



The interaction between social protection and agriculture

A review of evidence



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Executive Summary

Introduction

Social protection policies aim to reduce socio-economic risks, vulnerability, extreme poverty and deprivation, while smallholder agricultural policies focus on improving productivity in crops, fisheries, forestry and livestock and improving access to markets. Both areas of policy are important in poverty reduction strategies, but little attention has been paid to the interaction between them and how that influences their design and implementation.

Conceptually, there is a two-way relationship between social protection and agriculture. On the one hand, poor rural households that mostly rely on agriculture for their livelihoods are often affected by limited access to resources, low agricultural productivity, poorly functioning markets and repeated exposure to covariate and idiosyncratic risks. Social protection can help to alleviate credit, savings and liquidity constraints by providing cash and in-kind support. In addition, the regularity and predictability of social protection instruments help households to better manage risks and to engage in more profitable livelihood and agricultural activities. On the other hand, agricultural policies and programmes can help smallholder households manage risk by stimulating farm output, income and overall household welfare. Since social protection and smallholder agricultural interventions often cover the same geographic areas and target the same households, there are opportunities for synergies and complementarities that would strengthen the livelihoods of poor rural households.

This study explores the interaction between formal social protection and agriculture by proposing a theory of change and conducting an empirical review that identifies how social protection impacts agricultural production and how agricultural interventions reduce risks and vulnerability at the household and local economy levels. The paper seeks to provide an empirical rationale for building synergies and coordinating complementarities between social protection and smallholder agriculture in developing countries, especially in sub-Saharan Africa. The review also provides some insights to the FAO and its partners on how social protection and agriculture can potentially complement each other.

Methods

This study reviews published and unpublished empirical literature and systematic reviews from the period 1999-2012. Evidence was collected from the impact evaluations of social protection and agricultural interventions in rural sub-Saharan Africa, Latin America and Asia. The review is mainly based on the impact evaluations of non-contributory schemes, such as cash transfers, public works, school feeding, food aid, social pensions and education fee waivers. On the agricultural side, the review focused on land tenancy and titling, extension, irrigation, natural resource management, input technology, marketing arrangements, microfinance and rural infrastructure.

The impact of social protection on agriculture

Much of the evidence about the impact of social protection on agriculture comes from impact evaluations of cash transfers and public works schemes, although there is also some evidence from school feeding schemes and education fee waivers.

Cash transfers and public works schemes can directly impact agriculture by increasing the accumulation of agricultural assets. However, the magnitude of accumulation varies based on programme design (value of transfer, regularity of payments, duration, complementary interventions), gender and socio-cultural context. While more evidence is required, available studies suggest that cash transfers and public works may increase expenditures in agricultural inputs, depending on the programme design (value of transfer, duration, predictability, initial endowment of wealth).

A solid amount of evidence shows that social protection interventions reduce child labour and can make labour allocation decisions more flexible. Studies of cash transfers have reported shifts from on-farm to non-farm work in Latin America and shifts from casual work to own-farm work in sub-Saharan Africa. There are studies that have not found reductions in adult labour supply as a result of cash or in kind transfers. However, reductions in adult labour supply due to income effects have been reported for women, informal and unpaid workers who have received conditional cash transfers in Brazil and elderly beneficiaries of old age pensions in South Africa.

Cash transfers and public works interventions also indirectly impact agriculture by preventing detrimental risk-coping strategies (e.g. selling ploughs or fishing equipment to buy food) and, together with school feeding and education fee waivers, by increasing investments in human capital development (e.g. child education and health services). The limited evidence available suggests that cash transfer interventions also increase off-farm investments in microenterprises.

An emerging body of evidence shows that cash transfers and some public works interventions generate significant income multipliers in local economies as beneficiary households spend the transfers on goods and services mainly sold or produced by non-beneficiary households. However, complementary programmes for non-beneficiary households would be needed to relax capital and liquidity constraints and enable a better supply response that maximizes the income multiplier (e.g. microcredit). Some studies have found that cash transfers and old age pensions crowd out private transfers, while others have found the opposite and suggest that cash transfers schemes may improve participation in social networks.

In the empirical literature, improvements in assets, inputs, agricultural output and off-farm investments are attributed to the alleviation of credit and liquidity constraints and the predictability of cash transfers and cash-based public works schemes. The alleviation of credit and liquidity constraints also encourages investments in human capital development, while the certainty of social protection mechanisms discourages adverse risk coping and makes labour allocation decisions more flexible. Consequently, changes in spending by the household generate additional income in the local economy.

The impact of agriculture on risks, vulnerability and income generating capacity

The evidence provides an empirical rationale as to how agriculture can complement social protection and points to potential synergies between the two sectors. Smallholder agricultural interventions can reduce household vulnerability and risk as measured by indicators of livelihood security. The evidence shows that many agricultural interventions increase household income and that interventions that improve access to microcredit, infrastructure,

irrigation, extension and input technology can lead to improvements in household consumption, food security and the accumulation of durable assets.

Agricultural interventions can also improve the income generating capabilities of rural households, thus further protecting them from risks. Some studies have found that interventions that enhance certainty by guaranteeing access to land and/or insuring against potential crop losses have led to increased investments in high-return microenterprises. Several studies have suggested that irrigation and land tenancy reform increase the labour allocated to on-farm work. Microcredit schemes and some land tenancy reform measures increase the labour allocated to non-farm work.

There is limited and inconclusive evidence concerning the impacts of agriculture on school attendance, risk coping and health. Cash grants for production and input subsidies may generate significant income multipliers throughout the local economy.

In short, the nascent empirical literature appears to link various smallholder agricultural interventions to greater productivity and hence income, with subsequent increases in consumption and food security. Interventions that provide certainty and alleviate credit constraints may promote off-farm investments and investments in assets. In light of this emerging evidence, there is reason to believe that smallholder agricultural interventions can become social protection interventions in their own right if they are specifically targeted to the poorest and most vulnerable households.

Knowledge gaps

To better understand the role of social protection in agriculture, more evidence is needed concerning its impacts on crops, fishery, forestry and livestock production; the uptake of agricultural technologies to adapt to climate change; and natural resources management. There are numerous impact evaluations of conditional and unconditional cash transfer programmes in Latin America, but other regions have been less well studied. In addition, the interactions between multiple social protection interventions at local and national levels have generally not been addressed nor have the impacts of programmes that integrate social protection and agriculture. Similarly, most agricultural research does not follow the methodological standards needed for rigorous impact evaluation. Future studies of agricultural interventions should emphasize their impact on risk coping, informal risk management, human capital accumulation and the local economy.

There is an important knowledge gap on the type of institutional arrangements at central and decentralized levels that could facilitate greater collaboration among the actors involved in social protection and agriculture. A comprehensive capacity development approach for stakeholders at the national level is needed to ensure greater coordination among social protection and agricultural policies and programmes.

Conclusion

Our review has shown that social protection and agriculture support the fulfilment of each other's objectives. We conclude that the available empirical literature suggests that there are potential synergies between social protection and agriculture at the household and local economy levels. That said, any efforts to capitalize on such synergies must be mindful of the conflicts that might arise from competition for power in the political economy of policy-

making. One should also be sensitive to programme design and implementation issues, such as inconsistent policy objectives, targeting, timing and coordination of interventions. Guidance on how to navigate these potential conflicts and maximize synergies would be beneficial to both policy-makers and practitioners.

FAO's social protection agenda focuses on the interface between social protection, food and nutrition security, agriculture and livelihoods. Our paper is relevant to this agenda because it highlights the linkages between social protection and agriculture, which can be exploited and optimized toward building resilient and sustainable rural livelihoods. Our paper is also a timely contribution to the policy discourse on social protection and agricultural transformation in sub-Saharan Africa. A major voice in this discourse is the CAADP¹ framework, which encourages synergies between social protection and agriculture that would enable agriculture-driven development to eradicate hunger and alleviate poverty and food insecurity. It is hoped that our review will be used as a starting point for future research and the formulation of guidance material.

¹Comprehensive Africa Agriculture Development Programme. The programme's goal is to eliminate hunger and reduce poverty through African governments allocating a minimum of 10 percent of their national budgets to agriculture and agreeing to raise annual agricultural productivity by a minimum of 6 percent (CAADP 2012).

Abbreviations

AC	Atención a Crisis (Nicaragua)
BDH	Bono de Desarrollo Humano (Ecuador)
CCT	Conditional cash transfer
BONOSOL	Bono Solidario (Bolivia)
CT	Cash Transfer
DECT	Dowa Emergency Cash Transfer scheme (Malawi)
NREGS	National Rural Employment Guarantee Scheme (India)
FA	Familias en Accion (Colombia)
FFE	Food for education
FFW	Food for work
JPS	Jaring Pengamanan Sosial (Indonesia)
OAP	Old age pension
PAL	Programa Apoyo Alimentario (Food Support Programme, (Mexico)
PATH	Programme of Advancement through Health and Education (Jamaica)
PETI	Programa de Erradicacao do Trabalho Infantil (Program to Erradicate Child Labor, Brazil)
PRAF	Programa de Asignacion Familiar (Family Allowance Programme, Honduras)
PROCAMPO	Programa de Apoyos Directos al Campo (Programme for Direct Assistance in Agriculture, Mexico)
PROGRESA	Programa Nacional de Educacion, Salud y Alimentacion (National Programme for Education, Health and Nutrition, Mexico)
PSNP	Productive Safety Nets Programme (Ethiopia)
RPS	Red de Proteccion Social (Social Protection Programme, Nicaragua)
UCT	Unconditional cash transfer
SAM	Social accounting matrix
CT-OVC	Cash Transfer Programme for Orphans and Vulnerable Children (Kenya)
LEAP	Livelihood Empowerment Against Poverty (Ghana)
PW	Public works/workfare programmes

1. Introduction

Social protection is rapidly gaining prominence on the global development agenda, where it is being used to reduce vulnerability and food insecurity in the developing world. Recent and ongoing global crises (food prices, financial and debt crises and climate change) have heightened volatility and uncertainty in the global economy with far reaching consequences, especially for poor households in low-income countries (HLPE 2012). This partly explains the use of social protection as a policy response.

In sub-Saharan Africa and other regions, where households are continually susceptible to a wide variety of risks and shocks, social protection is becoming an important development tool. Since 2004, African Union (AU) member states have identified social protection as a key strategy for enhancing social development. AU member states have committed themselves to the Ouagadougou Declaration and Plan of Action to strengthen social protection schemes, increase their coverage and effectiveness for everyone, especially the poorest, most vulnerable and excluded persons (African Union 2008a). Further commitments include the 2006 Livingstone and Yaoundé Calls for Action on social protection, agreements at the 2007 International Labour Organization (ILO) regional meeting in Addis Ababa and recommendations of the 2008 regional meetings on Investing in Social Protection in Africa. All of these actions culminated with the development of a social policy framework for Africa (African Union 2008a).

At the global level, some development agencies have begun to promote the development and strengthening of integrated social protection systems through multi-sectoral approaches (Rawlings *et al.* 2013). Yet one area that has received little attention in both policy discourse and empirical literature is the link between social protection and agriculture. This link is important and particularly relevant for rural households for several reasons. First, most rural beneficiaries of social protection are self-employed or rely on agriculture for their livelihoods. This means that, in practice, beneficiaries of agriculture and social protection policies may overlap and share the same geographical space. The extent of this overlap is debatable. Ostensibly, social protection would have little impact on the agricultural production of extremely poor, landless and labour-constrained beneficiaries. However, profiles of beneficiary households show that even the landless poor directly engage in agricultural activities by renting or borrowing land, sharecropping or providing agricultural wage labour (Davis and Debwre 2013; Asfaw *et al.* 2012b). While most agricultural interventions that target smallholders usually exclude the poorest households, they can still affect the productive behaviour of these households by bringing about changes in local agricultural labour markets. Nonetheless, agricultural interventions can potentially have a greater role in reducing vulnerability if they are targeted to the poorest households.

Agricultural policy may have implications for the effectiveness of social protection policy and interventions, just as social protection policy may have implications for rural and agricultural livelihoods. Importantly, it is unlikely that social protection alone can sustainably lift households out of poverty, as it may not lead to long-term changes in livelihoods. Thus, there is a need to formulate social protection and complementary livelihoods promotion policies as part of a comprehensive rural development strategy. The well-documented role of agriculture in development and poverty reduction makes it a natural ally and complement to social protection. When combined, the two approaches can serve both immediate and long-term livelihood needs.

In most countries, agriculture has historically been the lead contributing sector in the early stages of growth and development (Diao *et al.* 2007). In sub-Saharan Africa, agriculture constitutes one third of GDP, 50 percent of total export value and remains the main source of livelihoods and food for two-thirds of the population. Approximately 72 percent of the active rural population in the region are smallholder farmers and women comprise about half of the agricultural labour force (World Bank 2007).

Agriculture makes key contributions to poverty reduction and development through various pathways. These include: increasing agricultural profits and labour income; increasing non-farm rural labour incomes, non-farm profits and savings from investment in rural and urban areas (Hart 1998); lowering food prices, hence making tradable sectors more competitive; and tightening urban and rural labour markets, leading to higher unskilled wages in the economy (World Bank 2006). In China, evidence shows that GDP growth originating in agriculture was up to four times more effective in reducing poverty than GDP growth from non-agricultural sectors (Ravallion *et al.* 2007). The agricultural sector also plays a vital role in ensuring long-term food and nutrition security.

Although agriculture is a key driver of development, there are several impediments to its growth and maturity in sub-Saharan Africa. Agricultural growth has been slow and beset by challenges, including poor soil fertility and high variability in agro-ecological environments and farming systems; reliance on rain and traditional cultivation practices; underinvestment in human, physical and institutional capital; weak input and output markets; and unfavourable public policies, such as low spending, high taxation and structural adjustment (World Bank 2007; Diao *et al.* 2007). Recently, the revitalization of sub-Saharan African agriculture has become a major focus of policy. One of several initiatives aimed at igniting rapid agricultural growth in the region is the Comprehensive Africa Agriculture Development Programme (CAADP) whose broad aim is to help African countries boost their economic growth and improve their food security through agriculture-led development.²

A major challenge to agricultural growth and development in sub-Saharan Africa is the fact that rural or agricultural households remain vulnerable to shocks and risks. Most rural households in low-income countries are net buyers of food, which makes them susceptible to production and market-related risks (de Janvry and Sadoulet 2011). Covariate risks, such as natural disasters, livestock diseases, climate change, financial crises, global food price hikes, conflict, economic collapse and devastating epidemics like HIV/AIDS, are major threats to the welfare of rural households (Dorward *et al.* 2006; Dercon 2005). In an uninsured rural population, exposure to idiosyncratic shocks such as illness, job loss, family deaths, births, migration, marriages and accidents can cause or deepen poverty. Rural households are often constrained by a lack of resources and low productivity, which makes it harder for them to cope with such risks and shocks. Furthermore, rural households often participate in imperfect and thin markets characterized by low economic activity and weak coordination (Dorward *et al.* 2006). Rural people are often poorly organized, which limits their access to markets and to adequate prices; while technical support services are weak or sometimes lacking. Consequently, the prevalent uncertainty, poverty and exposure to repeated shocks in rural

² The programme's goal is to eliminate hunger and reduce poverty through African governments allocating a minimum of 10 percent of national budgets to agriculture and agreeing to raise annual agricultural productivity by a minimum of 6 percent (CAADP 2012).

areas all lead to a high degree of risk and vulnerability, hence the need for social protection (HLPE 2012; Dorward *et al.* 2006). Social protection interventions, when regular and predictable, are ideally suited to reducing the vulnerability of rural households by increasing consumption and relaxing credit, liquidity and insurance constraints.

There are many definitions of social protection, most of which focus on risk management and the assistance of poor people (HLPE 2012). Generally defined, social protection is a set of interventions whose objective is to reduce social and economic risk and vulnerability and to alleviate extreme poverty and deprivation. Devereux and Sabates-Wheeler (2004) define social protection as “the set of all initiatives, both formal and informal, that provide social assistance to extremely poor individuals and households; social services to groups who need special care or would otherwise be denied access to basic services; social insurance to protect people against the risks and consequences of livelihood shocks; and social equity to protect people against social risks such as discrimination and abuse.” The European Community defines social protection as “a specific set of actions to address the vulnerability of people’s life through social insurance, offering protection against risk and adversity throughout life; through social assistance, offering payments and in kind transfers to support and enable the poor; and through inclusion efforts that enhance the capability of the marginalised to access social insurance and assistance (European Community 2010).” The African Union defines social protection as encompassing “a range of public actions carried out by the state and others that address risk, vulnerability, discrimination and chronic poverty. The right to social security in childhood, old age and at times of disability is expressed in a range of international Human Rights Declarations and treaties. Social security transfers in the form of, for example, pensions, child benefit and disability allowances are considered to be core elements of a comprehensive social protection system (African Union 2008).”

Social protection has four important roles (Devereux and Sabates-Wheeler 2004). *Preventive* instruments can stave off deprivation, mitigate the impact of an adverse shock and avoid adverse risk-coping strategies. Examples include regular and predictable cash transfers, the elimination of user fees and contributory social insurance/security (pensions, health insurance, maternity, disability, unemployment benefits, etc.). *Protective* instruments promote recovery from shocks and provide relief from economic and social deprivation, including the alleviation of chronic and extreme poverty and food insecurity. Examples include cash transfers, public employment schemes, feeding programmes and humanitarian relief. *Promotive* instruments enhance asset accumulation, human capital and income earning capacity among the poor and marginalized. They include conditional and unconditional cash transfers (CCTs, UCTs), asset building and livelihood development, elimination of user fees, school feeding programmes, second chance education, skills training and integrated early childhood development. Finally, *transformative* instruments address power imbalances that create or sustain economic inequality and social exclusion. Examples include workers’ rights, antidiscrimination policies and laws to protect inheritance rights. (Devereux and Sabates-Wheeler 2004).

Much of the focus in empirical literature and policy debates has been on the human development outcomes of social protection interventions such as health and nutrition. There has been little discussion of the agricultural outcomes of social protection and, likewise, minimal attention has been paid to the potential role of agriculture in reducing vulnerability and averting risks. Identifying linkages between social protection and agriculture is ever more important in light of the growing risks to rural development in low income countries due to globalization, climate change, lagging investment in agriculture, imperfect agricultural inputs

and outputs, inadequate resources for social protection and chronic food insecurity (Farrington *et al.* 2004). Building synergies between social protection and agriculture could be integral to the implementation of strategies and policies for mitigating these risks and achieving sustainable and long-term rural development.

This paper seeks to provide an empirical rationale for building such synergies and exploiting the complementarities between social protection and smallholder agriculture in developing countries, particularly in sub-Saharan Africa. The paper builds upon earlier work commissioned by FAO to conceptualize the links between social protection and smallholder agriculture (Devereux *et al.* 2008a). In it, we explore the interaction between formal social protection and agriculture by developing a theory of change and conducting an empirical review that identifies how social protection impacts smallholder agricultural production and how agricultural interventions reduce risks and vulnerability at the rural household and local economy levels. On the one hand, we assess how social protection could produce impacts on agricultural production (crops, livestock, fishing and forestry). The evidence for this is primarily obtained from impact evaluations of social assistance instruments, such as cash transfer programmes, where possible augmented with findings from other instruments like public works, school feeding programmes, food aid, social pensions and education waivers. On the other hand, we determine how agricultural interventions can reduce risks and vulnerability and enhance income-generating capacity: impacts normally associated with social protection measures. Empirical evidence is obtained from the impact evaluations of community and smallholder-targeted agricultural interventions, which are classified into nine categories: land tenancy and titling; extension (including farmer field schools); irrigation; natural resource management; input technology (chemical, seed, implements, etc.); marketing arrangements (contract farming, cropping schemes, producer organizations); financial services (microfinance, crop insurance); transfers and subsidies (cash transfers for inputs, input fairs, input subsidies); and infrastructure.³ We also use this evidence to determine whether there are potential synergies between social protection and agricultural interventions and consider the implications for policy and programme design. The study reviews evidence from developing regions, including sub-Saharan Africa and Asia. We also include information from Latin America, where there is a large body of literature on the impact of social protection.

The aim of this paper is to provide guidance for FAO's work on social protection and to contribute to the policy discourse on building resilience in rural communities and promoting sustainable rural livelihoods. Social protection is relevant to FAO's mandate to "raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy." FAO already promotes the role of social protection in enhancing food security and rural development. The twin-track approach adopted by FAO aims to i) improve livelihoods by promoting agricultural production and rural development with a focus on smallholders within a medium to long-term perspective, while also ii) facilitating more direct and immediate access to food, partly through social protection interventions (FAO 2003). As we will show, social protection can work on both tracks, since it can help to create the enabling environment for rural development. FAO's twin-track should thus be viewed as complementary approaches, which need to be carefully coordinated. FAO's comparative strengths in promoting agriculture, food security and rural

³ Adapted from IEG (2011b)

development make it the ideal agency to provide technical advice and build capacities to maximize the synergies between social protection and agriculture.

1.1 Organization of the paper

The paper is organized in six sections. The first section is the Introduction. Section 2 presents the theoretical framework for linking social protection and agriculture. Section 3 presents the methods used in searching and selecting the appropriate empirical literature for review. Section 4 reviews the available evidence on the impact of social protection interventions on agriculture, while Section 5 reviews the available evidence on the impact of agricultural interventions on risks, vulnerability and income generating capacity. Section 6 concludes the paper by summarizing the evidence on the interaction between social protection and agriculture, highlighting the knowledge gaps and discussing the policy implications.

2. Framework for linking social protection and agriculture

2.1. Introduction

Conventional economic theory has identified social protection as a public transfer characterized by income redistribution from the rich to the poor (Alderman and Yemtsov 2012). Accordingly, social protection has historically been viewed as having a negative effect on growth by reducing capital accumulation (via income redistribution), increasing fiscal deficits, producing a deadweight loss and economic distortions from the associated taxation and causing dependency and work and innovation disincentives (Alderman and Yemtsov 2012; Alesina and Perotti 1997). However, recent empirical evidence contradicts this theoretical orthodoxy, demonstrating that social protection interventions do not create work disincentives or dependency (Barrientos and Scott 2008; Abdulai *et al.* 2008). Moreover, the social protection goals of reducing vulnerability and managing risks are no longer viewed as interfering with growth objectives, but in fact as contributing to growth by increasing human capital accumulation and encouraging aggregate savings and risk-taking (Alderman and Yemtsov 2012; Ravallion 2007; Perotti 1993).

There are good reasons to expect that social protection, and cash transfers in particular, can improve growth as a result of productive decisions at the household and local economy levels. The livelihoods of many beneficiaries of social protection programmes in sub-Saharan Africa are predominantly based on subsistence agriculture and will continue to be so for the foreseeable future. The exit path from poverty is not necessarily the formal (or informal) labour market, but self-employment generated by beneficiary households themselves, whether within or outside of agriculture. Most social protection beneficiaries live in places where markets for financial services (such as credit and insurance), labour, goods and inputs are lacking, difficult to access and enter or do not function well. Cash transfers typically represent about 20 percent of their *per capita* expenditure and, when provided in a regular and predictable fashion, they may help households to overcome the obstacles that limit their access to credit or cash. This in turn can increase spending in productive and other income-generating activities, influence the role of the beneficiaries in social networks, increase their access to markets and inject resources into local economies. These impacts come through changes in household decisions and behaviour and, concomitantly, through impacts on the local economy of the communities (social networks, labour and goods markets, multiplier effects) where the transfers operate (Asfaw 2012).

Agricultural interventions can also serve as instruments for social protection. Some agricultural interventions have an explicit social protection function since they are aimed at reducing risks, e.g. crop insurance, input subsidies, input grants and agricultural cash grants. At the micro level, agricultural interventions can improve agricultural output, household income, food security, risk coping, participation in social networks and a range of other welfare/social protection outcomes that reduce vulnerability and mitigate risks. At the meso and macro levels, agricultural growth lowers food prices and boosts food supplies, while the resulting profits increase the resources available for financing social protection. As mentioned previously, rapid agricultural growth produces an increase in rural labour incomes that may decrease the aggregate fiscal demand for social protection.

2.2 Theoretical models

Several theoretical models can help predict how social protection leads to agricultural outcomes and how agriculture affects risks and vulnerability. While some of these models adhere to the traditional assumption that social protection instruments produce disincentives, they are still relevant because they provide a basis for hypothesizing pathways of impact.

The agricultural household model is often used to describe the economic decision-making of rural households (Singh *et al.* 1986). In this model, when markets function perfectly production and consumption decisions can be viewed as ‘separable.’ The model assumes that all prices are determined through market mechanisms and that households are price takers. Households suffer no labour, credit or other market constraints. There is no trade-off between the consumption of agricultural commodities and production for sale, since there are no transaction costs in food markets. In this context, agricultural households solve the profit maximization and utility maximization problem recursively by first maximizing profits from agricultural production based on standard economic theory, and second, given that profit, maximizing utility (Taylor and Adelman 2003). If the agricultural household model reflects reality, cash transfers should have little effect on agricultural production and instead only impact consumption (Boone *et al.* 2013).

Yet, rural markets in developing countries do not often function perfectly. Liquidity and credit constraints are key factors leading poor agricultural households to lower than optimal use of types and quantities of inputs. Poor households, and particularly women, often find it difficult to borrow money due to a lack of assets to use as collateral or to credit rationing resulting from adverse selection, asymmetric information or government policies (Feder *et al.* 1990; Rosenzweig and Wolpin 1993; Fenwick and Lyne 1999; Lopez and Romano 2000; Barrett *et al.* 2001; Winter-Nelson and Temu 2005). Further, agricultural households in less developed regions often rely upon assets, such as livestock, as a form of savings or insurance, often an unsatisfactory risk-coping strategy for a variety of reasons. The lumpiness of these assets increases the difficulties of using them for savings and, in the context of covariate risk, they usually drop in value as many households try to sell them as a coping mechanism. Assets held as livestock or other animals are also risky due to the possibility of sickness or death.

Rural markets are characterized by isolation or remoteness, with few buyers and sellers and covariate production risks (weather, prices, etc.). Moreover, high transaction costs in staple markets can often make self-sufficiency the best choice (Key *et al.* 2000). Transportation costs time and information-gathering activities add to the cost of selling food, creating a difference between the selling and buying prices; the more rudimentary the market, the higher these costs can be. Transaction costs, such as worker supervision, can lead households to use family workers over hired labour, although family and hired labour are imperfect substitutes (Deolalikar and Vijverberg 1987; Schmitt 1991). Further challenges to agricultural households include a lack of access to factors of production, including technology and extension services.

Without access to adequate credit markets and with poor alternative risk-coping mechanisms, agricultural households often adopt low-risk low-return income generation strategies, often selling more than the optimal amount of labour off-farm in casual or exploitative labour markets in order to secure diverse sources of income (Dercon 2002). Due to multiple market failures, agricultural households may also make decisions based on ensuring that they have enough food to eat rather than on what would be the most profitable outcome (Boone *et al.*

forthcoming). For example, in the context of the risk of high food prices or thin product markets, households may prioritize the production of staple crops to ensure food security instead of producing more profitable cash crops. In the face of such constraints, the production and consumption decisions of agricultural households can be viewed as jointly determined, or 'non-separable' (Singh *et al.* 1986).

If household production and consumption decisions are non-separable, social protection and agricultural interventions may help overcome some of the constraints faced by agricultural households in the context of imperfect markets (Asfaw *et al.* 2012a). Cash transfers, for example, provide a guaranteed steady source of income if delivered at regular intervals, thus potentially making up for failures in the insurance market. This guarantee, especially for agricultural households that are less likely to have regular sources of income, may allow them to adopt riskier production strategies with a higher rate of return or to reduce the use of adverse risk-coping strategies. Furthermore, cash transfers provide liquidity and thus can be used for productive activities or as evidence that households can repay their debts. This may allow farmers to move closer to the optimal level of inputs when credit markets have failed. Such expenditures can be complemented by household labour and lead to increased agricultural or non-agricultural production. It is in this context that social protection instruments and agricultural interventions can help rural households alleviate some of the constraints and market failures that underlie non-separable consumption and production decisions.

As suggested by the agricultural household model, the imperfect markets, credit constraints and volatile incomes caused by widespread risks (Fiszbein and Schady 2009) also constrain human capital investments (education and health) by rural households. There is extensive literature demonstrating that human capital accumulation raises economic growth and agricultural productivity (Jamison and Lau 1982; Pudasaini 1983; Jamison and Moock 1984; Azhar 1991). Social protection programmes like cash transfers can relieve constraints on human capital accumulation by meeting the costs and increasing the incentives associated with investing in human capital, thereby smoothing income fluctuations and reducing inequality within households and communities (Fiszbein and Schady 2009). In particular, conditional cash transfers (CCTs) address family underinvestments in human capital that are driven by imperfect information, incomplete altruism and short-sightedness (Fiszbein and Schady 2009).

Another traditional theoretical model, Becker's Time and Household Production Theory (Becker 1965), also helps to explain the impact of social protection instruments and agricultural interventions on labour supply decisions. The model suggests that household time allocation decisions are based on a trade-off between the time allocated to utility-generating activities, like domestic production and/or leisure, and the time allocated to wage labour, which generates income (Becker 1965). When a household receives an income transfer, it may prefer utility-generating activities rather than wage labour, i.e. the income effect resulting from the transfer may create disincentives for paid work and incentives for domestic production or leisure (Parker and Skoufias 2000; Kanbur *et al.* 1994). The income effect of a social transfer may vary by gender. For instance, while female recipients of a transfer may shift their labour supply from the labour market to domestic household care and work, male recipients may increase their leisure time. The income transfer may also lead to a substitution effect, with adults compensating for any reductions in child labour associated with increased school attendance, which is usually part of the conditionality for some cash transfers (Parker and Skoufias 2000).

The models we have discussed so far are often classified as ‘unitary’ in nature, i.e. the household makes joint consumption and production decisions as a single unit or agent, and the members have the same preferences (Alderman *et al.* 1995). However, household members might not have identical preferences and the distribution of resources is often unequal, which makes the intrahousehold demographic composition and balance of power relevant for outcomes (Browning *et al.* 1994; Browning and Chiappori 1998). Empirical research has strengthened the case for the collective model (Thomas 1990; Chiappori 1992), while other studies have highlighted how preferences for production and consumption decisions vary by gender (Haddad *et al.* 1997; Handa and Davis 2006; Fiszbein and Schady 2009; Yoong *et al.* 2012). The collective model has implications for understanding how social protection instruments or agricultural interventions can influence household decision-making (Yoong *et al.* 2012).

The extent of the bargaining power possessed by an individual often depends on their share of resources or earned income in the household (Yoong *et al.* 2012). Accordingly, the impact of agricultural interventions or social protection instruments on intrahousehold resource allocation – especially to women – could largely be influenced by who owns the means of production or by the cultural norms defining gender roles and power in the household. As such, many social protection programmes – such as most CCTs in Latin America – target women in order to increase their bargaining power and capitalize on their preferences to invest in children and food security. Yoong *et al.* (2012) however, note that social norms or lack of legal rights for women could hinder the success of gender-targeting in social protection programmes.

In summary, our discussion of theoretical models makes the case for pathways or channels through which social protection instruments and agriculture affect the consumption and production decisions of rural households, especially in the presence of market failures and other constraints. Some models also recognize the potential gender differential in outcomes due to the intrahousehold decision-making processes in rural households.

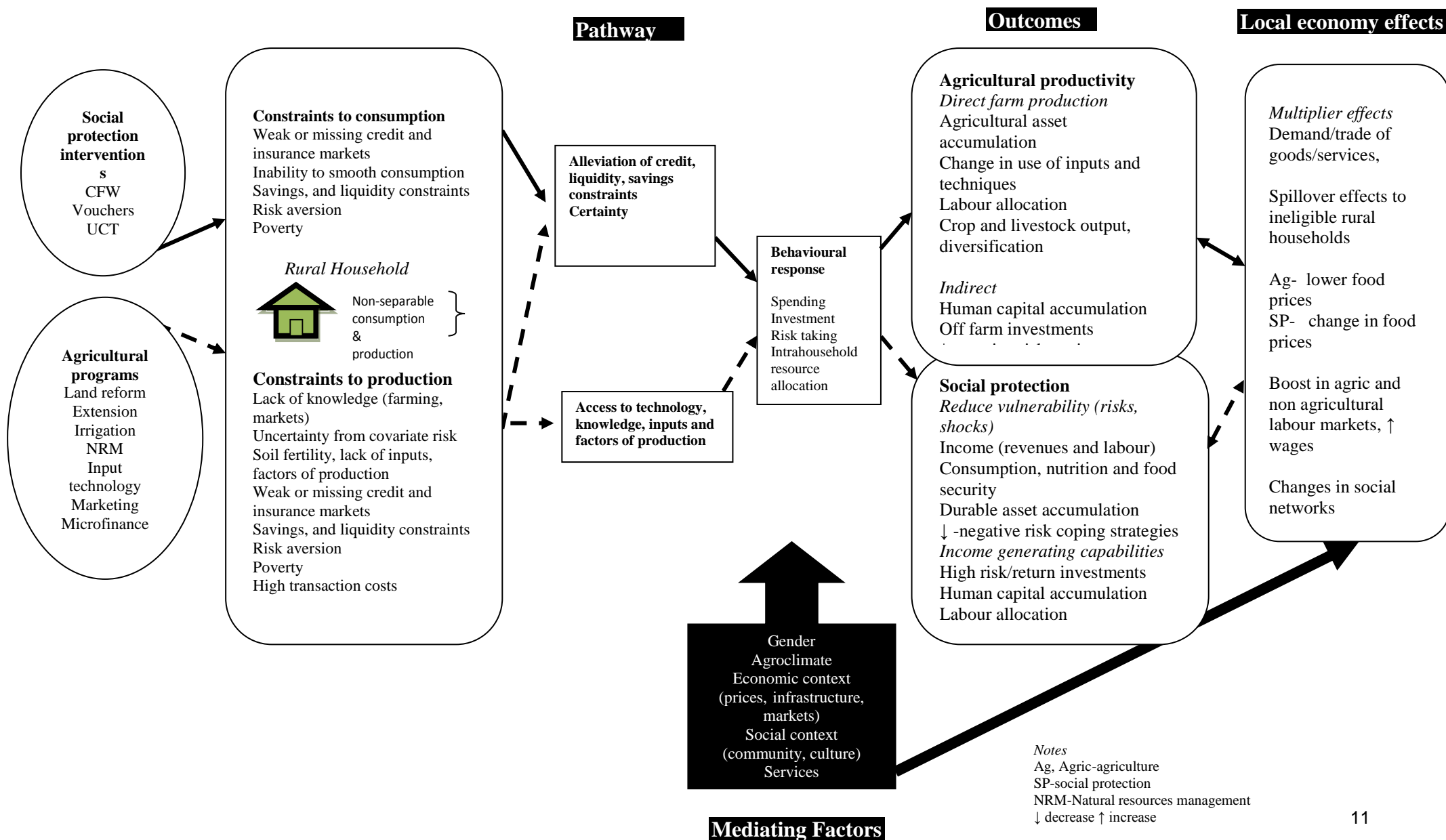
2.3 Theory of change

2.3.1 Pathways of impact

Following the rationale of the agricultural household model, the central assumption behind our theory of change is that consumption and production decisions are not separable for rural households living in a context of missing or incomplete markets. Multiple market failures and credit constraints may lead to suboptimal human capital investments, while the lack of knowledge about improved agricultural practices, inputs and factors of production hamper agricultural production. Social protection and agricultural interventions can play a vital role in easing these constraints for rural households. The underlying principles of the agricultural household model and the other models previewed earlier help us identify potential pathways through which social protection interventions can affect agricultural outcomes and agricultural interventions can function as social protection instruments. Our theory of change is also premised on the notion that the impacts of social protection and agricultural policies are not parallel but are interlinked, such that they contribute to each other’s objectives of reducing risks and enhancing agricultural production.

As shown in Figure 1, there are three plausible pathways through which social protection affects agriculture and vice versa. Two of the pathways apply to both social protection and agricultural interventions.

Figure 1 Interaction between social protection and agriculture



Alleviation of credit, savings and liquidity constraints

The first shared pathway of impact is the *alleviation of credit, savings and liquidity constraints*. Social protection interventions like cash transfers or cash for work schemes can either improve savings or alleviate credit constraints and, if they are regular and predictable, they can improve access to credit by acting as collateral (Barrientos 2012). Additional cash or disposable income resulting from a social protection intervention can also improve liquidity, a buffer for consumption shortfall, thus encouraging risk taking and spending on inputs (Dercon 1996). Agricultural interventions like microcredit, microfinance and input subsidies may also alleviate the credit constraints of rural households. This would improve farm productivity and lead to gains in rural household welfare.

Certainty

The second shared pathway of impact is *certainty*. The vagaries of weather and lack of insurance accentuate the risks and vulnerability that rural households face and they are often accompanied by substantial reductions in household consumption and assets. Not surprisingly, rural households are usually risk-averse (Barrientos 2012; Fenwick and Lyne 1999; Rosenzweig and Wolpin 1993; Morduch 1995). In this context, social protection instruments like cash transfers or social pensions, which are provided at regular and predictable intervals, can increase certainty and security and act as insurance against risks. Agricultural interventions can also increase certainty and security and provide assurance to rural households. For example, irrigation reduces the uncertainty associated with rainfed agriculture and guarantees the supply of water throughout the year. Agricultural interventions like input grants and agricultural cash grants, such as those provided by the Mexican scheme PROCAMPO, increase certainty and security when they are provided at regular and predictable intervals. Other interventions like weather-based crop insurance schemes directly address the lack of insurance and uncertainty related to weather variability.

Increased access to technology, knowledge, inputs and factors of production

A third pathway of impact specific to agricultural interventions is *increased direct access to technology, knowledge, inputs and factors of production (e.g. land)*. As stated earlier, the lack of technology, knowledge, inputs and factors of production limits agricultural productivity. There are several examples of productivity-enhancing agricultural interventions that can be used to address these constraints. These include input subsidies and grants; input technology (e.g. new high yield varieties, fertilizer); natural resource management techniques (e.g. soil conservation practices, irrigation); land tenure reform; marketing arrangements (e.g. producer organizations, contract farming); and macroeconomic reforms (e.g. price liberalization). Infrastructural interventions, such as roads, increase access to local markets and market information. Other interventions like farmer field schools and extension services enhance access to agricultural knowledge and skills. Some social protection interventions like public works programmes may also work through this third pathway since they facilitate access to relevant knowledge and skills and rural infrastructure.

2.3.2 Behavioural response and impacts

The pathways of impact for social protection and agricultural interventions trigger behavioural responses that determine the direction and magnitude of impacts. Three major behavioural responses are especially relevant to the two-way relationship between social protection and agriculture.

Spending and risk-taking behaviour

Pathways of impact, such as certainty and the alleviation of credit, liquidity and savings constraints, can influence household spending and risk-taking behaviour. This is particularly relevant because rural households are the crucial investors in rural areas. For example, households participating in cash transfer or agricultural microcredit programmes may spend more on acquiring agricultural assets (e.g. farm implements, land or livestock), inputs and human capital investments (e.g. school enrolment and nutrition), ultimately causing changes in farm production. Interventions, like cash transfers or weather-indexed crop insurance, increase certainty and have an insurance effect that allows households to reduce precautionary savings and make higher risk-higher return agricultural expenditures such as the purchase of high-yield seed varieties, cash cropping and investing in on- and off-farm enterprises. Such behaviour can also enable small farming communities to better manage scarce natural resources or adapt to climate change by adopting better natural resource management practices and technologies. Another important impact that occurs in tandem with changes in household spending and risk taking is the reduction of adverse risk coping, which undermines long-term livelihood sustainability and agricultural development. Examples of adverse risk-coping strategies include asset sales, school dropout, child labour, reduced purchases of nutritious foods, food rationing, reduced essential medical expenditures and risky income generating activities (e.g. gold panning, transactional sex and theft).

Intrahousehold resource allocation

The third possible behavioural response to social protection and agricultural interventions are changes to intrahousehold resource allocation. Household members typically bargain over many different decisions and outcomes relating to consumption, labour allocation (care work, chores, farm work and off-farm work), children's education and health and production strategies. Bargaining power and, ultimately, resource allocation within households is influenced by the individual/s who control the means of production, who own the largest share of the income or who hold the most power within the household according to cultural norms. Usually women and children have limited bargaining power due to social norms, lack of control over the means of production and/or relatively lower shares of income compared to men. Household decisions on time or resource allocation that take place in an environment with unequal bargaining power can lead to inefficiencies that hinder investment and income growth (Barrientos 2012). However, empirical evidence demonstrates that social protection interventions targeted to women can improve their bargaining power and lead to greater investments in child education and health (Barrientos 2012). Such interventions can also bring about a reduction in child labour. They may also either decrease adult labour supply (due to the income effect) or increase it as a result of new investments in on-farm and non-farm ventures, better nutrition and opportunities for migration.

The way that agricultural interventions are implemented also influences intrahousehold dynamics and, ultimately, household welfare. For example, a rice irrigation project in Burkina Faso was perceived as male domain and it transformed rice from a crop traditionally grown by women into a communal crop controlled by the male head of the household, thereby reducing the opportunity for women to produce rice as a private cash crop (Von Braun and Webb 1989). In contrast, an extension project promoting soya bean production (viewed as a woman's crop) in Togo accounted for intrahousehold dynamics by targeting women and promoting soya beans as an ingredient for food rather than a cash crop; the result was that women retained control of soya bean production (Udry *et al.* 1995; Dankelman and Davison, 1988). Agricultural interventions, such as gender-responsive land reform, can be implemented

to improve women's bargaining power. A study found that in Nepal, when women own land their children are less likely to be underweight compared to landless women or women who do not own land directly. Therefore, land reform programmes targeting women could lead to resource allocation that is favourable to children.

Local economy effects

Behavioural responses to social protection and agricultural interventions have consequences that are felt beyond the household cascading into the local economy. Social networks often help to transmit the response to such interventions to the local economy. Unlike in developed countries, formal instruments, such as social security, that help rural households manage risks are scarce; hence there is greater reliance on informal mechanisms such as social networks. In rural areas, informal social networks facilitate reciprocal transfers and mutual insurance and are more prominent than in urban areas (Ravallion and Dearden 1988). In social networks, interpersonal arrangements are created to diminish risk; these often involve transfers or exchanges of cash, food, livestock, clothing, loans and productive and care labour. Social networks have become critical to household welfare, particularly in sub-Saharan African countries stricken by HIV/AIDS.

At the household level, social protection and agricultural interventions allow households to renew and/or strengthen their participation in social networks for risk sharing and reciprocal exchange. Households may begin sending more private transfers to their risk-sharing networks than they receive from them (Angelucci *et al.* 2009; OPM 2012a; OPM 2012b). Conversely, if a social protection intervention is imperfectly targeted and excludes deserving households, it may lead to tensions or the breakdown of the risk-sharing arrangements to the extent that beneficiaries leave the network, leaving eligible non-beneficiaries vulnerable (Dercon 2002). Other interventions like farmer field schools can have a direct impact on social networks through strengthening collaboration within the community and improving relationships with institutions (Mancine *et al.* 2006).

Another way that interventions influence local economies is through the externalities or spillover effects on non-beneficiaries from changes in beneficiary behaviour (Fiszbein and Schady 2009). Empirical literature shows that this can be observed with regard to the educational and health impacts of CCTs, where non-beneficiaries are influenced by beneficiary behaviour and also increase their own school attendance or child health check-ups (Fiszbein and Schady 2009). Certain types of interventions, like cash transfers, social pensions or microcredit, increase rural household incomes leading to a substantial amount of cash being injected into the local economy by beneficiaries. When the beneficiaries spend this cash they may trigger general equilibrium (GE) effects that impact other households in the economy, including non-beneficiary households, who may become relatively wealthier and better poised to increase their productivity in response to the rise in local demand (Taylor *et al.* 2013).

Subsequently, the local economy could experience multiplier effects through the stimulation of agricultural and non-agricultural labour markets and the demand for local goods and services from agricultural and non-agricultural households (Taylor *et al.* 2013, Schneider and Gugerty 2011). Furthermore, the rise in farm productivity may raise employment and wages

in both farm and non-farm sectors achieved through forward and backward linkages (Schneider and Gugerty 2011; Hammer and Naschold 2000). In the short run, social protection interventions may lead to higher prices,⁴ while agricultural interventions aimed at increasing output can lead to lower prices. Lower food prices due to increased agricultural output are also a crucial component of the multiplier effect. Low food prices increase the income of net food buyers and generate economic growth in other sectors. The changes in food prices⁵ also influence household production decisions (e.g. planning output levels) and the subsequent income effect triggers further multiplier effects (Schneider and Gugerty 2011). The totality of the multiplier effects – including increased incomes, wages, employment and demand – in both farming and non-farming sectors may enhance the protection of rural households from risks and shocks. Multiplier effects like higher wages in rural farm and non-farm labour markets also send feedback to households whose labour allocation outcomes may change as a response to the wage levels (see Figure 1).

2.3.2 Dynamic extensions

In order to maintain brevity, our theory of change is viewed through a static prism. However, it can be extended to consider dynamic aspects. First, over time there could be feedback effects at two levels i) from the local economy to the household behavioural response; and ii) from the household impacts to the household behavioural responses, leading to a dynamic cycle of impacts and behavioural responses. Second, there is a possibility that the pathway of impact for a social protection or agricultural intervention may change over time. For example, food aid may increase food security in the short term but decrease local prices and food production in the medium and long term. Third, the timing of an intervention also has important ramifications for agricultural production due to seasonal variation. As an example, the implementation of a public works scheme during the planting season may divert labour resources away from on-farm activities, depressing on-farm investments and yields. Fourth, there is a possibility that rural households participate in more than one intervention, which would influence the pathways of impact and behavioural responses. Finally, over time rural households may graduate from social protection or agricultural programmes as their risk profile changes, becoming non-beneficiaries who respond differently to interventions in the local economy. All these dimensions can be added to our theory of change to reflect the dynamic undercurrents of an intervention.

2.3.3 Mediating factors

The magnitude and distribution of the direct and indirect impacts of social protection and agricultural interventions may be mediated by gender, age, initial endowments, programme characteristics and contexts. These factors may influence household behavioural responses -- spending, risk taking and intrahousehold resource allocation – and may also influence the

⁴ Since rural markets are imperfect, they are characterized by inelasticity of supply and demand, high transaction costs and incomplete information, all of which contribute to a short-term rise in prices (temporary inflation).

⁵ However, the effectiveness of lowered food prices depends on the tradability of the agricultural commodity and the elasticity of its demand. First, when demand is inelastic there is a larger decline in food prices compared to when demand is elastic. Second, if the commodity's sector is large and non-tradable internationally, output expansion will substantially lower food prices (Schneider and Gugerty 2011, Thirtle *et al.* 2001).

extent of local economy effects. This review highlights studies documenting the various impacts of the interventions. Mediating factors are classified into the following categories:

Gender: Social protection and agricultural interventions are likely to have different gender impacts. The impacts at the household level may vary based on the gender of the household head or main recipient of the interventions and they can also be different for the household's male and female members. For instance, it has been widely established that cash benefits are spent differently by men and women. Empirical evidence demonstrates that social protection interventions targeted to women improve their bargaining power and lead to greater investments in child education and health (Barrientos 2012). As posited in the theoretical models, there is normally an imbalance in the bargaining power of men and women, driven by social norms of gender and the relative lack of resources controlled by women. This in turn affects intrahousehold decision-making and leads to inefficient resource allocation. An agricultural yield-enhancing intervention, such as fertilizer, could increase women's labour responsibilities as compared to men's, since women and children are traditionally engaged in the labour-intensive manual activities of agriculture (hoeing, weeding and harvesting). As a result, women would likely spend less time on care work or income-generating activities and allocate more time to manual labour activities.

Age: Social protection and agricultural interventions can have different impacts on different age groups. For instance, interventions targeting households headed by elderly people could have different labour supply impacts than interventions targeting adult-headed or child-headed households. The age distribution within the household is also important. Social protection and agricultural interventions lead to different labour and time use responses from adults and children. The consumption levels from cash transfers or yield-enhancing interventions will vary according to the age distribution within households, i.e., between households with a higher proportion of working age adults and those without.

Initial endowment: The initial levels of human capital (educational levels, skills, health status), knowledge and information, working-age members, social capital and wealth available in a household can influence its response to interventions. For example, relatively wealthier households may respond more favourably to the multiplier effects generated by cash transfers in the local economy than poorer households. In another example, the impact of a new yield-enhancing technology that increases the demand for labour could be mediated by whether the household is labour-constrained or not. Its impact could also be mediated by the available level of education or skills, where households with skilled members would use new technologies more effectively than households with unskilled or less educated members.

Agroclimatic factors. These are naturally occurring differences such as rainfall and topographic variation in agro-ecological zones; seasonal variation; daily mean temperature; and soil-water content. All of these factors contribute to disparities in agricultural production and the subsequent second order outcomes such as income, consumption and food security, nutrition and poverty. Seasonal variation has implications for the timing of a social protection or agricultural intervention and its expected outcomes. The diversity of agro-ecological zones in a country, region or locale is also likely to produce different household and local economy outcomes.

Economic context: Factors such as prices, infrastructure, markets (access, size and information) and location (urban-rural, peri-urban) characterize the economic landscape and influence how social protection and agricultural interventions affect the rural household. For

example, high food prices will limit the effectiveness of additional disposable income from cash transfers and hence result in smaller gains or no effects on household welfare. Multiplier effects in the local economy from social protection and agricultural interventions would more likely be easier to observe in rural areas than in urban areas (Barrientos 2012)

Sociocultural context: Rural households are part of communities and rely on kinship ties within the extended family for social and economic support. Therefore, community and lineage systems defined by cultural practices influence the impact of social protection and agricultural interventions. For example, the impact of a conditional cash transfer on the school attendance of children from pastoral communities in East Africa could be less than on non-pastoral communities since the former belong to a nomadic culture which is conspicuously disruptive of settlement and require an education system that is adapted to this fact. The impact of a land rights programme in a village might vary by how much social capital a rural household owns in the village or by the extent of its extended family or kinship networks.

Services: Access to and the quality of public services, such as education, healthcare, housing and extension, are also likely to affect the impact of social protection and agricultural interventions. Local institutional arrangements or government mechanisms also affect the quality of service delivery. The lack of roads is an impediment to the marketing of agricultural produce by rural farmers. The lack of teachers in a rural community is an obstacle to school attendance and learning for children in households receiving education grants, while a lack of schools could hinder investments in children by households receiving CCTs. Inadequate proper housing can cause illnesses, which would affect the impact of interventions on nutritional status or household labour allocation. The lack of primary health care centres would nullify the condition that beneficiaries receive cash transfers in return for regular clinic visits for their children.

Programme design: Programme design is another important element influencing the impact of an intervention. Aspects, such as the choice of intervention (e.g. cash or in kind), targeting method (e.g. means testing, geographic targeting, and community targeting), implementation (e.g. interval and types of delivery systems), value/scale of transfer, coverage, grievance mechanisms (if they exist, their effectiveness and perceived fairness), complementarities with other programmes, programme credibility, programme duration, duration of participation perceived sustainability and graduation strategies, all influence the impact of interventions. The value of a cash transfer plays a critical role in influencing household spending behaviour, intrahousehold resource allocation and risk taking. For example, a larger transfer may have greater impacts on consumption and productive investments than a smaller transfer. A larger transfer can also trigger temporary inflation and, the more widespread a transfer programme is in a given community, the larger the multipliers and spillovers can be. Programme credibility, duration and perceived sustainability may also determine whether beneficiaries engage in high-risk and high-productivity agriculture.

3. Methodology and sources of evidence

3.1 Criteria for inclusion

In this section, we outline the methodology and sources used to review the available evidence linking social protection and agriculture. Our review is not intended to be exhaustive, but rather to highlight key studies that demonstrate the impact of social protection on agriculture and vice versa. We primarily focus on quantitative studies, taking advantage of existing systematic reviews. Quantitative studies were included based on five criteria: i) they specifically evaluated a social protection or agricultural intervention in a developing country; ii) they used a robust research design with a credible counterfactual; iii) outcome measures were clear, comparable, replicable and objective; iv) the results were not subject to confounding factors and bias; and v) they were published between 1999-2012. While our focus is mainly on the rural beneficiaries of social protection and agricultural interventions, we also cite several studies of interventions in poor urban communities, which we feel are relevant to our analysis. We supplement the empirical review with several qualitative studies that report on similar outcomes and are based on standard clear data collection methods (e.g. focus group discussions, in depth interviews and key informant interviews).

3.2 Outcomes of analysis

In our review of social protection impact evaluations, the household-level outcomes were grouped into two categories:

- i) Outcomes that are explicitly related to agricultural production. These include outcomes contributing to the process leading to agricultural production (assets, inputs, labour allocation) and denoting agricultural output (see Table 1).
- ii) Outcomes that have indirect implications for agricultural production (human capital development, off-farm investments, adverse risk coping). As stated earlier, human capital accumulation contributes to agricultural productivity. Human capital measures, like nutritional and health status, are essential to the supply of household farm labour, its duration and intensity. Off-farm investments could affect household farm labour allocations by adults and children. The reduction in adverse risk-coping strategies, such as withdrawal of children from schools for child labour or asset distress sales, has implications for agricultural production. For example, a reduction in on-farm child labour in a household receiving cash transfers could require a compensatory increase in adult labour allocation. However, in small families an uncompensated steep reduction in on-farm child labour could decrease agricultural productivity. A reduction in the sale of agricultural assets would maintain the asset base and secure its contribution to present and future agricultural productivity.

Table 1 Impact of social protection on agriculture

Outcomes	Indicators
<i>Direct impacts on farm production</i>	
Agricultural asset accumulation	<ul style="list-style-type: none"> ▪ ownership and spending on farm implements, tools, livestock and land;
Input use	<ul style="list-style-type: none"> ▪ self-reported use of inputs and techniques; ▪ adoption rates of inputs and techniques; ▪ input expenditures.
Labour allocation	<ul style="list-style-type: none"> ▪ farm labour hours; ▪ off-farm labour hours; ▪ employment status.
Agricultural output	<ul style="list-style-type: none"> ▪ yields of crops, livestock, fishing, forestry; ▪ reported diversification of crops, livestock; ▪ indirect indicators, e.g. consumption of own home produce.
<i>Indirect impacts on farm production</i>	
Human capital accumulation	<ul style="list-style-type: none"> ▪ nutritional status; ▪ health status; ▪ health expenditures; ▪ educational expenditures ▪ school attendance, enrolment, test scores; ▪ school completion.
Off-farm investments	<ul style="list-style-type: none"> ▪ self-reported start ups; ▪ spending on off-farm enterprises.
Reduction of adverse risk-coping strategies	<ul style="list-style-type: none"> ▪ reductions in begging for food, borrowing, asset sales, school dropouts, child labour, food rationing and risky sources of income (theft, low-pay casual labour); ▪ reductions in strategies harmful to the environment and sustainable agriculture, e.g. charcoal making, wood burning.
<i>Local economy effects</i>	<ul style="list-style-type: none"> ▪ income multipliers; ▪ spillover effects on non-beneficiary rural households (consumption, labour supply and agricultural productivity); ▪ local demand/trade of goods and services, investments in community assets and infrastructure; ▪ price levels, wage levels and local employment (agricultural and non-agricultural). ▪ social networks, including private transfers received/remitted.

The review of agricultural impact evaluations also focused on household level outcomes, some of which may be similar to those in Table 1, but in a different context. The outcomes show:

- i) *Whether a rural household is protected from vulnerability.* Income is included as an outcome, since it acts as a buffer for consumption shortfall, while increased consumption, food and nutrition security and durable asset accumulation all demonstrate a household's capacity to withstand risks and shocks (see Table 2). The reduction in adverse risk-coping strategies in this context confirms the household's ability to manage risks and recover from shocks, which is necessary for effective risk management.
- ii) *The income-generating capabilities of a household.* Efficient labour allocation and high-risk expenditures and investments can increase household earnings and maintain income growth. In this context, human capital accumulation is especially linked to the long-term employability or the labour market participation of household members, which sustain income growth and help households to manage risks.

Table 2 Impact of agricultural interventions on the reduction of vulnerability

Outcomes	Indicators
<i>Reduce vulnerability (to risks and shocks)</i>	
Income	<ul style="list-style-type: none"> ▪ household earnings from all sources; ▪ farm revenues and profits.
Consumption, food and nutrition security	<ul style="list-style-type: none"> ▪ food intake; ▪ consumption expenditures; ▪ dietary diversity and quality; ▪ self-reported food access and quality.
Durable asset accumulation	<ul style="list-style-type: none"> ▪ ownership and spending on: <ul style="list-style-type: none"> ○ farm implements, tools, livestock and land; ○ household durables-mobile phone, TV, refrigerator, furniture, vehicles.
Reduction of adverse risk-coping strategies	<ul style="list-style-type: none"> ▪ reductions in begging for food, borrowing, asset sales, school dropouts, child labour, food rationing and risky sources of income (theft, low pay casual labour).
<i>Income generating capabilities</i>	
High risk-high return expenditures and investments	<ul style="list-style-type: none"> ▪ self-reported start ups; ▪ spending on off-farm enterprises (new and increased). ▪ spending on inputs
Human capital development	<ul style="list-style-type: none"> ▪ nutritional status; ▪ health status; ▪ health expenditures; ▪ educational expenditures; ▪ school attendance without periods of absence, enrolment, test scores; ▪ school completion.
Labour allocation	<ul style="list-style-type: none"> ▪ farm labour hours; ▪ off-farm labour hours; ▪ employment status.
<i>Local economy effects</i>	<ul style="list-style-type: none"> ▪ income multipliers; ▪ spillover effects on non-beneficiary rural households (consumption, labour supply and agricultural productivity); ▪ local demand/trade of goods and services, investments in community assets and infrastructure; ▪ price levels; ▪ wage levels and local employment (agricultural and non-agricultural); ▪ social networks- amount of private transfers received/send out, self report of whether household receives or sends out private transfers.

Social protection and agricultural interventions may also have effects on the local economy, an important outcome in this review. Local economy effects include spillover effects on non-beneficiary households (consumption, labour supply and agricultural productivity), changes in the volume of trade in local goods and services, local prices, wages and local employment and changes in social networks. These changes are also reflected in the income multipliers.

3.3 Results of the search

3.3.1 Social protection impact evaluations

After applying the inclusion criteria, the literature review identified a comprehensive meta review of diverse social protection interventions conducted by the IEG (2011a) and a recent critical review by Alderman and Yemtsov (2012). IEG (2011a) is currently the most comprehensive review of social protection impact evaluations. The study reviewed 149 completed and 36 ongoing social protection impact evaluations covering 48 countries and 86 social protection programmes. The major social protection interventions featured in the study were CCTs and school feeding programmes and most of the impact evaluations were carried out within two years of programme implementation. IEG (2011a) specifically chose the time period 1999-2010 since their assessment showed that most social protection impact evaluations were conducted during this time period. Table 3 presents a summary of the impact evaluations assessed by IEG (2011a).

Table 3 Social protection studies reviewed in the IEG (2011a)

Types of social protection interventions	percent
CCTs	56
SF/THR	11
HEW	4
Workfare	9
ES	2
UCT	7
NCP/DB	6
Food aid	2
GS	1
FCA	1

Notes: CCT = conditional cash transfer, SF/THR = school feeding/take home rations, HEW = fee waivers for health and education, ES = employment subsidies, UCT = unconditional cash transfer/basic transfer, NCP/DB = non-contributory pension/disability benefit, GS = general subsidies, FCA = family/child allowances

Alderman and Yemtsov's review links social protection with growth and productivity, discusses operational implications and presents an updated review of the literature that builds on previous meta-studies by OECD (2006), Alderman and Hoddinott (2010), Barrientos and Scott (2008) and IEG (2011a). Other reviews that will be cited in this study include Yoong *et al.* 2012 and Fiszbein and Schady (2009), Lagarde (2009) and Manley *et al.* (2011), all of which summarized the impact of specific social transfers on various socio-economic outcomes. Overall, we inspected about 160 social protection impact evaluations studies from sub-Saharan Africa and other developing regions, including Latin America. Most of the

studies focused on vulnerable populations in rural communities, although some evaluations sampled both urban and rural populations.

3.3.2 Agricultural impact evaluations

Our literature review identified one comprehensive meta review of diverse agriculture interventions conducted by the IEG (2011b). This review comprises 86 impact evaluations from interventions in Africa, East Asia, South Asia, Latin America and the Caribbean. The impact evaluations mostly concern land or agricultural extension interventions, with the remainder relating to market arrangements, irrigation, natural resource management, input technology and microfinance interventions. Very few of the studies included in IEG (2011b) were long-term evaluations and all studies were from the time period 2000-2010. Outcomes of the analysis were yields, income, profit and production or amount cultivated (see Table 4).

Another review identified during the literature search is specific to index-based crop insurance schemes (Cole *et al.* 2012). The review looked at 13 studies conducted from 1990 and in Africa and Asia – specifically in Ethiopia, Kenya, Malawi, Morocco, Tanzania, China, India and Vietnam. The review was mostly concerned with assessing the willingness to pay for index-based insurance schemes. It investigated the impact of insurance schemes on input expenditures and the extent to which assets, income, liquidity, financial literacy and trust influence the take-up of insurance schemes.

Table 4 Interventions reviewed in the IEG (2011b)

Interventions	percent of studies reviewed (n=86)
<i>Land tenancy and titling</i>	
a. Titling	10
b. Tenancy law	8
c. Inheritance law regarding property rights	1
<i>Extension</i>	
a. Farmer field schools	8
b. Technical or advisory services	9
c. Market information	3
<i>Technology: Natural resource management (NRM)</i>	9
a. Soil and water conservation	
b. System of rice intensification	4
c. Integrated aquaculture-agriculture	1
<i>Technology-inputs</i>	
a. Improved seeds	8
b. Fertilizer	1
<i>Irrigation</i>	
a. Access to irrigation	2
b. Irrigation management systems	3
c. Dams	4
<i>Marketing arrangements</i>	
a. Contracts	6
b. Interlinked credit-input-output marketing arrangements	3
c. Spillover effects on food productivity	3
d. Cooperatives or social learning	3
<i>Microfinance</i>	
a. Access and services	5
b. Rural non-credit or insurance	2
<i>Other</i>	
a. Social safety net programmes	2
b. Community-driven development	2
c. Rural roads or infrastructure	5

Source: IEG 2011b. N.B. Some studies analyse more than one intervention or location, hence the total is more than 100 percent.

The third systematic review referred to in this study was conducted by Masset *et al.* (2012), and it covers 23 published and unpublished studies from Asia, Africa and Latin America that

assessed the impact of agricultural interventions on the nutritional status of children. Masset *et al.* (2012) did not review all agricultural interventions but only those that promoted the adoption of technologies for improving child nutritional status through income and diet quality. The interventions were mostly new inputs or crop varieties for home gardens, with the remainder comprising biofortification and product diversification projects like home gardens, small scale fisheries and aquaculture, dairy development, animal husbandry and poultry development. The outcomes of the analysis included programme participation, income, dietary diversity, micronutrient intake and the prevalence of undernutrition (Masset *et al.* 2012). The review (2012) built upon previous reviews by Ruel (2001), Berti *et al.* (2003), Leroy and Frongillo (2007), and Kawarazuka (2010). Table 5 presents a summary of the agricultural interventions reviewed by Masset *et al.* (2012).

Table 5 Studies reviewed in Masset *et al.* (2012)

Programme type	Number of studies
Biofortification	2
Home gardens	16
Fisheries	3
Dairy development	1
Animal husbandry	1
Total	23

Source: Masset *et al.* (2012)

A fourth systematic review, on rural microfinance in sub-Saharan Africa by Stewart *et al.* (2010), identified 15 studies, ten of which were entirely based in rural settings and three in both rural and urban settings (see Table A1). Overall, we inspected around 141 agricultural impact evaluations.

4. Impact of social protection on agriculture

In this section, we review the evidence demonstrating the impact of social protection interventions on agricultural outcomes. This evidence provides a rationale for how social protection can complement agriculture. Our primary sources of evidence were quantitative impact evaluations of various social protection measures. In a few cases, we have supplemented these with qualitative studies. Overall, much of the available evidence was based on evaluations of cash transfers and some public works schemes.

4.1 Outcomes directly related to farm production

4.1.1 Agricultural asset accumulation

The majority of the available evidence from Latin America and sub-Saharan Africa shows that social protection encourages investments and the accumulation of agricultural assets, but to varying degrees. Most of the evidence comes from impact evaluations of cash transfers schemes (see Table 6). The most common assets assessed in the impact evaluations were livestock, land and farm implements (including small tools). From Latin America, the evidence shows that the PROGRESA programme in Mexico increased land use and livestock ownership (Todd *et al.* 2010; Gertler *et al.* 2012; Angelucci *et al.* 2009; IEG 2011a). In Bolivia, the BONOSOL pension programme increased livestock ownership, while in Paraguay, the Tekopora CCT programme increased the likelihood of procuring livestock by six percent (Martinez 2004; Soares *et al.* 2010). In contrast, Maluccio (2010) found that the RPS programme⁶ in Nicaragua had limited impacts on the acquisition of farm implements and no impact on livestock or land ownership. These minor impacts were attributed to the poor macroeconomic environment during the survey period and the programme's strong impacts on food expenditures (Maluccio 2010).

Rabbani *et al.* (2006) found that the Bangladesh CFPR programme increased livestock and land ownership. In sub-Saharan Africa, studies showed that the Zambia CGP and Malawi SCT programmes significantly increased investments in farm implements and livestock ownership (AIR 2013; Covarrubias *et al.* 2011; Boone *et al.* 2013). Unlike Zambia and Malawi, the Kenya CT-OVC programme led to a modest increase in the ownership of sheep and goats (Asfaw *et al.* 2012b), while the Ghana LEAP programme had no impact on agricultural assets or livestock (Handa *et al.* 2013). Qualitative evidence is consistent with the findings of the quantitative impact evaluations. Unconditional cash transfers in Ghana (LEAP) and Kenya (CT-OVC) stimulated asset acquisitions for economically active beneficiaries or those with relatively higher asset endowments only, leaving behind the elderly, infirm and poorest households (OPM 2012a; OPM2012b). In other research, qualitative assessments of cash transfer programmes in Zambia and Lesotho showed that they increased livestock ownership (Devereux *et al.* 2005). A number of reasons may explain the differences in impact between programmes. These reasons include the availability of labour given the demographic profile of beneficiary households, the relative distribution of productive assets, the local economic context, the relevance of messaging and soft conditions for social spending, the regularity and predictability of the transfers themselves and finally, the level of transfer as a share of per capita income.

⁶ RPS - Red de Proteccion Social in Nicaragua, a conditional cash transfer programme

In Ethiopia, Berhane *et al.* (2011b) found that, after five years, the Productive Safety Net Programme (PSNP) – a prominent public works scheme – increased households’ livestock holdings by a far greater degree than in its first year of existence. This dramatic change was attributed to the low levels and the poor predictability of the payments made in the first year, which improved on an annual basis. Devereux *et al.* (2008b) found that PSNP beneficiaries had faster asset growth than non-beneficiaries over a two-year period (with a difference of 16 percentage points). However, Andersson *et al.* (2009) found that the PSNP increased the number of trees planted but did not increase livestock holdings. A more positive picture emerged from the impact assessments of both the PSNP and the HABP (Household Asset Building Programme), a programme which provides microcredit, business skills training, extension services and assistance with sourcing inputs in order to increase the income-generating capacity of beneficiaries. The studies found that participating in *both* the PSNP and HABP raised investments in fencing by 22.6 percentage points (Berhane *et al.* 2011) and increased livestock holdings and the purchase of farm tools (Berhane *et al.* 2011; Andersson *et al.* 2009; Gilligan *et al.* 2009b). Andersson *et al.* (2009) attributed the increase in livestock holdings to better access to credit through the HABP programme.

The accumulation of agricultural assets varies by gender, region (agro-climate) and social context. Covarrubias *et al.* (2012) found that female-headed households participating in the Malawi social cash transfer scheme accumulated more agricultural tools and livestock than their male counterparts, an effect they attributed to the smaller initial base of female-headed households. In Kenya, female-headed households in the CT-OVC programme had greater rates of small animal ownership compared to male-headed households, perhaps due to cultural norms, where small animals are associated with women and larger animals tend to be associated with men (Asfaw *et al.* 2012b). The Bolivian pension programme (BONOSOL) also had gender-differentiated impacts on livestock ownership (Martinez 2004). Specifically, male beneficiaries were more likely to acquire goats, while female beneficiaries were more likely to acquire pigs. In the highlands, male beneficiaries were more likely to own llamas while female beneficiaries acquired chickens; in the valleys, female beneficiaries owned more sheep and in the lowlands female beneficiaries owned more pigs than their male counterparts (Martinez 2004). Angelucci *et al.* (2009) examined the role of social context – whether a household is well connected or isolated in the village – on the impact of PROGRESA on investment in assets (in this case, chickens) as opposed to secondary school enrolment. A connected household has one or more members of the extended family living in the village, while the isolated household has none. A key finding of their study was that isolated households spent conditional cash transfers on increasing chicken stock rather than on secondary school enrolment, whereas for connected households the opposite was true (Angelucci *et al.* 2009). Since the CCT school subsidy component did not meet the full cost of secondary education, this disparity was attributed to kinship networks that, in the case of connected households, can pool resources for education. Isolated households have no such networks to draw upon (Angelucci *et al.* 2009).

As stated previously, there are fewer impact evaluations of non-cash transfer interventions than of cash transfers, so it is difficult to draw major conclusions on any differences. Overall, the available evidence indicates that cash transfer programmes increase investments in agricultural assets, although the magnitude of asset accumulation varies by the value of the transfer, gender and sociocultural context. The certainty created by predictable cash transfers and the capacity to alleviate liquidity or credit constraints were mentioned in the studies as being possible underlying pathways to impact. Several studies of PSNP in Ethiopia found that

this public works scheme had more impact on agricultural assets when payments were regular and the duration of programme participation was longer. The impact was greatly enhanced when beneficiaries had access both PSNP and to a complementary livelihoods promotion programme that increases their access to credit.

Table 6 Evidence of the impact of social protection on agricultural asset accumulation

Type of intervention	Number of studies	Effect
CT (CCT and UCT)	7	Positive
PW	3	2 Positive; 1 None
PW plus another complementary intervention	3	Positive
CT (CCT and UCT)	2	None

Source: Authors' analysis. Notes: CT = cash transfer, CCT = conditional cash transfer, UCT = unconditional cash transfer (includes social pensions), PW = public works/workfare

4.1.2 Input use

Most of the available studies show that social protection encourages expenditures on fertilizer, seed, pesticides, hired labour and improved varieties.

In sub-Saharan Africa, when the PSNP and the HABP/OFSP programmes in Ethiopia were combined, the use of improved agricultural technologies increased significantly; fertilizer use increased by 21 percentage points; and fencing increased by 29 percentage points over what had been the case under PSNP alone (Berhane *et al.* 2011; Gilligan *et al.* 2009b). In Zambia, the CGP programme (cash transfer) increased the share of households with any input expenditures (seeds, fertilizer, hired labour) by 18 percentage points from a baseline share of 23 percent (AIR 2013). This increase was larger among smaller households. The study also found that the CGP programme increased ownership of farm implements (AIR 2013). In Ghana, the LEAP (UCT) programme increased expenditures on seeds for households with four members or less, but reduced hired labour among all households (Handa *et al.* 2013). Several studies show that food for work (FFW) programmes in Ethiopia and Kenya indirectly relaxed seasonal credit constraints, enabling beneficiaries to spend on fertilizer, seeds, hired labour and soil and water conservation practices like terracing (Bezuneh *et al.* 2001; Bezuneh *et al.* 1988⁷ Holden *et al.* 2006). In qualitative studies, Devereux *et al.* (2005) found that a cash transfer programme in Zambia increased the purchases of seeds and the use of hired labour, while Du Toit and Neves (2006) discovered that non-contributory social pensions for the elderly in South Africa increased the use of hired labour by beneficiaries. In South Asia, rural farmers participating in the Indian Employment Guarantee Scheme (EGS) planted higher yielding crop varieties (Devereux 2002).

⁷ The 1988 study is outside of our 1999-2012 timeframe but it is included due to the limited amount of evidence on this outcome.

In Latin America, the Bolivian social pension programme (BONOSOL) raised expenditures on farm inputs like feed, seed, fertilizer and pesticide, although this differed by gender (Martinez 2004). Female beneficiaries were more likely to make expenditures on seed and pesticides than were male beneficiaries. Todd *et al.* (2010) and Gertler *et al.* (2012) found that the PROGRESA programme in Mexico increased expenditures on agricultural inputs. While the evidence is still rather limited, early findings generally indicate that both cash-based and in-kind transfers generate expenditures on farm inputs. This is likely the result of relaxing credit and liquidity constraints (Bezuneh *et al.* 2001) and the certainty that is generated when transfers are predictable and regular (Berhane *et al.* 2011).

4.1.3 Household labour allocation

Impact on adult labour supply and allocation

The evidence shows mixed impacts of social protection on adult labour supply when interventions did not specifically aim to change labour supply and allocation. Conditional cash transfers in Latin America provide a vivid example. A considerable number of studies on the BDH in Ecuador, PRAF in Honduras and PROGRESA in Mexico did not detect any impacts of CCTs on adult labour supply (Foguel and Paes de Barrios 2010; Teixeira 2010; Edmonds and Schady 2008; Parker and Skoufias 2000; Skoufias and di Maro 2008; Alzua *et al.* 2010; Galiani and McEwan 2012; IEG 2011a). One study found that the Bolsa Familia programme in Brazil marginally reduced the wage hours worked by beneficiaries, a sign that it was a modest work disincentive (Teixeira 2010; IEG 2011a). This disincentive effect was greater for informal and unpaid workers with irregular or no sources of income and for women and it was more pronounced when beneficiaries received a higher level of transfer (as share of per capita income). In Nicaragua, the RPS programme did not have any impact on labour market participation, but it led to a minor reduction in the number of hours worked per week (Maluccio and Flores 2005). Ribas and Soares (2011) found that the Bolsa Familia Programme increased participation in the informal sector but reduced the number of hours worked, indicating that, while the CCT benefit reduced the relative cost of leisure causing beneficiaries to work less, it was not a large enough reduction to decrease participation in the informal sector. Another study of the 10-year impacts of PROGRESA in Mexico found that the wages of long-term male beneficiaries (involved in the programme for at least six years) increased at every educational level, but no significant impact was found for short or medium-term beneficiaries (Rodriguez and Freije 2008).

Research from sub-Saharan Africa also reported mixed signals on adult labour supply. In Ethiopia, the beneficiaries of both the PSNP and the complementary OFSP did not stop working or worked fewer hours (Gilligan *et al.* 2009a). Barrett *et al.* (2001) found that a FFW programme relaxed capital constraints, leading educated and landowning beneficiaries to increase their involvement in skilled non-farm employment and self-employment. Covarrubias *et al.* (2012) and Boone *et al.* (forthcoming) found that the Malawi social cash transfer programme decreased ganyu⁸ labour and increased the labour supply on the beneficiaries' own farms.

⁸ Ganyu labour is an informal off-farm form of casual labour in Malawi usually used by poor households as a coping mechanism.

In Kenya, the CT-OVC programme increased the labour participation of women who lived farther from markets, presumably because they could help defray the transaction costs of labour market participation. The likelihood of labour participation for both male and females involved in the programme increased with age (Asfaw *et al.* 2012b). Qualitative research on the Kenyan CT-OVC also found a reduction in participation in casual labour markets; beneficiaries preferred to work on their own farms rather than for others, which is considered a risk-coping strategy (OPM 2012b). In Ghana, the LEAP programme increased the labour supplied to their own farms by adults in households with four members or less (Handa *et al.* 2013). The emergency food aid literature, mostly concerned with Ethiopia, largely disproves the argument that food aid is a labour disincentive (Abdulai *et al.* 2005; Hoddinott 2003). Abdulai *et al.* (2005) found that food aid in Ethiopia increased the labour supply of beneficiaries in agriculture, wage work and non-farm business activities. Hoddinott (2003) also found that receiving food aid increased the amount of labour allocated to on-farm activities.

In South Africa, studies have found varied impacts of old age pension schemes. One study concluded that old age pensions increased overall family income and enabled pensioners to care for small children, thereby increasing employment through the labour migration of adult household members (Ardington *et al.* 2009). Another study found no impact of pensions on aggregate household labour supply, but noted improvements for females through labour migration (Posel *et al.* 2006). These studies are in contrast to Jensen's findings (2004), that the old age pension had no impact on the number of labour migrants, while Bertrand *et al.* (2000) found that it led to a decline in labour supply, which was attributed to the low opportunity cost of leisure for the eligible elderly. Lam *et al.* (2005) also evaluated the old age pension by assessing the impact of eligibility age on labour force participation rates. They found a sharp decline in labour force participation rates for men and women over 50; at the eligibility age⁹ the risk of labour market exit is 40 percent for women and 35 percent for men, in line with OECD countries (Lam *et al.* 2005; Sienaert 2008). This decline has been attributed to an income effect. Ranchhod (2006) conservatively estimated that pension eligibility decreased labour supply by 8.4 percent for men and 12.6 percent for women. This decline in labour supply is attributed to i) an income effect, which allows pensioners to allocate more time to leisure; and ii) the means test design, which induces a substitution effect i.e. people substitute labour with leisure when they become eligible for a pension since according to the rules of the pension, the maximum benefit level is reduced if a pensioner earns other income.

There is evidence that social protection may influence labour shifts or reallocation between the agricultural and non-agricultural sectors. Evidence from Latin America has shown that that the PAL programme (food aid) in Mexico, the RPS programme in Nicaragua and the PROGRESA (Oportunidades) programme in Mexico relaxed liquidity constraints, which led to the reallocation of labour from agriculture to high-return non-agricultural employment (Skoufias *et al.* 2008; Gertler *et al.* 2012; Maluccio 2010). In Brazil, the Bolsa Familia programme led rural beneficiaries – particularly women – to move into the informal sector and reduced the participation in formal labour markets by both male and female urban beneficiaries (Ribas and Soares 2011).

⁹ Eligibility age for the old age pension in South Africa is 60 for women and 65 for men.

The transition of rural beneficiaries into the informal sector could be due to unemployed documented workers who stop their search for jobs in the formal sector after they became eligible for the Bolsa Familia programme. Another explanation for the shift into the informal sector could be due to beneficiaries leaving the formal sector to avoid verification of their earnings and possibly losing eligibility for the programme. In Kenya, the CT-OVC programme increased the non-agricultural wage labour participation for males but decreased their agricultural wage and on-farm labour (Asfaw *et al.* 2012b). In Zambia, the CGP programme caused a significant shift from agricultural wage labour to family agricultural and non-agricultural businesses (AIR 2013).

The literature contains other insights on the impacts of public works/workfare programmes on poor urban beneficiaries. Workfare schemes in Argentina (Plan Jefes y Jefas, Proempleo experiment and Trabajar II) increased adult labour supply (Galasso and Ravallion 2003; Ravallion *et al.* 2001; Galasso *et al.* 2001; Colombia [Familias en Accion] Departmental Nacional de Planeacion 2004, 2007, IEG 2011a).

On the whole, the literature suggests that social protection instruments elicit different behavioural responses and diverse impacts in different places. The evidence largely shows that CCTs in Latin America were not a disincentive to working. However, they may lead to shifts from on-farm work to non-farm work; in Brazil they led to shifts from the formal agricultural sector to the informal sector, which were partly attributed to the relaxation of liquidity constraints (Skoufias *et al.* 2008; Gertler *et al.* 2012; Maluccio 2010). In Africa, public works programmes were not work disincentives and some may have increased non-farm employment, particularly for the educated and landowners, due to the relaxation of credit constraints (Barrett *et al.* 2001). On the other hand, some cash transfers reduced participation in casual labour markets and increased the intensity of labour on the beneficiaries' own farms. For example, in Brazil the Bolsa Familia programme marginally reduced the labour intensity of women and of informal and unpaid workers due to the income effect of the transfer; this effect was greater when the transfer value was high. Old age pensions in South Africa led to a reduction in labour market participation for elderly recipients, though the non-elderly adult household members appeared unaffected or they engaged in labour migration.

Impact on child labour supply and allocation

Most evidence shows that social protection programmes can reduce child labour. In Latin America, two major systematic reviews found that most CCTs significantly lowered child labour participation (IEG 2011a; Fiszbein and Shady, 2009). Similar findings have been reported in studies evaluating two CCT programmes in Cambodia and Pakistan, two school feeding programmes in Bangladesh and Burkina Faso, one UCT in Ecuador and two education fee waiver/scholarship programmes in Colombia and Indonesia (IEG 2011a).

In sub-Saharan Africa, unconditional cash transfers have been associated with large reductions in child labour, as households better managed risks and avoided the use of child labour as a coping mechanism. In South Africa, children residing in households where a resident is eligible for an old age pension reduced their total hours of work by 33percent (Edmond 2006; IEG 2011a). In Kenya, the CT-OVC programme substantially decreased child labour on the family farm, especially for boys (Asfaw *et al.* 2012b). Qualitative studies also reported similar findings from the LEAP programme in Ghana and the Kenya CT-OVC programme (OPM 2012a; OPM 2012b).

In Malawi, by contrast, the social cash transfer programme decreased off-farm child labour but increased child labour on the family farm (Covarrubias *et al.* 2012). In Ethiopia, Woldehanna (2009) found that the PSNP public works scheme had mixed impacts in rural areas. It increased the amount of paid child labour and the time that girls spent studying but reduced the total hours of time spent on all work by children and the time that children spent in child care and on household chores. The literature suggests that both school-related (CCTs, school feeding and education waivers) and non-school-related (unconditional cash transfers) programmes can trigger intrahousehold resource allocation processes that generally reduce the hours of work for children. In Zambia, the CGP programme had no significant impact, neither on paid child labour nor on work on-farm (AIR 2013).

4.1.4 Agricultural output

The emerging body of literature on the impact of cash transfers and public works generally hints at improvements in farm output or in the share of food consumption available from home production. The impact is mediated by programme design and the gender of the beneficiary, specifically the person who controls the means of production.

Evidence from Latin America shows improvements in land use and crop output from PROGRESA in Mexico (Todd *et al.* 2010; Gertler *et al.* 2012), Tekopora in Paraguay (Soares *et al.* 2010) and BONOSOL in Bolivia (Martinez 2004). These improvements have been attributed to the potential role of cash transfers in alleviating liquidity constraints for the poor (Todd *et al.* 2010). Other studies have used an indirect measure of crop production, i.e. the share of food consumption coming from home production. Davis *et al.* (2002) compared the consumption impact of PROCAMPO and PROGRESA in Mexico, finding that PROCAMPO's consumption effect was mainly derived from increased home production unlike the PROGRESA beneficiaries, who balanced calorie intake between purchases and home production. Gender and programme characteristics influenced the manner in which PROGRESA and PROCAMPO transfers were invested in agriculture (Davis *et al.* 2002). For instance, a PROCAMPO cash transfer for farmers led to larger agricultural investments by male beneficiaries, since they own land, whereas female beneficiaries most often do not. PROCAMPO may also act as collateral for borrowing, thus encouraging beneficiaries to invest in home production (Davis *et al.* 2002). Todd *et al.* (2010) found that the PROGRESA programme in Mexico increased the share of food consumption coming from home production. However, the amount of the increase varied by the initial endowment of land, with the larger landholders experiencing little impact on agricultural production, while the smallholders and previously landless households experienced increases in the share of consumption from their own production (Todd *et al.* 2010).

Studies from sub-Saharan Africa found that both the Malawi social cash transfer programme and the Kenya CT-OVC programme increased the share of consumption, diet quality and dietary diversity from home crop production (Covarrubias *et al.* 2012; Boone *et al.* 2012; Asfaw *et al.* 2012). A food for work programme in Kenya relaxed seasonal credit constraints, allowing households to spend on yield-enhancing inputs, which increased farm net returns by 52percent and increased millet production (Bezuneh *et al.* 1988). In Ethiopia, beneficiaries of both the PSNP and HABP had yields of over 297kg/ha higher than beneficiaries of PSNP alone (Berhane *et al.* 2011). Andersson *et al.* (2009) found that the PSNP increased the number of trees planted by beneficiaries. In Zambia, the CGP programme increased the share of households planting maize (by 8 percentage points), groundnuts (by 3 percentage points) and rice (by 4 percentage points among smaller households) (AIR 2013). The CGP

programme also increased crop input expenditures and the value of crop production, but did not have a significant impact on the quantity harvested (AIR 2013). The study suggested that the inconsistency between the increased crop input expenditures and the little impact on output harvested may have been due to the beneficiaries not using inputs in the most efficient manner (AIR 2013). In Ghana and Kenya, qualitative assessments suggested that UCTs modestly increased farm production, but only for economically active beneficiaries (OPM 2012a; OPM 2012b).

Only a few studies have examined the impacts of social protection on agricultural output, specifically focusing on crops and livestock. The current evidence, while limited, suggests that cash transfers or even in-kind transfers (e.g. food for work) have increased agricultural yields by potentially alleviating liquidity and credit constraints.

4.2 Outcomes indirectly related to farm production

4.2.1 Human capital development

There is a great deal of literature documenting the impacts of various social protection measures on human capital development. Most studies are particularly concerned with children's education, health and nutrition outcomes. However, the studies predominantly assess immediate and intermediate outcomes such as school enrolment and attendance, clinic visits and dietary diversity. Few of them have examined final or long-term outcomes like cognitive achievement, educational achievement, disease incidence or nutritional status. Nonetheless, the reported improvements in human capital development indicate that social protection interventions have alleviated liquidity and credit constraints and have provided certainty, enabling households to invest in the human capital development of their children.

Education

Education is a determinant of agricultural productivity and a crucial and important predictor of employability and long-term labour market outcomes. A great deal of literature demonstrates that social protection improves education attainment. It has been widely established that CCTs in Latin America increase school enrolment and progression rates. A comprehensive review by Fiszbein and Schady (2009) found that PROGRESA improved children's school progression from primary to secondary school with spillover effects among children in non-beneficiary households. Moreover, CCTs increased school enrolment in Honduras by 3 percentage points, in Ecuador by 10 percentage points, in Nicaragua by 13 percentage points, in Chile by 7 percentage points (4 to 5 percentage points in preschool) and in Columbia by 2 percentage points (8-13 years) and 6 percentage points, (14-17 years) (Fiszbein and Schady 2009).

In sub-Saharan Africa, Malawi's Zomba Cash Transfer programme, an experimental CCT for girls, had a greater impact on school enrolment and attendance than a UCT programme (Baird *et al.* 2011). Baird *et al.* (2011) also found that the CCT improved cognitive ability while the UCT had no effect. The Malawi social cash transfer programme increased school enrolment by five points, increased educational spending, reduced school dropouts and decreased child labour outside the home by 10 percentage points (Miller and Tsoka 2012). These results are supported by similar findings from qualitative data (Miller and Tsoka 2012). In South Africa, children living with a pensioner spent 0.25 years more in school than the control group and the increase was particularly significant for girls (Hamoudi and Thomas 2005; Samson *et al.* 2004). Case *et al.* (2005) determined that the child support grant increased enrolment by

8.1percent for 6 year olds as compared to 1.8percent for 7 year olds. In Kenya, the CT-OVC programme increased secondary school enrolment and helped households meet transport costs and the cost of school supplies (The Kenya CT-OVC Evaluation Team 2012). In Zambia, the CGP programme had no overall impacts on the education of children (AIR 2013). However, it raised school enrolment and the attendance of children with less educated mothers (AIR 2013). In Ghana, the LEAP programme increased secondary school enrolment, reduced grade repetition for both primary and secondary school-age children and reduced absenteeism among primary school-age children (Handa *et al.* 2013). School feeding programmes in Burkina Faso, Uganda, Kenya, Bangladesh and India increased school enrolment by 6 to 20 percentage points (IEG 2011a). In Indonesia, the JPS education fees waiver programme – developed to mitigate the shock of a financial crisis – protected investments in child education by helping families keep their children in school (Cameron 2002; Sparrow 2007).

Education outcomes differ significantly by gender. In Bolivia, when there was an eligible woman present in the household, an unconditional cash transfer programme increased education expenditures for children by 56 percent among indigenous households, by 60 percent among multiethnic households and by 91 percent among non-indigenous households (Yanez-Pagans 2008). However, in indigenous households the higher educational expenditures were for boys and not girls, due to cultural norms where the allocation of resources within such households follows the patriarchal preferences for boys, and women have limited decision-making power (Yanez-Pagans 2008). In Mexico, PROGRESA led to greater investment in children, including school enrolment, but this was conditional on women beneficiaries residing in a two-parent household (there are no effects in a one parent households) (Yoong *et al.* 2012; Rubalcava *et al.* 2009). In Nicaragua, a CCT programme led to larger investments in child education when a woman had similar levels of education as her husband.¹⁰ Even greater impacts were detected when women were more educated than their husbands (Gitter and Barham 2008). In South Africa, Edmonds (2006) found that pension-eligible grandfathers were associated with increased school enrolment of the children in the household. Case and Ardington (2006) found that old age pensions received by elderly women increased school enrolment and education attainment for orphans.

Generally, the empirical findings imply that when women receive transfers, they invest in children's education. However some studies clearly show that there are limits to this effect, especially where cultural norms are deeply patriarchal and when women have limited bargaining power in the household.

Health

Much of the literature focuses on child health and has largely shown that social protection has can lead to improvements in the use of health services and in health status. In Latin America, CCTs significantly increased child preventive healthcare visits in Nicaragua (by a range of 6-13 percentage points; in Colombia, the range was 22.8 percentage points; in Chile, 4-6percent in rural areas; in Honduras, 20 percentage points and in Jamaica, 28 percentage points) (Fiszbein and Schady 2009; Galasso 2006). However, CTs in Ecuador and Mexico did not significantly change child health visits for children in the age range of three to seven years old

¹⁰ Women's power is measured by the years of a woman's schooling relative to her husband's years of schooling.

(Fiszbein and Schady 2009). In Mexico, rural households participating in both the PROCAMPO and PROGRESA programmes were unlikely to comply with the conditions set for child health visits, due to time conflicts with agricultural work on their own farms (Handa *et al.* 2010). A review by Gaarder *et al.* (2010) concluded that the poor quality of health care may have hindered the impact of social protection on nutrition and health. In Zambia, the CGP programme reduced the incidence of diarrhoea among children under 5 years old by 4.9 percentage points, but had no impact on curative or preventative health-seeking behaviour (AIR 2013). In Ghana, the LEAP programme increased preventative health care seeking among girls aged 0-5 years, but had no impact on curative care seeking (Handa *et al.* 2013).

Another systematic review by Lagarde *et al.* (2009) found that CCT programmes also reduced self-reported episodes of illness by pregnant women and children. The CCT programmes, Atención a Crisis in Nicaragua, Red Solidaria in El Salvador and the Familias en Accion in Colombia, reduced the prevalence of diarrhoea among children by a range of four to nine percentage points (IEG 2011a). A host of empirical evidence on PROGRESA in Mexico shows that the programme decreased child stunting, infant mortality (by 11percent), anaemia prevalence (by 10 percentage points) and incidence of illness (by 40percent) (Alderman and Yemtsov 2012).

Food security and nutrition

A large body of evidence shows that social protection interventions have improved household food security and child nutrition. In Mexico, Rubalcava *et al.* (2009) found that the PROGRESA (Oportunidades) CCT programme improved the protein per calorie intake for participating households. A meta review identified 17 out of the 20 studies that reported an increase in food intake, diversity and quality, all of which make important contributions to food security (IEG 2011a). Bailey and Hedlund (2012) reviewed evidence on the impact of cash transfers on nutrition and food security in emergency and transitional contexts. They found that, in most cases, cash beneficiaries had better diet quality and greater dietary diversity than food aid beneficiaries.

In Latin America, researchers have found considerable evidence that PROGRESA has increased the weight and height of older children (IEG 2011a). In sub-Saharan Africa and South Asia, school feeding programmes in Bangladesh, Uganda, Kenya and Burkina Faso and a food for work programme in Ethiopia increased the weight and height for older children (IEG 2011a), while in Zambia, the CGP programme increased infant and young child feeding by 22 percentage points and increased the weight for height among children ages 3 to 5 (AIR 2013). However, none of these studies found any gains in height for age-Z scores. In South Africa, the evidence shows that when a child support grant was received within the first three years of a child's life, they experienced significant gains in height-for age-ratio (Aguero *et al.* 2009). Qualitative findings from evaluations of the CT-OVC programme in Kenya and the LEAP programme in Ghana showed improvements in quantity and diversity of the foods produced (OPM 2012a; OPM 2012b) In Ethiopia, Yamano *et al.* (2005) found that food aid received in the aftermath of a drought increased the height of children ages 6 to 24 months by an average of 1.6 cm more than non-beneficiaries.

The impact of social protection on child nutritional status varies by access to services, programme design and gender. A systematic review of evidence on the impact of cash transfer interventions on child nutritional status found greater impacts in countries with poor health care systems (Manley *et al.* 2011). A comparative analysis of CCTs and UCTs determined

that UCTs performed slightly better than CCTs, although the difference was not statistically significant (Manley *et al.* 2011). Nevertheless, this discrepancy could inspire future impact evaluations to consider the role of UCTs in programme design (Manley *et al.* 2011). A further key finding from the review was that CCTs contributed more to the nutritional status of girls more than they did to boys (Manley *et al.* 2011). In another review, Hoddinott and Basset (2008) surmised that low benefit levels and coverage, poor communication of programme requirements to beneficiaries and constrained implementation capacity resulted in CCTs having minimal effects on child nutritional status. Leroy *et al.* (2009) concluded that, while the evidence from CCTs showed some improvements in child anthropometric status, the programmes still had limited impacts on linear growth and micronutrient deficiency. They recommended the modification of programme design to include clear and specific nutrition objectives, targeting children younger than two years of age, improved nutrition and health education services, integration with micronutrient initiatives, such as fortified foods, and better implementation, monitoring and evaluation. Duflo (2003) evaluated the gender-differentiated impacts of pensions on child nutrition in South Africa and found that when women received pensions, there was a significant gain in the nutritional status of girls. When men received pensions, there was no significant impact on the nutritional status of either girls or boys (Duflo 2003). Another review concluded that cash transfers received by women had larger impacts on family and child welfare than transfers received by men, yet the impact was ambiguous for social pensions and grants (Yoong *et al.* 2012). As with child labour, the reviewed literature suggests that social protection instruments induced intrahousehold resource allocation processes that produce optimal child nutrition outcomes.

4.2.2 Risk coping

The principal view from the reviewed literature is that social protection may protect beneficiaries from shocks and reduce adverse coping strategies. One group of empirical literature estimated the impact of social protection on recovery from shocks. A public works/workfare programme for poor urban populations in Argentina (Trabajar II), introduced during an economic crisis, reduced income volatility among beneficiaries (Ravallion *et al.* 2001; IEG 2011a). A public works programme in India reduced income fluctuations, while a food aid/food for work programme in Ethiopia protected households from the harmful effects of crop damage on child growth (IEG 2011a; Yamano *et al.* 2005). However, although a food for work programme in Ethiopia increased risk sharing in beneficiary villages, it also reduced the capacity of participant households to manage idiosyncratic crop shocks (Dercon and Krishnan 2003). The authors argued that the food aid crowded out informal insurance, leaving beneficiaries without the capacity to manage idiosyncratic risks (Dercon and Krishnan 2003). CCTs in Latin America also improved the ability of people to recover from shocks. Some of the improvements included reduced child labour Nicaragua (RPS programme), protection of coffee farmers in Mexico from the shock of falling global prices (Oportunidades), income diversification in Brazil (Bolsa Familia) and a decline in the number of school dropouts in Mexico (Oportunidades/PROGRESA) (Maluccio 2005; IEG 2011a). The JPS scholarship programme in Indonesia, which was launched after the financial crisis of 1997-1998, protected household consumption levels and led to declines in school dropouts and child labour (Cameron 2002; Sparrow 2007; IEG 2011a). However, a study also found that a CCT (Bolsa Escola) in Brazil increased the likelihood of a child failing their grade. The study determined that the CCT increased school enrolment and retention and thus may have kept less motivated children or those with a lower academic aptitude in school, leading to an increase in grade failures (de Janvry *et al.* 2006).

Another group of empirical studies showed that social protection generally led to a reduction in the use of adverse coping strategies. One study found that Ethiopia's PSNP prevented 60percent of the beneficiaries from engaging in distress sales during a drought (Devereux *et al.* 2005). Covarrubias *et al.* (2012) found that the Malawi Social Cash Transfer pilot scheme reduced begging for food or money by 14percent, school dropout rates by 37percent and ganyu labour by five days. These effects were pronounced in households with able-bodied members (over 90percent decline in ganyu labour; 53percent decline in school dropout rates); in households without able-bodied members, there was no impact. Similar findings were reported in the qualitative literature. In Ghana and Kenya, the LEAP and CT-OVC programmes reduced child labour, begging, distress asset sales and indebtedness (OPM 2012a; OPM 2012b). In Kenya, the CT-OVC programme also led to a decline in casual labour market participation as a risk-coping strategy (OPM 2012b).

The impact of social protection on risk-coping behaviour is also influenced by gender and programme design. In Malawi, children in female-headed households benefited from the social cash transfer programme through a decline in non-household wage labour (9percent) and an increase in their participation in household chores (15percent), whereas children in male-headed households only experienced a decline in school absenteeism (Covarrubias *et al.* (2012). Yet these gender-specific outcomes are also a reflection of the constraints facing the households, as female-headed households face challenges in balancing work at home with income-generating activities (Covarrubias *et al.* 2012).

4.2.3 Off-farm investments

There is also limited evidence that social protection encourages risk-taking behaviour in the form of off-farm investments by rural households. Simulations by Elbers *et al.* (2007) demonstrated that insurance programmes or safety nets led to higher incomes for beneficiaries and increased capital accumulation by 46percent. In Latin America, the Mexican PROGRESA programme was found to not only increase land use and crop output but also to increase the probability that beneficiaries would undertake a non-farm microenterprise (Gertler *et al.* 2012; Todd *et al.* 2010). PROGRESA beneficiaries, on average, consume 74 cents and invest the rest, thereby increasing long-term consumption (Gertler *et al.* 2012). However, Maluccio (2010) found that the RPS programme in Nicaragua decreased involvement in informal enterprise, a result attributed to the time needed to fulfil the conditions of the cash transfer or to poor transportation in the rural areas, which would lower the marginal returns from informal enterprise.

In Ethiopia, a FFW programme relieved capacity and capital constraints, enabling beneficiaries to diversify into skilled non-farm employment and self-employment (Barrett *et al.* 2001). In Zambia, the CGP programme increased the share of households running non-farm enterprises, the duration of enterprise operations and total monthly revenue (AIR 2013). Qualitative studies also showed increases in off-farm investments. Devereux *et al.* (2005) found that three unconditional cash transfer programmes in Lesotho, Zambia and Mozambique all led to greater involvement in informal enterprises like petty trading. In South Africa, pension beneficiaries started or strengthened their own microenterprises (Du Toit and Neves 2006). In Kenya, CT-OVC beneficiaries increased their participation in joint informal savings rotation clubs, which enabled them to start new income-generating activities such as petty trade and taxi services (OPM 2012b). In Ethiopia, beneficiaries of both the PSNP and the HABP were found to be more likely to own and run their own off-farm enterprises (Gilligan *et al.* 2009b).

Off-farm investments may vary by gender or economic context. In Kenya, the CT-OVC programme increased female-headed household participation in non-farm enterprises (7 percentage points) compared to a marginally significant decrease (11 percentage points) for male-headed households (Asfaw *et al.* 2012). Lichand (2010) found that Brazil's Bolsa Familia (CCT) programme encouraged entrepreneurial investments in urban areas, but had no impact in rural areas.

4.3 Effects on the local economy

Most social protection interventions have impacts that extend beyond the beneficiary household into the local community and economy. These impacts can be experienced by non-beneficiary households, who are linked to beneficiary households through local markets, social and economic relationships and shared social space. Income multiplier effects can be quantified by estimating social accounting matrices (SAM) or general equilibrium models.

4.3.1 Spillover effects to non-beneficiary households

Most impact evaluations do not assess spillovers as this requires the collection of information about non-beneficiaries, an aspect that is usually overlooked in study designs. However, there is a small but emerging body of evidence in this area.

The reviewed evidence shows mixed impacts of social protection on non-beneficiaries. In Latin America, there is evidence that the Mexican PROGRESA programme increased school attendance, grade progression (Bobonis and Finan 2009; IEG 2011a) and access to loans and asset accumulation among non-beneficiaries in participant communities (Angelucci and De Giorgi 2009; Angelucci *et al.* 2009). However, PROGRESA had no spillover effects on the wage earnings of ineligible households in participant villages. In Paraguay, the Tekopora CCT programme raised the savings of non-beneficiary households in participating municipalities (Soares *et al.* 2008). Some studies reported negative externalities, such as increased child labour in ineligible households from Brazil's PETI programme (Yap *et al.* 2008); this was attributed to the increase in local wages for child labourer when beneficiaries decrease their participation in child labour. In Colombia, reduced school enrolment and test scores were found among siblings of child beneficiaries of the Conditional Subsidies for School Attendance programme (Barreira-Osorio *et al.* 2008). In Mexico, PROGRESA reduced the adult labour force participation of ineligible households and the wages and self-employment of non-beneficiary women (Skoufias and di Maro 2006; Angelucci *et al.* 2009).

In South Asia, the Female Secondary School stipend and the Food for Education programmes both had positive spillover effects on school attendance and grade progression (Khandker *et al.* 2003; Ahmed *et al.* 2006). In sub-Saharan Africa, Baird *et al.* (2011) found no spillover effects on education from the Zomba cash transfer scheme in Malawi.

4.3.2 Prices, wages and volume of local trade in local markets

The reviewed evidence suggests that mediating factors, like programme design (value of the cash transfer, coverage, duration) and local economic context, affect the impact of social protection on prices, wages and volume of local trade.

With respect to prices, it appears that both context and design, such as targeting, can have an influence at the local level. Barrett (2002) found that the effect of food aid on local prices

varies from country to country: in some places it results in price hikes and in others it lowers prices. Barrett (2002) also determined that when food aid is properly targeted to the poor, who generally have high price and income elasticities of demand for food, any price disincentives from food aid are cancelled by demand-side income effects. Otherwise, policy interventions like demand expansion, market differentiation and producer price supports could be implemented to mitigate the price disincentives produced by food aid (Barrett 2002).

In sub-Saharan Africa, qualitative evidence suggests that the size and duration of the programme, benefit level or scale and local markets all influence how social protection affects local prices. For example, an emergency cash transfer programme in Northern Uganda caused temporary local price inflations due to the inelasticity of supply and demand, high transaction costs and incomplete information about local markets (Creti 2010). In Niger, a short-term cash transfer programme with wide coverage and a significant payment size produced temporary inflation in the prices of edible oil and milk in the context of a market with high transaction costs and poor supply-side information (Save the Children 2009). In Swaziland and Zambia, short-term cash transfers had relatively small benefit levels that did not lead to price inflation in local markets (Mattinnen 2006; Schubert 2004; Creti 2010).

The same pattern of short-term price changes can result from large social protection schemes. For example, the cash transfer component of PSNP in Ethiopia was followed by price volatility in the short run (Kebede 2006; Devereux *et al.* 2006), but this did not persist in the long run and eventually there was price convergence between PSNP and non-PSNP districts (Save the Children 2008; Rashid *et al.* 2009; Creti 2010). The literature suggests that either the in-kind transfer component of PSNP (e.g. food and housing subsidies) or infrastructure improvements is the key driver of price changes over time (Rashid *et al.* 2009; Creti 2010).

Evidence on local wages is limited. Conceptually, large scale, predictable and regular cash-based public works programmes can stimulate local demand for food and imports and promote food production (McCord 2012). On the other hand, food-based public works programmes that rely on imported food can distort local food markets and discourage local production. The scale and duration of the public works schemes generally determine the impact of the programmes (McCord 2012). Interventions, like cash for work programmes, can distort local wage markets if they pay wages that are higher than the prevailing rates, as these could create labour deficits in other productive sectors and raise the local reservation wages (Creti 2010; McCord 2012). A higher reservation wage in the casual agricultural labour sector has the potential to shift labour from low-paid permanent employment to casual public works-based employment (McCord 2012). However, in India where NREGS's wage is above the local casual labour rate, people were encouraged to withdraw from exploitative casual labour (e.g. bonded labour), which was perceived as a desirable shift and an improvement (McCord 2012). Evidence shows that NREGS has actually eased seasonal fluctuations in labour demand and thus has stabilized wage rates (Shariff 2009; Creti 2010). However, setting the wages of public works programmes to prevailing local rates in the very poor and low wage environments of most sub-Saharan African countries could hinder the programmes' objectives of achieving food security (Barrett *et al.* 2005).

Qualitative evidence from sub-Saharan Africa shows improvements in the volume of local trade; in some cases, this is affected by the size of the local economy. In Ghana, the impacts of LEAP included marginal changes in the volume of local trade, increased diversity of local goods and an increase in local labour market hiring by both beneficiaries and non-beneficiaries (OPM 2012a). The increase in labour market hiring and the volume of local

trade was more evident in smaller communities (OPM 2012a). In Kenya, the CT-OVC programme improved the diversity of locally-traded goods and labour market hiring among both beneficiaries and non-beneficiaries (OPM 2012b). Cash transfers in Ethiopia, Niger, and Swaziland increased the circulation of cash, competition and the volume of local trade and stocks in local markets (Adams and Kebede 2005; Save the Children 2009; De Matteis 2007).

Qualitative evidence from Uganda shows that an emergency cash transfer scheme increased investments in productive assets and livelihood diversification, which mostly benefited non-beneficiaries such as medium-scale farmers and local traders from whom the beneficiaries purchased commodities (Creti 2010). Larger traders from outside the community chiefly benefited from the rise in local demand caused by the scheme (Creti 2010). In Ethiopia, in the three years after a FFW scheme created roads in the lowlands, the improved market access and local trade led to the establishment of water mills and fruit plantations and the revitalization of traditional cotton spinning and weaving (von Braun *et al.* 1999).

4.3.3 Estimations of the income multiplier

When beneficiaries receive cash transfers, they spend them. The immediate impact is to raise the purchasing power of beneficiary households. As the cash is spent, the impact of the transfers spreads from the beneficiary households to others. Income multipliers in the target villages are set in motion by doorstep trade, purchases in village stores and periodic markets. Some impacts may extend beyond a social protection programme's area of operation, potentially unleashing income multipliers in non-target sites.

The local income multiplier, which measures the changes in income per unit transferred (Taylor 2013), has traditionally been estimated using models such as social accounting matrices (SAM) or computable general equilibrium models (CGE). While the SAM accounting multiplier model is computationally simple, it assumes that all responses are linear and that there are no price effects. An absence of price effects reflects the assumption that all supplies (of factors of production, such as capital and labour, as well as goods) are perfectly elastic; this may not be realistic in the rural areas of sub-Saharan Africa, leading to an overstatement of the income multiplier. The Local Economy Wide Impact Evaluation (LEWIE) model was recently developed to capture multiplier effects through an impact evaluation framework (Taylor and Filipinski 2012). The LEWIE model includes both beneficiary and non-beneficiary households in a general equilibrium model of cash transfer programme communities. The model relies on data from a household survey and a business enterprise survey to estimate model parameters econometrically and uses Monte Carlo methods to construct confidence bands around simulation results (Taylor 2013).

Most available studies report substantial multiplier effects from cash-based social protection schemes. Taylor and colleagues have used the LEWIE model to estimate local income multipliers for the Kenya CT-OVC programme (Taylor *et al.* 2012), the Child Grants Programme in Lesotho (Taylor *et al.* 2013), the LEAP programme in Ghana (Thome *et al.* 2013), the Child Grant Program in Zambia (AIR 2013) and the Social Cash Transfer Program in Tigray, Ethiopia (Kagin *et al.* 2013) (see Table 7). The income multipliers range from 2.52 in Hintalo-Wajirat Tabias in Ethiopia to 1.34 in Nyanza, Kenya. That is, for every Birr transferred by the Ethiopia SCTP in Hintalo, up to 2.52 Birrs in income can be generated for the local economy. Differences between countries, and between areas within countries, are driven by the openness and structure of the local economy, where money is spent in the local

economy and the demand for goods and the intensity of supply of goods produced within the local economy increase.

Table 7 Simulation of cash transfer income multipliers on the local economy from the LEWIE model

Country	Intervention	Nominal multiplier	Real multiplier	Author
Ethiopia	UCT	2.52 (Hintalo-Wajirati) 1.35 (Abi-adi)	1.84 1.26	Kagin <i>et al.</i> (2013)
Ghana	UCT (LEAP)	2.5	1.5	Thome <i>et al.</i> (2013)
Kenya	UCT (CT-OVC)	1.34 (Four districts in Nyanza province) 1.81 (Garissa and Kwale districts)	1.08 1.23	Taylor <i>et al.</i> (2012)
Lesotho	UCT (CGP)	2.23	1.36	Taylor <i>et al.</i> (2013)
Zambia	UCT (CGP)	1.79	1.34	AIR 2013

UCT = unconditional cash transfer, CCT = conditional cash transfer, SAM = social accounting matrices, CT-OVC = Cash Transfer Programme for Orphans and Vulnerable Children DECT = Dowa Emergency Cash Transfer Scheme, PW = public works, NREGS = National rural employment guarantee scheme

However, when the local supply response is constrained, the increase in demand brought about by the cash transfer programme can lead to higher prices and consequently a lower income multiplier. In each country, Taylor and colleagues included in the model a variety of constraints, such as credit and capital, and found that in the presence of supply constraints the real income multiplier could be significantly lower—though in all cases still greater than one.

In either case, much of the spillover was captured by households that were ineligible for the given cash transfer programme. These households tended to be wealthier and to have greater control over means of production than the UCT beneficiaries and were thus better positioned to respond to increased local demand for goods and services (Taylor *et al.* 2013; Taylor *et al.* 2012). The key message is that in order to maximize potential income multipliers, policy-makers need to pay attention to the supply response by all households, and particularly non-beneficiaries

In Malawi, a SAM model showed that the Dowa Emergency Cash Transfer (DECT) had a local income multiplier ranging from 2.02 to 2.79 (Davies and Davey 2008). Beneficiaries spent 61percent of the money on maize (the local staple), 10percent on other food items and 5percent on healthcare (Davies and Davey 2008). Links with beneficiaries enabled medium-scale farmers to gain from directly selling produce to consumers, unlike small-scale farmers who had less to sell (Davies and Davey 2008). Other gainers include small traders from whom beneficiaries purchased food, whose volume of trade increased to the extent that they could purchase produce from larger traders and farmers (Davies and Davey 2008; Creti 2010). Studies from other parts of the world have reported similar findings. In India, Hirway *et al.* (2009) determined that public works interventions (NREGS) created a multiplier of 1.77.

Filipski and Taylor (2012) employed a nationwide rural CGE model to compare the impacts of cash transfers, input subsidies and market price supports on income and production in Malawi and Ghana. The simulations were calibrated to the level of government spending on existing fertilizer subsidy schemes in both countries, which was then compared to two other

transfer schemes in each country: a market price support for staples, similar to what historically has been implemented in both countries and a scaled up version of existing cash transfers programmes (the SCT in Malawi and the LEAP in Ghana). The base model in each country assumed perfect markets, which was then compared with several scenarios of market imperfections, including constrained input use, unemployment and a combination of the two. The Malawi simulations also included inelastic input supply. The simulations revealed that no transfer mechanism was unequivocally superior. In both Malawi and Ghana, it was found that a market price support could create substantial multipliers if unemployment were to permit more elastic production responses.

The study concluded that input subsidies can be the most welfare-efficient transfer scheme when the supply of inputs and factors is elastic but input demand is constrained by insufficient liquidity. An input subsidy can stimulate output without increasing the cost of consumption, which is important in a context such as Malawi where many farmers are net purchasers of staples. While the cash transfer was not designed to support agricultural production, the presence of liquidity constraints led to significant production effects and overall, a large multiplier effect. When markets were characterized by liquidity constraints that affect input use, cash transfers were the most efficient mechanism in both countries. However, the extent to which this is true depends on the spending patterns of recipient households. The study concluded that since cash transfers and input subsidies can be targeted, these mechanisms have a distributional advantage over the market price support.

Taylor *et al.* (2005) employed the disaggregated rural economy-wide modelling (DREM) approach to assess the possible impacts of agricultural and non-agricultural policies on rural economies in Mexico. DREM combines CGEs with microagricultural household models. In one of the experiments, researchers simulated the impact of eliminating the PROGRESA programme in West-Central Mexico. They found that terminating PROGRESA cash transfers would decrease incomes by more than 7percent in landless households and by more than 4percent in households with small landholdings, as well as decreasing wages by 0.02percent and land rents by 0.16percent. Eliminating PROGRESA transfers would have minimal impact on commercial maize production but would reduce demand and lead to a decline in subsistence maize production of between 1.3 and 2.1percent. In Brazil, a study found that a 10percent increase in Bolsa Familia transfers would result in an increase in municipal GDP of 0.6percent (Landim 2009).

4.3.4 Social networks

A small number of studies hint at the link between social protection interventions and increased participation in social networks of reciprocity, in which poor households manage risk via informal exchanges or transfers among extended family, friends and neighbours. In Latin America, the RPS in Nicaragua did not replace private transfers, such as gifts and loans (Maluccio and Flores 2005). In Mexico, the PROGRESA programme's impact on private transfers varied according to programme duration. Albarran and Attanasio (2002) found that after six months the PROGRESA programme crowded out private transfers to beneficiary households. Yet another study found that after 19 months the programme did not have this effect (Teruel and Davis 2000). A further study found that the PROGRESA programme increased the flow of private transfers to non-beneficiary households in target communities by 33percent as compared to non-beneficiary households in control communities (Angelucci and De Giorgi 2009; IEG 2011a)

In sub-Saharan Africa and other parts of the world, evidence of the impact of social protection on private transfers is mixed. In Ethiopia, a food aid programme did not crowd out private transfers (Lentz and Barrett 2004). Dercon and Krishnan (2003) found that combining food aid and food for work programmes in Ethiopia increased intra-village risk sharing but decreased risk sharing between the villages that received food aid. The authors argued that the decline in inter-village risk sharing was due to weak informal risk-sharing arrangements between villages. Gilligan *et al.* (2009b) found that the PSNP programme modestly crowded out private transfers when payments were regular and reduced private transfers when the payments were irregular. However, Berhane *et al.* (2011) found that PSNP did not have adverse impacts on private transfers. In South Africa, old age pensioners experienced a 25-30percent decline in private transfers from their children once they began to receive their pensions (Jensen 2003; IEG 2011). In Malawi, Covarrubias *et al.* (2012) found that private transfers to cash transfer beneficiaries decreased by 32percent. This reduction came mostly from a decline in cash and in-kind gifts from friends and family rather than from remittances (Covarrubias *et al.* 2012)¹¹. In Ghana, the LEAP programme allowed beneficiaries to re-enter and/or strengthen risk-sharing networks, including increasing the value of gifts received by beneficiaries and credit extended to others by the beneficiaries (Handa *et al.* 2013),

Qualitative research found modest impacts from unconditional cash transfers. In Ghana and Kenya, UCT programmes appear to enable the ‘re-entry’ of beneficiaries into existing social networks (OPM 2012a; OPM 2012b). Beneficiaries were viewed more favourably and felt to be more trustworthy by other community members. In Ghana, the transfer value level was low (11percent of household consumption) such that beneficiaries still needed to obtain informal protection from their social networks (OPM 2012a; OPM 2012b). In both Ghana and Kenya, the UCT programmes’ actual and ‘perceived’ targeting errors caused jealousies, tensions and more constrained risk-sharing behaviour (OPM 2012a; OPM 2012b).¹²

4.4 Impacts of social protection interventions on other economic outcomes

4.4.1 Income, consumption and poverty

Social protection may also affect economic outcomes that fall outside the purview of our framework, such as income, consumption and poverty. There is a large body of literature that shows that various social protection interventions increase household consumption and income and may ultimately reduce poverty.

In Latin America, the Argentinean public works/workfare schemes Trabajar II and Plan Jefes y Jefas increased short-term household income (Galasso and Ravallion 2003; Jalan and Ravallion 1999). A CCT in Colombia also increased household income (Departamento Nacional de Planeación 2004). However, a public works scheme (with employer wage subsidies) in Argentina and a general subsidy in Mexico had no impact on household income

¹¹ The crowding out effect is an economic construct. Anthropologists for example view the reduction of informal transfers in a positive light where this reduction would relax the burden on social networks, allowing transfer beneficiaries to participate in different ways.

¹² Perceived targeting errors refer to the perceptions that the programme included undeserving beneficiaries. Information obtained from personal communication with P. Pozarny, FAO.

(Galasso *et al.* 2001; Cattaneo *et al.* 2007). In Ecuador, a UCT programme decreased household income mainly because it led to a large decline in child labour (Edmonds and Schady 2008; IEG 2011a).

In Latin America, conditional cash transfers significantly improved consumption. The PRAF II (CCT) programme in Honduras, worth 8percent of median per capita consumption, increased household consumption by 7percent, while the RPS programme (CCT) in Nicaragua, which represented 15percent of per capita expenditures, increased total expenditures by 32 percent. (Coady *et al.* 2004). Further gains in consumption were found to result from CCTs in Colombia, Mexico, Ecuador and Brazil (Attanasio and Mesnard 2005; Hoddinott *et al.* 2000; Edmonds and Schady 2008; Schady and Rosero 2008; Olinto *et al.* 2003). Nevertheless, a UCT in Albania (the Ndihma Ekonomike programme) reduced household consumption, possibly as a result of a decrease in the adult labour supply due to the income effect (Dabalén *et al.* 2008), while another UCT in China (the Southwest China Poverty Reduction Project) had no impact on household consumption (Chen *et al.* 2008).

In sub-Saharan Africa, the Kenya CT-OVC has significantly increased food expenditures and decreased spending on alcohol and tobacco (Kenya CT-OVC Evaluation Team 2012). In Zambia, the CGP programme increased expenditures, with the majority of the increase going to food (76 percent), health and hygiene (7 percent), clothing (6 percent) and transportation/communication (6 percent) (AIR 2013). Similar results were found for Malawi (Romeo *et al.* 2013). Other non-cash instruments have also increased household consumption. These include school feeding programmes in India and Bangladesh (Afridi 2010; Ahmed 2004), food aid in Bangladesh and Ethiopia (Del Ninno and Dorosh 2003; Gilligan and Hoddinott 2007) and a public works programme in Ethiopia (Gilligan and Hoddinott 2007; Gilligan *et al.* 2009).

There is evidence that social protection schemes reduce poverty as measured by the headcount ratio and poverty gap index. For example, poverty reductions have been reported for public works/workfare schemes in Argentina (Galasso and Ravallion 2003) and CCTs in Mexico and Nicaragua (Skoufias and Di Maro 2006; Handa *et al.* 2001; Maluccio and Flores 2005). In South Africa, the old age pension reduced the poverty headcount rate by 26 percentage points (Jensen 2004). Simulations have also shown that providing a child support grant (whose eligibility has been extended to 14 years) together with the full take-up of the old age pension and the disability grant would reduce the poverty gap by 29percent (Samson *et al.* 2004). The Zambia CGP led to a 5-percentage point reduction in extreme poverty, an 11-percentage point reduction in the extreme poverty gap and an 11-percentage point reduction in the severity of the extreme poverty gap (AIR 2013). The Kenya CT-OVC led to a 13-percentage point reduction in the dollar a day level of poverty (Ward *et al.* 2010).

4.4.2 Macroeconomy

Social protection impacts are eventually felt in the wider macroeconomy. Current empirical literature has measured the macroeconomic effects of social protection through CGE modelling and cross-country regression frameworks (Alderman and Yemtsov 2012).

Almost all of the available studies find that social protection has a beneficial impact on the macroeconomy. A study from South Africa demonstrated that social assistance spending boosted economic growth, employment, investment and the trade balance (Williams 2007; Alderman and Yemtsov 2012). Another study from South Africa found that public works programmes (worth the equivalent of 0.2percent of GDP) in the construction sector

increased the GDP by 0.34percent, although the authors concluded that that it was difficult to discern the impact of public work programmes (small shock) from statistical noise in a CGE model (McCord and van Seventer 2004). In Bangladesh, the renowned BRAC programme was found to have increased GDP by 1.15percent at a time when its cost was only 0.2percent of GDP (Alamgir 1996; Mallick 2000; Alderman and Yemtsov 2012). A global cross country study by Zaman and Tiwari (2011), analysed social protection spending from 100 countries during the period 1980-2008 and found that social protection spending raised economic growth to a certain threshold after which it began to reduce growth (Alderman and Yemtsov 2012). In particular, they identified small-sized effects where shifting social protection spending from 0 to 2percent of GDP would increase per capita GDP rate by 0.1 to 0.4p.p (Zaman and Tiwari 2011; Alderman and Yemtsov 2012). However, few studies have actually researched the links between social protection and financial development or have distinguished which types of social protection actually lead to economic growth (Alderman and Yemtsov 2012).

4.5 Gaps and weaknesses in the empirical literature

Impact evaluation techniques are increasingly being used in studies seeking to understand the role of social protection interventions in development. However, despite the growing interest in evaluating social protection, there are gaps and weaknesses in the methodologies that still need to be addressed.

Given the intention of this review, we observe that the empirical literature on the agricultural outcomes of social protection is neither extensive nor well established. Evidence is solid for some outcomes and sparse for others (see Table 8). Evidence on the impact of social protection on input use and crop and livestock output is particularly scant. Nor is there any evidence assessing the impacts of social protection on fishing and forestry. On the other hand, the role of social protection on household labour allocation has been thoroughly studied (although there has been little assessment of full/part time and seasonal/all year dichotomies) and a rapidly growing evidence base is emerging on the impact of social protection on agricultural assets, risk coping and the local economy (although evidence on social networks is still limited). Nor is there much evidence on the role of social protection interventions in off-farm investments.

Our observations of balance in the empirical literature are for the most part consistent with previous appraisals (IEG 2011a). While the current evidence base is dominated by CCT evaluations, a large number of impact evaluations of UCTs are underway in sub-Saharan Africa and this body of evidence will soon rival that of CCTs in Latin America (Davis *et al.* 2012). Nevertheless, an array of social protection interventions is currently being implemented, especially in sub-Saharan Africa, including food aid, food vouchers, general subsidies, health and education waivers; these have not received the same attention. Also worrisome is the lack of geographic diversity. At present, over 50percent of impact evaluations originate from Latin America. Rigorous impact evaluations of emergency social protection interventions are sorely lacking – albeit due to their short-term nature or small scale – yet they have dominated the social protection landscape of sub-Saharan Africa for decades.

Table 8 Summary of findings on the impact of social protection on agriculture

Outcomes	Impact (majority of studies)	Interventions with strong/most of the evidence	Evidence base (availability)
<i>Direct farm production</i>			
Agricultural asset accumulation	+	CTs	Fair
Change in use of inputs and techniques	+	CTs, PW	Very poor
Labour allocation	Adults: +, -, 0 Children: -	PW +, CCTs 0 CTs/FA-mixed CCTs, SF, EW, UCTs	Good
Crop and livestock output	+	CTs, FFW	Very poor
<i>Indirect farm production</i>			
Human capital development	+	CCTs, SF, EW	Excellent
Off-farm investments	+	CTs	Poor
Reduction of adverse risk-coping strategies	+	PW, CTs	Fair
<i>Local economy effects</i>	+, -	CTs , PW, SF, EW, FA + CCTs -	Fair

Source: Authors' assessment. UCT = unconditional cash transfer, CCT = conditional cash transfer, CT = cash transfer, EW = education waiver, FA = food aid, FFW = food for work, SF = school feeding, PW = public works. +: positive, -: negative, 0: zero

From a methodological standpoint, there is little evidence on final outcomes and the long-term effects of social protection on learning, health status and earnings in later life (IEG 2011a). We also found that the most common heterogeneous impacts were based on gender and, sometimes, on age. Few studies looked at the role of mediating factors like programme design (transfer level, conditionality, duration, targeting, etc), agroclimate, economic context (prices, infrastructure and markets), sociocultural context (community, culture) and access to services. We are also concerned that most research on social protection does not test or empirically determine the causal pathways of impact. Moreover, few studies followed a mixed methods approach bringing together quantitative and qualitative information. In practice, social protection schemes interact at local or national levels. Yet the current literature does not reflect the impact of this interaction (IEG 2011a). Impact assessments of interventions that combine social protection with other livelihood-enhancing interventions are also lacking. We observed that few impact evaluations included cost-benefit analyses of the interventions (IEG 2011a).

Current impact evaluations of social protection schemes are addressing some of the limitations noted in this study. IEG (2011a) has identified 36 ongoing impact evaluations, over 50 percent of which are from sub-Saharan Africa. Some of these studies are seeking to

determine the long-term impacts of social protection and/or to understand the role of programme design on impacts. Among these studies is the “From Protection to Production”¹³ project, led by FAO, which is specifically looking at the productive outcomes of cash transfers in several sub-Saharan African countries using a mixed methods approach (see Table A2). Other initiatives, such as the Transfer Project, are supporting the implementation of impact evaluations of several cash transfer schemes across sub-Saharan Africa¹⁴ (see Table A2).

¹³ Implemented by FAO in partnership with UNICEF and with the financial contribution of the UK’s Department for International Development..

¹⁴ A partnership between UNICEF, FAO, Save the Children UK and the University of North Carolina that focuses on the design, implementation and impact evaluation of cash transfers in sub-Saharan Africa.

5. Impact of agriculture on risks and vulnerability

In this section, we review selected literature demonstrating the impact of agricultural interventions on risks, vulnerability and income generation capacity. This evidence provides a rationale for why and how agriculture can complement social protection. We assess the impact of agricultural interventions on risks and vulnerability using typical social protection outcomes, including income, consumption, food security, asset accumulation and risk coping. We also assess their impact on income generation capacity using outcomes like labour allocation, investments in human capital and high risk-high return ventures. We use evidence from the impact evaluations of community and smallholder-targeted agricultural interventions, which fall into nine categories:

- land tenancy and titling
- extension (including farmer field schools)
- irrigation, natural resource management
- input technology (chemical, seed, implements etc),
- marketing arrangements (contract farming, cropping schemes, producer organizations)
- financial services (microfinance, crop insurance)
- transfers and subsidies (cash transfers for inputs, input fairs, input subsidies¹⁵)
- infrastructure¹⁶

Most smallholder agricultural interventions exclude the poorest households, but since such interventions bring changes in local agricultural labour markets, they can still affect the very poor. It should be noted that when agricultural interventions are specifically focused on the poorest and most vulnerable people, they can become social protection interventions in their own right.

5.1 Outcomes related to the reduction of vulnerability and risks

5.1.1 Household income

The empirical evidence demonstrates that a wide range of agricultural interventions increase household income. This impact has been observed in a range of agricultural interventions around the world. Studies on land reform interventions in Peru, India and El Salvador; irrigation management in India; and soil and water conservation practices in El Salvador all found improvements in household income (see review in IEG 2011b). Increased income levels have also been reported for input technology interventions (seeds, fertilizer) in Argentina, Honduras, Kenya and Uganda; extension services (market information, farmer field schools, technical advice) in India, Thailand, Uganda and Vietnam; marketing arrangements (contract farming, cropping schemes) in Peru, Kenya, Malawi and Indonesia; microcredit projects in Thailand and Bangladesh; and an integrated infrastructure/extension and asset subsidy project in Nigeria (IEG 2011b). Further evidence comes from Kenya, Bangladesh and Thailand where studies found that interventions in production areas, such as dairy, aquaculture, animal husbandry and home gardens, increased household income (see

¹⁵ Our typology classifies crop insurance, subsidies and cash for inputs schemes as agricultural interventions since they originate from the agricultural sector.

¹⁶ Adapted from IEG (2011b)

review in Masset *et al.* 2012). In Mexico, Sadoulet *et al.* (2001) found that the PROCAMPO programme, a cash grant scheme for farmers, raised the agricultural and livestock income of its beneficiaries.

Table 9 presents a summary of the evidence from the reviews by Masset *et al.* (2012) and IEG (2011b). As can be seen, most of the interventions directly improved farm productivity or output. Some interventions, like irrigation, land reform and microcredit, also worked by having an insurance effect (increasing certainty), while cash grants for farmers alleviated liquidity constraints and microcredit interventions alleviated credit constraints.

Nevertheless, it should be noted that some soil and water conservation interventions had no effect on the income of rural farmers in El Salvador, Malawi and Kenya (IEG 2011b). These interventions were mostly conservation structures, such as terraces, ditches, live barriers and stone walls, that were ill suited to high rainfall areas because they retained too much water, hence depressing yields (IEG 2011b). In El Salvador, for example, conservation practices, like crop residue mulching, minimum and zero tillage, crop rotation, green manure and contour tillage, increased income, unlike conservation structures, which had no significant impact on income (IEG 2011b).

Table 9. Impacts of agricultural interventions on income

Systematic review	Country (ies)	Agricultural intervention	Beneficiaries	Impact
Masset <i>et al.</i> (2012)	Kenya, Bangladesh, Thailand	<ul style="list-style-type: none"> ▪ dairy ▪ aquaculture training/technology ▪ animal husbandry ▪ home gardens (mixed) 	Rural farmers	+
IEG (2011b)	Peru, India, El Salvador	<ul style="list-style-type: none"> ▪ land reform (titling) 	Rural farmers	+
	India	<ul style="list-style-type: none"> ▪ irrigation 	Rural farmers	+
	El Salvador	<ul style="list-style-type: none"> ▪ soil and water conservation structures ▪ soil and water conservation practices 	Rural farmers	0
	Malawi	<ul style="list-style-type: none"> ▪ integrated aquaculture/agriculture 		0
	Kenya	<ul style="list-style-type: none"> ▪ soil and water conservation practices 		0
	Argentina, Honduras, Kenya, Uganda	<ul style="list-style-type: none"> ▪ input technology (seeds, fertilizer) 	Rural farmers	+
	India, Thailand, Uganda, Vietnam	<ul style="list-style-type: none"> ▪ extension (market info, farmer field school, technical advice) 	Rural fishermen Rural farmers	+
	Peru, Kenya, Malawi, Indonesia	<ul style="list-style-type: none"> ▪ marketing arrangements (contracts, cropping schemes) 	Rural farmers	+
	Thailand, Bangladesh	<ul style="list-style-type: none"> ▪ microcredit 	Rural farmers	+
	Nigeria	<ul style="list-style-type: none"> ▪ rural infrastructure/asset purchase subsidy 	Rural poor	+

Sources: Masset *et al.* 2012, IEG (2011b).

5.1.2 Consumption, nutrition and food security

Almost all of the available studies show that agricultural interventions increase consumption¹⁷ and food security, but have mixed impacts on child nutritional status. Evidence is mostly obtained from microcredit, which alleviates credit constraints; infrastructure, which increases access to markets; and market information and input technology interventions, which enhance access to productivity-enhancing technology and inputs.

From sub-Saharan Africa, there is evidence that microcredit and microsavings programmes improve consumption and food security (Stewart *et al.* 2010). Studies from Tanzania (Brannen 2010) and Rwanda (Lacalle Calderon *et al.* 2008) found that microcredit improved meal quality, particularly the consumption of meat and fish (Tanzania). However, in some countries, like Tanzania and Ethiopia, there was little impact on meal quantity (Brannen 2010; Doocy *et al.* 2005). In Ethiopia and Ghana, microcredit was shown to have no effect on household diet and food security (Doocy *et al.* 2005; Nanor 2008). In Thailand, production microcredit and women's groups increased asset growth and consumption, unlike rice and buffalo banks,¹⁸ which did not (Kaboski and Townsend 2005). This is due to the fact that, distinct from rice and buffalo banks, production credit and women's savings groups include services like training, savings and pledged savings accounts. In Bangladesh, microfinance led to poverty reduction among poor clients and increased per capita consumption (Khandker 2005; IEG 2011b).

Gender appears to influence the impact of rural microcredit/microsavings schemes on consumption and food security. A microsavings evaluation in rural Kenya found that female clients increased their food expenditures and improved their food quality more than male clients did (Dupas and Robinson 2008; Stewart *et al.* 2010). This is consistent with findings from rural Ethiopia, where female microcredit recipients were more likely to spend money to maintain diet quality than male recipients or non-recipients (Doocy *et al.* 2005). In Bangladesh, an increase in lending to women increased consumption, although not by enough to reduce poverty (Khandker 2005). The construction of rural roads in Bangladesh increased savings by 36 to 38percent and household consumption by 11percent per year (Khandker *et al.* 2006). The largest impacts were found in households in the lowest percentile of the consumption distribution (Khandker *et al.* 2006; IEG 2011b).

Microcredit improves child nutritional status but this varies by the gender of the recipient. In Ethiopia, the children of microcredit recipients have better nutritional status than the children of non-recipients and this effect was particularly observed for children of female microcredit recipients (Doocy *et al.* 2005). In Malawi, girls aged six and under who were living in the households of female microcredit recipients showed improvements in height for age as compared to boys; no such differences were reported for mid-upper arm circumference (an indicator of short-term nutritional status) or in the households of male microcredit recipients (Shimamura and Lastarria-Cornhiel 2009).

¹⁷ Consumption refers to food expenditures, dietary quality and meal quantity.

¹⁸ In Thailand, a buffalo bank is a scheme whereby when a poor family is given a buffalo to use as draught power on their rice farms in exchange for 12 kg of rice, which is remitted to the community rice bank. Community rice banks provide rice during seasonal shortages and seek to protect households from the volatile fluctuations of rice prices.

In many cases, new input technologies adopted for home gardens, fisheries and dairies increased food consumption. Masset *et al.* (2012) found that home garden interventions in countries, such as Bangladesh, Indonesia, South Africa, Nepal and Tanzania, improved fruit and vegetable consumption, while fisheries interventions in Bangladesh increased fish consumption and a dairy intervention in Kenya improved milk consumption (Bushamuka *et al.* 2005; de Pee *et al.* 1998; Faber *et al.* 2002; Greiner and Mitra 1995; Hoorweg *et al.* 200; Jones *et al.* 2005; Masset *et al.* 2012). Most of these studies focused on the consumption of the specific food targeted by the intervention; they did not assess substitution effects.

It is notable that, in the case of some interventions, there were no changes in food consumption, e.g. home gardens in South Africa and Thailand (Schipani *et al.* 2002; Shmidt and Vorster 1995). A seeds and technical assistance intervention in Cambodia and a biofortification project promoting orange-fleshed sweet potato in Mozambique did improve dietary diversity (Olney *et al.* 2009; Low *et al.* 2007). Masset *et al.* (2012) also reviewed the impacts of agricultural interventions on micronutrient intake. However, of the four studies that assessed iron intake, only one found an increase in iron intake from home gardens in Bangladesh and Cambodia (Talukder *et al.* 2010). A summary assessment of four home garden projects in Thailand and South Africa found an overall positive impact on Vitamin A intake for children under five years as measured by serum retinol concentration in the blood (2.4 microgram/dl) (Masset *et al.* 2012).

Table 10. Impact of agricultural interventions on diet composition and micronutrient intake

Intervention	Diet composition		Iron intake		Vitamin A intake (children under five)	
	<i>Positive</i>	<i>None</i>	<i>Positive</i>	<i>None</i>	<i>Positive</i>	<i>Negative/non e</i>
Home gardens	11	2		2	2	2
Dairy development	1					
Fisheries		1	1	1		
Biofortification	1					
Animal husbandry		1				
Total number of studies	13	4	1	3	2	2

Source: Masset *et al.* (2012)

Masset *et al.* (2012), shows that, of the eight studies that assessed the impact of agricultural interventions on child nutritional status, only three found improvements in status (see Table 11). A dairy intervention in Kenya reduced stunting, wasting and the prevalence rates for underweight (Hoorweg *et al.* 2000). A fishery intervention in Malawi reduced the prevalence rates for underweight (Aiga *et al.* 2002), while a biofortification project in Mozambique reduced the rates for underweight and wasting (Low *et al.* 2007). The lack of impact observed by some of the studies was attributed to the lack of statistical power and to the fact that most of the interventions were short term and not well suited to detecting long-term outcomes like stunting (Masset *et al.* 2012).

Table 11. Studies showing the impact of agricultural interventions on child nutritional status

Intervention	Stunting		Underweight		Wasting	
	<i>Positive</i>	<i>None</i>	<i>Positive</i>	<i>None</i>	<i>Positive</i>	<i>None</i>
Home gardens		5		5		5
Dairy development	1		1		1	
Fisheries		1	1			1
Biofortification		1	1		1	
Total no. of studies	1	7	3	5	2	7

Source: Masset *et al.* 2012

5.1.3 Durable asset accumulation

A small number of agricultural impact evaluations suggest that agricultural interventions may encourage investments in durable assets.

In India, the use of farmer field schools to promote the adoption of an integrated pest management intervention increased investments in farm tools and equipment by rural farmers (Mancini *et al.* 2006; IEG 2011b). In Thailand, cash lending programmes, like production

credit groups and women's groups, improved financial mediation and increased asset accumulation, among other gains in welfare (Kaboski and Townsend 2005; IEG 2011b).

A land resettlement programme in Malawi improved production and livestock asset holdings, mainly for people who were resettled within reasonable distances from their district of origin or within their district of origin. This is due to the fact that households that were resettled far away from their district of origin had to adapt to new agro-ecological, cultural and market environments (Datar *et al.* 2009). Women participants had greater asset growth than their male counterparts a difference attributed to the different expenditure preferences of men and women, with women spending more time on farm work and less on non-farm work due to lack of opportunities in the resettlement areas (Datar *et al.* 2009). In Nigeria, the agricultural project Fadama II combined infrastructure investments, an asset acquisition subsidy, demand-driven advisory services and capacity building for managing economic activities and conflict resolution (Nkonya *et al.* 2008). A study found that Fadama II enhanced asset accumulation, income, access to markets and transportation (Nkonya *et al.* 2008). The project was especially successful in targeting women farmers and the poor for the asset-building component (IEG 2011b; Nkonya *et al.* 2008).

5.1.4 Risk-coping strategies

Evidence on the impact of agricultural interventions on risk-coping behaviour is scant. A few studies have found that microcredit offers minimal protection from shocks. One study from Ethiopia compared coping strategies – such as the consumption of seed crops and the consumption and distress sales of small livestock – among microcredit recipients and non-recipients (Doocy *et al.* 2005; Stewart *et al.* 2010). The study found no significant differences in the consumption of seed crops between microcredit recipients and non-recipients in the community (Doocy *et al.* 2005; Stewart *et al.* 2010). However, there were significant differences in the sales and consumption of small livestock, with long-established microcredit recipients and non-recipients reporting higher levels of such actions than incoming recipients (Doocy *et al.* 2005). In Uganda, there were no significant differences between microcredit recipients and non-recipients in terms of distress asset sales (Barnes *et al.* 2001). In Thailand, the average microlending institution does not mitigate risks and some institutions, like buffalo and rice banks, encourage the reduction of consumption as a coping mechanism (Kaboski and Townsend 2005). However, lending institutions that provided services like training and flexible and pledged savings accounts allowed households to smooth consumption in the aftermath of a shock, and decreased the likelihood of reducing consumption or input use by 10 to 29 percentage points (Kaboski and Townsend 2005).

5.2 Outcomes related to income generation capability

5.2.1 High risk-high return expenditures and investments

Several impact evaluations found positive correlations between agricultural interventions and risk taking and investments by rural farmers. This evidence mostly comes from interventions that have enhanced certainty such as cash grants, land reform and crop insurance.

Sadoulet *et al.* (2001) evaluated the impact of the PROCAMPO (cash grant) programme on Mexican farmers and found evidence that the farmers had purchased chemical inputs. Davis *et al.* (2002) also found that PROCAMPO led to significant increases in agricultural spending by beneficiaries. Two land reform interventions that secured land rights and thus enhanced certainty for smallholder farmers in Ethiopia and Vietnam increased land-related investments,

such as soil conservation structures and increased area for long-term crops, respectively (Deininger *et al.* 2008a; Deininger *et al.* 2008b; Do and Iyer 2008; IEG 2011b). An experiment in Ethiopia assessed the impact of providing weather-indexed crop insurance based on spending behaviour as measured by fertilizer purchases (Hill and Viceisza 2010; Cole *et al.* 2012). The study reported a general increase in the willingness of farmers to purchase fertilizer, but the effects were higher for farmers who: chose to pay for the insurance product rather than getting it for free; had a greater understanding of the contract; were risk averse; and had purchased fertilizer in the past (Cole *et al.* 2012). In Thailand, membership in women's savings groups and owning pledged savings accounts increased the likelihood of starting a business, unlike traditional savings accounts and production credit groups (Kaboski and Townsend 2005; IEG 2011b).

5.2.2 Human capital development

Education

Agricultural interventions have mixed impacts on the use of education services, although the evidence is quite limited. In Bangladesh and Georgia, the construction of rural roads improved access to schools, school attendance and the incidence of respiratory diseases for school aged children (Khandker *et al.* 2006; Lokshin and Yemtsov 2005; IEG 2011b). In Bangladesh, rural roads led to higher secondary school enrolment for boys and girls compared to primary school enrolment (Khandker *et al.* 2006). This is because most secondary schools were usually located further away from communities than the primary schools.

Interestingly, some studies found that microcredit interventions decreased school attendance rates (Stewart *et al.* 2010). In Uganda, microcredit recipients were more likely than non-recipients to fail to pay school fees for one term, leading to school dropouts. (Barnes *et al.* 2001; Stewart *et al.* 2010). This could be due to the fact that the microcredit recipients had greater school expenses since they were more likely to pay school fees for their own children as well as for other non-household members than were the non-recipients. However, these dropouts were temporary and in response to short-term financial hardships (Barnes *et al.* 2001). Another study from rural Malawi found that microcredit actually reduced the primary school attendance of children, resulting in grade repetition for boys and delayed or lack of school enrolment for girls (Shimamura and Lastarria-Cornhiel 2009; Stewart *et al.* 2010). In a similar vein, a study from Ghana found that continued borrowing reduced children's school enrolment (Adjei *et al.* 2009; Stewart *et al.* 2010). This was confirmed by another study in Uganda, which found larger declines in the proportion of 6-16 year-old girls attending school in microcredit recipient households compared to non-recipients, indicating that an increase in debt leads to adverse risk-coping strategies like withdrawing girls from school (Barnes *et al.* 2001).

One study from Ghana reported mixed impacts of microcredit on education expenditures, depending on the region (Nanor 2008; Stewart *et al.* 2010). Since the evidence also showed that microcredit did not increase child labour, a possible reason for the decline in school attendance could be that recipients had to choose between prioritizing education spending and paying back loans (Stewart *et al.* 2010); there appeared to be a significant trade-off between the two choices. On the other hand, a few studies found improvements in education spending. Two studies from Ghana and Rwanda found that microcredit increased child education expenditure (Adjei *et al.* 2009; Ssewamalla *et al.* 2010; Lacallo Calderon *et al.* 2008), while a

microsavings programme in Uganda increased both school attendance and test scores (Ssewamalla *et al.* 2010).

Health

Agricultural interventions can affect health in various ways. By increasing access to output-enhancing interventions (technology, inputs, knowledge, factors of production), they can increase income and improve household spending on food and healthcare. Water-related interventions can reduce the incidence of water-borne illnesses and pesticides that can be toxic and harmful to health. Agricultural interventions can also affect health by influencing nutritional status. Evidence on the impact of microcredit on nutritional status has already been presented in section 5.1.2.

The evidence of impact on health is limited. However, what evidence there is generally shows a mixed picture. In sub-Saharan Africa, studies have shown that microcredit schemes improve the health of rural farmers. A comprehensive review by Stewart *et al.* (2010) found that microcredit and microsavings generally improved the health of poor beneficiaries by reducing their number of sick days and episodes of illness and increasing their nutritional status. In Rwanda, a microcredit programme increased the purchase of health insurance (Lacalle Calderon *et al.* 2008). In Ghana, Tanzania and Kenya, microcredit increased spending on health care (Adjei *et al.* 2009; Brannen 2010; Dupas and Robinson 2008; Stewart *et al.* 2010). However, in Ghana, the increased spending on healthcare did not vary among older or newer clients (Adjei *et al.* 2009). In Tanzania, children of microcredit recipients benefited from the purchase of mosquito nets (Brannen 2010), while the IMAGE microcredit scheme, paired with gender and HIV awareness training programmes, improved the sexual health of women and empowered women in rural South Africa (Pronyk *et al.* 2008; Stewart *et al.* 2010). In Uganda, a microsavings scheme increased household income and discouraged risky sexual behaviour by AIDS orphans, although this was less pronounced for girls (Ssewamala *et al.* 2010; Stewart *et al.* 2010).

In Ethiopia, irrigation microdams increased the incidence of water-borne diseases and subsequent healthcare costs. While fuel wood collection and crop production were improved by being close to the dams, nearby households often suffered from disease over long periods, with men and women both spending time caring for sick household members (Amacher *et al.* 2004; IEG 2011b). In India, Mancini *et al.* (2006) found that the adoption of integrated pest management through farmer field schools (IPMFFS) reduced pesticide use by 78 percent and led to better health for the farmers. Bennet *et al.* (2006) found that Indian smallholder farmers who adopted Bt cotton (a genetically modified variety) experienced gains in yields and gross margins, devoted less labour to pesticide application and used less pesticides; hospital records accordingly showed a significant decline in pesticide poisonings. A review by Van Den Berg and Jiggins (2007) review found that participation in farmer field schools led to reductions in the frequency of pesticide use. Yet another study found no significant impacts of IMPFFS on pesticide use by farmers in Indonesia. It recommended the simplification and refinement of the curriculum as a solution (Feder *et al.* 2004; IEG 2011b). Studies in West Africa showed that broad-spectrum insecticide use might also indirectly harm the health of rural farmers by increasing the resistance of mosquitoes to insecticides, thereby decreasing the effectiveness of insecticide-treated bed nets and indoor residual spraying (Van Den Berg and Jiggins 2007).

5.2.3 Household labour

The main lesson from the literature on household labour is that agricultural interventions generally increase household labour supply, have varied effects on on-farm labour demand and create some shifts between the agricultural and non-agricultural sectors. Evidence is obtained from evaluations of interventions such as irrigation, the construction of rural roads, microcredit and land reform interventions and new agricultural technologies.

A study from Ethiopia found that irrigation significantly increased labour intensity and agricultural productivity, which reduced reliance on public employment programmes (Van Den berg and Ruben 2005; IEG 2011b). A study from Peru found that an irrigation project did not increase production for the poor but only for large farmers, possibly due to their ability to take better advantage of infrastructural improvements. Nevertheless, the irrigation project still benefited the poor and small farmers by increasing employment opportunities on large farms (Del Carpio *et al.* 2011; IEG 2011b). As we saw earlier, Amacher *et al.* (2004) found that microdams in Ethiopia resulted in the prevalence of water-borne diseases, leading to a diversion of labour from productive activities to the care of sick family members. This cost households around 150 to 250 Birr per season (8 to 14 USD). The diversion of male labour resulted in 40-60percent greater losses in productivity and income compared to the diversion of female labour (IEG 2011b; Amacher *et al.* 2004).

Several microcredit interventions have also been found to affect household labour allocation. In Thailand, a study found that different types of microcredit had diverse impacts on job mobility and the ability to start a business (Kaboski and Townsend 2005). The authors reported that microlending institutions that succeeded in gaining membership (e.g. through women's groups) or offered financial intermediation services, such as training, advice and pledged savings accounts, increased job mobility compared to traditional savings accounts and production credit groups (Kaboski and Townsend 2005; IEG 2011b).

Land tenure reform appears to cause some shifts in labour between the agricultural and non-agricultural sectors. In Vietnam, a land titling intervention increased the cultivation of long-term crops but also increased the labour allocated to non-farm activities. This was mainly attributed to the increased certainty provided by secure tenure (IEG 2011b; Do and Iyer 2008). However, another land titling programme in Peru increased household labour allocations to on-farm or agricultural self-employment activities rather than non-agricultural activities (IEG 2011b; Nakasone 2008).

Other interventions affect the demand for on-farm labour; these include farmer field schools, cash crop production schemes and the construction of rural roads. In India, Mancini *et al.* (2006) found that an integrated pest management/farmer field school intervention increased household demand for family female labour. In Nepal, participation in a vegetable and fruit cash crop programme increased the time spent by both men and women on cash crop production and decreased the time they spent caring for preschoolers (Paolisso *et al.* 2002). These effects vary with the number of preschool children in each household. In households with at least one preschooler, there was a significant trade-off between time spent on crop production and time spent caring for the child (Paolisso *et al.* 2002). However, this trade-off may not be terribly important, since the results also showed that the cash crop intervention did not decrease the overall leisure time of men and women spent with preschoolers (Paolisso *et al.* 2002).

New agricultural technologies affect the intrahousehold demand for labour, with gender-specific implications. Doss (2001) reviewed evidence on the impact of new agricultural technologies on the division of labour between women and men and found that the new technologies add to the burden of labour on women such as increased weeding and processing harvests after fertilizer use. Yet as women's labour burden rises, their control of the labour effort increases, which may lead to an overall improvement in their wellbeing. Doss (2001) also found that the impacts of new technologies can vary by religion and ethnicity, citing an irrigation scheme in Nigeria that increased Muslim women's labour allocation to non-agricultural self-employment, and increased the demand for non-Muslim women's labour on men's fields rather than on their own plots. In Indonesia, a study evaluated the impact of contract farming – of seed corn, rice and poultry – on the labour supply in rural households (IEG 2011b; Simmons *et al.* 2005). Seed corn contracts increased the demand for female labour. The rice contract increased the demand for family labour, while the poultry contract did not affect labour demand at all. However, while the contracts affected the type of labour used, none of them affected total farm employment (Simmons *et al.* 2005).

The evidence on child labour allocation is thin. A study from Malawi found that microcredit reduced children's involvement in household chores and also reduced their attendance at school (Shimamura and Lastarria-Cornhiel 2009; Stewart *et al.* 2010). The study also found a reduction (but not significant) in child agricultural labour, a result they attributed to measurement error since the survey was conducted after the harvest season, which could have led to respondents underreporting child labour due to poor recall.

5.3 Effects on the local economy

The emerging evidence base uses village-wide – or other – models to determine the effects of agricultural interventions on the local economy. The literature points to some spillover effects on consumption, prices and local labour markets as well as notable multiplier effects.

In Ethiopia, a study found that irrigation has small spillover effects on the expenditures of non-irrigating households and that these minor effects are possibly due to the irrigation rates being too low to induce bigger changes in the local economy (Van Den berg and Ruben 2005; IEG 2011b). In Bangladesh, microfinance led to poverty reduction in the local economy and there were notable positive externalities in consumption for non-recipients in the community (IEG 2011b; Khandkar 2005).

Agricultural interventions have different impacts on prices, wages and local labour markets for a variety of reasons. In Ethiopia, Van Den berg and Ruben (2005) found that irrigation increased cereal prices but reduced the prices of pulses. This was because irrigation lowered the levels of cereal production and increased the production of pulses. In addition, irrigation increased household labour intensity and, as a result, decreased reliance on public works programmes, although it did not increase the demand for labour in the local agricultural labour markets. In Bangladesh, the construction of rural roads lowered transportation costs by 36 to 38percent, improved men's agricultural wages by 27percent, reduced fertilizer prices by 5percent and caused an increase in potato and wheat prices of 4percent (Khandkar *et al.* 2006; IEG 2011b).

In India, Subramanian and Qaim (2009) used a SAM model to determine that the adoption of Bt cotton, a genetically modified crop, significantly improved rural employment (IEG 2011b). They also discovered that it caused a decrease in the labour used for pest control and an

increase in the labour used for harvesting. Large farmers benefited more than small farmers from the time saved on cotton production by shifting their labour to alternative activities (Subramanian and Qaim 2009; IEG 2011b). This discrepancy was probably due to the higher education and resource levels of large farmers, which enhanced their access to employment and self-employment. Subramanian and Qaim (2009) also found that women earned substantially more from Bt cotton than did men, as female wage labourers gained more employment in cotton harvesting while the involvement of men in pest control was reduced by the Bt cotton. Simulation results suggest that labour savings from a reduction in pest control by men could be directed towards alternative agricultural and non-agricultural employment, which would still increase the overall returns to labour (Subramanian and Qaim 2009; IEG 2011b).

Very few studies have assessed the impact of agricultural interventions on social networks; those that do hint at improved participation. Mancini *et al.* (2006) found that adopting integrated pest management through farmer field schools in India improved social ties and collaboration within the community and led to stronger connections with the department of agriculture. Participants also perceived themselves to be more economically resilient than did control households (Mancini *et al.* 2006). A study from Uganda showed that microcredit recipients were more likely to send remittances and gifts than non-recipients (Barnes *et al.* 2001; Stewart *et al.* 2010).

General equilibrium modelling and econometric estimations have shown us that different agricultural interventions can create significant income multipliers in the local economy. Sadoulet *et al.* (2001) used econometric analysis of household survey data to determine the impact of PROCAMPO on ejidatarios (land reform beneficiaries) in Mexico, finding a household-level multiplier effect ranging between 1.5 and 2.6. The income multipliers were notably greater for households with fewer adults, for medium and large farms and for people of non-indigenous backgrounds residing in the Centre and Gulf regions. As we saw earlier, Filipski and Taylor (2012) used a nationwide rural CGE model to simulate and compare cash transfers and agricultural interventions on income and production in Malawi and Ghana. The simulations showed that market price support creates substantial income multipliers when unemployment allows more elastic production responses. Input subsidies create substantial income multipliers under conditions where there is an elastic supply of inputs and factors of production but where liquidity constraints affect input demand. Hence, an input subsidy would increase output without increasing the cost of consumption, benefiting farmers who are net buyers of staples in Malawi. Filipski and Taylor (2012) also concluded that since an input subsidy can be targeted it has a distributional advantage over the market price support.

Taylor *et al.* (2005) developed a disaggregated rural economy-wide model (DREM¹⁹) to determine how agricultural and trade policy reforms have affected rural communities in Mexico. Their simulations show clear variances in how different rural households responded to the reforms. In one hypothetical experiment, they simulated the impacts of reintroducing a 10percent maize price support and simultaneously curbing PROCAMPO transfers by the equivalent peso amount in West-Central Mexico. The results showed that the price support would increase commercial maize production by 12percent, wages by 0.22percent and land rents by 0.48percent compared to PROCAMPO transfers. Yet nominal and real incomes

¹⁹ DREM integrates CGE with microagricultural household models.

would decline since rural households are maize consumers and subsistence production would decline by between 0.11 and 0.26percent. In another hypothetical experiment, Taylor *et al.* (2005) simulated the impacts of increasing access to cash crop export markets as measured by higher farm gate prices. They found that this policy change would increase cash crop production by 3 to 4percent on low-productivity farms, increase wages by 3percent and land rents by 11percent. However, this would be accompanied by a decline in the production of maize and other commodities due to competition for land planted to cash crops, with cash crop prices having a greater influence on subsistence maize production than maize prices. The effects of increasing access to cash crop export markets would also vary by landholding size, as reflected by the 4percent increase in the incomes of households with large landholdings compared to about 2percent for landless households.

5.4 Gaps and weaknesses in the empirical literature

Determining the impact of agricultural interventions on risks and vulnerability is a relatively new subject area in development research. In a nutshell, the evidence on how agriculture affects risks and vulnerability is not extensive and for some outcomes it is quite scarce. We conclude that there exists relatively solid evidence concerning the impact of agriculture on household income, on consumption, nutrition and food security; and on household labour allocation for adults. A fair amount of evidence is also available on the impact of agriculture on high-risk investments and in the local economy. However, few studies have examined the impact of agricultural interventions on durable asset and human capital development. In our view, the evidence on risk coping and risk sharing (social networks) is particularly scant (see Table 12).

Table 12 Summary of findings on the impact of social protection on agriculture

Outcomes	Impact (majority of studies)	Interventions with strong/most of the evidence	Evidence base
<i>Reduce vulnerability to risks and shock</i>			
Income	+	<ul style="list-style-type: none"> ▪ wide range 	Excellent
Consumption and food security	+	<ul style="list-style-type: none"> ▪ microcredit ▪ infrastructure ▪ input technology 	Good
Nutritional status	0 +	<ul style="list-style-type: none"> ▪ input technology ▪ microcredit 	
Durable asset accumulation	+	<ul style="list-style-type: none"> ▪ microcredit ▪ land reform ▪ extension ▪ infrastructure 	Poor
Reduction of adverse risk-coping strategies	inconclusive		Very poor
<i>Income-generating capabilities</i>			
High risk-high return expenditures and investments	+	<ul style="list-style-type: none"> ▪ cash grants ▪ land reform ▪ crop insurance 	Fair
Human capital development	education + , education - health +,health -	<ul style="list-style-type: none"> ▪ infrastructure ▪ microcredit ▪ input technology (pest management) ▪ irrigation (microdams) 	Poor
Labour allocation	adults: +, children: inconclusive	<ul style="list-style-type: none"> ▪ irrigation, microcredit, land reform 	Good
<i>Local economy effects</i>	spillovers + local markets : D multiplier + social networks +	<ul style="list-style-type: none"> ▪ microcredit, irrigation, ▪ various interventions ▪ cash grants, input subsidies ▪ microcredit, extension 	Fair Very poor

Source: Authors' assessment. +: positive, -: negative, 0: zero, D: diverse

Our own assessment of the state of the literature is consistent with the methodological appraisals done by the reviews (IEG 2011b; Masset *et al.* 2011; Cole *et al.* 2012 and Stewart *et al.* 2010). Impact evaluation is a relatively recent practice and evaluations on the impact of agriculture are thin on the ground. Notably, many studies in agricultural research do not have

proper counterfactuals. For example, out of the initial 271 studies identified initially, only 86 were included in the review by IEG (2011b), while out of an initial 307 studies, only 23 studies were included by Masset *et al.* (2012) and out of an initial 69 impact evaluations, only 15 were included by Stewart *et al.* (2012). The current literature is dominated by land reform, microcredit, NRM and extension impact evaluations. We also find that few studies assessed the heterogeneity in impacts caused by mediating factors such as gender, programme design, agroclimate, cultural context, economic context and access to services. In addition, the use of mixed methods is uncommon as is the testing of theory or causal pathways. Also lacking is information on the costs and benefits of agricultural interventions, long-term impacts and assessments of interventions that combine agriculture with other livelihood-enhancing approaches.

6. Policy and research implications

This paper aims to demonstrate the interaction between social protection and agriculture, specifically how they can fulfil each other's objectives of reducing risks and vulnerability and enhancing agricultural production. Our approach was to develop a theory of change and collect empirical evidence on how social protection impacts agriculture and vice versa.

6.1 Policy implications

6.1.1 Empirical rationale

Extensive literature has already established the role of social protection in reducing risks and vulnerability. The empirical literature on the agricultural impacts of social protection is neither as extensive nor as well established and overall it is uneven, being solid for some outcomes and sparse for others. The empirical evidence reviewed in this paper shows how social protection programmes can promote agricultural development. In addition, the paper shows how agricultural interventions can reduce risk and vulnerability in addition to their more established role of promoting agricultural development and improving rural livelihoods.

The available evidence on social protection interventions mostly comes from impact evaluations of cash transfers, and public works schemes, although school feeding and education fees waivers also provide evidence on child labour and human capital accumulation. A fair amount of evidence shows that cash transfers and some public works schemes increase the accumulation of agricultural assets. However, the magnitude of accumulation varies by programme design (e.g. value of transfer, regularity of payments, duration, complementary interventions), gender and socio-cultural context. Evidence on the impacts of social protection interventions on input use and farm output is limited, but the early patterns suggest that social protection measures increase input use and farm output, depending on programme design as above. Some studies have attributed improvements in assets, inputs and agricultural output to the alleviation in credit and liquidity constraints and the certainty and predictability of cash transfers and cash-based public works schemes.

Studies also have shown that social protection interventions reduce the rates of disruptive child labour, whereas impacts on the adult labour supply are mixed. CCTs in Latin America, for example, have little or no impact on the overall adult labour supply but are, in some cases, accompanied by shifts from on-farm work to non-farm work. In Africa, public works programmes are not a disincentive to work, while some cash transfers reduce casual labour market participation and increase own farm labour intensity. Reductions in labour supply due

to income effects are reported for women, informal and unpaid workers receiving CCTs in Brazil and for elderly beneficiaries of old age pensions in South Africa where non-elderly adults appear unaffected or engage in labour migration.

The indirect impacts of social protection on agricultural production include improvements in the human capital development of children (use of education services, health visits, disease incidence and nutrition) and the reduction of adverse risk-coping strategies. A small body of evidence suggests that social protection encourages off-farm investments. In the local economy, there is mixed evidence of the crowding out of informal transfers due to social protection. Cash transfers and some public works schemes generate significant multiplier effects in the local economy, although complementary programmes (e.g. microcredit) for non-beneficiary households would be necessary to loosen their capital and liquidity constraints, increase their supply response and maximize the income multiplier.

Equally revealing are the findings on the impact of agriculture on risks and vulnerability. The preponderance of the limited evidence available demonstrates that improvements in income, consumption, food security and durable asset accumulation result from interventions such as microcredit, infrastructure, irrigation, extension and input technology. Agricultural interventions that enhance certainty (e.g. cash grants, land reform and crop insurance) largely have positive impacts on high risk-high return investments. There is limited and inconclusive evidence about the impacts on school attendance, risk coping and health. Significant income multipliers in the local economy are created by cash grants and input subsidies and there are signs of improved participation in social networks as well. In light of this evidence, there is reason to believe that smallholder agricultural interventions become social protection interventions in their own right if they are specifically targeted to the poorest and most vulnerable households.

6.1.2 Scope for synergies

Even though social protection and agricultural interventions originate from different sectors and disciplines, the empirical literature shows that they can help support each other's objectives and even enhance each other's impacts. Complementarities and synergies can be established at the micro level. Agricultural interventions do not always reach nor are not always adopted by the poorest agricultural households who face market failures and are risk averse. Social protection interventions can alleviate credit, liquidity and savings constraints and provide the greater certainty that poorer households require for investing in agriculture and riskier income-generating activities. Hypothetically, agricultural interventions can take advantage of the liquidity provided by interventions, like cash transfers, if they are implemented a few months after the cash transfers have begun. In the same vein, agricultural interventions can be delivered to non-beneficiaries of social protection in the same locales as cash transfers are occurring to take advantage of the increase in local demand, loosen their capital and liquidity constraints and increase their supply response in order to maximize the income multiplier.

At the same time, simply incorporating productive elements into the design of social protection interventions can increase and diversify the impact of these interventions. For instance, a food aid or school-feeding programme that uses locally purchased or home-grown food could provide production incentives and assured markets to smallholder farmers (Devereux *et al.* 2008a).

Furthermore, the effectiveness of social protection programmes can be hampered by factors such as high food prices and underdeveloped infrastructure and, in many cases, social protection interventions are only implemented in the short term or they have short-term impact. Therefore, social protection interventions can be complemented by agricultural interventions in order to establish sustainable livelihoods. For example, high food prices can limit the spending power of cash transfer beneficiaries, which can be addressed by implementing complementary market price supports and yield-enhancing agricultural technologies. Furthermore, when social protection schemes are limited to short-term interventions, delivering them before agricultural interventions commence could ease the graduation or exit of beneficiaries. All of these examples show that there is great scope for synergies between social protection interventions and agricultural interventions at micro and local economy levels and these can be exploited as both types of interventions generally target similar geographic areas and population groups.

6.1.3 Exploiting synergies through cross sectoral coordination and integration

In practice, there are few examples of current interventions that exploit these synergies. Some interventions that do so integrate social protection and agricultural interventions into one livelihoods package. Most of these integrated programmes provide beneficiaries with an opportunity to transition into self-reliance (HLPE 2012). Rwanda's Vision 2020 Umurenge Programme (VUP) provides unconditional cash transfers to labour-constrained households, public works to poor households with labour availability and microcredit for smallholder farming, among other income generating activities (HLPE 2012). The programme is designed in such a way that beneficiaries receive cash payments via bank accounts, ensuring access to credit and savings. In Bangladesh, the Challenging the Frontiers of Poverty Reduction (CFPR) programme provides beneficiaries with asset grants, cash grants, healthcare support and housing and sanitation materials (HLPE 2012). Asset grants are worth about US\$100-150 and are loaned or provided for free in the form of livestock, agricultural or non-agricultural assets. First and second phase impact evaluations of CFPR found an increase in agricultural asset ownership, self-employment, savings, access to land, food security, income and a reduction in poverty (Rabbani *et al.* 2006; Das and Shams 2011). In Ethiopia, the government initially complemented the Productive Safety Nets Programme (PSNP) with the Other Food Security Programme (OFSP). PSNP is a cash transfer and public works programme, while OFSP provides access to credit, inputs and agricultural extension (see Box 1). Studies have shown that beneficiaries with access to both PSNP and OFSP had the largest improvements in food security, better agricultural technologies and participation in non-farm business enterprises compared to beneficiaries of either PSNP alone or PSNP with higher benefit levels (Gilligan *et al.* 2009). Nicaragua's Atención a Crisis programme (2005-2006) combined a conditional cash transfer with either vocational training or a productive investment grant (non-agricultural). Evidence has shown that the programme increased income diversification and provided greater protection from drought than basic conditional cash transfers (Macours *et al.* 2012). However, it is unclear from the evaluations of integrated programmes whether the increased welfare has come from synergies arising from the integration. The evaluations of the programmes have not explicitly compared the effects of integration with the effects of the individual components of the programme.

Despite the few examples of integrated social protection and agricultural interventions that exist, the norm is that they are implemented separately. Hence, conflicts may occur that can limit the effectiveness of both types of intervention. These conflicts can occur at policy and programme levels and they require appropriate responses. Conflicts may arise from

inconsistent objectives between interventions, e.g. there could be time conflicts with regard to the conditionalities for conditional cash transfers and for agricultural work. Another source of conflict might arise from the poor timing of social protection interventions. For example, distributing food aid at harvest time can lead to a decline in local food demand and production. The interaction between gender and targeting can also potentially lead to problems. In another example, the burden for complying with conditionalities is generally borne by women and this could divert their labour from farming and other productive activities.

Agricultural and social protection policies originate from different disciplines, and are still viewed as parallel policies implemented by different authorities that compete for financial resources. That said, potential synergies could be maximized by sharing knowledge about them, understanding potential constraints and/or developing a systems approach that promotes the cross-sectoral coordination and/or integration of social protection with agriculture. In sub-Saharan Africa, under the CAADP initiative, there is now a strong push to develop national agricultural policies that are inclusive and exploit synergies between agriculture and social protection. Countries like Gambia and Sierra Leone have begun using the systems approach to complement agriculture with social protection in their national agricultural plans.

Overall, while the coordination of social protection with agriculture is not the sole approach to achieving broad based rural development, there are still potentially great benefits to be had from more systematically exploiting the synergies between social protection and agriculture.

6.2 Research implications

Our review identified some gaps in the evidence on the impact of social protection on agriculture. Future research should consider shifting the focus of social protection instruments beyond CTs, which currently dominate the landscape. Geographical diversity is sorely lacking in the current evidence base, which is currently overshadowed by Latin American impact evaluations, although it is encouraging that impact evaluations are increasingly targeting social protection schemes in sub-Saharan Africa and other developing regions.

There are generally fewer impact evaluations on agricultural than on social protection interventions in the empirical literature. There is a need for far more evidence on the impact of agricultural interventions on risk coping, risk taking and risk sharing (social networks), human capital accumulation and the effects of such interventions on the local economy. At the outcome level, more evidence is needed on the role of social protection in risk taking, risk coping, social networks, crop and livestock production, fishing output and forestry, input use and labour supply variation for full time/part time and seasonal/all year dichotomies. That having been said, the lack of solid evidence on the agricultural impacts of social protection is not surprising since most researchers rightly focus on determining whether social protection programmes have achieved their immediate objectives of reducing vulnerability, increasing food security, and/or enhancing human capital development. As such, we agree with Alderman and Yemtsov (2012) that the productive argument for social protection should remain secondary in order not to displace the poverty reduction argument. Yet we also believe that having empirical evidence on the agricultural and productive impacts of social protection instruments could help developing countries when they formulate social protection policies.

At present, most of the impact evaluations do not test theory nor do they examine the causal pathways underlying impacts. A few studies extend their analysis to assessing heterogeneous

impacts. Gender is the most common source of heterogeneity in impact findings, whereas there is a dearth of evidence on the role of programme characteristics (design, implementation, targeting, benefit structure and duration). Evidence is also lacking on the role of agroclimate, economic and cultural contexts and access to social services. If the conditions are feasible, future researchers could also evaluate the long-term impacts of social protection and agricultural interventions. Not much research has been done on the impacts of interventions integrating social protection with agriculture. Such research would need to be designed in a manner that provides clarity on the synergies arising from actual integration. A robust design that would distinguish between an integrated intervention, individual interventions and control households would be ideal. Other interesting questions to investigate would include: i) what outcomes would produce the greatest synergies between social protection and agriculture; ii) what conditions or factors would maximize synergies; iii) the cost effectiveness of integrated versus individual interventions; and ii) whether synergies at the level of the local economy differ when agricultural interventions are targeted only to households that are not eligible for social protection.

6.3 Conclusion

In conclusion, our review has shown that social protection and agriculture can positively impact each other's objectives. This supports the notion that there are potential synergies that can be exploited to help build resilient and sustainable rural livelihoods. Our paper hopefully provides some helpful input to FAO's work on social protection, specifically on the links between social protection and agriculture that can be built upon and optimized. FAO's mandate and agenda already promote the role of social protection and agriculture in enhancing food security and rural development. Hence, FAO has a comparative advantage in this area and is ideally suited to provide technical advice on how to maximize the synergies between the two areas of intervention. Our paper is also a timely contribution to the policy discourse and agenda on social protection and agricultural transformation in developing countries and especially in sub-Saharan Africa, where the CAADP initiative is encouraging synergies between social protection and agriculture as part of the effort to stimulate agriculture-driven development. Our consolidated evidence and the identified knowledge gaps can be used as a starting point for future research and the formulation of guidance material.

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Annex

Table A1 Microcredit impact evaluations from sub-Saharan Africa

Author(s)	Setting	Microfinance intervention	Microfinance model	Name of microfinance program
Adjei <i>et al.</i> (2009)	Rural and urban settings in Ghana	Credit with business management training and client welfare scheme	Group-based lending to men and women	Sinapi Aba Trust (SAT)
Ashraf <i>et al.</i> (2008)	Rural Kenya	Credit with orientation course and advice on export crops and facilitation of export process	Group-based lending to small holder farmers	Drumnet
Barnes, Gaile <i>et al.</i> (2001)	Rural and urban settings in Uganda	Credit and savings with non-formal education in health, nutrition, family planning, HIV/Aids prevention and business management	Group-based lending to men and women	Foundation for International Community Assistance (FINCA), Foundation for Credit and Community Assistance (FOCCAS), Promotion of Rural Initiatives and development enterprises (PRIDE)
Barnes, Keogh <i>et al.</i> (2001)	Urban Zimbabwe	Credit with business management training	Group and individual lending to men and women	Zambuko Trust
Brannen (2010)	Rural Tanzania (<i>Zanzibar</i>)	Credit and savings with business training	Group-based lending to men and women	Village Savings and Loan Association
Doocy <i>et al.</i> (2005)	Rural Ethiopia	Credit	Group-based lending to men and women	WISDOM Microfinance Institution
Dupas and Robinson (2008)	Rural Kenya	Savings with scope to purchase shares	Individual savings accounts	Unnamed
Gubert and Roubaud (2005)	Urban Madagascar	Credit	Group-based lending to men and women	Action for Development and Financing of Micro-Enterprises (ADéFI)
Lacalle and Calderonet <i>et al.</i> (2008)	Rural Rwanda	Credit	Group-based lending to men and women	Spanish Red Cross in Rwanda
Lakwo (2006)	Rural Uganda	Credit with training in microenterprise skills and business counselling	Group-based lending to men and women	Pakwach Nam Co-op Savings and Credit Society
Nanor (2008)	Rural Ghana	Credit with financial literacy training	Individual lending to women	Upper Manya Kro Rural Bank, South Akrim Rural Bank and the Afram Rural Bank. KROBODAN (NGO)

Author(s)	Setting	Microfinance intervention	Microfinance model	Name of microfinance program
Pronyk <i>et al.</i> (2008)	Rural South Africa	Credit with gender and HIV/awareness training (Sisters for Life) and community mobilization support	Group-based lending to men and women	Small Enterprise Foundation (SEF)
Shimamura and Lastarria-Cornhiel (2009)	Rural Malawi	Credit with financial literacy training	Group and individual lending to men and women	Malawi Rural Finance Company (MRFC)
Ssewamalaet <i>et al.</i> (2010)	Rural Uganda	Savings dedicated to paying for post-primary schooling, alongside training and mentorship programmes	Individual savings accounts for boys and girls	Suubi Research Programme (Suubi is Luganda for 'hope')
Wakoko (2004)	Rural and urban Uganda	Credit with various other unspecified programmes		

Source: Stewart *et al.* (2012)

Table A2 Ongoing impact evaluations of cash transfers in sub-Saharan Africa

Country	Intervention	Type	Beneficiaries (households)	Timeframe	Implemented by
Ethiopia	Tigray SPP	UCT	Ultra-poor Labour constrained	2012-2014	FAO PtoP
Ghana	LEAP pilot	UCT	Ultra-poor with OVC, the elderly poor, disabled	2010-2012	FAO PtoP, transfer project
Kenya	CT OVC Expansion	UCT	Ultra-poor with an orphan or vulnerable child <=18 years	2012-2014	FAO PtoP, transfer project
Kenya	HSNP Pilot	UCT	Poorest 10percent, high dependency ratio or having an elderly person	2010-2012	IDS, OPM
Lesotho	Child grants programme	UCT	Poor with children, including child-headed households	2011-2013	FAO PtoP, transfer project
Malawi	Mchinji Pilot	UCT	Ultra-poor Labour-constrained	2007-2011	FAO PtoP, transfer project
Malawi	Social cash transfer programme	UCT	Ultra-poor Labour-constrained	2012-2013	Transfer project, FAO PtoP
Sierra Leone	Gola Forest Programme Pilot	UCT CCT	Local villagers	2011-2012	University of Cambridge, Njala University, Wageningen University
South Africa	HPTN 068 Experiment (HIV risk)	CCT	Young women in grades 8, 9, 10 or 11 in 2011 and between the ages of 13 and 20 years	2011-2014	Transfer project
South Africa	CAPRISA 007 Experiment (RHIVA)	CCT	Boys and girls in grades 9 and 10	2010-2012	Centre for the AIDS Programme of Research in South Africa
Tanzania	TASAF pilot	CCT	Ultra-poor with orphan or vulnerable child or elderly person >60 years	2009-2012	World Bank, IFPRI
Tanzania	TASAF expansion	CCT	Ultra-poor with orphan or vulnerable child or elderly person >60 years	2012-2014	World Bank, IFPRI
Uganda	SAGE pilot	UCT	Labour constrained > = 65 years	2011-2014	OPM
Zambia	Child grant programme	UCT	Children under 5 years	2010-2013	Transfer project, FAO PtoP
Zambia	Multi-categorical grant programme	UCT	Female-headed household with orphans, disabled, elderly-headed household with orphans, other ultra poor	2011-2015	Transfer project, FAO PtoP
Zimbabwe	HSCT pilot	UCT	Ultra poor Labour constrained	2013-2015	FAO PtoP, Transfer project

Notes: IE = impact evaluation, CT-OVC = Cash Transfer for Orphans and Vulnerable Children, HSNP = Hunger Safety Net Programme, PSA = Programa Subsídio de Alimentos, HTPN-HIV = Prevention Trials

Network, CAPRISA = Centre for the AIDS Programme of Research in South Africa, SPP = social protection package, LEAP = Livelihood Empowerment Against Poverty, SAGE = Social Assistance Grants for Empowerment, HSCT = Harmonized Social Cash Transfer programme, TASAF = Tanzania Social Action Fund, UCT = unconditional cash transfer, CCT = conditional cash transfer, PtoP = Protection to Production, IFPRI-International Food Policy Research Institute, IDS = Institute of Development Studies, OPM = Oxford Policy Management, FAO = Food and Agricultural Organization of the United Nations.

Annex A1 Impact of social protection on agriculture: Summary of findings

On the whole, the evidence mostly shows positive impacts of social protection on agriculture. However the evidence is solid for some outcomes and scant for others (see Table 8).

A1.1 Direct impacts on farm productivity

Asset accumulation: Most of the available studies show that social protection increases the accumulation of agricultural assets. However, the magnitude of this impact differs by the gender of the beneficiary, programme design (value of transfer, duration, regularity/predictability of payments, complementary intervention), region (agroclimate) and social context. Weaker impacts are also reported for the poorest and most labour-constrained households. Much of the evidence of positive impacts comes from impact evaluations of cash transfer programmes since there are only a few impact evaluations of other social protection schemes that have specifically considered this outcome.

Inputs: The limited evidence available suggests that cash transfers and public works may increase investments in fertilizer, seed, pesticides, hired labour and improved varieties, depending on programme design. Weaker impacts are reported for the poorest and most labour-constrained households.

Adult labour supply: The evidence presents a mixed picture. Little to no impact has been found for conditional cash transfers in Latin America, but in some cases, shifts from on-farm work to non-farm work and from the formal sector to the informal sector have been reported. In sub-Saharan Africa, some cash transfers were found to reduce casual labour market participation and increase own-farm labour intensity. Reductions in labour supply for women, informal and unpaid workers due to income effects were reported for a CCT in Brazil and for elderly beneficiaries of the old age pension in South Africa, where non-elderly adults appear unaffected or engage in labour migration.

Child labour supply: Most of the evidence has shown that that social protection reduces child labour supply. This applies to both school-related (CCTs, school feeding and education waivers) and non-school-related programmes (UCTs).

Agricultural output: The small amount of impact evidence available shows that cash transfers and public works increase farm output or the share of food consumption coming from home production. The impact is mediated by programme design and the gender of the beneficiary, specifically the person who controls the means of production.

A1.2 Indirect impacts on farm productivity

Human capital development: Much of the literature demonstrates that CCTs, school feeding programmes and education fee waivers improve immediate and intermediate education indicators. This impact is mediated by the gender of the beneficiary. CCTs have positive impact on child health checkups, infant mortality, nutritional status, diarrhoea, incidence of illness and anaemia. The impact on child nutritional status is mediated by access to services (countries with poor health care systems benefit most), programme design (UCTs perform slightly better than CCTs), the gender of the target beneficiary (children benefit when women receive transfers) and the gender of the children (girls appear to benefit more from CCTs than boys).

Off-farm investments: Some evidence (albeit limited) shows that cash transfers encourage risk taking in the form of off-farm investments by rural households. Off-farm investments may vary by gender or economic context; there is also an urban/rural distinction.

Risk coping: Most of the studies show that public works, CCTs and UCTs may protect beneficiaries from shocks and reduce adverse coping strategies. The impact on risk-coping behaviour is also mediated by the gender of the beneficiary.

Local economy effects: The evidence shows that CCTs increase school attendance (as do school feeding and public works programmes), grade progression, adult labour participation, access to loans and asset accumulation by non-beneficiary households. However, some CCTs have increased child labour and reduced school enrolment and test scores. The available studies suggest that programme design and the local economic context mediate the impact of social protection on prices, wages and volume of local trade. For example, cash benefit levels that are high relative to individual income produce temporary inflation in incomplete markets, while higher salaries for cash for work programmes can increase local wages. There is mixed evidence as to whether social protection measures crowd out informal transfers to beneficiaries. Some studies find that cash transfers and old age pensions crowd out private transfers. Others show that cash transfers do not crowd out private transfers and may modestly improve participation in social networks. In some cases, ineligible households may also benefit from private transfers. Cash transfers and public works interventions create significant income multipliers ranging from 1.58 to 2.79. However, factor constraints can limit programme impacts particularly in non-beneficiary households. Factor constraints raise local prices, which reduce the income multipliers.

A2 Impact of agriculture on risks and vulnerability: Summary of findings

Overall, the evidence mostly indicates that agricultural interventions can reduce vulnerability and risks. These are also typical social protection outcomes. However for some outcomes, the evidence is mixed and/or is very limited (see Table 13).

A2.1 Impacts on vulnerability

Income: The evidence overwhelmingly shows that a wide range of technical and non-technical agricultural interventions increase household income, mainly by increasing output and subsequent revenues from sales.

Consumption, nutrition and food security: Evidence mostly comes from microcredit, infrastructure and input technology interventions, all of which increase consumption and food security. However, studies on input technologies for home gardens show little impact on child nutritional status due to poor statistical power, whereas microcredit schemes generally improve child nutritional status, especially for the children of female recipients.

Durable asset accumulation: The small number of impact evaluations that are available find increased ownership of durable assets, specifically from microcredit, land reform, extension and infrastructure.

Risk-coping strategies: Evidence is scant but early indications are that microcredit offers minimal protection from shocks.

A2.2 Impact on income generating capabilities

High risk-high return investments: The small body of available evidence shows that some agricultural interventions promote risk taking and investments by rural farmers. Evidence mostly comes from interventions that enhance certainty, e.g. cash grants, land reform and crop insurance.

Human capital accumulation: The impacts of agricultural interventions on education are mixed, although they are based on a thin evidence base. Studies have observed increases in school attendance as a result of rural infrastructure projects and the opposite from microcredit schemes. The evidence on health impacts is also very limited, but it shows that some interventions, such as integrated pest management, may improve the health status of rural farmers.

Household labour allocation: The available evidence mostly shows improvements in household labour allocation due to irrigation, microcredit and land reform interventions, while new agricultural technologies have gender-specific impacts on labour demand. There is little evidence about the impact on child labour allocation.

Local economy effects: The literature points to some spillover effects on consumption growth from microcredit and irrigation, price changes (lower input prices and higher commodity prices) and changes in local labour markets arising from a variety of interventions. There are signs of improved participation in social networks and increases in informal private transfers. Significant income multipliers are created by cash grants and input subsidies.