprises	Ghana	IPA

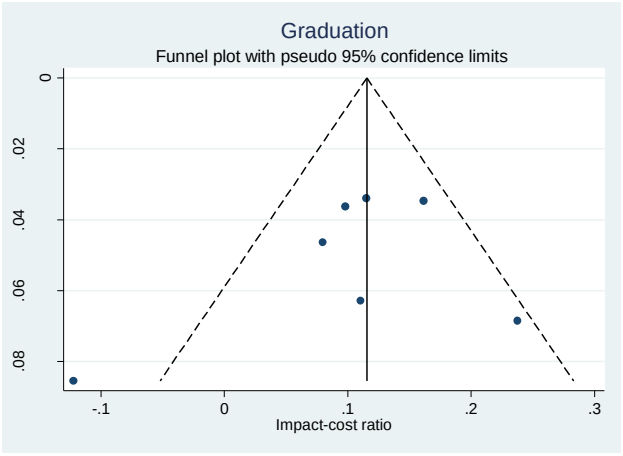
Table A2. Interventions in the livelihood programs

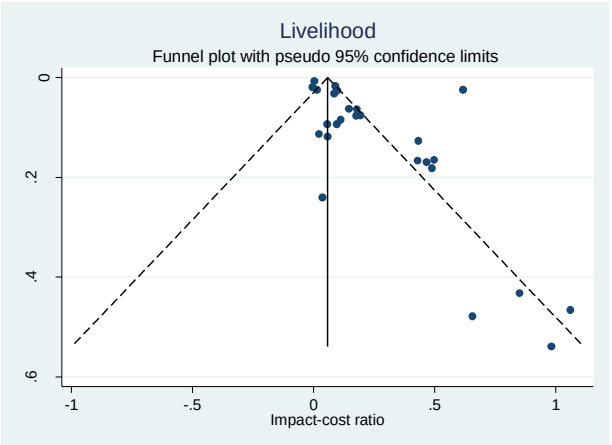
Sl	Case Name	In-kind grant	Cash grant	Training	Supervision/ TA	Infra-structure	Public works	Land title	Marketing/ value chain	Credit	Community mobilization	Access to input	Category
L1	Training Farmer Groups (MiDA) GHA	■		■									Ag Ext
L2	Rural Business NIC		■	■	■								MEnt Dev
L3	Ag Extension (NAADS) UGA			■	■				■				Ag Ext
L4	Productive Safety Net (PSNP) ETH	■	■	■		■	■			■			Safety Net
L5	Sipi Coffee Promotion UGA				■				■				MEnt Dev
L6	Farm Input Subsidy (FISP) MWI	■										■	Ag Ext
L7	Ag Reform PHL	■						■					Land Title
L8	Ag Recovery ZWE	■											Ag Ext
L9	Agroforestry KEN			■							■		Ag Ext
L10	Land Titling PER							■					Land Title
L11	Land certificate VNM							■					Land Title
L12	Ruti Irrigation ZWE	■		■		■							Irrigation
L13	Productive Business Service SLV	■		■	■				■				MEnt Dev
L14	Water to Market ARM			■	■	■				■	■		Irrigation
L15	Farmer Training HND	■		■	■	■							Ag Ext
L16	Plataformas ECU			■					■			■	MEnt Dev
L17	Dairy Sector Development KEN			■								■	MEnt Dev
L18	Livestock Development BGD			■	■					■		■	MEnt Dev
L19	Farmer Field School PER			■									Ag Ext
L20	Income for Vulnerable BGD	■		■						■			MEnt Dev
L21	WINGS UGA		■	■	■						■		MEnt Dev
L22	Support for export crop KEN			■					■	■			MEnt Dev
L23	Sustainable Aquaculture BGD			■								■	MEnt Dev
L24	Input Subsidy Prog MOZ	■											Ag Ext
L25	Land Titling MDG							■					Land Title
L26	Land Redistribution MWI		■					■					Land Title
L27	Irrigation PER					■					■		Irrigation
L28	Micro-enterprise skill & grant CHL	■		■	■								MEnt Dev
L29	Ex-combatant reintegration LBR	■		■									MEnt Dev
L30	Ag Development (Fadama) NGA					■			■		■		Ag Ext
	Number of project	**12**	**4**	**19**	**9**	**6**	**1**	**5**	**6**	**5**	**5**	**5**	

Annex 1. Funnel plot of the three groups of cases

Funnel plots are used to visually assess potential 'small study bias' in meta-analysis. The idea is smaller studies with larger standard errors will have wider distribution of point estimates. In case of no bias (publication/citation/data irregularities/methodological), there should be studies on both sides of the effect size. Livelihood cases show signs of positive bias. Besides this visual analysis, a statistical test of small study effect also find significant 'bias' only for livelihood. Also this test is often used as evidence for publication bias (i.e. selective publication of positive results) in meta-analysis, it is technically not possible to disentangle different other biases. There is an important caution to this analysis of bias that there could be a 'true heterogeneity' whereby the imprecise estimates are from population with wider dispersion in their mean. For instance, it might be the case that livelihood cases outside the dotted lines (i.e. large estimates of impacts with large confidence intervals) are dealing with populations with exceptionally wide range of income or consumption values.







Annex 2. Assessment of targeting extreme poor

Sl	Case Title	Target extreme poor	Targeting approach
L1	MiDA Farmer Based Organization (FBO) Training	No	Targeting through FBOs with at least 50 members, average farm size of members at least 2 acres, democratic structure in their management, engaged in production or value chain. Average plot size of treatment households is 1.25 hectare while 31% of the population in Ghana has less than 1 hectare land (Chamberlin, 2007).
L2	Rural Business Program	No	Primarily self-selection of farmers with a few eligibility criteria on minimum farm size for agriculture. About 70% of the farms are livestock and agriculture related. Beneficiaries are selected through farmers' groups. Targeting outcome shows that the beneficiaries are primarily from upper 50% of rural income distribution.
L3	National Agriculture Advisory Services (NAADS)	No	Target population is “economically active poor”. Geographical targeting is done to offer services to everyone in the treated sub-counties. However, vulnerable households (in terms land ownership and education) are less likely to participate, and this pattern is more prominent in NAADS II.
L4	Productive Safety Net Program (PSNP)	Yes	Target groups are chronically food insecure households residing in PSNP *kebeles*. Implementation manual contains specific criteria for food insecurity. Eligibility for food or cash transfers depends on the main earner being elderly or disable. Value of livestock assets among non-beneficiaries is 1.5 times higher than beneficiaries at baseline (Berhane et al, 2013)
L5	Sipi organic coffee contract farming scheme	No	Targets medium scale coffee growers with average farms size of 10.8 sq meter (650 trees), which is higher than even the non-organic coffee growers of the area (nearby parishes selected as comparison group) 7.9 sqm and 308 trees.
L6	Farm Input Subsidy Program (FISP)	No	Coupons are allocated to districts on the basis of proportional maize area, and village committees select "productive poor" farmers. Since 2007/2008, the definition is "farm households with the land and human resources to use the subsidized inputs, but without the financial capital to purchase inputs at commercial prices". Several studies find regressive targeting. Ricker-Gilbert et al (2011) have the largest national sample, and find that female headed households are less likely to participate, and beneficiaries have more physical assets and land compared to non-beneficiaries.

Sl	Case Title	Target extreme poor	Targeting approach
L7	Comprehensive Agrarian Reform Program (CARP)	Yes	Target rural landless farmers and tenure security for tenants. Distribution is done through community level agrarian reform committees.
L8	Agricultural Recovery Program (ARP)	No	Tillage services were very limited, but there was no difference in poverty status of recipients and non-recipients in 1992. For "crop pack" intervention, drought stricken areas were targeted, and targeting favored less poor by small margin in 1995 and 1996.
L9	Agroforestry in Western Kenya	No	Primarily used existing village groups to provide information and training, and rely on community knowledge sharing to reach the whole population of intervention villages.
L10	National Titling and Registration Program in Peru (PETT)	No	It is a national program with no targeting involved.
L11	Land-Use Certificate	No	Land was based on needs and covered almost all the rural households.
L12	Ruti Irrigation Scheme	Yes	Primarily target households below poverty line (about 40% of the beneficiaries are still estimated to be living below 1GBP per day at endline). Majority of the target beneficiaries are women.
L13	Productive Business Services (PBS)	Yes	Project's target groups are poor farmers; farmer organizations; and micro, small and medium enterprises that benefit poor inhabitants of the area. The beneficiaries belong to three sectors – dairy, horticulture and handicrafts. Results show that dairy beneficiaries were richer than the other two groups (average annual net income of dairy sector beneficiaries is USD 2,013 vs. USD 151 and USD 478 for horticulture and handicrafts respectively). Respective extreme poverty rates at baseline were 14%, 53% and 57%, poverty line being about $1.86 per person a day.
L14	Water to Market (WtM)	No	Included communities with adequate access to irrigation water. Within targeted communities, focused on individuals who become members of water user associations (WUAs).
L15	Farmer Training and Development Project (FTDP)	No	Targeting criteria included subjective assessment of interest and several indicators (which were changed during implementation). Indicators included max 50 ha of land, access to irrigation and paved road, and ~$377 /ha for investment. Clearly the project was suited for better-off farmers.

Sl	Case Title	Target extreme poor	Targeting approach
L16	Plataformas	No	There is no specific focus on targeting extreme poor. Community targeting also primarily rely on economic feasibility than vulnerability of population. Although all households were encouraged to participate, preference was given to farmers participating in an association. Average beneficiary household own 2.6 ha land.
L17	Kenya Dairy Development Project (KDDP)	No	There are strong self-selection, and does not explicitly target extreme poor. Households without livestock and land are not eligible. In 2004, participants (all three intervention groups combined) had more than double amount of farm land than comparison.
L18	Participatory Livestock Development Project (PLDP)	No	The project mentions targeting 18% of poor HHs. However, there is no targeting approach adopted to reach the extreme poor. Also reliance on existing microfinance groups is unlikely to reach them. However, the program was implemented in poorer districts of the country.
L19	Farmer Field Schools in Cajamarca	No	Does not specify targeting method, and no comparison of poverty profile of participants could be found.
L20	Income Generation for Vulnerable Group Development (IGVGD)	Yes	The program uses local representatives to nominate households, which is verified by partner NGOs. The evaluation reports successful poverty outreach.
L21	Women's Income Generating Support (WINGS)	Yes	Mostly young women, many of whom were formerly abducted in Northern Uganda. Mean cash earning was USD 3.58 per month during baseline.
L22	DrumNet	No	Eligibility requirements include being registered with a farmer group, interest in growing export crops, have irrigated land and able to commit to an insurance fund ($10). Average landholding of the households in evaluation sample was 1.8 acres.
L23	Development of Sustainable Aquaculture Project (DSAP)	No	Farmers of different wealth ranks were selected for the study and in the program.
L24	Input subsidy program	No	Targeting by Govt. agriculture extension officer, local leader and retailers. Eligible farmers have 0.5 to 5 hectares of maize land, progressive farmer and willing to pay 27% of costs. Data shows that study participants are less vulnerable and more educated than average population of the province with 10.3 hectares of land on average.
L25	Land title reform by SOMALAC	No	There is no targeting. Tenants conforming to SOMALAC's by-laws were eligible to receive formal title after paying maintenance fee. However, a large fraction of parcels are not titled. The formal titling procedure - involving 24 separate steps and taking years to complete - is better suited to large tracts of highly productive farmland than typically-sized Malagasy plot.

Sl	Case Title	Target extreme poor	Targeting approach
L26	Community Based Rural Land Development Project	Yes	Target group of the project were landless or land-poor rural families. According to the survey data, beneficiaries were generally less food secured than the other households in the area.
L27	Peruvian Irrigation Subsector Project	No	Projects were selected in coastal regions with higher density of smallholders.
L28	Micro-entrepreneurship support program	Yes	Use Social-Security Card (SSC) score for targeting. Individuals with score in the bottom 20% are eligible for the program.
L29	Ex-combatant reintegration program	Yes	Target groups are ex-combatants with very little education, youth (<30 years old), engaged in casual labor and small-scale agriculture. Monthly average income of the evaluation sample is USD 50 at baseline.
L30	Fadama	Yes	The program highlights youth, women, elderly and people with HIV/AIDS as preferential group. Project document mentions targeting 1/3 of the beneficiaries meeting these criteria. However, the survey finds the average income of beneficiaries comparable to national rural average.
Cash transfer (unconditional lump-sum) cases			
C1	Self-selection into credit markets in Mali	No	Randomly selected farmer households from villages where loans were not offered, and non-participants from villages with loan access
C2	Agricultural decisions after relaxing constraints	No	Two rounds of randomization (117 in Y1 and 363 in Y2). The sampling frame was from MiDA database: selected farmers were mazie producers with <15 acres of land.
C3	Transfers, diversification and household risk strategies	Yes	Used proxy means testing to identify eligibility status of households. While the basic CCT's aim was to protect investments in human capital, the two complementary interventions aimed at strengthening households' ex ante risk management via income diversification in non-agricultural activities.
C4	Returns to capital in microenterprises	No	Targeted small-enterprises with capital stock less than $1000, roughly equal number of retailers and manufacturers.
C5	Experimental Evidence on Returns to Capital and Access to Finance	No	Targeted small-enterprises with capital stock less than $1000, primarily retailers.
C6	Unconditional cash transfer by GiveDirectly	Yes	Targeted households using housing characteristics (whether has a thatch roof).

Sl	Case Title	Target extreme poor	Targeting approach
C7	Stimulating Microenterprise Growth	No	Firms selected by survey by asking whether interested to grow and have interest in ILO training and loan program. 60% of the beneficiaries are female, but no targeting by poverty status.
C8	Youth opportunities program in Northern Uganda	No	In 17 eligible post-conflict districts. Beneficiaries (16-35 years old) were screened from young rural farmers with grade 8 (on average), earning less than dollar a day and working <12 hours/week. One-third of beneficiaries were women. Beneficiaries are slightly better-off than average youth population in education, wealth and urban location.
C9	Human and financial capital for microenterprise development	No	Selected from the pool of PRIDE's microfinance clients with at least one enterprise. A sub-sample of micro-entrepreneurs (with/without training) received the cash grant.
C10	Business training and female enterprise start-up	Yes	Two samples: business owners with <$2/day income and women without a business but interested in starting.
C11	Returns to capital in microenterprises	No	In urban Ghana, households with at least one enterprise were selected from a census in a sample of enumeration areas.

Annex 3. Projects considered but not included in meta-analysis

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
1	Private Investment in Capacity Building and its Effect on Sugarcane Productivity	India	Training, TA and access to credit	Original reference is not available on web. The source SR also questions attribution.	Diamond et al (2013), IFC
2	Assessing the Impact of Improved Agricultural Technologies on Household Income in Rural Mozambique	Mozambique	Technology adoption (improved maize seeds, improved granaries, tractor mechanization, and animal traction)	Not an intervention, and cost estimation is not feasible	Cunguara and Damhofer (2011)
3	Land reform	China	Land reform, pricing policy and irrigation facility.	No cost data	Bruce (2009)
4	Cuatro Pinos	Guatemala	Value chain and credit to support export vegetables and cereals	They have a wide range of programs, but no evaluation found measuring impact at household level. Cost data is not available either.	Carletto (2009)
5	Projet de developpement rural de Tombouctou (PDRT)	Mali	Irrigation, research and extension	No impact result on income or consumption. Cost data is also not available.	Coulibaly et al (2003)
6	Land registration	Ethiopia	Land registration and tenure security	Evaluation looks at land security and investment on land only. Impact on income or consumption is not measured.	Deininger (2010)
7	Trade liberalization	Bangladesh	Food import by private sector and infrastructure (irrigation, roads and embankments)	Measure impact on household coping strategies and food security during 1998 flood. Too unique situation and costing policy is not available.	Del Ninno et al (2003)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
8	Wheat stem and leaf rust resistance program	International	Stem research, capacity development and information sharing	The main source does cost benefit analysis based on simulations of benefits (IRR) from crop disease reduction. However, a couple of other CIMMYT country specific programs are included.	Dubin and Brennan (2009)
9	Zero tillage wheat and rice cultivation	India	Research and extension of zero tillage technology	There a number of research papers by CIMMYT on zero tillage technology. However, the impacts on productivity are measured at pilot plots. No household level impact assessment was available.	Erenstein (2009)
10	Shallow tubewells, Boro rice, and their impact on food security in Bangladesh	Bangladesh	Impact assessment of research and technology adoption, no specific extension program as such.	No cost data and the impact is done by trend analysis of national aggregates.	Hossain (2009)
11	Irrigation, agricultural performance and poverty reduction in China	China	Investment in irrigation infrastructure by the government.	Cost of irrigation projects is not availabel. Also the impacts are measured on crop yield, not on household income or consumption.	Huang (2006)
12	Institutional reform in the Burkinabé cotton sector	Burkina Faso	Provitazation and liberalization of cotton sector, Cotton Producers Groups and local credit committees.	Evaluates a series of reforms in the sector and estimates impact at aggregate level. Altough household level food security impact is assessed, no impact estimate found on income or expenditure. Cost data is also not feasible.	Kaminski et al (2009)
13	Impact of Soil Conservation on Crop Production in the Northern Ethiopian Highlands	Ethiopia	Technology adoption (stone bunds and moisture conservation)	Measures impact on productivity. Impact on household income or consumption is not assessed. Also per HH cost data not feasible.	Kassie et al (2007)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
14	Land reforms in general economic reforms (Doi Moi initiative)	Vietnam	Decollectivization, land redistribution, privatization and tenancy reform	Impact evaluation of a series of reforms between 1988 and 2001. Impact estimate is on poverty at national level.	Kirk and Tuan (2009)
15	Viable initiatives for the development of agriculture in Nampula province - Phase 2. Results from Final Household Survey	Mozambique	Farmer groups and supporting export of groundnuts.	The source (IOB, 2011) discusses this as a separate project, but the reference is to Care's VIDA project, which is already included.	Langworthy (2006)
16	Rice market integration in the Mekong River Delta	Vietnam	Trade policy on rice price and export	The paper looks at impact of national policy on spatial price differences. Costing is not feasible.	Lutz et al (2006)
17	Nikwaha project by Save the Children	Mozambique	Multiplication and extension of varietal tolerance to cassava brown streak disease	The evaluation does not measure impact on income and consumption. The benfits are estimated from projected (not actual) adoption of cassava variety.	McSwee et al (2006)
18	Neoliberal policy reforms in West Africa	Gambia, Côte d'Ivoire, and Mali	Impact of trade and market reforms.	No impact estimate at household level and cost estimation is not feasible.	Moseley et al (2010)
19	Organization credit and management in Macina (ROCAM)	Mali	Production credit, safety net and irrigation	Impact on agricultural output is measured, but there is no impact estimate for income or consumption. There is no cost data available.	Ngampana et al (2004)
20	Trade liberalization and food security in Nepal	Nepal	Trade liberalization and food policy reforms	Impacts on wage from CGE models, no other HH level effects measured. Looked at aggregate food availability per HH.	Pyakuryal et al (2010)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
21	Rinderpest control programs	International	Veterinary service development for rinderpest virus control	Documents the successes of rinderpest eradication and influence on veterinary service development. Not suited for comparison with livelihood programs.	Roeder and Rich (2009)
22	Measuring the impact of fair trade on development	Peru, Costa Rica	Measures impact of fair trade on FT farmers, institution development and access to services	Cost of the specific FT program was not available	Ruben et al (2009)
23	Improving and disseminating Mungbean variety	(South) Asia	Multi-partner initiatives to conduct research and extension of Mungbean for nutritional improvements	Summarizes the results, and the benefits are estimated as expected income from adoption by average farmers. Costing is not feasible because of long history and diversity of the projects.	Shanmugasundaram et al (2009)
24	Kenya Agricultural Productivity program	Kenya	Supported institutional reform, research and extension	No decent impact evaluation found. IOB mentions their CBA measure as "fake IRR"	WB (2009)
25	Economics of biological control of cassava mealybug in Africa	Africa	Pest control	CBA based on national aggregates. HH level impact and costing not feasible	Zeddies et al (2001)
26	Assessing impact and impact pathways of a homestead food production program on household and child nutrition in Cambodia	Combodia	Seeds, inputs and technical assistance to grow vegetables	Reports increase in vegetable production (0.77 kg/season), but price and cost data are not available	Olney et al (2009)
27	Dietary intake and nutritional status of young children in families practicing mixed home gardening	Thailand	Promotion of mixed home gardens (fish, small animal and vegetables) by the govt.	Annual income is reported to be higher among gardening families compared to non-gardening comparison group. However, no information of the program and costs.	Schipani et al (2002)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
28	Malnutrition among children in rural Malawian fish-farming households	Malawi	Looks at the prevalence of malnutrition between fish farming and non-farming HHs	This is not an impact evaluation.	Aiga et al (2002)
29	Home gardening project by Helen Keller Int.	Bangladesh	Home gardening extension pilot in Bangladesh between 1990 and 1993.	Details of the project is not available. The reference also has no point estimate for impact on income.	Marsh (1998)
30	Homestead Food Production Program	Bangladesh, Cambodia, Nepal, and Philippines	There is a synthesis report of HKI's program that are reaching 30,000 households. Intervention include training and input delivery.	This synthesis does not give specific sources or the estimates of impact on income or consumption. The report discusses the usages of 'additional income' from HFPP activities.	Talukder et al (2010)
31	National Fertilizer Sector Project (NFSP)	Ethiopia	Development of private sector for ferlizer and other input supplies, promote efficient and environmentally safe use of fertlizers through extension staffs, and credit facility.	Point estimate on income or consumption is not available, and the evaluations are primarly trend based.	WB (2007)
32	Do Farmers Benefit from Participating in Specialty Markets and Cooperatives? The Case of Coffee Marketing in Costa Rica	Costa Rica	Looks at the factors of farmers participating in special marketing channels (specialty niche) and cooperatives, and its influence on cofee price (per lb) received.	Not an impact evaluation of a project/programme. Does not look at impact on income or consumption. There is no cost information. The paper is similar to Ruben et al (2009) [number 22 in excluded]	Wollni and Zeller (2007)
33	Property Rights Imperfections, Asset Allocation, and Welfare: Co-Ownership in Bulgaria	Bulgaria	Evaluates a land reform policy reinstating private property rights on household welfare.	Welfare is measured as an asset index with factor analysis. Imputing vlaue of welfare gain is not feasible. There is also no cost information of the policy.	Vranken et al (2007)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
34	Small-scale irrigation and income distribution in Ethiopia	Ethiopia	Looked at the association between use of irrigation and consumption.	No average impact figure for access to irrigation. There is also no cost data available.	Berg and Ruben (2006)
35	Land tenure, fixed investment, and farm productivity: Evidence from Zambia's southern province	Zambia	Looks at the fixed investment by farms with and without titles. OLS estimate of holding title and farm yield does not have causal interpretation.	Point estimate on income or consumption is not available, causality is not addressed, and cost data are not reported.	Smith (2004)
36	An analysis of contract farming in East Java, Bali and Lombok, Indonesia	Indonesia	Explores different contracting schemes in three sub-sectors, and the association between farmers participaiton and gross margin.	Not an impact evaluation, and no cost information.	Simmons et al (2005)
37	The impact of extension services in times of crisis: CÙte dílvoire (1997-2000)	Ivory Coast	An impact evaluation of extension services by ANADER. The results are inconclusive (e.g. positively related to yield and negatively with value of output).	Separate income or consumption estiamtes are not available.	Romani (2003)
38	Do Farmer Field School Graduates Retain and Share What They Learn? An Investigation in Iloilo, Philippines	Philippines	Finds high knowledge retention by FFS graduates.	Impact estimates are limited to knowledge retention and usage. No result is presented on productivity, income or welfare.	Rola et al (2002)
39	Adoption of Bt Cotton and Impact Variability: Insights from India	India	Finds postive impact of this technology adoption on net revenue from cotton.	Compares adopter and non-adopters to measure economic benefit of this new technology. No cost data on extension.	Qaim et al (2006)
40	Bt Cotton and Pesticide Use in Argentina: Economic and Environmental Effects	Argentina	Studies insecticide use and productivity effects of a new insect-resistant Bt cotton.	Does not measure impact on income or expenditure, and no cost data available.	Qaim and Janvry (2005)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
41	Genetically Modified Crops, Corporate Pricing Strategies and Farmers Adoption: The Case of BT Cotton in Argentina	Argentina	Analyzes adoption and productivity against high price of seeds.	Does not measure impact on income or expenditure, and no cost data available.	Qaim and Janvry (2003)
42	Impact Assessment of Farmer Field Schools using A Multi-Period Panel Data Model	Thailand	Measures impact of FFS to find reduction in pesticide usage. However, no significant impact on gross margin.	Only the not significance of the impacts are mentioned (the estimates are not presented). No cost data is reported.	Praneetvatakul and Waibel (2006)
43	Spillovers from High-Value Agriculture for Exports on Land Use in Developing Countries: Evidence from Madagascar	Madagascar	Intends to measure the effects of globalization on natural resource usage, and farm farm productivity.	Relies on qualitative reporting to make the causal links. Does not have impact on income or consumption. No cost data.	Minten et al (2007)
44	Adoption and Impact of Hybrid Wheat in India	India	Compares adopters and non-adopters to find effect on net income from wheat.	Also use willing to pay analysis to find value of adoption. No cost data on extension available.	Matuschke and Qaim (2006)
45	Results of Disseminating the System of Rice Intensification with Farmer Field School Methods in Northern Myanmar	Myanmar	Impact evaluation of rice intensification through FFS based training	Estimates impact on yield only. Adequate information is not available to impute value of impact. No cost data is available.	Kabir and Uphoff (2007)
46	Interlinked Credit and Farm Intensification: Evidence from Kenya	Kenya	Impact of participation in any credit and marketing scheme on non-contracted food crop	Look at participation in any scheme with fertilizer use in food crops. However, does not specify the schemes to measure cost. No data on overall income or consumption.	Jayne et al (2003)
47	Incentives, Supervision and Sharecropper Productivity	Pakistan	No intervention as such. Looks at the effect of increased supervision by landlords on share-croppers productivity, and finds a positive correlation.	No intervention. Cost data from intervention perspective is not relevant. Observe effects on yeild, but not total income or consumption.	Jacoby & Mansuri (2007)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
48	Economic Analysis of the Impact of Adopting Herd Health Control Programs on Smallholder Dairy Farms in Central Thialand	Thailand	Used on farm trial (C=15, T=29) and policy analysis metrix for impact assessment of disease control.	Used PAM for measuring benefits. Costs and detail estimates are not provided.	Hall et al (2004)
49	The Impact of Farmer-Field-Schools on Knowledge and Productivity: A Study of Potato Farmers in the Peruvian Andes	Peru	Promotion of integrated pest management (IPM) among potato farmers through training at FFS.	There is impact on knowledge acquisition. However, impact on productivity is measured through simulation (without any direct measure from survey). Imapct on income or consumption is not measured, and cost of this pilot by Care Int is not reported.	Godtland et al (2004)
50	Insurance, credit, and technology adoption: Field experimental evidence from Malawi	Malawi	RCT of weather insurance and agri credit to maize farmers.	Offering insurance lowered credit uptake. Effects on income or welfare are not measured.	Gine and Yang (2009)
51	Land Security in Rural Thailand: Evidence from a Property Rights Reform	Thailand	Used DiD to measure effect of land reform on land rental	Does not measure effects on income or consumption. Cost information are also not provided.	Gine (2005)
52	The Acquisition and Diffusion of Knowledge: The Case of Pest Management Training in Farmer Field Schools, Indonesia	Indonesia	Effect of FFS on knowledge about pest management.	Does not measure effects on productivity, income or consumption. Cost data are also not available.	Feder et al (2004)
53	Access to Dynamic Markets for Small Commercial Farmers: The Case of Potato Production in the Peruvian Andes	Peru	Assessed the impacts of market access created by FOVIDA combined with technical assistance.	Reports impact on household income and expenditure (Table 5). However, no cost data could be obtained for this specific or other projects by VOFIDA.	Escobal and Torero (2006)
54	Genetic Improvement and Cocoa Yields in Ghana	Ghana	Used natural experiment of bushfire and Cocoa Rehabilitation project on yield from new variety	Impact is measured for yield only. No estimate on total income or consumption. Cost data are also not available.	Edwin and Masters (2005)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
55	Household Behavior Under Market Failures: How Natural Resource Management in Agriculture Promotes Livestock Production in the Sahel	Burkina Faso	Used IV to measure effect of having stone bunds in the village on staple crop yield.	Finds positive impact on income and food sufficiency. However, the stone bunds technology spread without any specific intervention as such. No cost data available.	Dutilly-Diane et al (2003)
56	Dams	India	Used suitability of a district for dams construction to measure effect of dams on agriculture productivity.	Covers a wide range of welfare indicators aggregated at district level. Household level point estimate is not feasible. Cost data are not reported.	Duflo and Pande (2005)
57	Access to Irrigation and the Escape from Poverty	Mali	Use PSM for measuring effect of access to irrigation on farm productivity, income and consumption.	Data used is from panel of 1997-98 and 2006, and the paper mentions about various small irrigation projects by the govt and NGO. However, no specific project is named to measure costs.	Dillon (2008)
58	Diffusion and adoption of NERICA rice varieties in Cote D'Ivoire	Ivory Coast	Measures effect campaigns on adoption rates and other determinants of adoption.	Does not measure effect on productivity, income or consumption. Cost data are not available.	Diagne (2006)
59	Impact of Development and Dissemination of Integrated Aquaculture-Agriculture (IAA) Technologies in Malawi	Malawi	Measures impact of WorldFish Centers research and extension works in southern Malawi by comparing farm income of adopter and non-adopters.	Impact estimates relate to a long series of research and extension projects starting in mid 80s. There is a cost benefit analysis in the report based on national aggregates, but no consolidated cost and outreach number could be found.	Dey et al (2006)
60	Learning about a new technology: Pineapple in Ghana	Ghana	Tests social learning from successful farmers in technology adoption	Does not measure impact of any program, and cost data is not applicable.	Conley and Udry (2005)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
61	The Effects of Integrated Pest Management Techniques (IPM) Farmer Field Schools on Groundnut Productivity: Evidence from Ghana	Ghana	Training on Integrated Pest Management through Farmer Field Schools	Measures impact on productivity (number of bags produced per acre). Does not provide enough information to impute value. Cost information is not available.	Cerlberge et al (2012)
62	Learning to Think for Ourselves: Knowledge Improvement and Social Benefits Among Farmer Field School Participants in Cameroon	Cameroon	Impact of Farmer Field Schools	Measures impact on knowledge and adoption. Does not look into productivity or any other outcome. Cost information is not available.	David (2007)
63	The Impact of Integrated Pest Management Information Dissemination Methods on Insecticide Use and Efficiency: Evidence from Rice Producers in South Vietnam.	Vietnam	Training on pesticide usage through FFS	Measures impact on pesticide usage. Does not measure the productivity or any other outcome. Cost data is not reported.	Rejesus et al (2009)
64	Effects of training on acquisition of pest management knowledge and skills by small vegetable farmers	China	Training through FFS	Measures effects on knowledge and does not look into productivity or welfare effects.	Yang et al (2008)
65	The Impact of Cash Assistance in Lebanon	Lebanon	Experimental study of cash transfer to refugees.	There is no report with the details on impact measurements. Available report contains expenditure on specific items. Does not report total expenditure or income.	Lehmann and Masterson (2014)
66	The value of advice: Evidence from mobile phone-based agricultural extension	India	Toll free hotline, and training	Looks at the impact on pesticide use and farming practices. Impact on income or consumption is not available.	Cole and Fernando (2012)
67	Temporary labor migration as mitigation: Strategies for managing seasonal famine	Bangladesh	Training on migration, cash transfer and credit	Is a unique project promoting seasonal migration as livelihood strategy.	Bryan et al (2014)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
68	Dynamics of Demand for Index Insurance: Evidence from a Long-Run Field Experiment	India	Agriculture insurance	Does not measure impact on income or expenditure	Cole et al (2014)
69	Promoting sustainable farming practices in Malawi	Malawi	Training on fertilizer nutrient management and conservative agriculture	The paper evaluates different channels and incentives of training; Impact on income or consumption is not available.	Yishay and Mobarak (2014)
70	Leveling the Intra-household Playing Field: Compensation and Specialization in Child Labor Allocation.	Nicaragua	This research project has 3 treatment arms (CCT, CCT + Vocational training, CCT + lump sum grant).	Impact on total household income or consumption could not be found.	Carpio and Macours (2009)
71	The price effects of cash versus in-kind transfers	Mexico	This research has two interventions (bi-monthly transfer of food and equivalent cash).	The paper does not look into welfare effects, and the intervention is not directly comparable.	Cunha et al (2013)
72	Cash or condition? Evidence from a cash transfer experiment	Malawi	This research project evaluated CCT vs. UCT.	The evaluation finds the importance of conditionality in schooling outcomes. However, none of the reports looks into the impact on consumption.	Baird et al (2011)
73	Hybrid Rice Commercialization Program (HRCP)	The Philippines	Training for seed growers, demo-farm, inputs, cash grants, marketing guarantee, and credit.	Statistical significance not reported.	IOB (2011)
74	Viable Initiatives for the Development of Agriculture (VIDA)	Mozambique	Organize farmers in groups for training on farming practices, new technology, access to agriculture inputs, and marketing.	Statistical significance not reported.	IOB (2011)

Sl	Project/Evaluation Title	Country	Intervention	Reason for exclusion	Project reference
75	Protracted Relief Program (PRP)	Zimbabwe	Seed distribution, promoting OPV, and variety chosen by technical advice from CIMMYT. Second phase includes food vouchers, cash, shelter, water, livestock sector and additional ag inputs.	Statistical significance not reported.	IOB (2011)
76	Dairy Development FFP DAP for Vulnerable Populations	Zambia	Distribution of heifers, develop dairy value chain (establishing milk collection centres, transportation and processing), artificial insemination, technical assistance for production and marketing	Statistical significance not reported.	IOB (2011)
77	Hill Maize Research Program (HMRP)	Nepal	Participatory varietal selection (PVS) and community based seed production (CBSP) are the two key components	Statistical significance not reported.	IOB (2011)
78	Andhra Pradesh Irrigation Project (APIP)	India	Building irrigation canals and rehabilitation of old canals. Water user association (WUA) formation. Also training of farmers, resettlement activities and construction of feeder roads.	Statistical significance not reported.	IOB (2011)
79	Improving sustainability of cassava-based cropping systems in Asia	Vietnam	Training through visits to demonstration plots and technical supports by extension workers.	Statistical significance not reported.	IEG WB (2011)
80	Environmental Program of El Salvador (PAES)	El Salvador	Training on soil and water conservation, and product diversification	Statistical significance not reported.	IEG WB (2011)
81	Extension of Integrated Pest Management (IPM) in cotton in Asia	China, India, Pakistan	Training on integrated pest management in cotton production through farmer field schools	Statistical significance not reported.	Phillips et al (2014)