ReSAKSS

Regional Strategic Analysis and Knowledge Support System

Facilitated by IFPRI

Annual Trends and Outlook Report 2017 2018

BOOSTING GROWTH TO END HUNGER BY 2025

The Role of Social Protection

Edited by
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Established in 2006 under the Comprehensive Africa Agriculture Development Programme (CAADP), the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) supports efforts to promote evidence- and outcome-based policy planning and implementation. In particular, ReSAKSS provides data and related analytical and knowledge products to facilitate CAADP benchmarking, review, and mutual learning processes. The International Food Policy Research Institute (IFPRI) facilitates the overall work of ReSAKSS in partnership with the African Union Commission, the NEPAD Planning and Coordinating Agency (NPCA), leading regional economic communities (RECs), and Africa-based CGIAR centers. The Africa-based CGIAR centers and the RECs include: the International Institute of Tropical Agriculture (IITA) and the Economic Community of West African States (ECOWAS) for ReSAKSS–WA; the International Livestock Research Institute (ILRI) and the Common Market for Eastern and Southern Africa (COMESA) for ReSAKSS–ECA; and the International Water Management Institute (IWMI) and the Southern African Development Community (SADC) for ReSAKSS–SA.

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Abbreviations

3ie	International Initiative for Impact Evaluation
5RW	5 rural worlds
AATS	Africa Agriculture Transformation Scorecard
ACLED	Armed Conflict Location and Event Data
AEU	adult equivalent unit
AIR	American Institutes for Research
AM	acute malnutrition
API	agricultural production index
ATOR	Annual Trends and Outlook Report
AU	African Union
AUC	African Union Commission
BCC	behavior change communication
BR	Biennial Review
BRAC	Bangladesh Rural Advancement Committee
CAADP	Comprehensive Africa Agriculture Development Programme
Cash+	cash plus
CBT	community-based targeting
CCT	conditional cash transfer
CEN-SAD	Community of Sahel-Saharan States
CFA	Communauté Financière Africaine
CFPR	Challenging the Frontiers of Poverty Reduction
CGAP	Consultative Group to Assist the Poor
CGE	computable general equilibrium
CGP	Child Grants Program
COMESA	Common Market for Eastern and Southern Africa
CP	complementary programs
CSSP	child-sensitive social protection
CT	cash transfer
CT-OVC	Cash Transfer for Orphans and Vulnerable Children
DID	difference in difference
DRF	dose-response function
EAC	East African Community
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of Western African States
ED	electoral district
EGP	Egyptian pound
FAO	Food and Agriculture Organization of the United Nations
FANTA	Food and Nutrition Technical Assistance
FSVGD	Food Security Vulnerable Group Development
GDP	gross domestic product
GPS	generalized propensity score
HABP	Household Asset Building Programme
HIECS	Household Income, Expenditure and Consumption Survey
HSNP	Hunger Safety Net Program
IDP	internally displaced person
IEG	Independent Evaluation Group
IFPRI	International Food Policy Research Institute
IGAD	Intergovernmental Authority for Development
IGVGD	Income Generation for Vulnerable Group Development

Abbreviations *Continued*

ILO	International Labour Organization
IPA	Innovations for Poverty Action
ISSER	Institute for Statistical, Social and Economic Research of the University of Ghana-Legon
ISPA	Interagency Social Protection Assessments
J-PAL	Abdul Latif Jameel Poverty Action Lab
JSR	joint sector review
KMO	Kaiser-Meyer-Olkin
KZN	KwaZulu-Natal
LDP	livelihood development packages
LEAP	Livelihood Empowerment Against Poverty
LRIS	last-resort income support
M&E	monitoring and evaluation
MiDA	Millennium Development Authority
MNLA	National Movement for the Liberation of Azawad
MoSS	Egypt, Ministry of Social Solidarity
MWK	Malawian kwacha
NAIP	national agriculture investment plan
NGO	nongovernmental organization
NPCA	NEPAD Planning and Coordinating Agency
NSA	non-state actor
NSPP	National Social Protection Policy
OECD	Organisation for Economic Co-operation and Development
OFSP	Other Food Security Programme
OP	overlapping programs
PC	principal component
PC1	first principal component
PC2	second principal component
PCA	principal component analysis
PMT	proxy means test/testing
PSNP	Productive Safety Net Programme
PROGRESA	Programa de Educación, Salud, y Alimenación
PSM	propensity score matching
PtoP	From Protection to Production
RAIP	regional agriculture investment plans
RCT	randomized control trials
REC	regional economic community
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
RF	Results Framework
SADC	Southern African Development Community
SAKSS	Strategic Analysis and Knowledge Support System
SASSA	South African Social Security Agency
SCT	social cash transfer
SCTP	Social Cash Transfer Program
SCTPP	Social Cash Transfer Pilot Program
SKS	Swayam Krishi Sangam
SLP	sustainable livelihoods program
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SPP	social protection program
SSA	Africa south of the Sahara
SCT	social cash transfer

Abbreviations *Continued*

SWC	soil and water conservation
TKP	Takaful and Karama Program
UCT	unconditional cash transfer
UMA	Arab Maghreb Union
UN	United Nations
USAID	United States Agency for International Development
VUP	Vision 2020 Umurenge Programme
VGD	Vulnerable Group Development
WFP	World Food Programme
WINGS	Women's Income Generating Support
ZMK	Zambian kwacha

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Foreword

The Malabo Declaration emphasizes agriculture-led growth as the engine for poverty reduction in Africa. But even the most inclusive growth may not be sufficient to lift everyone out of poverty. To take part in and benefit from the growth process, households need to have some basic level of capital and security so that assets are not depleted in the face of shocks including droughts, floods, price fluctuations, and diseases.

Social protection programs—public or private initiatives that aid the poor and protect the vulnerable against livelihood risks—can effectively be used to assist those trapped, or at the risk of being trapped, in chronic poverty. These programs aim to address chronic poverty through redistribution and protect vulnerable households from falling below the poverty line. Although investments in social protection programs are often motivated by equity concerns, they can also contribute to economic growth by, for example, encouraging savings, creating community assets, and addressing market imperfections.

Despite their potential and proliferation, not enough is known about social protection programs in Africa. The *2017–2018 Annual Trends and Outlook Report* (ATOR) reduces this knowledge gap by focusing on the potential of such programs on the continent and the corresponding opportunities and challenges. The chapters of the Report highlight the benefits of these programs, not only to their direct recipients but also others in the community through spillover effects. They also underscore the importance of appropriate design and sustainability to fully realize the potential of social protection programs.

A multiplicity of objectives and modalities are associated with such programs. The Report emphasizes several features that contribute to their success. Active participation by beneficiary communities (local up to national) in the design and implementation of social protection programs is vital. These programs should be considered as an integral part of the overall development effort, not a stand-alone source of change. In this regard, it is fundamental to recognize that growth and social protection programs are highly complementary when designed appropriately. Finally, deliberate experimentation and regular evaluation and learning lead to considerable returns in the form of sustainable scale-up.

There are signs that African policy makers are taking social protection more seriously. In the 2014 Malabo Declaration, African leaders committed to end hunger on the continent by 2025, in part by integrating social protection with measures to increase agricultural productivity and committing resources to finance the integration. This commitment also highlights the key role of social protection in advancing the Comprehensive Africa Agriculture Development Programme (CAADP) implementation agenda. The extension of social protection in Africa is highly diverse, its dynamics are complex, the challenges to financing and delivery remain large, and there are significant challenges in terms of ensuring political commitment to social protection

As Africa embarks on the implementation of the Malabo Declaration commitments and Agenda 2063 of the African Union, we hope that this report and the 2018 ReSAKSS Annual Conference will make a valuable contribution toward emphasizing the vital role that well-designed national social protection programs can play in ensuring that the benefits of and opportunities provided by economic growth reach the poorest and most vulnerable households.

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Executive Summary

Social protection initiatives in Africa increasingly aim to institutionalize systems that guarantee assistance for the poor and protect the vulnerable against livelihood risks. Through direct and indirect income effects, social protection programs can also play an instrumental role in promoting agricultural development and, more broadly, economic growth.

Two major trends will determine the future demand for social protection in African countries. One is the persistent high rates of poverty that are the result of decades of economic decline and stagnation that preceded the recent economic recovery. The other is the transition toward more democratic, pluralistic political systems combined with faster economic growth and a more vocal urban segment of the poor and vulnerable population. This combination is bound to lead to growing demand for social protection and increasing pressure on governments to respond or face certain social upheaval.

These two trends suggest that African countries will confront a two-fold challenge: finding sufficient resources to invest in both accelerating growth and meeting the cost of providing social services to large numbers of poor and vulnerable people. Meeting this challenge is further complicated because most African countries operate under tight budget constraints and have limited experience with social protection programs. Social protection programs in Africa are highly diverse, their dynamics are complex, the challenges to financing and delivery in low-income countries remain large, and there are significant challenges in ensuring political commitment to these programs.

These issues raise important questions for research. One question asks how social protection programs can be designed and targeted to allow countries to effectively and efficiently meet their growing needs. A second question calls for identification of the factors that determine success, costs, and sustainability of the social safety net programs currently being implemented. Finally, an understanding is needed of how fiscal constraints and the need to provide social protection can be reconciled and of how the agenda itself can be adapted to diverse country contexts.

The *2017-2018 Annual Trends and Outlook Report* (ATOR) takes an in-depth look at social protection in rural Africa to address these three questions, which are particularly relevant as Africa embarks on the implementation of the Malabo Declaration commitments and the African Union's Agenda 2063. First, the contributed chapters summarize and synthesize the available evidence on successful implementation of social protection programs in rural Africa. Second, the report fills in knowledge gaps on how to maximize the role of social protection in reducing vulnerability and increasing resilience of rural households. Third, the report highlights policy implications to guide the design and roll-out of national social protection programs for rural Africa.

Major Findings and Policy Recommendations

Social protection can contribute to reducing income inequality and promoting a more equitable, inclusive, and sustainable pathway to

structural transformation. Social protection programs, at a minimum, allow the poorest to access more and better food; to enhance their capacity to manage risk, and then progressively strengthen human capital and relax the economic constraints they face; and to invest in higher-risk economic activities that offer higher returns. While social protection measures are not sufficient to trigger a rapid and substantial change in households' well-being, they can mitigate the most negative effects arising from the widespread out-migration from rural areas that is driven by a lack of employment and income-generating opportunities. Linking a social protection program with agriculture sector programs can help not only to protect poor people from consumption crises but also to minimize productive disincentives by addressing the needs of different households differently.

Cash transfer programs—the most important form of social protection in Africa—can provide more than just social assistance. Cash transfer programs' primary purpose is to help vulnerable households avoid the worst effects of severe deprivation, but they can also contribute to economic and social development. By providing a steady and predictable source of income, cash transfer programs can build human capital, improve food security, and potentially strengthen the ability of households to deal with exogenous shocks by allowing them to diversify and strengthen their livelihoods to prevent fluctuations in consumption. Although the impacts on risk management are less uniform, cash transfer programs appear to strengthen community ties (through increased giving and receiving of transfers), allow households to save and to pay off debts, and decrease reliance on adverse risk coping mechanisms. Cash transfers also have potential to help poor households manage climate risk. And these transfers can play a positive role in the development of agricultural entrepreneurship in rural areas when households' level of dependency on social grants is low.

In settings characterized by chronic food insecurity and conflict, food transfers may have a protective effect on food security and nutrition of vulnerable populations. Combining specialized and general food assistance is more effective than using a single form of transfer. In general, different payment modalities for transfers (cash, in-kind, voucher) are largely equivalent in their impact on the amount that beneficiaries spend on food; the advantage of cash transfers lies in the additional improvements they can support.

Although cash transfers have perhaps the most potential to reduce poverty, cash+ (cash plus) programs have the largest and most consistent body of evidence supporting their impact on extreme poverty. Cash+ programs are social protection interventions that provide regular cash transfers in combination with additional components or interventions designed to augment income effects. These include measures to induce behavioral changes or to address supply-side constraints that limit access to, for example, credit markets. In fact, graduation programs—one form of cash+ program—were most consistently found to have significant positive impacts across sites and in the longer-term. Programmatic interventions, such as those included in cash+ approaches, stimulate development of a more skilled workforce capable of responding to changing demand and joining the transition to higher levels of productivity. The cash+ approach also has

potential as a powerful tool to improve the well-being and care of Africa's children. However, the productive impact of cash transfers is sensitive to implementation problems; delays and irregularities in payments can reduce their effectiveness in helping households invest and manage risk.

Articulation of cash transfer programs with other sectoral development programs in a coordinated rural development strategy could lead to synergies and greater overall impact. Linking social protection with agriculture interventions further improves technical skills and access to new technologies. Complementary measures to maximize the positive spillover effects of the income multiplier effect generated by the cash transfer program should be targeted not only to cash transfer beneficiary households but also to the ineligible households that provide many of the goods and services in the local economy.

Including environmental risks and vulnerabilities as targeting criteria could help improve the effectiveness of safety nets as risk-coping instruments. While direct income support for households in the short term is important to address hunger and extreme poverty, poor households should also be afforded opportunities to work themselves out of poverty. The role of social grants in addressing short-term poverty is appreciated, but social grants must also foster sustainable economic activities by building entrepreneurship and capacity among the beneficiary households. Public works programs, including productive safety nets, can be designed in ways that contribute simultaneously to increasing household incomes, engaging communities in climate-smart agriculture, and generating "green jobs" in areas such as waste management, reforestation, and soil conservation.

Accurate targeting as a form of rationing is a critical element of both food security and livelihood support for the poorest. Due to imperfect information, identifying the poorest is not straightforward. Targeting may also have political costs. For example, the relatively less poor may feel excluded and decide to vote against the government that initiated the program. Whatever the targeting method, implementation efficiency and overall implementation capacity cannot be overlooked.

In situations where the income or asset distribution is flat, meaning it is difficult to identify the poorest, a combination of targeting methods may work best, such as an objective proxy means test (PMT) together with a community-based method. While household-level verification is costly, it makes a significant difference in terms of preventing leakage. Combining use of exclusion factors with PMT may make the process easier for beneficiaries to grasp and contribute to an understanding that a program is attempting to be fair.

Where poverty and location are highly correlated, universal coverage may be a more effective way to support the poor than targeted programs. Universal targeting substantially reduces the cost of deciding which combination of targeting mechanisms will work best, if at all, minimize exclusion errors, and reduce the social tensions created when the poorest of the poor are suddenly catapulted to income levels above the moderately poor. Such coverage may also provide a more ethical solution in the context of local development.

Heterogeneity in household type, in location, or in population group means that a one-size-fits-all social protection program is unlikely to work, especially in terms of targeting households for program eligibility. Assumptions about similarities within a target group can be misplaced, leading to inappropriate benefit provision for some households. Assuming homogeneity also ignores the diverse needs of households for different

types of support and for different lengths of time. A "leave-no-one-behind" agenda requires that a social protection policy coordinate and deliver the appropriate combination of interventions to different population groups in different contexts.

For targeting to be effective—in the sense that it supports and facilitates program objectives—attention to context, culture, and population characteristics is critical. Likewise support delivered through the program must be appropriate and sensitive to different contexts and livelihoods, and delivery should be fitting to the context. For example, for cultures where sharing is the norm, benefits may need to be delivered to clans or communities rather than individual households. Or, where people are on the move, registration of target populations and payment points will need to adapt to mobility patterns and changing locations.

The choice of the targeting method needs to be grounded in the local context. It is advisable to pilot and evaluate different targeting methods before a full scale-up, bearing in mind that a combination of different targeting methods may lead to greater targeting accuracy than use of a single method.

Clear communication is needed about the targeting approach. Confusion about acceptance criteria has potential to fuel suspicion of local government officials and increase social tension.

Graduation—or the potential to reduce vulnerability so that people can move away from social protection support—is closely linked with overall budget considerations. Increasing the number of households that sustainably graduate from social protection programs reduces the number of beneficiaries and therefore reduces costs. Investments in successful graduation programs could thus serve to reduce the fiscal burden of social protection.

To graduate, households often need additional support that is not part of the basic safety net package. Graduation may still be slow even when a program combines cash transfers with additional support such as public works. Graduation is a function of many factors, including production disincentives, the ability or inability to create capacity, and the effectiveness of the implementers to help clients graduate.

Differences in household type, in location, or in population group mean that a one-size-fits-all social protection program is also unlikely to work when it comes to identifying households to graduate from a program. The possibility of wrong assumptions about similarities within a target group may lead, for example, to premature graduation.

Monitoring and evaluation (M&E) systems should be developed early on as a core component of program design. Well-functioning M&E systems can document progress in implementation and generate information that can be used to improve overall program design.

Continuous empirical assessment is essential to generate evidence for learning and for improving the design of succeeding phases of social protection programs. Systematic qualitative assessments can generate insights to complement quantitative M&E results and to draw practical lessons. Assessing graduation rates and the cost effectiveness of programs requires a mix of quantitative and qualitative analyses. Exploring the perceptions of beneficiaries and local experts regarding transfers and the sustainability of other measures, such as public work schemes, requires in-depth qualitative analysis. Impact studies on community-level asset-building should also be conducted. Investments in policy-relevant research and communication about interventions that have a broad impact on important aspects of well-being are essential to trigger other policy actions with positive consequences,

such as strengthening education and health or actions that effectively promote productivity.

A sustainable multi-objective social protection program requires an effective institutional architecture that can mobilize expertise, assign clear responsibilities to stakeholders, and design an equitable and efficient targeting system. The institutional architecture should articulate the different objectives, instruments, beneficiaries, and oversight institutions.

To ensure the long-term sustainability of these programs, it is important to move toward domestic financing models. Currently, most low-income countries do not have the capacity to fund their own social protection programs through tax income alone, making it imperative to establish effective domestic resource mobilization systems and strengthen national tax collection systems. The Malabo Declaration represents a step in this direction as it commits African governments to integrate measures for increased agricultural productivity with social protection initiatives for vulnerable social groups through targeted lines within national budgets.

Policy and program synergies can maximize the impact of social sector expenditures on agricultural productivity—a key driver of long-term poverty reduction. To address high poverty rates and vulnerability, governments increasingly allocate resources to social sectors such as social protection, health, and education. In fact, spending on social protection has increased sharply. However, despite showing strong growth during the first decade of CAADP, agricultural spending has declined. For Africa as a whole, the share of government spending on social protection in total expenditures rose from an average of 5.2 percent in 1995–2003 to 12.5 percent in 2008–2012 while the share of agriculture expenditure fell from an average of 3.3 percent in 1995–2008 to 3.0 percent in 2008–2017. It is therefore important to improve allocation of social sector expenditures, especially those that protect or build human capital and productive assets, to maximize their contribution to increasing agricultural productivity.

CHAPTER 1

Introduction

Fleur Wouterse and Alemayehu Seyoum Taffesse

Shocks and vulnerabilities are common in the lives of many Africans. Individuals and communities cope with adversity in diverse ways, but poverty and capacity constraints limit their options (Nikoloski, Christiaensen, and Hill 2018). Social protection should play an expanded role in these countries to increase the resilience of the poor and help pave a path out of poverty. Broadly, social protection comprises public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalized with the overall objective of reducing the economic and social vulnerability of poor, vulnerable, and marginalized groups (Devereux and Sabates-Wheeler 2004). Social protection represents an investment in a country's "human infrastructure" that is no less important than investments in its physical infrastructure (ILO 2015). Only a population that is healthy, well nourished, and well educated can realize its potential for productive employment. Lack of access to social protection constitutes a major obstacle to economic and social development; inadequate or absent social protection coverage is associated with high and persistent levels of poverty and economic insecurity, growing levels of inequality, insufficient investments in human capital and capabilities, and weak aggregate demand in times of recession and slow growth (ILO 2015).

Social safety nets or social assistance programs are ubiquitous in developed countries and there has been a great impetus for revisiting social protection in Africa, demonstrated especially by the African Union's declaration on social protection and the June 2012 adoption of a recommendation for national floors for social protection by the International Labour Organization (Klasen 2012). In the 2014 Malabo Declaration, African leaders committed to end hunger on the continent by 2025, in part by integrating social protection with measures to increase agricultural productivity and committing resources to finance that integration. This commitment highlights the key role of social protection in advancing the Comprehensive Africa Agriculture Development Programme (CAADP) agenda.

Social protection initiatives in Africa increasingly aim to institutionalize systems that guarantee assistance for the poor and protect the vulnerable against livelihood risks (Devereux and White 2012). Social protection policies play a critical role in realizing the human right to social security for all, reducing poverty and inequality, and supporting inclusive growth—achieved by boosting human capital and productivity, supporting domestic demand, and facilitating structural transformation of national economies (ILO 2015). Four channels or pathways have been highlighted through which social protection programs can play an instrumental role in promoting agricultural development and, more broadly, economic growth. First, social protection programs create individual, household, and community assets. Second, programs aid households in protecting their assets in case of shocks. Third, programs help households cope with risk and enable households to use their existing resources more effectively. Fourth, programs reduce inequality and thus raise growth rates directly (Hoddinott 2012). Social protection programs are sometimes criticized, however, for creating disincentive effects and for being overly costly. Disincentive effects may arise, for example, if the receipt of public funds discourages beneficiaries from working in favor of increasing their leisure time.

Two major trends will determine the future demand for social protection in African countries. The first is the long-standing elevated poverty rates that have resulted from the decades of economic decline and stagnation that preceded the recent economic recovery. The second trend is the transition to more democratic, pluralistic political systems combined with faster economic growth and a more vocal urban segment of the poor and vulnerable population. This combination is bound to lead to growing demand for social protection and increasing pressure on governments to respond or face social upheaval. These two trends suggest that African countries will confront a two-fold challenge: finding sufficient resources to invest in accelerating growth and meeting the cost of providing social services to large numbers of poor and vulnerable people. Meeting this challenge is further

complicated because most African countries operate under tight budget constraints and have limited experience with social protection programs (Badiane and Ulimwengu 2009). Unlike their Latin American and Asian counterparts, countries in Africa (excepting South Africa and Ethiopia) largely rely on traditional, family-based safety nets and formal pension schemes. The latter cover only a small fraction of employees in the formal sector, while traditional safety nets have come under pressure due to rapid urbanization and are disintegrating rapidly (Badiane and Wouterse 2012). The extension of social protection in Africa south of the Sahara is highly diverse, its dynamics are complex, the constraints to financing and delivery in low-income countries remain formidable, and there are significant challenges in ensuring political commitment to these programs.

The issues highlighted above raise important questions for research. One question relates to how social protection programs can be designed and targeted to allow countries to effectively and efficiently meet their growing needs. A second question calls for identification of the factors that determine success, costs, and sustainability of the social safety net programs currently being implemented. Finally, an understanding is needed of how fiscal constraints and the need to provide social protection can be reconciled and of how the social protection agenda can be adapted to diverse country contexts.

The *2017–2018 Annual Trends and Outlook Report* (ATOR) takes an in-depth look at social protection in rural Africa to address these three questions. First, it summarizes the available evidence on successful implementation of social protection programs in rural Africa. Second, the report helps to fill knowledge gaps related to enhancing the role of social protection in reducing vulnerability and increasing resilience of rural households as Africa embarks on the implementation of the Malabo Declaration commitments and the African Union's Agenda 2063. Third, the report highlights policy implications to guide the design and roll-out of national social protection programs for rural Africa.

Chapter 2 analyzes how the interplay of agriculture and social protection programs and policies and their coordinated implementation can contribute to positive synergies that accelerate progress in reducing rural poverty, eliminating hunger, and building resilience and improved well-being, especially for smallholders. Further exploring the synergies between social protection and agriculture, Chapter 3 provides critical lessons and insights regarding the effects of social protection on agriculture. The author assesses the benefits and challenges of linking social protection with agriculture using the experiences and empirical evaluation of the Ethiopian Productive Safety Net Program (PSNP)—the second largest social protection program in Africa.

The next chapters look at the impact of social protection programs. Chapter 4 provides an empirical analysis, using data from KwaZulu-Natal in South Africa, of the impact of social grants on the development of entrepreneurship in farm households. Using an experimental design impact evaluation for Lesotho, Kenya, Malawi, and Zambia and a quasi-experimental design for Ethiopia and Ghana, the authors of Chapter 5 assess the role of cash transfer programs as a tool to support risk management and build resilience. Chapter 6 zooms in on Mali to evaluate how conflict affects the impact on household food security of two food assistance projects. The authors design a longitudinal, quasi-experimental study based on two survey rounds, five years apart, in the Mopti region in Northern Mali and assess whether access to different forms of food assistance improved household (food) expenditures, food consumption and nutrient availability, and the nutrition status of children. Also looking at the well-being of children, Chapter 7 reflects on coverage and under-coverage of social assistance among certain groups of children and provides an overview of the impact of social protection on children. The author offers reflections on the way forward, particularly in relation to program design and implementation. Finally, Chapter 8 provides a comparative analysis of 48 graduation, livelihood, and cash transfer programs. Using income and

consumption as the primary metrics of impact and focusing on long-term outcomes, the author assesses the sustainability of impact of these programs and compares both costs and impacts across the three types of approaches.

The subsequent chapters reflect on design aspects of social protection programs and provide related lessons for policy makers. The author of Chapter 9 draws on in-depth knowledge of a set of recent and active social protection programs implemented in eastern Africa to discuss three challenges inherent to poverty-targeting that constrain the achievement of program objectives. These challenges are the difficulty of identifying the poorest among the poor, heterogeneity in household characteristics within a target population that is assumed to be relatively homogeneous, and provision of "individual/household" transfers in diverse social and cultural contexts. Chapter 10 uses Egypt as a case study to examine the effectiveness of proxy means test (PMT) targeting. Targeting effectiveness is defined in terms of the ability of the program to enroll beneficiaries from the lowest two quintiles of the expenditure distribution. The authors also consider the social costs of implementing PMT in a context where administrative capacity to explain the targeting mechanism to the public is imperfect. Chapter 11 offers insights for policy makers into how to design cost-effective social protection programs. Focusing on noncontributory transfers to the poor, the authors provide evidence and offer reflections on the key design decisions associated with putting social protection programs in place: targeting, the choice of payment modality, and graduation.

In line with the role of the ATOR as the official monitoring and evaluation report for CAADP, Chapter 12 monitors progress on CAADP indicators outlined in the CAADP Results Framework 2015–2025. The chapter also reviews progress in the CAADP implementation process across the continent, including a look at trends in government social protection expenditures. Finally, Chapter 13 provides an overarching account of findings on social protection as development policy and draws out lessons for policy makers when adopting a systems approach to social protection.

CHAPTER 2

Synergies between Social Protection and Agriculture

Silvio Daidone, Natalia Winder Rossi, and Fabio Veras Soares

Despite the progress made in reducing poverty and hunger over the past few decades, an estimated 782 million people still live in extreme poverty and 815 million are undernourished (World Bank 2018; FAO et al. 2017). Hunger appears to be on the rise, affecting 11 million people, largely due to climate-related disasters and conflict. Africa south of the Sahara remains the region with the highest prevalence of undernourishment, affecting 22.7 percent of the population, especially in eastern Africa, where one-third of the population is estimated to be undernourished. Poverty and hunger are concentrated in rural areas where livelihoods, incomes, and food security depend heavily on agriculture.

Accelerating progress toward rural poverty reduction and achieving Sustainable Development Goal 1.1 require innovation and multisectoral perspectives. Prioritizing coherence between agricultural and social protection policies is a necessary component of such innovation, especially needed to enhance the productive capacity of poor and vulnerable small-scale farmers.[1] On the one hand, ensuring that agricultural interventions reach the poorest can address structural constraints to poverty reduction by increasing access to land and water resources, inputs, financial services, advisory services, adaptive technologies, and markets. This approach can potentially promote the accumulation of productive assets and favor investments that increase small-scale farmers' production and productivity, allowing (some of) them to escape poverty traps. On the other hand, social protection programs provide a minimum income level that can enhance farmers' ability to manage risks and, by providing liquidity, enable poor small-scale farmers to invest in agricultural productivity and other nonfarm income-generating opportunities. Program beneficiaries can use the social transfers to: purchase inputs and productive assets or reallocate their labor to on-farm activities; invest in human capital development; and increase participation in social networks as a result of an increase in their creditworthiness (the regular and predictable flow of cash can work as collateral). In the event of shocks or stresses, access to predictable transfers can help protect valuable productive assets and minimize use of negative coping strategies that exacerbate vulnerabilities (Slater et al. 2016; Tirivayi, Knowles, and Davis 2016). Social protection has also been shown to enhance the capacity of small-scale farmers to invest in sustainable agricultural activities and overcome the economic barriers to adopting new climate-smart technologies and practices.

Agricultural and social protection policies originate from different disciplines and are still viewed by many as parallel policies implemented by different authorities, targeting different populations, and often competing for financial resources. Both areas are important for poverty reduction strategies and—while the coordination of social protection with agriculture is not the sole approach to achieving broad-based rural development—potential gains can be generated by systematically exploiting the synergies between the two sectors. The importance of this specific intersectoral coordination is reflected in several African policy initiatives and declarations, including the 2003 Comprehensive Africa Agriculture Development Programme (CAADP) and the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods in which, among other goals, African heads of state committed "to integrate measures for increased agricultural productivity with social protection initiatives focusing on vulnerable social groups through committing targeted budget lines within our national budgets" (AU 2014).

Cash transfers are increasingly being adopted by developing countries as central elements of their poverty reduction and social protection strategies. The expansion of cash transfer programs has been accompanied by a growing number of program evaluations, resulting in a body of evidence on the impacts on individual and household-level outcomes. Bastagli et al.

1 With the term "small-scale farmers" we refer to crop producers, pastoralists/livestock herders, forest workers, and fishermen who manage a small area. They are characterized by family-focused motives such as favoring the stability of the farm household system, using mainly family labor for production, and using part of the produce for family consumption.

(2016) calculated that there are about 130 low- and middle-income countries that have at least one noncontributory unconditional cash transfer (UCT) program and 63 countries that have at least one conditional cash transfer (CCT) program. In many countries, cash transfers have become the main social assistance program across regions, covering millions of households, like Brazil's Bolsa Família, Mexico's Progresa/Oportunidades/Prospera, South Africa's Child Support Grant, and Ethiopia's Productive Safety Net Programme. CCTs have been hailed as a way of reducing income inequality, especially in Latin American countries where inequality is high, and helping poor households there break the intergenerational transmission of poverty while promoting child health, nutrition, and schooling (Fiszbein and Schady 2009). In Africa, countries have defined tailor-made unconditional transfers that respond to specific vulnerabilities such as food insecurity, HIV/AIDS, and climate-related risks, with strong community participation to enhance design, implementation, and accountability. Convincing evidence exists of the impacts of these programs on food security, access to services, and mitigation of the negative economic impacts of HIV/AIDs on children and their families (AU and UNICEF 2014). In addition to indirect impacts on livelihoods through human capital accumulation and improved food and nutrition security, cash transfers may also have a direct effect on household livelihoods. Hypothesizing a productive impact of cash transfers assumes that recipient households, especially those living in remote rural areas of developing countries, face significant barriers in multiple markets. Under these conditions, and assuming the non-separability of consumption and production decisions in small-scale farming households that produce a significant amount of the food they consume, an infusion of cash can alter household decision making (Singh et al. 1986). Cash provides liquidity which can allow for productive investments that alter production possibilities. This circumstance has only recently begun to receive attention in the literature on the impact of cash transfer programs (Daidone et al. 2016; Davis et al. 2016).

From a policy perspective, understanding the productive impacts of cash transfers is relevant. Governments often voice concerns about "dependency" when cash transfers are used as a social protection instrument and are sometimes skeptical as to whether a monetary transfer could induce households to transition out of poverty in the medium term and thus to "graduate" from social assistance programs. These concerns have fueled a debate about the concurrent need for promoting income-generating activities and resilience-building among poor households. These interventions are a natural complement and necessary condition for sustaining any of the impacts achieved by social protection programs, especially for assuring that the increase in human capital can be matched with better occupational prospects for younger generations in rural areas (Mariotti, Ulrichs, and Harman 2016; Curry 2017).

This chapter analyzes how the interplay of agriculture and social protection programs and policies and their coordinated implementation can create positive synergies that accelerate progress in reducing rural poverty, eliminating hunger, and building resilience and improved well-being, especially for small family farmers. After providing a conceptual framework describing the links between the two domains, we review evidence from the impact evaluation literature and discuss possible policy and programming options to promote coherence and sustainable practices for agriculture and social protection efforts.

Conceptual Framework

According to the definition recently adopted by the Inter Agency Social Protection Assessments (ISPA), social protection refers to the "set of policies and programs aimed at preventing or protecting all people against poverty, vulnerability, and social exclusion throughout their lifecycles, with a particular emphasis on vulnerable groups. Social protection can be provided in cash or in-kind, through noncontributory schemes, providing universal, categorical, or poverty-targeted benefits such as social assistance, contributory

schemes with social insurance being the most common form, and by building human capital, productive assets and access to jobs" (ISPA, n.d.).

Agricultural interventions, particularly for small family farmers, focus on improving productivity in crops, fisheries, forestry, and livestock and increasing access to markets (Tirivayi, Knowles, and Davis 2016). A recent literature review of impact evaluations broadly classifies community and smallholder-targeted agricultural interventions in the following 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 (IEG 2011).

To look at the coherence between social protection and agricultural interventions, we adopted the definition of coherence put forward in Gavrilovic et al. (2016, 1): "a systematic promotion of complementary and consistent policies and programs across sectors, thereby creating synergies to combat rural poverty and food insecurity more effectively. It ensures that potentially conflicting interactions between policies and programs are avoided or minimized. Coherence can be pursued horizontally across agriculture and social protection agencies and their policies, programs and operational systems, and vertically across different levels of government in order to ensure consistency between policy frameworks/objectives and their translation into programs and effective delivery on the ground."

Coherence can take many forms. From a policy perspective, coherence entails aligning approaches to ensure that, on one hand, agriculture and broader economic inclusion dimensions are at the core of social protection strategies and, on the other, that the role of social protection for risk management, inclusivity, and addressing key gaps and constraints is fully acknowledged.

From a programmatic perspective, there are two main ways to reinforce coherence between social protection and agricultural interventions: First, designing and adapting stand-alone social protection or agricultural programs to make them coherent with agricultural and social protection objectives, respectively. Second, combining multiple interventions so that targeted communities and/or households participate in both components either simultaneously or sequentially. This second approach can entail either aligning existing programs to maximize impacts in terms of productivity and inclusion or designing an integrated package that includes both cash transfers and productive components (see categories of combined programs provided in the next section).

Many approaches have been developed to promote coherence between agriculture and social protection at the operational level. Cash transfers are generally used as the entry point, but in other contexts productive interventions play the primary role. Recently, a cash plus (Cash+) model has been used in both development and fragile settings to promote coherence between the two domains. According to Roelen et al. (2017, 6), "Cash plus programs can be characterized as social protection interventions that provide regular transfers in combination with additional components or linkages that seek to augment income effects. This is done either by inducing further behavioral changes or by addressing supply-side constraints." The "plus" components can be integrated into the cash transfer program or can be externally linked; these components can focus on social and/or economic dimensions. From the economic and productive perspective, Cash+ aims to maximize the impacts of cash transfer programs: the cash component of Cash+ enables beneficiary households to address their immediate basic needs and, depending on program characteristics such as size, duration, and regularity of the transfer, can allow them to invest in economic activities. The plus components of Cash+, often in the form of productive assistance and training, strengthen the economic and productive impacts of the cash component while helping to protect, restore, and develop livelihoods (FAO 2018).

Another approach used to promote coherence is the graduation model. This approach focuses on livelihood interventions that provide extremely poor households with an integrated and sequenced package of support over a short, defined time period. The package usually includes training to develop an income-generating activity, skills and business coaching, asset transfers, consumption support, and access to health information and services. A few pilots of this model have been rigorously evaluated and were shown to be sustainable and cost-effective (Banerjee et al. 2015).

To understand the impact pathways of social protection and agricultural interventions, we consider the model of agricultural households living in a context of missing or incomplete markets—synthetically described in the introduction to this chapter—for whom consumption and production decisions are not separable. We identify four plausible pathways through which social protection affects agriculture and helps achieve its objectives of reducing risks and enhancing agricultural production and, vice versa, for agricultural interventions (this paragraph heavily draws from Tirivayi, Knowles, and Davis 2016):

- *Alleviation of credit, savings, and liquidity constraints.* Social protection interventions, including unconditional and conditional cash transfers and cash-for-work programs, may reduce farmers' liquidity constraints, eventually encouraging greater risk-taking and spending on inputs (Dercon 1996). If regular and predictable, transfers can also facilitate small-scale savings or investment by serving as collateral and so enabling access to credit (Barrientos 2012). Agricultural interventions, like microfinance and input subsidies, may also alleviate the credit constraints on rural households, which prevent them from purchasing commercial inputs, and thereby contribute to greater farm productivity.
- *Certainty and risk.* Lack of insurance and exposure to shocks can drive farmers below a critical asset threshold from which recovery is not possible. In anticipation of such outcomes, poor and vulnerable households may opt for less risky technologies and portfolios. Yet these often generate lower returns, on average, trapping farmers in persistent poverty (Rosenzweig and Binswanger 1993). In this context, social protection instruments, such as cash transfers, can affect the risk attitudes of farm household members by altering household wealth (Hennessy 1998). Similarly, agricultural interventions, such as irrigation infrastructure or weather-based crop insurance, can increase certainty and security and provide assurance of a minimum income stream to rural households.
- *Increased access to technology, knowledge, inputs, and factors of production.* 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-yielding varieties and fertilizer); natural resource management techniques (e.g., soil conservation practices and irrigation); land tenure reform; marketing arrangements; and macroeconomic reforms.
- *Food and nutrition security and labor productivity.* Social protection instruments such as cash transfers, public works, or school feeding programs can have a positive effect on food and nutrition security, which may in turn enhance labor productivity. In the short term, beneficiaries have greater access to sufficient, safe, and nutritious food to meet dietary needs, which improves physical strength and stamina and reduces days of work lost. In the longer term, nutrition is improved, especially *in utero* and in other sensitive periods such as early childhood and adolescence, leading to greater cognitive development and ability and thus to greater labor productivity (Steckel 1995).

Three major behavioral responses from beneficiaries of social protection

and/or agricultural interventions are relevant in this relationship: spending and risk-coping behavior, intra-household resource allocation, and local economy effects. First, households participating in agricultural and social protection interventions that provide predictable income transfers will have the flexibility and confidence to spend more on agricultural assets and avoid negative risk-coping strategies, such as distress asset sales, dropping out of school, putting children to work, and food rationing, that undermine longer-term livelihood sustainability. Second, both agricultural and social protection interventions may trigger changes in intra-household resource allocation, such as a decrease in adult labor supply, due to the income effect of the interventions, or an increase in labor supply as a result of new investments in on-farm and nonfarm ventures or better nutrition (Prifti et al. 2018). Third, behavioral responses to social protection and agricultural interventions have consequences that are felt beyond the beneficiary households, producing not only indirect effects on informal mechanisms such as social networks but also spillovers on non-beneficiaries that trigger local general equilibrium effects (Thome et al. 2016).

Existing Evidence

Some evidence of combined or synergistic effects exists for three broad categories of combined agricultural and social protection programs or interventions:[2]

1. Sustainable livelihoods programs (SLP)—single programs with multiple components, including both agricultural and social protection interventions.
2. Complementary programs (CP)—separate programs/interventions involving the two sectors and implemented in a coordinated manner.
3. Overlapping programs (OP)—unplanned overlap of different sectoral programs at the individual/household or geographical/community level.

Veras Soares et al. (2016) recently conducted a systematic literature review of combined social protection and agricultural programs. They were able to identify only 37 papers, book chapters, or reports published before late 2016 that rigorously assessed the impact of combined agricultural and social protection interventions. [3]

The meta-analysis showed that, unlike the literature on the impact of cash transfers, the evidence on the impact of combined interventions is limited and regionally concentrated. Among the challenges facing the implementation of rigorous experimental impact evaluations of combined interventions, the authors highlight the difficulty of coordinating two programs implemented by different agencies in the context of an experimental design where treatment (with different sectoral arms) and control groups cannot be mixed for a relatively long period. Thus, it is not surprising that most SLPs had an experimental design, while the majority of CPs and OPs (at least two programs) only had quasi-experimental designs.

In addition, several of the non-experimental evaluations examined in the meta-analysis based at least part of their assessment on secondary data, relying on questionnaires and/or sampling strategies meant for other purposes. The ex-post nature of these evaluations is largely due to the absence of impact evaluation planning during the design phase, particularly in the case of CPs and OPs. Synergies were particularly difficult to measure

2 Combined effects refers to the sum of the positive impacts that each program can have in isolation. Synergistic effects refers to a multiplicative impact beyond the sum of the individual effects of each program.

3 Geographically, 46 percent of the evaluations (17) examined were of programs in Asia, 30 percent (11) in Latin America, and 24 percent in Africa (9). The overrepresentation of Asian programs is largely explained by the numerous evaluations of the Challenging the Frontiers of Poverty Reduction (CFPR) program of the Bangladeshi nongovernmental organization, BRAC.

across typologies due to the absence of a pure control (non-intervention group). Apart from a few exceptions, it was not possible to disentangle the individual contribution of each social protection or agricultural component/program and of their interaction (synergies) in shaping overall program impact.

The impact evaluation literature reveals a strong association between regions and types of combined interventions. In Asia, SLP designs prevail, with a focus on livestock transfers and extension services (training) coupled with consumption support (cash transfers), coaching, and links with other social services. In Latin America, impact evaluations primarily look at CPs that combine CCT with access to extension services and rural credit. In Africa, there is a more balanced representation of combined intervention types, with CPs largely represented by public works and agricultural interventions. Bangladesh, Peru, and Ethiopia are the countries in each region where the most evaluations considered in the systematic literature review were conducted and, not surprisingly, they focus on SPLs, CPs for cash transfers, and CPs for public works (cash-for-work) interventions respectively.

In terms of outcomes, the most common indicators examined in these studies relate to income, consumption, and expenditures; a few evaluations assessed how these indicators translate into poverty reduction. Impacts on hunger and malnutrition indicators are often reported in terms of a variety of food security indicators, such as perceived food security and standard food security scores, as well as indicators of dietary diversity or frequency of meals. Only 2 of the 37 evaluations considered in the meta-analysis looked at anthropometric measurements for children. Asset-related indicators represent the second-most-common type of outcome assessed in the impact evaluations (76 percent), with a focus on productive assets, but also including durable goods. Most evaluations focus on the ownership of assets rather than on their value. Land and livestock ownership are most commonly evaluated, largely because the programs were implemented mostly in rural areas and because livestock is highly prevalent among the assets distributed in SLPs. Moreover, in some regions, livestock is used as a form of precautionary savings in the absence of financial services. The focus on rural areas also explains the relatively large number of evaluations that either discuss program impacts in terms of direct production and productivity indicators or in terms of indirect indicators like household income sources. However, much less is known about the impact of interventions on investments in agricultural and non-agricultural inputs. Finally, the evaluations reviewed also commonly assessed indicators of savings and access to credit. Many of the interventions evaluated had components to incentivize the use of financial services, such as training in financial literacy, mandatory savings, and the formation of savings groups.

The impacts reported in the evaluations from all three categories of combined programs (SLP, OP, and CP) show promising results on most of the reported dimensions. Nuances arise with respect to broader questions. For example, the long-term implications of these combined social protection and agricultural programs is not entirely clear. The evaluations could not definitively determine how sustainable the impact of these programs would be if they were scaled up or the extent to which increased investment by beneficiary households could lead to sustained productivity and income gains. There are also open questions about program implementation and coordination. For example, a pattern seen in the implementation of such programs is that investment in productive assets and increased financial inclusion were either larger for or restricted to better-off beneficiaries. Targeting the poorest through such programs remains quite challenging, even within the context of SLPs. Further, standard agricultural extension services do not seem to be adequate or appropriate to meeting the needs of the target population of social assistance programs.

Promoting Coherence

Political Economy

Strengthening coherence between social protection and agriculture programs to ensure they contribute to the well-being of poor rural households primarily requires intervening in the enabling environment. Despite the need for coordinated efforts across different agencies and ministries, governments are not typically organized to allow for cross-sectoral collaboration. Different strategic approaches, technical competencies, organizational fragmentation, limited exchange of information, and competition for resources represent the main barriers to effective joint action.

High-level political commitment is critical in creating consensus among different stakeholders about the importance and the benefits of coherence. Support can be mobilized and achieved in various ways, for instance by building coalitions of stakeholders to develop a shared vision on how to fight rural poverty and a call to action; generating and disseminating evidence on impacts of the combined interventions on poverty reduction for policy advocacy; identifying leaders and policy champions; and leveraging regional and global commitments such as the Malabo Declaration.

Institutional Capacity

Institutional arrangements that facilitate coordination and collaboration across different government agencies are critical to ensure that policy and program formulation is properly harmonized and aligned and that interventions at the community and household levels are well implemented. Coordination and collaboration in support of coherence can be promoted in various forms, for instance by ensuring representation of agriculture and social protection sectors in relevant coordination mechanisms (Scott and Rahman 2016; Gordillo, Sanchez Ruy and Mendez. 2016) [4]; by harmonizing coordination mechanisms to avoid the proliferation and consequent fragmentation of actions; by engaging with institutions at decentralized levels, which provides the opportunity to build collaboration across central and subnational levels; and by developing programming guidance for staff members working on program delivery, who can facilitate the linkages across programs.

Organizing adequate and appropriate financing is central to establishing coherence. Funds should flow to jointly determined priority activities and areas. Proper budgeting based on the institutional arrangements and processes for collaboration across sectors will avoid potential competition for resources. Options for making financing supportive of coordination include: identifying the complementary roles of agriculture and social protection within cross-sectoral investment frameworks related to food security, rural development, and poverty reduction; pooling funds into basket-funding; and using incremental funding to create incentives for collaboration.

Operational Arrangements

Linkages between social protection and agriculture can be reinforced not only by working on the enabling environment but also through design and operational arrangements. Coordinated targeting is a crucial tool to promote coherence, representing "a conscious effort to select the beneficiaries of agricultural interventions and social protection programs in a way to increase the joint impact of both programs" (Cirillo, Györi, and Veras Soares 2017). Two different approaches can be used to produce synergies through targeting. First, social protection and agriculture agencies can make use

4 For instance, existing intersectoral coordination mechanisms—such as food security coordination committees or social protection steering committees that include government and development partners—can be strengthened by ensuring that they include adequate representation (both technical and with decision-making power) from the agricultural and social protection domains.

of the same database or targeting strategy with a view to reaching the same households and individuals. Second, the two agencies may elect to implement programs in the same geographic areas, without necessarily targeting the same households within those areas. If synergies are expected to occur at the individual level, the first approach is probably most efficient. For synergies to emerge at the individual/household level, eligibility criteria need to create a pool of households that are eligible for both programs. The use of single and/or interoperable registries can reduce the administrative costs of the targeting process and facilitate the creation of synergies by improving monitoring of a program's coverage. However, if synergies are expected to occur at the meso-level of communities or districts, the second approach would be sufficient. But challenges may arise when both types of interventions are targeted to the same households based on the geographical criterion only, and both coherence and coordination of the programs' objectives and implementation may need to be strengthened to foster synergies, as shown by the example of programs in Ethiopia (Box 2.1).

Benefits and Trade-Offs

Substantial efficiency gains and improved coherence can be achieved not only by coordinating targeting or other program features but also by replacing ineffective agricultural interventions with social protection programs and vice versa, in order to prevent market distortions and budgetary problems, and by aligning policies and programs in order to avoid unintended negative impacts. For instance, a cash transfer could be used to aid small-scale farmers' transition to different livelihoods or production of different commodities following the removal of import tariffs that protect the production of staples largely produced by the same farmers.

Depending on the stated objectives of the programs and the targeting strategy, policy makers will always face a trade-off between the goal of raising agricultural productivity and the goal of mitigating

BOX 2.1: IMPROVING COHERENCE AND GENERATING SYNERGIES BETWEEN THE PSNP AND THE OFSP/HABP IN ETHIOPIA

In 2006, about a third of the beneficiaries of the Ethiopia's Productive Safety Net Programme (PSNP), a large-scale cash-for-work program, also had access to the Other Food Security Programme (OFSP), a set of complementary agricultural interventions mostly linked to advisory services for smallholder farmers and microcredit (Gilligan, Hoddinott, and Tafesse 2009). But common geographical targeting seemed insufficient to ensure significant coverage of PSNP beneficiaries by the OFSP. The replacement of the OFSP with the Household Asset Building Programme (HABP) in 2009 addressed this issue by increasing the number of development agents responsible for extension services on the ground. In addition, the HABP enforced the priority access of PSNP beneficiaries to its services (for common targeting) and delinked credit services from extension services. This last change was important as Devereux and Sabates-Wheeler (2008) report that some PSNP beneficiaries had lost their eligibility for the PSNP after receiving credits from the OFSP to buy goats, despite the fact that the assets were not yet productive (i.e., not yet generating a flow of income) and the loan had not yet been paid. This type of fast-track graduation would prevent the fostering of synergies that the common geographical targeting was meant to produce, as there would be no time for the benefits of the two programs to reinforce each other (Cirillo, Györi, and Veras Soares 2017).

Introduction of the HABP increased the contact that PSNP beneficiaries had with development agents (extension services), who provided advice about new crops and how crops can be grown. In an impact evaluation of the combined impact of the programs, Hoddinott et al. (2012) find that access to the OFSP/HABP plus high levels of payments from the PSNP led to more fertilizer use and enhanced investments in agriculture that are likely to improve agricultural productivity among the households receiving both programs. That study also found that high levels of participation in the PSNP alone had no effect on agricultural input use or productivity and had limited impact on agricultural investments.

or reducing rural poverty by providing social assistance to poor and vulnerable households. Interventions that raise agricultural productivity lower food costs, which has positive real-income effects for poor households. Conversely, cash transfers increase food demand and create new markets for food products, with positive impacts on farmers' incomes. In the case of Malawi, Kagin et al. (2018) show that if the policy goal is to raise rural incomes and increase crop production, combining social protection with productive agricultural interventions is a more effective strategy than either intervention alone; the simulated cost-benefit ratios for cash-transfer and input-subsidy programs are always higher in the scenarios with overlapping targeting than in the non-overlapping options

Second-order effects of social protection and agricultural interventions cannot be ignored either. If an input subsidy raises the market supply of food crops and thus lowers food prices, any food producer not receiving the subsidy may suffer because market prices for food crops will fall. Policies that increase local demand for food crops, such as cash transfers, or connect producers with outside markets could alleviate this problem. Similarly, if a cash transfer pushes up food prices by raising the demand for food, households that do not receive the transfer could suffer, as such households will have to pay higher prices without the benefit of the transfer. Policies that simulate local production could alleviate these potentially negative spillovers by ensuring that increased demand created through the transfer is matched with increased production, thereby limiting price increases.

Selecting the Best Option

Selection of the best instrument or combination of instruments to generate synergies and maximize program impacts should be informed by various factors, including objectives of policy makers, national development priorities, and available resources. Further, because the productive capacity of small-scale farmers is determined by their diverse socioeconomic characteristics, both social protection and agriculture program designers must address this heterogeneity by ensuring flexibility in the design of integrated complementary interventions. The case of Cash+ interventions is paradigmatic in this sense.

While available evidence shows that cash transfer beneficiaries invest in economic and productive activities that contribute to livelihood improvements, complementary interventions are sometimes required to maximize opportunities and impacts. It is critical to identify the most relevant and suitable intervention or combination of interventions (the "plus" component) that can maximize the impact of the cash component in a specific context, including in fragile and post-emergency contexts (not only in developmental settings). This can be done through needs assessments, context-specific livelihoods and market analyses, and analyses of local agricultural value chains and economic opportunities (FAO 2018).

Defining the best timing for the plus component based on the local agricultural calendar and seasonal patterns is also key. Cycles in agricultural production, labor markets, and food prices have important implications for the timing of interventions designed to support production and consumption. These should consider fluctuations in income and access to food across the year. For example, providing subsidized fertilizer during the planting season can relax financial constraints that prevent households from investing in productive inputs at critical times in the agricultural cycle.

When the plus component includes the transfer of inputs or assets to beneficiaries, in-kind distribution may be one option, particularly when local agricultural markets do not function well. However, where suitable, cash-based transfers may be preferred; cash transfers increase choice and flexibility for beneficiaries and are potentially more cost-effective than in-kind assistance.

The selection of the "best" plus component or coherent package should be based not only on market opportunities but also on household demographic and economic characteristics. For instance, small-scale farmers with different labor capacities require different types of support.

Poor farmers with low endowments of factors of production might require predictable social cash transfers combined with agricultural interventions that improve access to modern inputs to increase land and labor productivity. In contrast, relatively better-off farmers with sufficient productive potential may prefer or require agricultural interventions that improve access to markets. Similarly, productive support should match agro-ecological factors and food production systems. For instance, small-scale fishermen and forestry workers can be targeted by unemployment insurance and/or seasonal public works to avoid the risk of overexploiting national resources that might result, for example, in the collapse of fish stocks or deforestation.

Conclusions

Recent declarations at the global and regional levels acknowledge the role played by social protection and agriculture in fighting poverty and eliminating hunger, especially in rural areas. However, despite the attempts made in various countries to better link the two spheres, more efforts are needed to improve coherence and achieve greater benefits for the most vulnerable households.

While rapid and sustained poverty reduction primarily requires policies fostering increased total factor productivity to produce significant cumulative income gains (Pritchett 2018), programmatic interventions such as Cash+ can help maximize the impacts of cash transfer programs—including helping families to enhance human capital and risk-management capacity and increase productivity, which will allow them to move from subsistence to resilient livelihoods.

Within the context of broad rural development and economic inclusion strategies, experience in many low- and middle-income countries shows that social protection can contribute to reducing income inequality and promoting a more equitable, inclusive, and sustainable pathway to structural transformation. Social protection programs, at a minimum, allow the poorest to access more and better food, to enhance their capacity to manage risk, and then to strengthen human capital, as well as relaxing the economic constraints faced by the poor and enabling them to invest in higher-risk/higher-returns economic activities. Linking social protection with agriculture interventions further improves technical skills and access to new technologies. Building coordination and coherence across social protection and agricultural programs from the political to the operational level can increase efficiency and effectiveness of these interventions.

While these measures are not sufficient to trigger a rapid and substantial change in households' well-being, they can certainly mitigate the most negative effects arising from the widespread out-migration from rural areas that is driven by a lack of employment and income-generating opportunities. Further, investments in policy-relevant research and communication about interventions that have a broad impact on important aspects of well-being are essential to trigger other policy actions with positive consequences, such as strengthening education and health or actions that effectively promote productivity.

CHAPTER 3

Agriculture and Social Protection: The Experience of Ethiopia's Productive Safety Net Program

Getaw Tadesse

In this chapter, critical lessons and insights regarding the effects of social protection on agriculture are drawn from an assessment of the benefits and challenges of linking social protection with agriculture using the experiences of and empirical findings from the Ethiopian Productive Safety Net Program (PSNP)—the second-largest social protection program in Africa. In Ethiopia, social protection has always been intertwined with agriculture and rural development (Devereux and Guenthe 2009), and over the years, this interlinkage has become progressively stronger. Before 2005, the country had an ad hoc social protection policy of responding to disasters and risks through emergency support to protect households from agricultural failures. The support was provided mainly in the form of emergency food aid and to some extent in the form of food-for-work programs. Since 2005, social protection and agricultural commercialization programs and policies have converged and become part of the broader agricultural and rural development policies. Through targeted public works and direct transfers in the PSNP, social protection has been made regular and predictable and designed to play a role in agricultural promotion, in addition to providing a welfare protection system (Ethiopia, Ministry of Agriculture 2014).

Ethiopia's 2005 agricultural development strategy divided the country into high-agricultural-potential (growth corridor) and chronically food insecure areas. For the high-potential areas, a program promoting agricultural commercialization was designed to enhance surplus production for sale or redistribution to deficit areas (Ethiopia, Ministry of Finance and Economic Development 2006). The program was succeeded by the Agricultural Growth Program in 2010 following the new national Growth and Transformation Plan and has remained an important agricultural development program in the high-potential areas. For the chronically food insecure areas, a new national social protection strategy was developed in the form of three food security programs. The PSNP, providing targeted transfers through public works or direct payments to poor households with disabled or elderly members, was initiated and quickly expanded. The other two food security programs were the Land Access (Resettlement) Program and the Other Food Security Program, which was renamed the Household Asset Building Program (HABP) in 2010. The HABP was designed to help PSNP households accumulate assets for graduation. The approach was revised as part of the PSNP's livelihoods transfer component in 2015.

The PSNP is a multipurpose social protection program designed to address the needs of different households and minimize disincentives through a sequence of social supports leading to beneficiaries' graduation out of the program. In operation for almost 15 years, the program has aimed to reach close to eight million people. Unlike many other social protection programs in Africa or in other developing countries, the PSNP has sought to promote agricultural production and productivity and generate rural incomes to break families free from the poverty trap that has ensnared millions of Ethiopians in food insecurity and vulnerability because of recurrent climate shocks and disasters. Although the program was extended to urban areas recently, it has been implemented predominantly in rural areas, where the majority of the poor live. The content and coverage of the program has continuously evolved through time.

Linking social protection with agriculture offers synergies that can increase the effectiveness of both (FAO 2015). Poverty reduction through social protection reduces the negative effects of poverty and its associates—malnutrition, illness, and lack of education—on agricultural productivity. Social protection programs help to increase the time horizon of vulnerable agricultural households and may encourage them to adopt riskier but higher-return agricultural and other income-generating strategies. The programs can also increase agricultural investments and input use through relaxing financial constraints. Conversely, improvements in agricultural productivity help to protect the welfare of poor households that are predominantly dependent on agriculture. However, in many developing countries agricultural interventions are poorly coordinated with social protection interventions. Furthermore, an effective synergy between social protection

and agricultural productivity requires efficient targeting, sufficient, timely, and predictable transfers, and market access (FAO 2015).

This chapter presents the experience of the PSNP and summarizes empirical evidence about its impact on agriculture and critiques of its approach to helping the poor. By summarizing the empirical evidence in an easily understandable way and pinpointing concerns, we believe that the chapter provides information to Ethiopia to further sustain and improve the program and provides several lessons for other African countries designing social protection programs. The chapter focuses on the productive aspects of the PSNP in linking agriculture and/or livelihoods with social protections. It discusses impacts on productivity, community resource development, and asset building as well as on productive disincentives.

The rest of the chapter is organized as follows. We first describe Ethiopia's experiences in designing and implementing the social protection interventions of the PSNP. Then we present and discuss the empirical findings on the impacts of the interventions on community resource development, agricultural productivity, and asset building. In the next section, we summarize three best practices and three critiques to offer lessons and insights for other countries and circumstances. The concluding section summarizes the findings and puts forth policy and research implications.

Design and Implementation of the PSNP

Objectives and Instruments

The PSNP was designed as an innovative social protection program to fit the context of Ethiopia—which is a largely agrarian society that suffers from widespread chronic food insecurity and severe natural resource degradation. The PSNP's innovativeness lies in the link between agricultural development and social protection and the use of multiple interventions to achieve multiple objectives. It has aimed to achieve three interlinked objectives, the three Ps, and clearly identified program interventions targeted to the objectives. These are protection, prevention, and promotion of vulnerable and chronically food insecure households (Devereux and Guenthe 2009).

Ideally the first objective protects households against hunger through consumption smoothing. By ensuring predictability—a criteria of food security—it minimizes uncertainty and reduces human catastrophe, including hunger and famine. The second objective, prevention, is intended to protect a household's assets during crises. Whenever shocks occur, households tend to destock their productive assets through distress sales and loan repayments, which can eventually lead households into a poverty trap. The prevention objective, therefore, provides safety nets to prevent a poverty trap.[1] The third objective, promotion, aims to enhance the productive capacity of households who have been trapped in poverty. Under this objective, households and/or communities caught in a poverty trap due to indebtedness, marginality, and asset crises are given the opportunity to build community resources, increase productivity, generate income, and build assets.

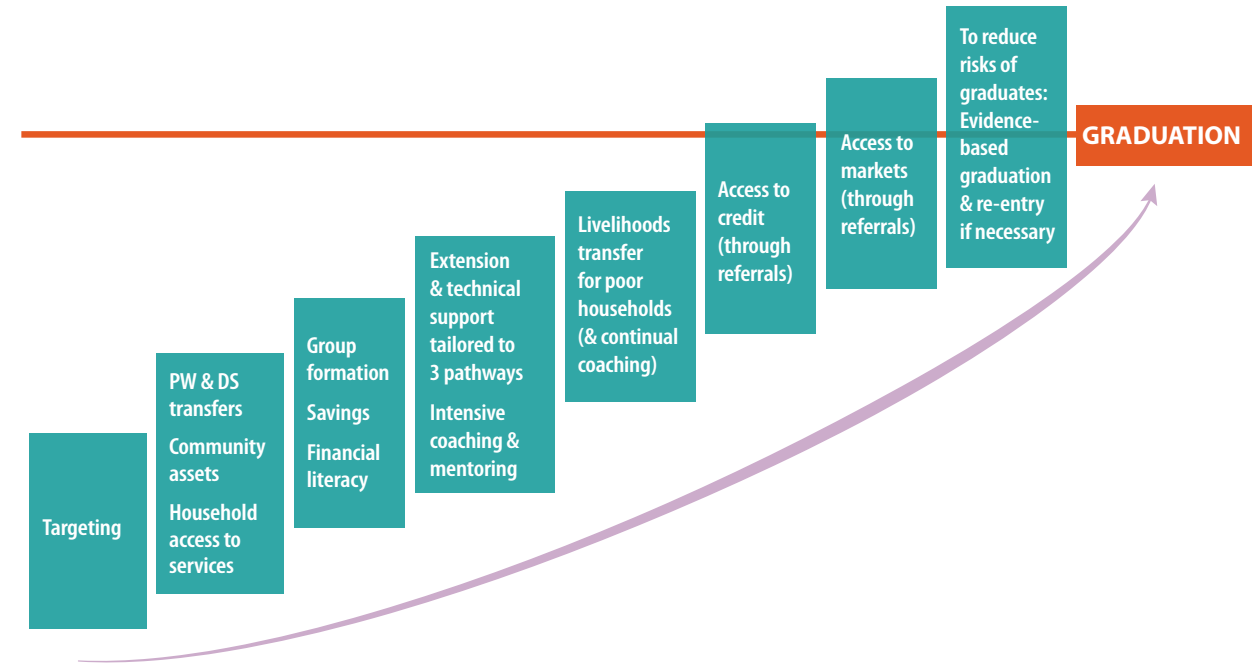
The PSNP applies two major interventions (instruments) to address the three objectives: direct cash or food transfers (direct support) and transfers through contribution of labor to public works. The direct support instrument is targeted at those who cannot supply labor due to illness, disability, or age. The public works component is targeted to those households who can supply labor to community works. In both interventions, beneficiaries are screened based on their levels of food insecurity and wealth. But in the case of public works, households or individuals receive the transfers only when they voluntarily contribute labor to public works. The aim of this intervention is twofold. On the one hand, it minimizes the disincentive or dependency effect associated with free transfers. On the other hand, it helps build community

1 A poverty trap is a self-reinforcing mechanism that causes poverty to persist (Azariadis and Stachurski 2005).

resources or assets that may otherwise not be built due to market failure or "Tragedy of the Commons" (Hardin 1968). Such assets or resources include soil and water conservation activities in communal rangelands and roadsides, developing water points such as springs and ponds, tree planting, and construction and maintenance of social service provision centers such as demonstration plots and farmers' training centers and schools.

In addition to the two most widely used interventions—public works and direct support—parallel programs closely related to the PSNP were initiated. The government of Ethiopia was concerned about the dependency of households on regular safety net supports, which would create a fiscal and public service burden. Thus, the Other Food Security Program until 2009 and the HABP until 2014 were introduced in parallel to the PSNP and merged as the livelihood component of the PSNP in 2015. Both the Other Food Security Program and the HABP provided livelihood development packages (LDPs) to those PSNP households who were willing, interested, and able to engage in income-generating activities selected from three strategic livelihood pathways—on-farm (e.g, poultry, sheep breeding, dairy etc.), off-farm (e.g, petty trade, hand craft), and employment activities. The objective of the LDP was to build and promote household assets essential for sustained income generation and graduation from the PSNP program. The packages include financial access initially through credit and later in 2015–2016 through a grant/transfer as well, trainings, managerial support to develop business plans, and frequent visits for coaching and advisory services by village-level assigned development agents. In some cases, the LDP includes market linkage support to access input and output markets. All the LDP beneficiaries are PSNP beneficiaries—with the goal of encouraging them to graduate from being regular recipients of public works transfers. All support was given sequentially to facilitate effective graduation (Figure 3.1). However, as we describe subsequently, only a few of the PSNP beneficiaries received the LDPs.

FIGURE 3.1—SEQUENCE OF PSNP SUPPORT



Source: Ethiopia, Ministry of Agriculture (2014).
Note: PW = public works; DS = direct support.

Institutional Architecture

In the PSNP, multiple stakeholders are actively involved from conception to impact evaluation. The program was initiated based on empirical findings and a series of studies by development partners that indicated the need for a comprehensive, well-structured, and sustained safety net program instead of an ad hoc response to the recurrent emergency needs of the country. Fortunately, there was a synergetic interest among development partners and the government to design a program that addresses the challenges of chronic food insecurity. The government was highly interested in having a large-scale program that would not only feed food-insecure households but also rehabilitate degraded natural resources and community assets. Furthermore, it was very much concerned about the disincentive effects of free food aid. This interest was in line with the interests of partner organizations and the research findings (Gilligan and Hoddinott 2007; Tadesse and Shively 2009). As a result, the PSNP was initially designed by a joint food security taskforce drawn from government and development partners. Then, a consortium of donors including, among others, the World Bank, the Department for International Development, and the United States Agency for International Development pledged funding to the program and the government adopted it as a regular public program integrated with the existing administrative structure for implementation. Thus, the program is regarded as government owned and led but supported by donors.

The PSNP is a multisector program that involves several government ministries and agencies including the Ministry of Agriculture, the Ministry of Finance and Economic Development, the Ministry of Labor and Social Affairs, the Federal Cooperative Agency, and the Ministry of Women and Children. These organizations work together to effectively manage the program. Besides these federal organizations, regional and *woreda*[2] -level organizations have been involved in planning, coordinating, and managing the program. At the design stage, the duties and responsibilities of these entities were clearly defined (Ethiopia, Ministry of Agriculture 2014). At all levels, the Ministry of Agriculture was responsible for coordinating the overall process of the program. To commence the implementation of the program, the Ministry of Agriculture departments were staffed with formal employees specialized in agribusiness, natural resource management, and rural finance. More recently, the responsibility of supervising the direct support component was shifted to the Ministry of Labor and Social Affairs.

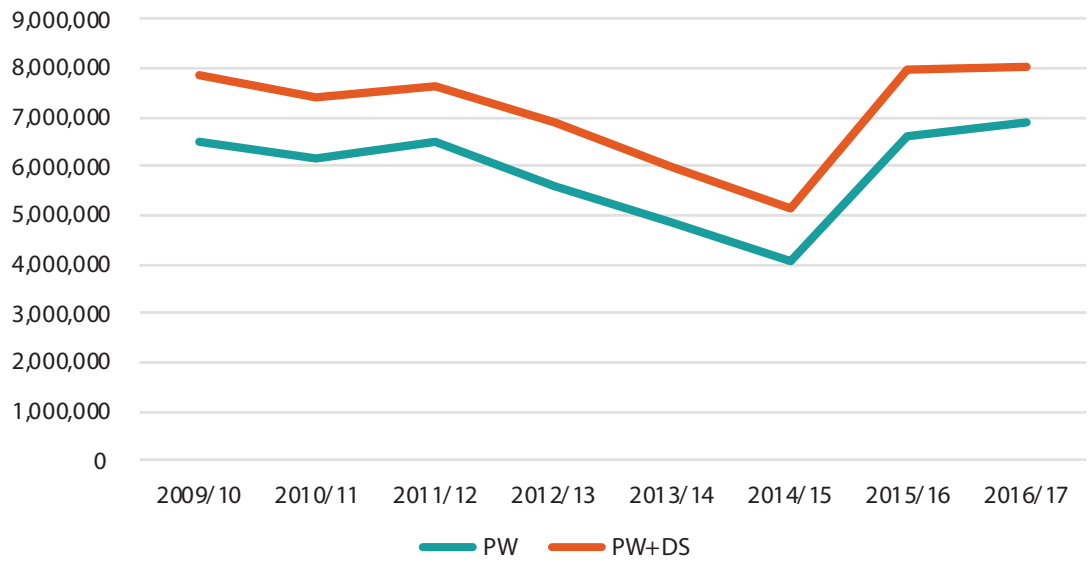
At the federal level, the PSNP was designed and has been monitored and continuously reviewed by several committees and teams drawn from governmental bodies and development partners. The Joint Review and Implementation Support Mission, made up of government and development partners, is one of the committees responsible for review of activities, outputs, and outcomes. It meets twice a year in May and October. The Joint Strategic Oversight Committee, which is chaired by the minister of agriculture and consists of several state ministers, reviews high-level policy issues raised by the Joint Review and Implementation Support Mission. The Joint Strategic Oversight Committee is supported by four technical committees in the areas of system development, livelihoods, public works and transfers, and resource management.

Phases of Implementation

The PSNP has undergone four phases since 2005. The fourth, which runs from 2015 to 2020, was designed to address the needs of about 7.9 million people living in 411 *woredas*. The program covers Oromiya, Southern Nations, Nationalities, and Peoples' Region (SNNPR), Amhara, Tigray, Dire Dawa, and Harari, as well as preparatory activities for Afar and Somali regions. Data from the Ministry of Agriculture show that the target has long

2 *Woreda* refers to the second lowest administrative unit in Ethiopia and equivalent to district in other countries. A *woreda* consists of 20-30 *kebeles*, the lowest administrative unit consisting of 3-4 villages or 800 to 1200 households.

FIGURE 3.2—NUMBER OF PSNP BENEFICIARIES



Source: Author estimation based on data from the Ministry of Agriculture.
Note: PW = public works; DS = direct support.

been achieved and that the number of PSNP beneficiaries of both interventions (public works and direct support) was declining until 2014/2015 but rose sharply again due to the drought in 2015 (Figure 3.2). Of the beneficiaries, close to 20 percent are direct support clients while the remaining 80 percent are public works clients. On average, 9 percent of the rural population of the country was covered by the program. This figure varies across years from 7 percent in 2014/2015 to 11 percent in 2015/2016 depending on the incidence of drought.

The number of PSNP beneficiaries varies significantly across regions. In 2014/2015, Amhara Region had the highest number of beneficiaries. However, the number of beneficiaries as a percentage of the total rural population, Afar had the highest share of clients. The share was very high in Dire Dawa due to the small numbers of rural population. Out of the four major regions (Oromiya, Amhara, SNNPR, and Tigray) implementing the program, Tigray, where about 17 percent of the rural population received transfers, ranks first. Whereas 8 percent of the Amhara rural population benefited from the program, only 4 percent of the Oromiya and SNNPR rural populations were covered by the program in 2014/2015. This figure varies over the years.

Table 3.1 presents the type and amount of public works done through the PSNP from 2009/2010 to 2016/2017. The public works primarily focus on construction and maintenance of soil conservation structures, water sources, small-scale irrigation, last-mile roads, and social centers such as schools, demonstration plots, farmer training centers, and public offices. They have also engaged in afforestation through planting trees on communal areas and agroforestry trees on farmlands. However, construction of soil conservation structures was by far the dominant activity, with about 250,000 hectares of land being terraced every year. Afforestation is the second-most-important public work to which the PSNP has contributed through tree planting, despite criticism of very low survival rates.

Since 2009/2010, about 300,000 households (1.5 million individuals) have received the LDP through an affordable credit scheme. That number is small compared with the number of total PSNP participants, and it could be one of the reasons for the PSNP's limited impact on household-level agricultural productivity (addressed in the next section). The program allocates funds to selected microfinance institutions and rural saving and credit

TABLE 3.1—TYPES AND AMOUNTS OF PUBLIC WORKS THROUGH THE ETHIOPIAN PSNP, 2009/2010 TO 2016/2017

Community Assets Developed Achievements	Unit	Amount
Rangeland management and biophysical soil conservation	Ha	1,741,261
Gully control	Ha	100,093
Forestry, agroforestry, and pasture development	Ha	464,895
Water sources construction	No.	121,373
Water points rehabilitation	No.	43,157
Small-scale irrigation construction	Ha	96,451
Small-scale irrigation rehabilitation	Ha	69,105
Community roads construction	Km	26,220
Community roads rehabilitation	Km	34,399
Social infrastructure construction	No.	21,787
Social infrastructure rehabilitation	No.	23,418

Source: Ethiopia, Ministry of Agriculture.
Note: ha = hectare; no. = number of projects; km = kilometer.

TABLE 3.2—LIVELIHOOD PATHWAYS PURSUED BY LDP HOUSEHOLDS

Livelihood pathways	Credit (*n* = 598)	Livelihood Cash Transfer (*n* = 509)
Average amount of cash received (Br)	5,101.0	3,952.0
Beef/fattening (%)	28.8	15.1
Dairy	11.4	14.3
Sheep and goat breeding or finishing	27.93	50.1
Poultry	1.34	10.61
Bee keeping	2.51	0
Crops	13.71	4.33
Off-farm business	14.38	4.33
Other	0	1.18

Source: Author estimation based on drivers of success in the 2015 HABP survey and the 2016 livelihood cash transfer survey.
Note: LDP = livelihood development package.

cooperatives, and they provide credit to households who have prepared a business plan with an interest rate lower than market rate. Until 2016/2017, close to 2.4 billion Ethiopian birr (US$88 million) had been disbursed to support rural livelihoods. More recently, a livelihood cash transfer scheme was piloted to address the poorest of the poor who are too poor to take credit. That scheme was piloted in eight *woredas* in 8,389 households. The scheme provided US$200 for each household as a grant to invest in livelihood-income-generating activities.

Households that received LDP packages invested in different livelihood pathways (Table 3.2), with many of them investing in the livestock business. Both the livelihood cash transfer and credit groups focused on livestock breeding/fattening, although the livelihood cash transfer households were involved with smaller animals such as sheep, goats, and poultry. The amount of funding may justify the choices as credit recipients received larger loans compared with the livelihood cash transfer recipients. Table 3.2 also shows that a larger share of the credit beneficiaries participated in off-farm businesses compared with the livelihood cash transfer recipients.

Productive Impacts and Disincentives

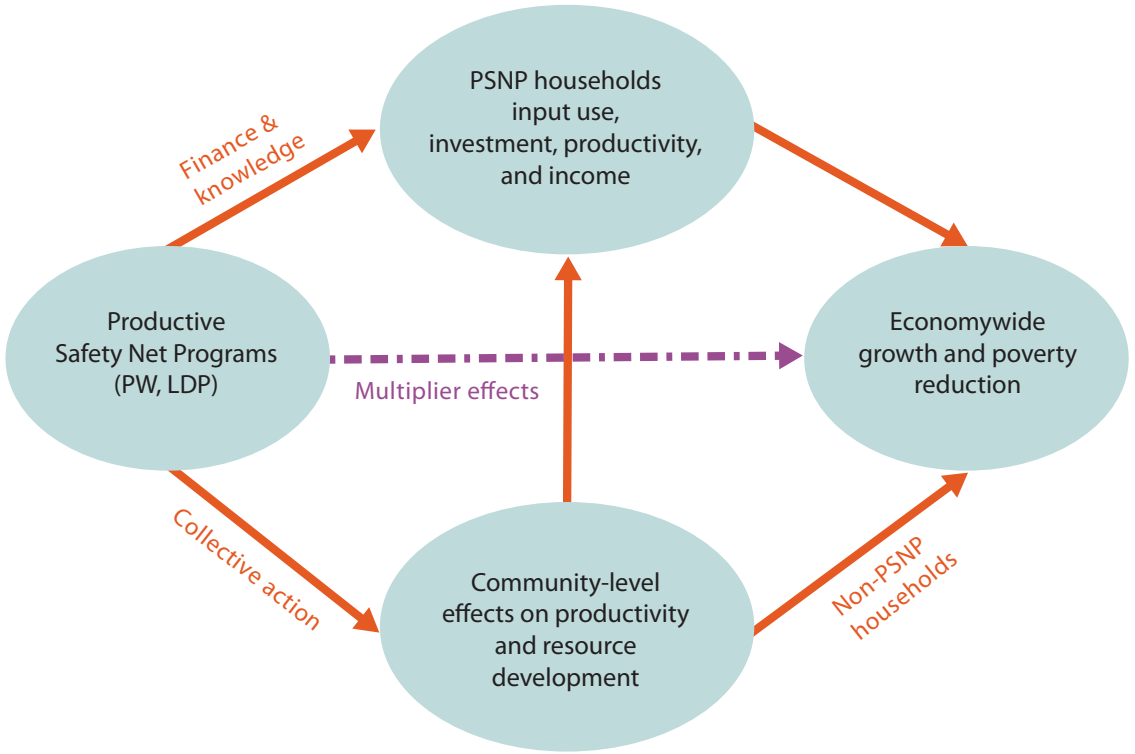
The PSNP is one of the most extensively studied development programs in Africa. The empirical research covers a wide range of topics including targeting efficiency, selection of instruments, disincentives and impacts on food security, productivity, and asset building. In this section, we review the evidence on productive and disincentive impacts. The review focuses on the impact of the public works and LDP interventions. Since the LDP is usually provided to those who are participants in and beneficiaries of the public works initiative, the impact of the LDP is a joint effect of the two interventions. Some studies did not specifically identify the type of intervention as public works or LDP but generally referred to participation in the PSNP. In that case, we assume that participation in the PSNP mainly referred to

participation in public works as that is the most widely used intervention compared with direct support or the LDP.

How Productive Is the PSNP?

A productive social protection program such as the PSNP could have diverse outcomes due to the complex impact pathways, multiple instruments, and several outcome variables at the household, community, and national levels. Figure 3.3 presents a conceptual framework of how the PSNP influences productive outcomes at different levels. At the household level public works and the LDP could improve input use, productivity, and asset building directly through relaxing financial constraints and building human capital and indirectly through community-level effects. The collective action organized through public works could help develop community resources. The buildup of both household-level and community-level resources could contribute to growth and poverty reduction at the national level. In addition to these direct impacts, the multiplier effect through market and nonmarket exchanges positively or negatively contributes to the economywide outcomes.

FIGURE 3.3—THE PRODUCTIVE IMPACT PATHWAYS OF THE PSNP (BOTH PW AND LDPs)



Source: Author formulation.
Note: PW = public works; LDP = livelihood development package.

Several studies—from as early as 2006 and as recently as 2017—have attempted to measure the empirical significance of the productive and consumption (food security and nutrition) impacts of the program. These studies use various methods including average treatment, difference-in-difference, and dose-response models. Table 3.3 summarizes the major results on selected outcome indicators. The studies indicate that the PSNP's impact on food security is quite compelling and conclusive (Gilligan, Hoddinott, and Taffesse 2009; Berhane et al. 2014). The PSNP's impact on child labor appears to be positive, but it has no effect on school attendance (Hoddinott, Gilligan, and Taffesse 2010; Tafere and Woldehanna 2012). However, the impact on nutrition differs across studies (Gilligan et al. 2009; Debela, Shively, and Holden 2015). Similarly, the impacts on other

TABLE 3.3—SUMMARY OF PSNP IMPACT ON FOOD SECURITY AND PRODUCTIVE OUTCOMES

Outcomes	Variables used/measured	Studies	Results
Food security	Per capita caloric acquisition; number of months when no food shortage	Gilligan, Hoddinott, and Taffesse 2009;Berhane et al. 2014	Public works intervention improves food security in recent studies and when complemented with the LDP. The PSNP has improved food security months by 1.29 months, which is equivalent of reducing hungry seasons by one-third.
Child welfare and nutrition	Child labor time in agriculture; child schooling	Hoddinott, Gilligan, and Taffesse 2010; Tafere and Woldehanna 2012	Reduces child labor, improves education performance, but no impact on attendance.
Child nutrition	Children's stunting, wasting	Gilligan et al. 2009; Debela, Shively, and Holden 2015	While the PSNP's impact on child malnutrition is insignificant in the earlier study, the recent study shows that children in PSNP member households had weight-for-height z-scores that were 0.55 points higher than those of children in non–member households.
Input use	Probability of fertilizer and seed use, amount of fertilizer applied	Gilligan, Hoddinott, and Taffesse 2009; Adimassu and Kessler 2015	Public works intervention increases the use of fertilizers and improved seeds in recent studies and when combined with the LDP. Access to LDPs increases the likelihood that the household will use improved seeds by 4.2 percentage points and increases the likelihood of fertilizer use by 7.2 percentage points.
Household income generation	Probability of participation in off-farm activities	Gilligan, Hoddinott, and Taffesse 2009; Tadesse and Zewdie 2017	Public works and LDP interventions have shown significant positive impact on participation in nonfarm business.
National income	GDP simulation using CGE	Filipski et al. 2016	The direct income transfer and the increased productivity due to SWC and irrigation have increased GDP by about 1 percent.
Household agricultural production	Changes in cereal production, area and productivit	Hoddinott et al. 2012	Public works and LDP interventions have increased household-level cereals production. But they reduce yields of recipients unless repeated for years.
Asset protection	Livestock and tree holdings during shocks	Andersson, Mekonnen, and Stage 2011	Being a PSNP beneficiary has no impact on changes in livestock and tree holdings during shocks.
Household asset building	Livestock holding; capital growth rate of livelihood investments	Gilligan, Hoddinott, and Taffesse 2009; Andersson, Mekonnen, and Stage 2011; Berhane et al. 2014	Public works intervention has no or a negative impact on asset building; for public works to have an impact on asset building, it must be supported by the LDP and repeated for several years.
Sustainable land management	Manure, compost, SWC, and tree planting	Adimassu and Kessler 2015; Filipski et al. 2016; Andersson, Mekonnen, and Stage 2011	The PSNP improves irrigated area in a *kebele*, increases households' tree holding, but reduces beneficiaries SWC construction on their land.
Community-level productivity	Average yield in the community; presence of PSNP SWC, road, and irrigation project in a village	Filipski et al. 2016	SWC and irrigation constructed through the PSNP contributed positive impact on crop yields but not road construction.
Community-level income	Simulation of community-level productivity change on average household income	Filipski et al. 2016	Impact on real incomes varies significantly; although it is positive and significant in some villages, it is negative in other cases.

Source: Author estimation based on drivers of success in the 2015 HABP survey and the 2016 livelihood cash transfer survey.

variables that represent the PSNP's impacts on productivity are not yet fully conclusive and depend on several factors. In the following sections, we summarize the major indicative conclusions that can be drawn from the studies at the household level on input use, productivity, income generation, asset building, and asset protection; at the community level on sustainable land management and productivity; and at the national level on gross domestic product (GDP).

Input Use and Productivity

The effect of the public works intervention on input use seems to depend on the frequency of participation. Earlier studies conducted to evaluate the first phases of the PSNP show very little impact of public works payments on fertilizer and improved seed use (Gilligan, Hoddinott, and Taffesse 2009). Because transfers through public works were small and sometimes given in-kind, initially they could not help recipients purchase inputs. However, more recent studies capturing the long-term effects of participation in public works show a significant impact on fertilizer use (Adimassu and Kessler 2015). The impact of the LDP intervention on input use is generally positive and significant (Gilligan, Hoddinott, and Taffesse 2009).

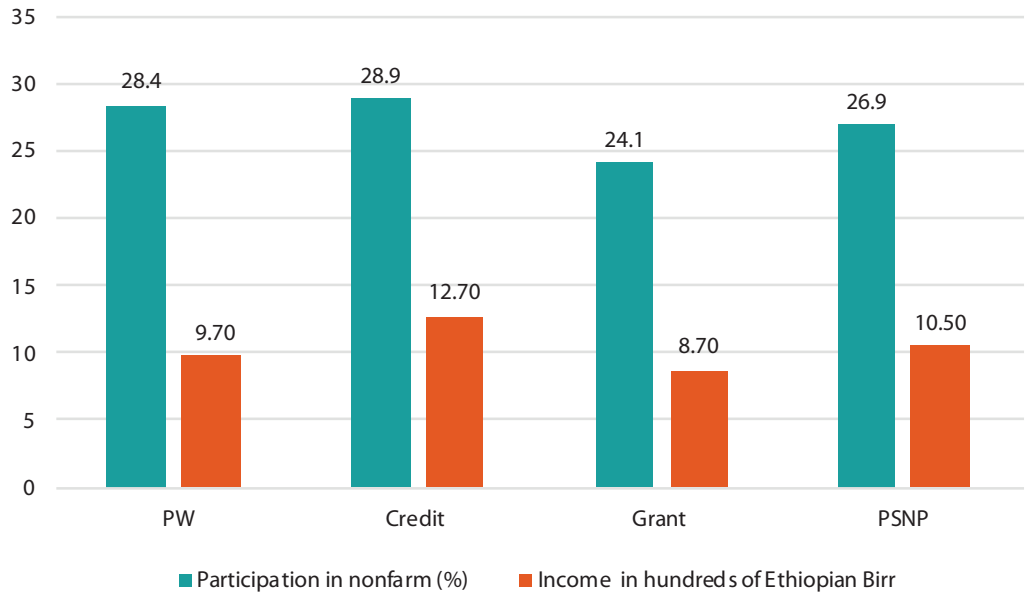
A study that assessed the PSNP's effects on production and productivity at the household level using a nationally representative panel dataset collected from 2006 to 2010 indicated that the production impacts of both public works and the LDP are not strong and depend on the level of payments and the frequency of participation over years (Hoddinott et al. 2012). Participation in public works showed statistically insignificant effects on cereals production, area allocation, and yield. Regularly receiving public works payments for up to five years did not improve the impact. Receiving five years of public works payments relative to one year of payments had no impact on changes in cereals production, area, or yield from 2006 to 2010. The additional income from the program did not improve agricultural productivity. Comparing households that participated both in the public works intervention and the LDP with the control (non–PSNP households) shows even a negative and statistically significant effect. However, this effect disappears when a household has been a recipient of public works payments for five years or more and becomes positive and statistically significant compared to the low level (one year) of public works payments. Therefore, the PSNP's impact on household-level productivity is not as such encouraging. The expected productive impact of increased financial liquidity to purchase farm inputs and knowledge to use improved agricultural technologies and practices is not strong.

Income Diversification and Asset Building

The PSNP through its public works component and the associated LDP is supposed to improve the income generation capacity of participating households and help them build assets that can serve as a buffer for income shocks as well as a source of income. Households generate income through participation in nonfarm business activities, wage employment, and agribusiness. Both public works and LDPs relax financial constraints and improve the skills of participating households to engage in these income-generating activities. The PSNP can also improve assets by protecting from asset crises (distress sales) during income shocks. However, the PSNP may reduce the households' asset-building incentives since it replaces the need for accumulating assets as an income buffer in times of shock.

Using data from sample *woredas* in the Tigray and Amhara regions, we estimated that about 27 percent of PSNP clients engaged in nonfarm business, including collection of firewood, petty trades, handcrafts, and rural services, and generated an average income of Br1,047 per year (Figure 3.4). However, the figures are different across interventions. Households that participated in the credit-based LDP were more likely to engage in nonfarm business and generated higher income than others.

FIGURE 3.4—PARTICIPATION IN NONFARM BUSINESS AND AVERAGE CASH INCOME GENERATED PER YEAR BY PSNP CLIENTS IN ETHIOPIA



Source: Author's calculation based on livelihood cash transfer survey in 2016 from Tigray and Amhara regions.

Note: PW = households participated only in public works; credit = households participated in PW and livelihood credit programs; grant = households participated in PW and livelihood grant; PSNP = the whole sample.

Previous studies that compared PSNP and non–PSNP households found that both public works and LDPs have shown a significant positive impact on participation in nonfarm business (Gilligan, Hoddinott, and Taffesse 2009). The impact of the LDP is stronger than that of the public works intervention. On average the programs increased the probability of engaging in nonfarm activities by 5 to 7 percentage points.

Many studies measure asset building in the form of changes in livestock holdings, which constitute the major form of asset in rural Ethiopia. Almost all studies confirmed that neither program (public works or LDP) had a significant impact on asset building. Indeed, a significant negative effect was observed in one out of the three studies (Andersson, Mekonnen, and Stage 2011). It has been a challenge for graduating PSNP beneficiaries to escape the poverty trap. However, long-term continuous support for about four or more years has shown a significant positive effect on livestock asset building (Berhane et al. 2014).

The PSNP was designed not only to build assets but also to avoid asset crises (through a distress sale) during shocks. A study by Anderson, Mekonnen, and Stage (2011) that estimated the effects of an interaction variable of participation and shock on changes in livestock and tree holdings revealed that the PSNP had no significant effect on distress sales or asset protection.

Economywide Impacts

Ideally the PSNP affects the community and the national economy by increasing household and community assets, which eventually contributes to increased productivity and incomes. Studies assessing the economywide impact of the PSNP are scarce. The only study that has assessed the PSNP's community and economywide effects is Filipski et al. (2016). At the community level, that study found that villages participating in the PSNP had more irrigated land compared with nonparticipating villages. The Study has estimated community-level production by comparing villages in which public works were undertaken through the PSNP and villages where there were no PSNP public works. The major PSNP public works considered in the study are soil and water conservation (SWC) projects, rural road construction, and small-scale irrigation developments. Villages with PSNP SWC and irrigation projects have shown higher average productivity than villages without such projects. The study found out that the presence of an SWC

project has increased the average yields of cereals by about 2.8 percent. The impact of a road construction project is insignificant. The study also shows that the average village-level real income effect of PSNP interventions varies across villages and household types. The real incomes of the sample villages increased as much as 19 percent and as little as 9.5 percent depending on the structure of the village economy. Due to income and production multipliers, the incomes of both PSNP and non–PSNP beneficiaries were increased. However, households receiving direct support benefited more than others. In some villages, nonbeneficiaries of the PSNP were worse off due to market-level price disincentives. A computable general equilibrium (CGE) model revealed that the contribution of the PSNP to GDP reaches as much as 1.24 percent depending on the yield impacts of SWC, irrigation, and share of PSNP in the income of beneficiaries. Based on a reasonable assumption of a 2.8 percent SWC project impact on cereals, a 12 percent irrigation impact on vegetable yield, and an 11 percent PSNP income share, the program has increased the country's GDP by about 1 percent.

Overall, the economywide impacts are quite impressive and suggestive of the value of investing in social protection not only to protect households from consumption shortfalls but also to promote the village and the macro economies. However, the entire economywide impact analysis presented here is strongly dependent on the productivity gain due to the presence of a public works project in a village. This analysis does not factor in the cost-effectiveness and sustainability of the projects.

How Significant Are the Disincentive Effects?

One of the major controversies of social protection programs concerns the disincentive effects the programs may create on producers, consumers, and investors. The PSNP was cautiously designed and implemented to minimize such disincentive effects. Thus, as discussed below, several empirical studies suggest that the disincentive effects of the PSNP are not generally significant. Nevertheless, it is important to explore which disincentives are minimized and which are not. Social transfers may create direct disincentives, inducing households to reduce labor supply for income-generating activities, decrease precautionary savings, undertake fewer private transfers, or use free resources/supports less efficiently (sunk cost effect), or they may create indirect disincentives through destabilizing local prices. Below we discuss the empirical importance of such disincentive effects based on the available evidence and our own research results related to the PSNP.

Destabilizing Local Prices

The nature of the disincentives of the PSNP for households through destabilizing the local market depends on the type of transfer. Cash transfers, on the one hand, increase local food demand and hence inflate local prices and dampen the real income effect especially for those who are net buyers. Food transfers, on the other hand, either reduce local demand or increase the local food supply, which would reduce local prices and create disincentives to local producers (net sellers).

Studies of the impacts of food and cash transfers on local markets and producers indicate that the disincentives of transfers are conditional on the type of local market, the state of annual food production, and the structure of the local economy. Food transfers hurt the market less in areas and times of food deficit and destabilize the market in areas and times of surplus (Tadesse and Shively 2009). In times of high food prices, the food security impacts of food transfers and cash-plus-food transfers are superior than that of cash-only transfers (Sabates-Wheeler and Devereux 2010). One study found that cash transfers have reduced the real incomes of nonbeneficiaries in half of the eight villages studied (Filipiski et al. 2016). This implies that although researchers observed only a few cases of falling food prices and reduced incomes of nonbeneficiaries depending on the extent of local food production and cash transfers, generally the disincentive effect of the PSNP through price destabilization is not very evident.

Seasonal Labor Competition Effect

Since the PSNP does not provide free transfers to those who can work, we do not expect to see any direct disincentive effect in the form of reducing labor supply for income generation. However, there exists an indirect disincentive of seasonal labor competition between public works and agriculture, which will adversely affect agricultural production and productivity (Devereux and Gunthe 2009). Although no study directly measured the impact of public works on the use of labor for agricultural operations (land preparation, weeding, and so on), some studies assessed the impact of the PSNP on labor-intensive agriculture-related activities such as use of manure, composting, using soil erosion controls, and the planting of trees. The studies indicated that participation in the PSNP was inversely related to the size of soil/stone bunds constructed and positively related to manure application, compost preparation, and tree holding (Adimassu and Kessler 2015; Andersson, Mekonnen, and Stage 2011). This implies that the negative effect of the PSNP on investment in soil erosion controls could be associated with the labor competition effect of the public works. Similarly, the negative impact of participation in both public works and the LDP on household-level yields of crops (Hoddinott et al. 2012) could be related to the seasonal labor competition effect of public works. However, the disincentive effects on both soil erosion control investment and crop yield are not very strong. They disappear when sample households are matched (Adimassu and Kessler 2015) and when households receive the payment for about four years (Hoddinott et al. 2012).

Precautionary Saving and Private Transfers

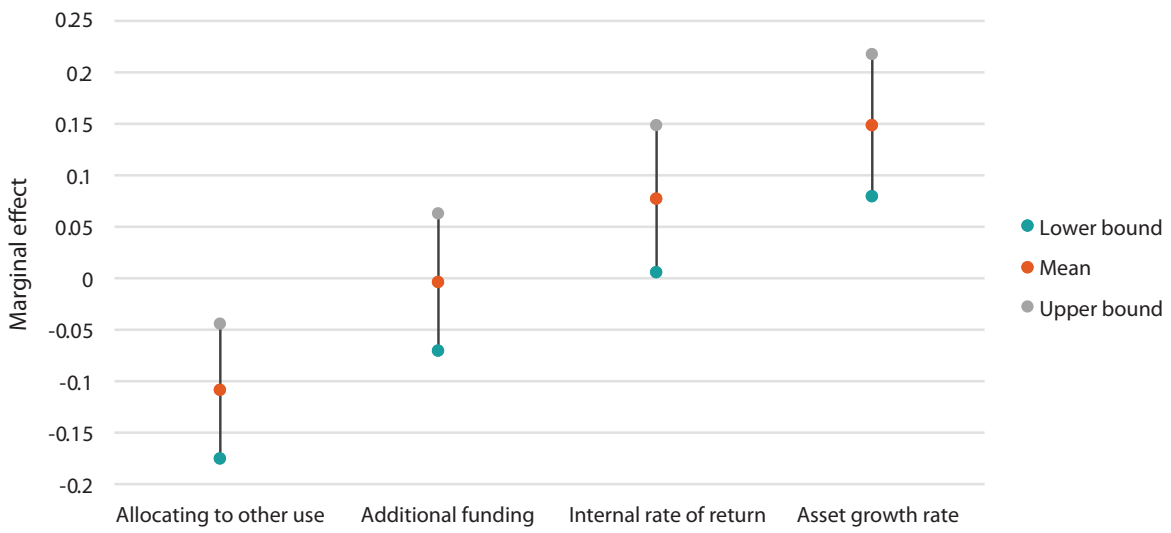
Households engage in precautionary saving when, in the absence of a credit market, they reserve income or assets to be used in times of income shocks. Rural households in Ethiopia reserve precautionary savings in the form of livestock, trees, and grain reserves. There is a concern that the PSNP may induce households to reduce precautionary savings as it provides a social safety net in times of shocks and crises. However, the empirical studies on assets confirm that though the positive impact of public works on asset building is very limited, the program did not negatively affect asset holdings of participants (Andersson, Mekonnen, and Stage 2011; Berhane et al. 2014).

A second drawback of a regular public transfer program is that it reduces or crowds out private transfers from other households in the form of remittances and mutual support. However, this drawback is not that important in the Ethiopian context. First, the extent of private transfers especially in rural areas is very small and is dwindling over time. This is consistent with the assertion that due to demographic and socioeconomic transformation, family protection in Africa south of the Sahara has been declining over the years (Mokomane 2012). Second, the empirical evidence does not support the crowding-out claim (Gilligan, Hoddinott, and Taffesse 2009; Berhane et al. 2014). Therefore, we believe the PSNP should have little or no effect on transfers from other households.

Sunk Cost Effects

Social protection beneficiaries may use the freely supplied resources less efficiently. This is because of the sunk cost hypothesis, which claims that since users do not invest in the resources, they attach less value to them and care very little about them (Ashraf, Berry, and Shapiro 2010). As part of the PSNP, livelihood cash transfers have been granted to households to invest in income-generating activities. A study was conducted to compare the effect of the 2015 pilot livelihood cash transfer against the credit-based livelihood projects using several regression and average treatment effect models (Tadesse and Zewdie 2017). Figure 3.5 summarizes the marginal difference between grant- and credit-based livelihood projects in terms of probability of fund allocation (either to use the fund for another purpose or to use the fund fully as earmarked or to match additional funds to the project), income generation (internal rate of return of the project), and asset building (asset

FIGURE 3.5—MARGINAL EFFECTS OF A LIVELIHOOD CASH TRANSFER COMPARED TO CREDIT ON PROBABILITY OF FUND ALLOCATION AND INVESTMENT PERFORMANCE



Source: Tadesse and Zewdie (2017).

Note: The lines represent the 95 percent confidence intervals where the upper and lower dots represent the upper and lower bound values. If zero is within the line, the effect is insignificant, otherwise significant. The mean effect is represented by the midpoint dot. The values are derived from regression models for each outcome variable listed along the x-axis.

growth rate of change between the value of the initial investment and its current value). The result indicated that, controlling for the characteristics of the recipient households, grant projects perform better than credit projects in many of the variables considered. Only one variable—the probability of adding funds to the project—showed a negative though not statistically significant effect. Therefore, the expected disincentive effect associated with a free transfer of assets is not empirically significant. The superiority of grants over credit may be related to the moral hazard problem widely present in rural credit disbursement.

Best Practices and Concerns

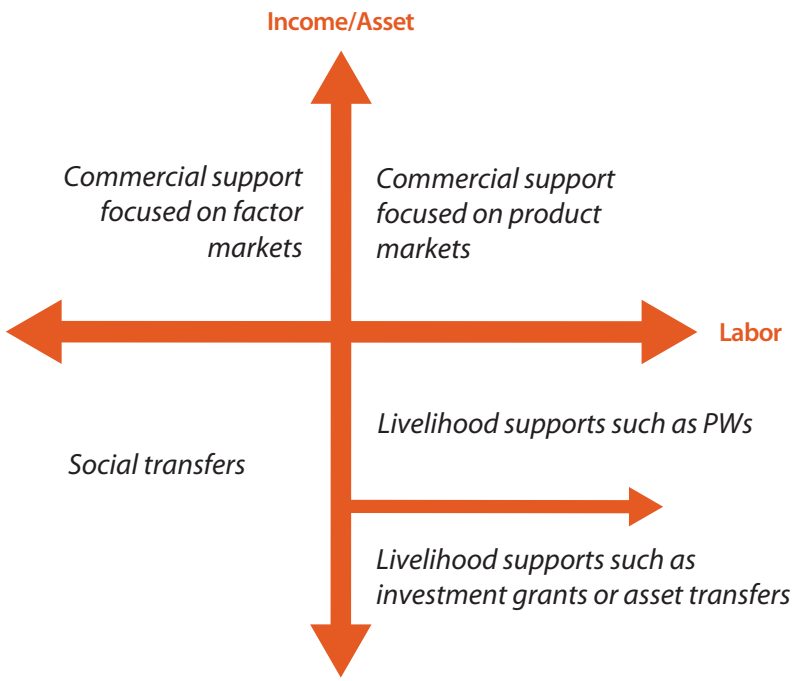
The synthesis of empirical evidence suggests that though the PSNP has a limited impact on community and household asset building, it has helped to smooth consumption and reduce food insecurity while minimizing disincentives to production. A further analysis of experiences and empirical evidence reveals several priority concerns and best practices that could inform Ethiopia and other countries in designing and implementing a productive social protection program. These concerns and best practices include strategic issues related to designing and prioritizing the interventions and operational issues in implementing the program. They stem from the nature of the PSNP, its design and implementation, and the contexts where the program was implemented. These best practices and concerns are drawn to help readers understand the advantages and disadvantages of a multipurpose social protection program and the possibilities and challenges of graduation from such a program. To save space we discuss three important best practices and three priority concerns with the aim of shedding light on a further discussion.

Best Practices

Use of Multiple Instruments

As discussed earlier, the PSNP has employed multiple instruments that affect markets and households differently. This has helped the program address

FIGURE 3.6—TYPOLOGY OF HOUSEHOLDS AND REQUIRED PRODUCTIVE SOCIAL PROTECTION PROGRAMS



Source: Author's formulation.
Note: PW = public works.

different social groups that have different needs and capacity. The experience of the PSNP indicates that poor households are not homogenous and hence require different social protection interventions. Figure 3.6 presents a typology of poor households based on such households' wealth and labor supply capacity and the interventions that were used to address each group. The four types of household are those who have assets and labor, those who have assets but not labor, those who have no assets but have labor, and those who have neither labor nor assets.

If households are endowed with agricultural assets, market support for exchanging inputs, factors, and outputs could be sufficient to lift them out of poverty. An important market intervention in Ethiopia is redressing the inflexible land market, which undermines the use of assets as a safety net (Devereux and Gunthe 2009). If households have no productive assets but do have labor, economic support in the form of job creation, through public works, and LDPs is needed to help them out of the poverty trap. Unfortunately, the experience of the PSNP shows that not all poor people are ready to use credit even if they have gained access to it. Households at the bottom of the income pyramid are risk-averse and need targeted interventions in the form of a livelihood cash transfer. If households have neither assets nor labor due to disabilities, age, or illness, free consumption-smoothing transfers are needed based on the rationale of humanitarianism and social solidarity. Such capacity- and needs-based targeting has helped the PSNP to minimize the disincentive impact. Therefore, in areas where market- and household-level disincentive effects are an important concern, the PSNP has demonstrated that the use of multiple instruments reduces the problem by addressing the different needs differently.

Program Continuity and Combining Interventions

Unlike many social protection programs in Africa that could not be sustained beyond the pilot phase, the PSNP has run for about 15 years and provided regular cash transfers every year to many beneficiaries. Despite the small size of the cash transfers, a repeated payment for up to five years has shown a significant effect not only on food security but also on asset building (Hoddinott et al. 2012; Berhane et al. 2014). Unlike the studies at the early stages of the program (Gilligan et al. 2009), recent studies have found significant impacts on input use (Adimassu and Kessler 2015) and child nutrition (Debela, Shively, and Holden 2015), indicating the importance of continued and sustained program support for improving welfare.

Furthermore, combining program interventions helps clients to smooth consumption and build assets at the same time. Several studies confirmed that households that participated in two benefits/interventions benefited more than households that participated in cash-only transfers. The continuity of the PSNP is mainly attributed to the full support and commitment of the government. Though the PSNP is largely funded and closely monitored by donors, it is a government-owned and -led program with the active involvement of higher government officials.

Evidence-Based Planning and Effective Partnership

An important best practice is the continuous assessment and evidence-based planning and implementation of the PSNP by the different stakeholders. Several reviews, studies, and learning conferences were held. The outputs of those assessments were used to plan the next phase of the program. For instance, the design of the HABP to support PSNP beneficiaries in the third phase emerged from studies that showed the need to support asset building of beneficiaries to encourage graduation (Devereux et al. 2006, 2008; Gilligan, Hoddinott, and Taffesse 2009). Similarly, the inclusion of the livelihood cash transfer and nutrition-based public works in the program's fourth phase stemmed from the evidence of little impact of the PSNP on child malnutrition (Gilligan et al. 2009).

A productive social protection program that uses multiple interventions should make use of strong partnerships not only between government and development partners but also between government ministries, agencies, and commissions. Through time, the PSNP was able to clearly define the roles and responsibilities of government bodies from the federal level to the *woreda* level and of the different committees (Ethiopia, Ministry of Agriculture 2014). This helped to roll out the program effectively and make good use of the expertise of the different stakeholders.

Concerns

Pace of Graduation

Even though the PSNP minimized disincentive effects on production, it did not create enough productive capacity to lead to beneficiaries' graduation from the program. The graduation rate admittedly has been lower than expected. Besides the failure of the support to significantly build assets, which could be due to the compromise of the promotion objective in favor of the transfer objective, clientelism between government officials and beneficiaries has lowered the pace of graduation. Transfers were used to mobilize people for political and social activities and actions, and hence the program created a patron–client relationship between recipients and local government officials. Therefore, it was politically infeasible to graduate beneficiaries from the program. This implies that dependency—one of the government's priority concerns—is related not only to disincentives but also to the extent of asset building and clientelism (Casamatta and Vellutini 2008).

Geographic Targeting of the PSNP

The PSNP adopts a clustered targeting method in which the chronically food insecure *woredas* and *kebeles* were selected out of all *woredas* of the country to select households from the list of the *kebele* inhabitants. Although household-level targeting is efficient (Sharp, Brown, and Teshome 2006; Devereux 2008; Tadesse and Zewdie 2017), there are concerns about the geographic (*woreda* and *kebele*) targeting. The PSNP targeted 411 *woredas* and even from these *woredas* some *kebeles* were excluded from the program. This exclusion raises equity and efficiency concerns.

On the one hand, poverty (food security), although it varies across *woredas*, is not geographically specific but rather household specific. Even in surplus-producing areas, there are poor people who cannot sustain themselves but are excluded from the program. This became clear in 2015

when the government was forced to run large-scale supplementary food transfers in non–PSNP *woredas* due to drought that seriously affected the transitory poor. Therefore, excluding these people may not be justifiable and equitable. On the other hand, areas that are targeted for the PSNP are excluded from other programs such as the Growth and Transformation Plan. This implies that households that are not eligible in PSNP *woredas* and *kebeles* are left out of any program support. These people excluded from the public works program may not attach ownership to the community assets with significant implications on their effectiveness and sustainability. Sustainable community resource development should be all-inclusive within a watershed. Moreover, households in chronically food insecure *woredas* and excluded from the public works intervention would be poorer in the long term due to exclusion from both the PSNP and the Growth and Transformation Plan.

Funding and Sustainability

The PSNP covers 9 percent of the rural population. As it stands, that figure may not be worrying. However, if we consider it contextually, it is beyond the capacity of the country. First, to make the program effective, equitable, and sustainable, current levels and coverage of transfers need to be substantially increased and expanded. Though currently donor groups and the government jointly fund the PSNP, in the long run the government must commit all funds on its own as donors may not fund the program indefinitely. Therefore, an effective and sustainable PSNP creates a huge fiscal burden for the country. Second, the PSNP is not the only social protection program in Ethiopia. Several programs and policies exist that serve the poor in different ways, which when considered altogether inflate the cost of social protection. Therefore, maintaining the high cost of social protection will create a substantial fiscal challenge in the long run and may jeopardize the sustainability of the program. In addition to the high cost of social protection, a trade-off appears to exist in allocating funds between current consumption transfers and growth-generating activities. As it stands now, the extent of investment in the latter is very low as indicated by the small numbers of LDP beneficiaries, although that instrument is more productive than public works.

Conclusion

The PSNP was designed to accommodate both long- and short-term objectives and was implemented on a large scale to address millions of poor people in rural Ethiopia with the ultimate purpose of graduating households from chronic food insecurity. It was also designed and managed in close collaboration between the government and development partners. While the program is government owned and led, it is jointly financed by development partners. This chapter reviewed experiences with the program and research findings on the program in order to draw lessons on two major issues: (1) the benefits and challenges of a multitasked social protection program linked with agriculture, and (2) the possibilities and challenges of graduation.

Review of the empirical evidence suggests that the PSNP's welfare impact is diverse depending on outcome variables, levels of analysis, and the type of intervention. Although its impact on productivity and household asset building is limited, it has helped to smooth consumption, reduce food insecurity, and minimize productive disincentives. This implies that linking a social protection program with agriculture helps not only to protect poor people from consumption crises but also to minimize production disincentives by addressing the needs of the different households differently. However, a sustainable multitasked social protection program requires an effective institutional architecture that can mobilize expertise, assign clear responsibilities to stakeholders, and design an equitable and efficient targeting system. The institutional architecture should articulate the different objectives, the instruments, the beneficiaries, and the overseeing institutions.

Many social protection programs in Asia and Latin America have faced challenges pertaining to graduation (Halder and Mosely 2004; Handa and Davis 2006). With its slow graduation rate, the PSNP is not an exception. Graduation tends to be a function of many factors, including production disincentives, the ability or inability to create capacity, and the effectiveness of the implementers for graduating clients. Regarding the PSNP, graduation has been hindered by an insignificant impact on households' income generation capacity and the clientelism created between donors and recipients. The promotion objective seems compromised in favor of the transfer (protection) objective.

An important lesson we can draw from the PSNP concerns the benefit of continuous empirical assessments that generate evidence for learning and improving the design of succeeding phases. However, the PSNP assessments are limited to quantitative analysis and disregard systematic qualitative assessments, which could generate several insights to qualify the quantitative results and to draw practical lessons. Exploring the perceptions of beneficiaries and local experts regarding transfers and the sustainability of the public works requires in-depth qualitative analysis. Assessing the reasons behind the low rate of graduation and the cost-effectiveness of the program requires a mix of quantitative and qualitative analyses. Also, impact studies on community-level asset building under the PSNP are very limited. Further research along these lines would benefit the program and beyond.

CHAPTER 4

The Impact of Social Grants on Agricultural Entrepreneurship among Rural Households in KwaZulu-Natal, South Africa

Sikhulumile Sinyolo and Sithembile A. Sinyolo

South Africa is characterized by high levels of unemployment, poverty, and inequality, commonly known as the triple challenges (NPC 2012). Though addressing these challenges has been prioritized in the country's policy rhetoric, all three problems have worsened since the arrival of democracy in 1994, particularly in rural areas (High Level Panel 2017; NPC 2012). The expansion of social grants to reach most of the poor has been one of the government's flagship interventions to address high levels of poverty and inequality (SASSA 2018). As of February 2018, social grants were benefiting more than 17 million poor people in South Africa, representing more than 30 percent of the country's population and more than 50 percent of households (SASSA 2018).

While the role of social grants in alleviating especially extreme poverty and hunger has been acknowledged in South Africa and beyond (Armstrong and Burger 2009; Bhalla et al. 2018; Brugh et al. 2018; Hidrobo et al. 2018; Lowder, Bertini, and Croppenstedt 2017; Woolard and Leibbrandt 2010), concerns have been raised with regard to their potential negative and unintended effects on recipients' social and economic behavior, including the potential entrenchment of a culture of dependency (Devereux 2013; Surender et al. 2010). The undesirable dependency syndrome occurs when assistance provision undermines incentives for the poor to invest their time and resources in economic activities that could help them escape poverty. The income effect of transfers reduces the marginal benefit of further income-generating activities (Binger and Hoffman 1998). However, social cash transfers can positively contribute to livelihood activities by relaxing credit and liquidity constraints (Barrientos 2012; Bezu and Holden 2008; Boone et al. 2013; Tirivayi, Knowles, and Davis 2016).

Levels of entrepreneurial activity are relatively low in South Africa, which has limited the country's ability to address the above mentioned triple challenges (Agbenyegah 2013; Okeke-Uzodike, Okeke-Uzodike, and Ndinda 2018; van der Merwe and de Swardt 2008). Despite efforts by the government to stimulate entrepreneurship, South Africa's Total Entrepreneurial Activity index has remained below 10 percent since the mid 1990s, a level just one-third that of other developing countries such as Brazil and Mexico (Dzansi, Rambe, and Coleman 2015; Fal et al. 2011; Herrington, Kew, and Kew 2015; Singer, Amoros, and Moska 2015). Entrepreneurship levels are lower in rural areas and among women, resulting in higher poverty incidence among these groups (Okeke-Uzodike, Okeke-Uzodike, and Ndinda 2018; Stats SA 2014). In addition to factors such as insufficient financial assistance, lack of skills, and an unsupportive regulatory framework, studies have reported that South Africans generally lack the entrepreneurial drive and exert limited effort to develop capabilities that are crucial for entrepreneurship growth (Agbenyegah 2013; Herrington, Kew, and Kew 2015; van der Merwe and de Swardt 2008). The question then is, to what extent is this low level of entrepreneurialism due to dependency on social grants?

Few studies have directly investigated the relationship between social grants and entrepreneurship in South Africa. Literature on social grants' impact has focused on outcomes such as nonfarm labor supply (Abel 2013; Ardington et al. 2013; Ardington, Case, and Hosegood 2009; Bertrand, Mullainathan, and Miller 2003; Surender et al. 2010; Williams 2007); attitudes toward work (Noble and Ntshongwana 2008; Noble, Ntshongwana, and Surender 2008; Surender et al. 2010); household formation (Klasen and Woolard 2008; Posel, Fairburn, and Lund 2006; Whitworth and Wilkinson 2013); gender and dignity issues (Goldblatt 2005; Holmes and Jones 2010; Patel, Hochfeld, and Moodley 2013; Patel et al. 2012; Wright et al. 2015); and teenage pregnancy (Makiwane 2010; Makiwane and Udjo 2007; Mokoma 2008). The evidence on the impact of social transfers on incentives to allocate labor to off farm activities is of a mixed nature. While some studies (Ardington et al. 2013; Ardington, Case, and Hosegood 2009; Posel, Fairburn, and Lund 2006) have found a positive relationship between social transfers and household labor supply, others (for example,

Abel 2013; Asfaw et al. 2016; Bertrand, Mullainathan, and Miller 2003) show unintended negative effects, in that social transfers reduce incentives to work.

Studies conducted in Latin American and sub-Saharan African countries show that social transfers have improved asset accumulation, input use, production, and labor use (Boone et al. 2013; Covarrubias, Davis, and Winters 2012; Radel et al. 2016; Tirivayi, Knowles, and Davis 2016; Todd, Winters, and Hertz 2010). There is also some evidence of a shift from on-farm to nonfarm work among cash transfer recipients (Asfaw et al. 2012; Gertler, Martinez, and Rubio-Codina 2012; Maluccio 2010), as well as increased investment in microenterprises (Gertler, Martinez, and Rubio-Codina 2012; Handa et al. 2016; Todd, Winters, and Hertz 2010).

The discourse across developing countries in general, and South Africa in particular, has progressed from thinking about social grants as merely a livelihood protection measure to viewing them as a livelihood promotion measure (Mabugu et al. 2013; Surender et al. 2010; Tirivayi, Knowles, and Davis 2016). The argument is that social grants should promote livelihoods and enhance economic activities by easing the financial constraints facing the poor—the so called irrigation function of social security—thus enabling a longer-term and more sustainable improvement in living standards (Covarrubias, Davis, and Winters 2012; Lund 2002; Mabugu et al. 2013; Woolard 2003).

In particular, recent studies (for example, Cirillo, Györi, and Veras Soares 2017; Daidone et al. 2017; Tirivayi, Knowles, and Davis 2016) have identified the need to improve the complementarity between social grants and agriculture, especially smallholder farming, as most of the social grant beneficiaries are poor smallholders. Smallholder farming remains an important livelihood activity among poor rural households in South Africa, especially in more rural provinces such as Eastern Cape, Limpopo, and KwaZulu-Natal (Stats SA 2012a). The literature agrees that the effectiveness of smallholder agriculture in reducing the rural poverty and household food insecurity prevalent in areas such as these provinces can be enhanced if rural households become more entrepreneurial in their farming activities (Díaz-Pichardo et al. 2012; Kahan 2013; Vesala and Pyysiäinen 2008).

This chapter investigates the conceptual and empirical linkages between social grants and agricultural entrepreneurship among rural households in the KwaZulu-Natal province of South Africa. Understanding the theoretical and empirical relationship between social transfers and smallholder entrepreneurship can enable policy makers to improve the design of rural development policy interventions and create synergies between cash transfers and poverty reduction by promoting enhanced agricultural productivity and production. This study performed continuous treatment analyses to understand the impact of the level of dependency on grants on agricultural entrepreneurship. Agricultural entrepreneurship was proxied by entrepreneurial competencies, investment in farm inputs, and income generated from farm activities. Additionally, household labor supplied to farming activities was used to capture the level of households' commitment to farming. Dependency on social grants was defined in terms of the relative contribution of social grant income to household income.

The study moves beyond considering impact as homogenous, as has been the case in recent studies linking social grants to smallholder entrepreneurship and other outcomes (Sinyolo, Mudhara, and Wale 2016a, 2016b, 2017), and examines heterogeneous social grant effects. Because social grants are given to individual household members, and each household differs in terms of the number of social grant beneficiaries, there is a high degree of heterogeneity in the contribution of social grants to household income. Estimating the dose-response and marginal effect functions of dependence, the study identified heterogeneities at different levels of dependence on social grants. This is important, as it can help policy makers identify the optimal levels of grant support that could be implemented

to increase synergies between social grants and entrepreneurship in smallholder farming while reducing the chances of creating a dependency syndrome.

The study results indicate that social grants can potentially play both a positive and negative role in entrepreneurship development in rural areas, depending on the relative contribution of social grant income to total household income. At low dependency levels, social grants were found to have a positive effect on farm labor supply, entrepreneurial competencies, and investment in farm inputs. At higher levels of dependency, a negative effect emerged. The results suggest that social grants can complement other economic activities of the poor, such as smallholder farming. However, for this to happen, the contribution levels of social grants to household income should be kept at low levels. The next section briefly discusses the meaning of entrepreneurship and how it can be measured. The subsequent section presents the data collection process and describes the study area. The models are then described, followed by estimation results. The last section provides the conclusions.

Definition and Measurement of Entrepreneurship

Entrepreneurship is a multifaceted concept that has been defined in various ways in different contexts (see Marcotte 2013 for a review). Most references to entrepreneurship, especially among policy makers, simply equate it with small and medium-sized enterprises or the self-employed (Ahmad and Hoffman 2007; Bauernschuster, Falck, and Heblich 2010; Hoffmann 2007; Nagler and Naudé 2017). Neither of these indicators, however, fully captures entrepreneurship as a whole (Ahmad and Hoffman 2007; Faggio and Silva 2014).

According to Alsos et al. (2011), entrepreneurship can be described in three distinctive but overlapping ways, based on the innovation, business formation and opportunity perspectives. The innovation perspective describes entrepreneurship in terms of new resource combinations that cause market disruptions, while the business formation perspective views entrepreneurship as a process of creating new business organizations. The opportunity perspective, which is relevant in the agriculture context, views entrepreneurship as the identification and exploitation of opportunities (Alsos et al. 2011; Lans et al. 2014). The literature on rural entrepreneurship, in both developed and developing countries, has focused on the business formation perspective, defining entrepreneurship in terms of the enterprises that rural households operate (Nagler and Naudé 2017). While self-employment has been widely used as a proxy to capture entrepreneurship, recent research (Faggio and Silva 2014) shows that these two do not always measure the same economic phenomenon, especially in rural contexts.

In line with the opportunity perspective, this study adopted the definition of the Organisation for Economic Co-operation and Development, which defines an entrepreneur as an individual who seeks to identify and exploit new products, processes, or markets to generate value through the creation or expansion of economic activity (Ahmad and Hoffman 2007; Sinyolo and Mudhara 2018). This definition has several advantages for a study on smallholder entrepreneurship. First, the definition is broader and includes the entrepreneurial activities of individuals or organizations that may not qualify as small businesses or the self-employed in policy rhetoric. Owners of smallholder farms are entrepreneurs in their own right, as running a farm is equivalent to running a firm (Lans et al. 2014).

Second, the definition clearly sets entrepreneurs apart as people doing something different from others, in that they are in the business of creating and/or identifying new processes, products, or markets. Third, entrepreneurship is not only about successfully doing but also about seeking. Both successful and unsuccessful entrepreneurs should be investigated, instead of focusing only on the successful ones, that is, "entrepreneurial stardom" (Faggio and Silva 2014). Failure is a very important part of the

entrepreneurial process, and entrepreneurs who have failed remain entrepreneurs (Ahmad and Hoffman 2007).

The measurement of entrepreneurial activity is a relatively recent and underrepresented area of study that is highly contested (Marcotte 2013). Although several indexes have been developed to measure entrepreneurship levels since the late 1990s, assessment of the various forms and expressions of entrepreneurial activity remains a challenge, even at the national level (Marcotte 2013). None of these indexes are universally accepted, and all have been subject to criticism (Marcotte 2013). This study adopts the competency approach, which has become increasingly popular in examining entrepreneurship among smaller businesses in which the entrepreneur dominates (de Lauwere et al. 2014; Lans et al. 2014; Mitchelmore and Rowley 2010; Phelan and Sharpley 2012; Sánchez 2012).

Entrepreneurial competencies are the underlying knowledge, skills, abilities, personality traits, and know how that allow for the effective discovery and exploitation of opportunities (Alsos et al. 2011; Bergevoet et al. 2005; Langbert 2000). Entrepreneurial competencies refer to activities such as evaluating information, identifying customer needs, scanning the environment, formulating strategies, bringing networks together, taking initiative, introducing diversity, and collaboration (Man, Lau, and Chan 2002; Phelan 2014). Entrepreneurial competencies are strongly linked to business growth and success, and an understanding of the nature and role of such competencies has important consequences for entrepreneurship practice (Mitchelmore and Rowley 2010). As shown by Bergevoet et al. (2005), using the concept of competencies can give insight into the entrepreneurial behavior of farmers and provide a means to evaluate their levels of entrepreneurialism. The competency approach is an appropriate framework for examining smallholder farms in rural areas, as these farms are smaller in size and are dominated by the owner (Man, Lau, and Snape 2008; Phelan and Sharpley 2012; Vesala 2008; Vesala and Pyysiäinen 2008). Challenging the notion that entrepreneurs are born, the competency approach implies that entrepreneurs can be made by supporting the development of these competencies (Becot, Conner, and Kolodinsky 2015; Fisher and Koch 2008).

Entrepreneurship has two distinctive components, both of which can be influenced by social grants (Kahan 2013; Pyysiäinen et al. 2006). The first component, which is not easy to define, speaks of the inner drive or desire to identify and exploit business opportunities and start and run a profitable business. It can be generally described as the entrepreneurial attitude (Pyysiäinen et al. 2006) or entrepreneurial spirit (Kahan 2013; Nafukho and Muyia 2010). Some studies (Agbenyegah 2013; Herrington, Kew, and Kew 2015; van der Merwe and de Swardt 2008) suggest that a lack of entrepreneurial attitudes is one of the major factors behind the low levels of entrepreneurship in South Africa. The second component of entrepreneurship includes the competencies that are required to effectively identify and seize opportunities to initiate, operate, and grow profitable businesses. These competencies can be developed by learning and through experience and can be stimulated by changing the social and business environment and by directly influencing the farmer and his or her personality and capacities (Bairwa et al. 2014; de Wolf and Schoorlemmer 2007; Man, Lau, and Chen 2002).

As already highlighted, social grants may have a positive or negative impact on the entrepreneurialism of beneficiaries. On the positive side, the regularity and predictability of social grants can change the attitudes of people toward risks, encouraging them to take more risks because they are guaranteed a minimum level of subsistence if their entrepreneurship activities do not pay off (Boone et al. 2013). Entrepreneurship is risky, and poor households lack buffers or insurance to protect their consumption or assets against market hazards (Barrientos 2012). Social grant income can potentially relax the credit and liquidity constraints of farm households, resulting in improved entrepreneurship outcomes. Since these poor farm households are often excluded from credit markets, or credit markets

are lacking in their areas, regular and reliable access to social grants can help them overcome the constraints caused by these credit access barriers (Alderman and Yemtsov 2013; Barrientos 2012).

If social grant income is used in production, it can enhance the saving capacity of poor households, provide increased security, and help compensate for insurance market failures, facilitating investment in farm inputs (Barrientos 2012; Boone et al. 2013). Income from social grants can also be used by beneficiaries to cover the costs associated with accessing and exploiting information and opportunities to generate income by successfully participating in the market. For example, several studies (see, for instance, Ardington et al. 2013; Ardington, Case, and Hosegood 2009; Posel, Fairburn, and Lund 2006; Williams 2007) have concluded that additional income from social grants has a positive impact on employment by easing the constraints associated with job searches. Social grants can also help beneficiaries pay for activities that improve their competencies, for example, training.

The negative unintended outcomes are due primarily to the income effect of social grants, as the additional unearned income leads to an increase in the consumption of goods and leisure. If the income effect is strong enough, it can have a negative effect on the propensity to work, as beneficiaries can continue to maintain their utility level through the unearned income (Barrett 2006; Binger and Hoffman 1998). Social grants may hinder entrepreneurship by creating a dependency syndrome (Abel 2013; Devereux 2013), which reduces the desire or drive to engage in business. They may also inhibit the psychological capital development and entrepreneurial spirit of recipients by creating hopelessness and destroying self-confidence and resilience (Kahan 2013). The growing literature on psychological capital theory (Luthans et al. 2006; Luthans et al. 2007; Luthans and Youssef 2004) highlights the importance of hope, confidence, optimism, and resilience in an individual's economic performance. Dependence on social grants may reduce farmers' incentive or motivation to engage in activities that could enhance their entrepreneurial skills.

Research Methods

Study Area Description

The data included a total of 984 rural farming households drawn from 4 out of 11 districts (Harry Gwala, Umzinyathi, Uthukela, and Umkhanyakude districts) across the KwaZulu-Natal (KZN) province in South Africa. The selected districts have a significant number of rural communities engaged in farming activities and are among the poorest in terms of average household incomes (Stats SA 2012b). Social grants and smallholder farming play important roles in the livelihoods of poor rural residents in KZN. KZN has the largest number of households benefitting from social grants (SASSA 2018), and social grants are the second-largest source of income in the province after salaries and wages (Stats SA 2015). Farming is not a large source of income in KZN; it is the sixth most important source after salaries and wages, social grants, remittances, nonfarm businesses, and pensions.

However, most of the rural people in the province are employed or self-employed in smallholder agriculture, producing mainly for subsistence purposes. More than 796,000 (28 percent) of the 2,802,000 households in KZN are directly involved in agriculture (Stats SA 2012b). Stats SA (2012b) reports that while wage employment is the preferred option for many people, household members who fail to secure employment in urban areas return to the rural areas and engage in economic activities such as smallholder farming. KZN is generally characterized by good, reliable rainfall (more than 1,000 millimeters a year) and fertile soil, making agriculture central to its economy (KZNDAE 2012). Although the KZN economy has significant potential in agriculture, current agricultural production is below this potential (KZNDAE 2012). Also, there is much uncultivated land in the rural areas of KZN (KZNPPC 2011), though a shortage of other

economic options makes smallholder agriculture more important in these areas.

Data and Variables

A multistage random sampling technique was used to draw the sample for the study. First, the 4 districts were purposely chosen out of the 11 districts in the KZN province. Second, one local municipality was randomly selected from each district: the Ubuhlebezwe local municipality in the Harry Gwala district, the Msinga local municipality in the Umzinyathi district, the Jozini local municipality in the Umkhanyakude district, and the Imbabazane local municipality in the Uthukela district. Third, a total of 984 rural households were randomly selected from the 4 local municipalities. The lists of farming households were obtained from the respective local offices of KZN's Department of Agriculture. The total sample comprised 411 households from Ubuhlebezwe, 239 from Msinga, 143 from Jozini, and 191 from Imbabazane.

The data were collected during the months of October and November 2014 using a pretested structured questionnaire. Questionnaire pretesting involved 15 rural households and was used to identify and remedy ambiguities or difficulties with regard to questions in the questionnaire. The questionnaire's modules captured information on basic household head characteristics (such as sex, age, marital status, and education level), measures of household wealth endowment (such as household assets, livestock, and land), labor allocation, agricultural production activities, and investment in farm inputs, as well as the crop marketing behavior of the household and its income level and sources. Questions on institutional and organizational support factors such as farmer associations, market access, credit, and extension support were included. The questionnaire also sought to capture self-assessed entrepreneurial competencies. The entrepreneurship questions were asked in 513 of the total 984 sampled households in three of the four districts described above (Umkhanyakude district was excluded). This was because the entrepreneurship section of the questionnaire was more involved and complex, and the research team decided to limit the number of respondents answering the questions in the entrepreneurship module.

The level of dependency on social grants was measured as the proportion of total household income received from social grants. Total household income included income that the household received from different sources, such as employment, remittances, social grants, farming, nonfarm microbusinesses, and arts and culture. To capture the level of income from social grants, the household was asked what social grant types any member of the household received and when each member had started receiving those grants. Questions about investment in farm inputs captured the amount of money the households had used to buy farm inputs such as fertilizer, seed, herbicides, and so on during the 12 months preceding the survey. Income generated from farming activities was captured as net revenue from the sale of crop and livestock output as well as income from hiring out farm implements.

To capture household participation levels in farming activities, following Abdulai, Barrett, and Hoddinot (2005), we used the total number of man day equivalents household members spent on crop farming in the 60 days preceding the survey. The 60 day period was considered short enough for the participants to recall easily so that they would give relatively accurate and reliable responses. The two months under study, October and November, represent the peak period of labor demand for land preparation, cultivation, and planting summer crops. A man day of work was defined as the amount of farm work that can be carried out by an adult male in an eight hour work period. The conversion factors (weights) presented in Panin (1986) were applied to males and females in different age groups and carrying out different farming tasks to calculate man day equivalents.

Self-assessed entrepreneurial competencies were used because, arguably, smallholders best understand their own entrepreneurial

capabilities and skill sets and make production and business decisions based on their perceptions (Lans 2009; Lans et al. 2014; Morgan et al. 2010). The questionnaire included six key subcategories of entrepreneurial competencies, as identified and discussed in Man, Lau, and Chan (2002) and Man, Lau, and Snape (2008). These are strategic, opportunity, relationship, conceptual, organizing, and commitment competencies.

Strategic competencies are those skills that help an entrepreneur set, evaluate, and implement the vision, goals, and strategies of the business, while opportunity competencies are about information seeking and recognizing opportunities in the market (Man, Lau, and Chan 2002). Relationship competencies refer to the ability to collaborate successfully with others. This entails being able to persuade, communicate, and use contacts and connections (Man, Lau, and Chan 2002). Conceptual competencies are those related to understanding complex information, making decisions, and being innovative and a risk-taker, whereas organizing competencies are those related to the organization of resources. Commitment competencies are those that drive the entrepreneur to move ahead with the business (Man, Lau, and Chan 2002).

The specific competencies in these subcategories included those widely accepted in the literature and those considered more relevant to the rural context, as informed by the results of the questionnaire pretesting. The results of the pretest were used to rephrase some entrepreneurship questions whose wording did not seem clear or strong enough to enable differentiation between good and poor ratings, following Man, Lau, and Snape (2008) and Phelan and Sharpley (2012).

Principal Component Analysis

Principal component analysis (PCA) was used to generate the entrepreneurial competency index, with the appropriate weights determined endogenously when merging the 24 entrepreneurial competencies to avoid arbitrary selection of weights. PCA is a multivariate statistical technique used to reduce the number of variables without losing too much information in the process. From an initial set of n correlated variables, PCA creates uncorrelated components as linear, optimally weighted combinations of the initial item responses (Armeanu and Lache 2008; Jolliffe 2002; Norman and Streiner 2008). From a set of variables X_1 through to X_n,

$$\begin{aligned} PC_1 &= a_{11}X_1 + a_{12}X_2 + \ldots + a_{1n}X_n \\ PC_2 &= a_{21}X_1 + a_{22}X_2 + \ldots + a_{2n}X_n \\ &\vdots \\ PC_m &= a_{m1}X_1 + a_{m2}X_2 + \ldots + a_{mn}X_n, \end{aligned} \qquad (1)$$

where a_{mn} represents the weight for the m^{th} principal component (PC_m) and the n^{th} variable.

The weights for the principal components are given by the eigenvectors of the correlation matrix. While the use of PCA assumes that data are continuous, this study uses ordinal item responses. Polychoric correlations were therefore calculated and the resulting matrix used, instead of the Pearson correlation matrix, as the former corrects the statistical error of using ordinal variables in a PCA analysis (Basto and Pereira 2012; Howe et al. 2012).

The variance (λ) for each principal component is given by the eigenvalue of the corresponding eigenvector. The components are ordered so that the first principal component (PC_1) explains the largest possible amount of variation in the original data. The second component (PC_2) explains additional but less variation than the first component and is uncorrelated with the first component (PC_1). Subsequent components are uncorrelated with previous components, while explaining smaller and smaller proportions of the variation of the original variables. The first component is usually used as the summary index for further analysis of the data, as it explains the most variation in the data (Filmer and Pritchett 2001). PCA works best when variables are correlated and when the distribution of variables varies across cases (Morrison 2005; Vyass

and Kumaranayake 2006). Variables with low standard deviations carry low weights, while those with high standard deviations carry high weights (Howe et al. 2012).

The Generalized Propensity Score Matching Method

Various versions of propensity score–based matching methods have been developed to cater for treatments that are not binary, that is, allowing for treatment to be multivalued. For example, propensity score matching (PSM) has been extended to deal with treatment variables that are categorical (Imbens 2000; Lechner 2001) or ordinal (Joffe and Rosenbaum 1999; Lu et al. 2001). The generalized propensity score (GPS) matching technique deals with continuous treatments (Bia et al. 2014; Bia and Mattei 2008, 2012; Flores et al. 2012; Guardabascio and Ventura 2014; Hirano and Imbens 2004; Imai and Van Dyk 2004; Kluve et al. 2012). The GPS technique is an extension of PSM.

The GPS technique was used in this study because the treatment variable, the proportion of household income from social grants, is continuous. The outcome variables were the amount of farm labor supplied to farming, the entrepreneurial competency index constructed using PCA, expenditures on farm inputs, and net income generated from farm activities. The use of experimental or randomized designs is not applicable when studying social grants in South Africa because these grants were not implemented with an experimental design but are targeted to individual household members based on their socioeconomic status (for example, age, income level, health status, etc.) (Patel, Hochfeld, and Moodley 2013).

The GPS is a balancing score, which is the conditional probability of receiving a particular dosage subject to a given set of observable variables (Hirano and Imbens 2004; Imbens 2000; Rosenbaum and Rubin 1983). The treatment effects were estimated using two-step semiparametric estimators of the dose-response function (DRF), following Bia et al. (2014). The first step involved estimating the GPS (R_i) and assessing the common support condition and the balance of the covariates. The DRF was then estimated using the nonparametric inverse weighting kernel estimator proposed by Flores et al. (2012).

Given that the continuous treatment variable—the level of dependence on social grants, GD_i—in this study is a fraction, a beta distribution was used for estimating the score. The bounded nature of the treatment variable is such that the effect of any particular covariate is not constant over its range, implying that there is no guarantee the ordinary least squares regression estimates would lie in the unit interval even after augmenting the model with nonlinear functions of the covariates (Guardabascio and Ventura 2014; Papke and Wooldridge 1996).

The GPS was estimated parametrically, and the beta distributional assumptions were specified as follows:

$$g(GD_i|X_i) \sim \psi[h(\gamma, X_i), \vartheta], \qquad (2)$$

where g is a link function, ψ is a probability density function, h is a flexible function of covariates depending on an unknown parameter γ, ϑ is a scale parameter, and X_i is a vector of the covariates. The common support or overlap region was determined following Flores et al. (2012), while the likelihood ratio test evaluated how well the estimated GPS balances the covariates. The introduction of several pretreatment covariates strengthened the plausibility of the unconfoundedness assumption.

The DRF and the treatment effect function were estimated using a nonparametric inverse-weighting estimator. This involves weighting observations using the estimated scores to adjust for covariate differences. The nonparametric method is flexible and does not impose a parametric structure on the data, which would have led to misleading results if not met (Bia et al. 2014). The estimates of the DRF and treatment effect function

were observed at 10 different levels of social grant dependency, considering increments of 10 percent for the treatment effect estimation.

Empirical Results and Discussion

Generating the Entrepreneurial Competency Index

Table 4.1 presents the means of the entrepreneurial competencies that were considered in this study. The table indicates that the farmers were somewhat negative about their entrepreneurial competencies. The average scores are mostly between 2.5 and 3.5, meaning slightly above "disagree" to just above neutral. The table shows that the farmers were particularly negative about their strategic, conceptual, and opportunity competencies. The average scores for the relationship, organizing, and commitment competencies are slightly higher. Further analysis indicated no differences in the scores by gender, suggesting that male and female farmers face the same challenges in improving their entrepreneurial competencies.

The entrepreneurship competencies listed in Table 4.1 were merged using principal component analysis (PCA) to generate an entrepreneurship index, and the results are presented in Table 4.2. Correlation analysis indicated moderate to higher degrees of correlation among the entrepreneurship variables in the data. All correlation coefficients were greater than 0.3, implying that the correlation matrix satisfies the basic requirement for a successful factor extraction (Norman and Streiner 2008; Tabachnick and Fidell 2001). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was greater than the 0.8 threshold to be considered reasonable (Antony and Rao 2007; Norman and Streiner 2008). The high KMO measure indicates that patterns of correlations are compact and that factor analysis should yield reliable factors (Field 2005). The Bartlett's test of sphericity result was strongly significant, indicating that it is highly unlikely that the correlation matrix was obtained from a population with

TABLE 4.1—SUMMARY STATISTICS OF ENTREPRENEURIAL COMPETENCIES

Variable	Mean	Std. dev.
Strategic competencies		
Goal and vision setting	2.45	1.42
Strategy formulation	2.85	1.40
Profit orientation	2.84	1.42
Growth orientation	2.72	1.44
Long-term or sustainability orientation	2.70	1.42
Opportunity competencies		
Market orientation	2.78	1.25
Environmental scanning	2.24	1.22
Opportunity recognition	2.88	1.37
Relationship competencies		
Cooperation and networking	3.21	1.32
Using networks and connections	3.04	1.35
Negotiation and persuasiveness	3.19	1.24
Conceptual competencies		
Initiative, creativity, and innovativeness	2.75	1.33
Understanding complex information	2.78	1.35
Risk taking	3.12	1.40
Organizing competencies		
Communication clarity	3.37	1.38
Vision clarity	3.66	1.33
Competitiveness and results orientation	3.21	1.34
Flexibility and willingness to adapt	3.19	1.34
Commitment competencies		
Business passion	3.45	1.33
Long and irregular hours	3.53	1.33
Motivation and ambition	3.50	1.30
Willingness to learn new things	3.51	1.28
Accountability	3.31	1.37
Emotional coping	3.61	1.35

Source: Authors' calculations.

TABLE 4.2—GENERATION OF THE ENTREPRENEURIAL COMPETENCY INDEX, PCA RESULTS

Variable	Principal components		
	PC_1	PC_2	PC_3
Strategic competencies			
Goal and vision setting	**0.780**	-0.124	-0.365
Strategy formulation	**0.776**	-0.173	0.344
Profit orientation	**0.759**	0.447	-0.022
Growth orientation	**0.688**	-0.331	0.331
Long-term or sustainability orientation	**0.800**	0.223	0.051
Opportunity competencies			
Market orientation	**0.773**	0.433	-0.103
Environmental scanning	**0.754**	0.263	0.118
Opportunity recognition	**0.765**	-0.109	0.259
Relationship competencies			
Cooperation and networking	**0.720**	-0.453	-0.068
Using networks and connections	**0.807**	-0.052	-0.160
Negotiation and persuasiveness	**0.730**	0.463	0.037
Conceptual competencies			
Initiative, creativity, and innovativeness	**0.732**	0.060	0.321
Understanding complex information	**0.758**	0.024	-0.026
Risk taking	**0.589**	0.291	-0.106
Organizing competencies			
Communication clarity	**0.745**	-0.314	-0.265
Vision clarity	**0.776**	0.129	0.273
Competitiveness and results orientation	**0.767**	0.106	-0.469
Flexibility and willingness to adapt	**0.813**	-0.029	-0.181
Commitment competencies			
Business passion	**0.715**	-0.043	0.295
Long and irregular hours	**0.806**	-0.207	0.122
Motivation and ambition	**0.797**	-0.248	-0.092
Willingness to learn new things	**0.785**	-0.244	-0.191
Accountability	**0.804**	-0.270	-0.049
Emotional coping	**0.819**	0.205	0.002
Eigenvalue	13.95	1.59	1.15
% of variance	58.11	6.63	4.79
Cumulative % of variance	58.11	64.74	69.53

Source: Authors' calculations.

Notes: Cronbach's alpha = 0.96. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy = 0.96. Bartlett's test of sphericity was highly significant: $\chi^2 = 11{,}271$; $p < 0.001$. PCA = principal component analysis. Bold means dominant.

zero correlation. The Cronbach's alpha for the multi-item index was higher than the minimum acceptable value of 0.7 (Man, Lau, and Snape 2008). This indicates a high level of internal consistency for the scale, implying that the 24 questions all reliably measured the same latent entrepreneurialism variable. The above tests indicate that a valid PCA can be performed.

Using the Kaiser criterion (Field 2005), PCA yielded three principal components (PCs) that had eigenvalues greater than 1, explaining about 70 percent of the variance in the data. However, only the first principal component (PC1), which explained 58 percent of the variation, was used in creating the entrepreneurship index. PC1 was selected because it explained most of the variation in the data and it had economic meaning. No economic meaning could be attached to the other two principal components. PC1 was strongly correlated with all 24 original variables, suggesting that the 24 competencies vary together, such that when one increases, the others also increase.

Socioeconomic Characteristics of the Sampled Households

Table 4.3 presents the demographic and socioeconomic characteristics of the sampled households, by access to social grants. More than 80 percent of the 984 sampled households had access to social grants. On average, each beneficiary household had more than three social grant beneficiaries, highlighting the importance of social grants among these rural households, in view of an average household size of seven. The beneficiary households had been recipients of social grants for about 9 years, on average, with the minimum reported being 1.2 years. The results show significant differences in socioeconomic characteristics between households that were beneficiaries of social grants and those that were not. While both beneficiary and nonbeneficiary households were headed by people aged over 50 years, the heads of beneficiary households were significantly older than those of nonbeneficiary households. Most of the beneficiary households were headed by females, while most nonbeneficiary households had male heads.

TABLE 4.3—SOCIOECONOMIC CHARACTERISTICS OF THE SAMPLED HOUSEHOLDS (*n* = 984)

Variable description	Mean			*t*-tests (*p*-values)
	All sample (*n* = 984)	Access to social grants		
		Yes (*n* = 829)	No (*n* = 155)	
Socioeconomic characteristics				
Age of household head (years)	56.11	56.65	53.05	0.002***
Gender of household head (1 = male)	0.47	0.45	0.52	0.060*
Marital status of household head (1 = married)	0.46	0.45	0.49	0.232
Household size (number of members)	7.04	7.24	5.97	0.000***
Education level of household head (years of schooling)	4.67	4.43	5.96	0.000***
Nonfarm employment of household head (1 = yes)	0.20	0.18	0.29	0.002***
Nonfarm business ownership (1 = yes)	0.08	0.07	0.14	0.003***
Land size (ha)	1.90	1.78	2.70	0.019**
Livestock (tropical livestock units)	3.53	3.10	5.78	0.079*
Value of assets (000 rand)	82.11	81.64	84.58	0.194
Number of social grant beneficiaries	3.19	3.20	0	0.000***
Years of access to social grants	8.91	9.12	0	0.000***
Total annual household income (000 rand)	46.76	48.02	40.04	0.005***
Social grant income (000 rand)	16.92	19.69	0	0.000***
Proportion of income from social grants	0.38	0.45	0	0.000***
Farm income (000 rand)	6.55	5.79	10.63	0.000***
Proportion of income from farming activities	0.13	0.11	0.22	0.000***
Income from other nonfarm activities	23.62	22.53	29.40	0.003***
Farming experience (years)	18.70	19.04	16.84	0.058*
Hiring in farm labor (1 = yes)	0.37	0.35	0.48	0.002***
Perceived soil quality (1 = good)	0.55	0.55	0.52	0.389
Market access (1 = yes)	0.20	0.20	0.22	0.612
Group member (1 = yes)	0.42	0.41	0.46	0.153
Access to credit (1 = yes)	0.36	0.36	0.33	0.434
Access to extension (1 = yes)	0.46	0.46	0.47	0.731
Access to agricultural training (1 = yes)	0.41	0.41	0.41	0.984
Access to irrigation (1 = yes)	0.46	0.45	0.53	0.074*
Distance to nearest all weather road (km)	17.75	16.14	26.36	0.003**

TABLE 4.3—SOCIOECONOMIC CHARACTERISTICS OF THE SAMPLED HOUSEHOLDS (*n* = 984) *continued*

Variable description	Mean			*t*-tests (*p*-values)
	All sample (*n* = 984)	Access to social grants		
		Yes (*n* = 829)	No (*n* = 155)	
Outcome variables				
Farm inputs (000 rand/ha/year)	3.28	2.52	4.03	0.094*
Farm income (000 rand/ha/year)	11.76	10.93	16.40	0.026**
Farm labor supply (man-day equivalents / ha)	36.37	35.72	39.83	0.016**
Entrepreneurial competency index (*n* = 513)	-0.14	-0.12	-0.33	0.116
Treatment variable				
Access to social grants (1 = yes)	0.84	1.00	0.00	0.000***
Proportion of income from social grants	0.38	0.45	0.00	0.000***

Source: Authors' calculations.

Note: ***, **, and * mean significant at the 1%, 5%, and 10% significance levels, respectively.

Beneficiary households were generally larger than nonbeneficiary households, which could be because larger households are more likely to have at least one of their members receiving social grants, or because access to social grants influences household formation. Table 4.3 shows that heads of beneficiary households had significantly lower levels of education than their nonbeneficiary counterparts. Nonbeneficiary households had access to more land than beneficiary households, and they owned more livestock.

The results also show that few household heads were formally employed and that levels of unemployment were higher among beneficiary households. A small proportion of these rural households owned a nonfarm business, with beneficiary households owning fewer nonfarm businesses than nonbeneficiaries. The limited participation in nonfarm livelihood activities underscores the importance of smallholder farming in these rural areas. However, the results indicate that farming currently makes a minor contribution to the incomes of rural households. Social grants played an important role in the livelihoods of the interviewed households, representing almost half of beneficiary households' incomes—more than four times the 11 percent contribution of farming. Farming contributed twice as much to the income of nonbeneficiary households as it did to beneficiary households.

The survey results indicate limited access to support services such as extension, training, and credit. In particular, the lack of access to credit was highlighted as a key constraint that inhibits entrepreneurship development among farmers. Only 33 percent of the farmers reported that they had accessed credit in the 12 months prior to the survey. Table 4.3 shows that nonbeneficiary households spent more on inputs, generated more farm income per hectare, and allocated more labor to farming than their counterparts. In terms of the entrepreneurial competency index, the results indicated that there was no significant difference between the entrepreneurship scores of beneficiary and nonbeneficiary households.

Determinants of Level of Dependency on Social Grants

Table 4.4 presents the factors correlated with level of dependency on social grants, estimated as a key step in generating the propensity scores. The results show that dependency on social grants is positively correlated with age, with households headed by older individuals being more likely to depend on social grants compared to households headed by younger individuals. This is expected, as older individuals are about to retire or are retiring, and they become eligible to receive the old age grant when they reach 60 years. The results show that the larger the household, the higher the chances of dependency on social grants. This could be because larger families have a greater chance than smaller families of having a member or two who qualify for social grants. This could also indicate that access to social grants influences household formation. For example, researchers (Agüero, Michael, and Ingrid 2007; Armstrong and Burger 2009; Klasen and Woolard 2008) have reported that people move into households in which social grants are received.

As expected, the level of education of the household head was negatively associated with dependency on social grants. Higher levels of education imply more livelihood options and opportunities for generating income from other economic activities and hence less reliance on social grants. Households with employed household heads depend less on social grants, as they depend instead on wages from the household head's employment. The same applies to those who are owners of small businesses, as they can generate income from their business activities. Given that social grants may result in erosion of dignity due to, among other factors, being treated disrespectfully by government officials or being made to feel unworthy by being required to queue for very lengthy periods (Wright et al. 2015), those who have alternative livelihood options, such as the educated, the employed, and owners of microbusinesses, may decide

TABLE 4.4—FACTORS ASSOCIATED WITH DETERMINANTS OF DEPENDENCY LEVEL ON SOCIAL GRANTS

Variable	Coef.	Std. err.
Age of household head	0.003***	0.001
Gender of household head	-0.017	0.018
Household size	0.011***	0.002
Education level of household head	-0.006***	0.002
Marital status of household head	-0.020	0.017
Value of assets (logged)	-0.033***	0.011
Income from nongrant sources (logged)	-0.003***	0.001
Employment status of household head	-0.043***	0.016
Nonfarm business	-0.024*	0.015
Land size (logged)	-0.004	0.007
Livestock	-0.001	0.000
Access to agricultural training	-0.014	0.015
Group member	0.009	0.018
Market access	-0.035*	0.019
Credit access	0.026*	0.016
Access to irrigation	-0.028*	0.016
Distance to nearest all weather road	-0.001**	0.001
Umzinyathi	-0.062***	0.021
Uthukela	0.072***	0.022
Umkhanyakude	-0.077***	0.027
Constant	0.570***	0.123
n	984	
Wald χ^2	199.15***	
Log likelihood	42.81	

Source: Authors' calculations.
Note: ***, **, and * mean significant at the 1%, 5%, and 10% significance levels, respectively.

not to apply for social grants even when they qualify to receive them. Likely for similar reasons, households with access to irrigation and markets depend less on social grants than do those without these advantages.

The negative coefficient on nongrant income indicates that income increases from other sources are associated with decreasing dependency on social grants. This is expected, as eligibility for social grants is based on income levels, among other criteria. The results indicate that the targeting mechanism for the income criterion in the means test is working properly, as it excludes better-off households. As a means-tested program, social grants are intended for the poorest members of society. The significant and negative estimated coefficient of asset values indicates that richer households depend less on social grants than poor households, again indicating that social grants are indeed targeting the poor.

The results indicate that households located far from good all weather roads are less likely to depend on social grants compared to those with closer access to roads. This could be because isolated households lack access to information about the grants and often are without important requirements such as identity cards (DSD, SASSA, and UNICEF 2012). This situation is unfortunate, as it may result in the exclusion of the poorest members of society who need the social grants the most. Another potentially concerning result is that households that reported having used credit were more likely to depend on social grants than those that had not accessed credit. This suggests that these households are becoming more indebted and do not have adequate opportunities to generate income outside social grants. The result may also suggest that credit suppliers, especially informal ones, are extending credit to poor households. Whether or not this is a good thing is a subject for further research. Table 4.4 indicates that rural households from Uthukela district were more likely to depend on social grants than those in Harry Gwala district, while those in Umzinyathi and Umkhanyakude were less likely to depend on social grants than those of Harry Gwala.

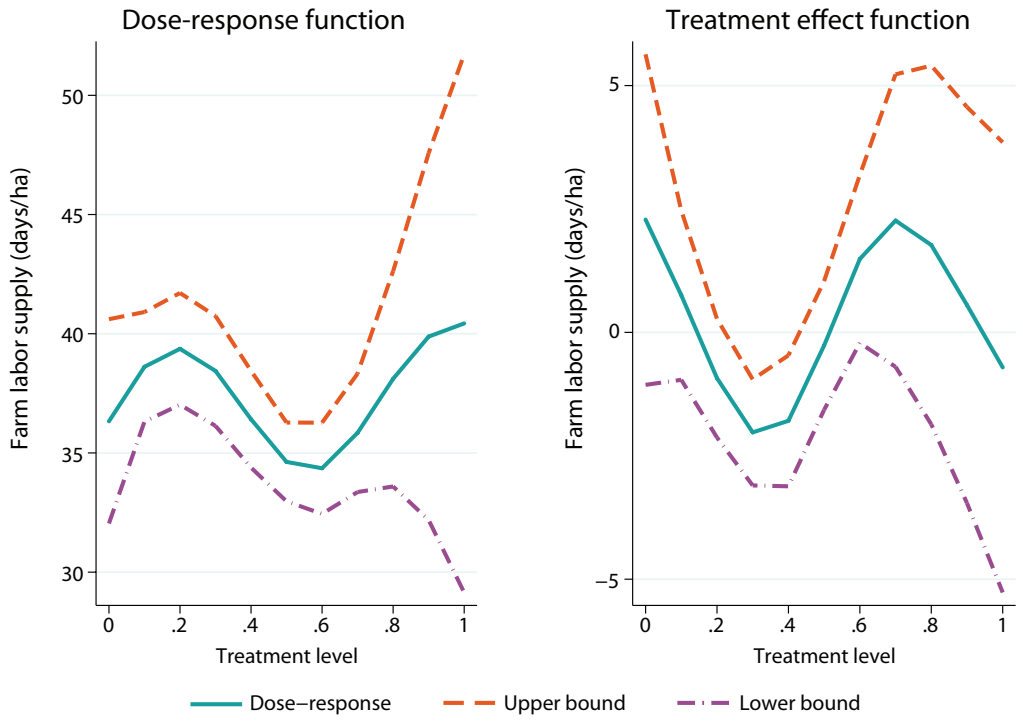
In summary, Tables 4.3 and 4.4 suggest that social grants are efficiently targeted at the poor households that they intend to reach. The study found that households that depend more on social grants are those that are not only poor but have fewer alternative livelihood options (such as the less educated, unemployed, or those that do not own a nonfarm microbusiness). The result is that the social grants are benefiting the poorest of the poor among rural households. Studies such as those by Abel (2013); Armstrong and Burger (2009); and DSD, SASSA, and UNICEF (2012) have also reported that social grants in South Africa are well targeted, in as far as they benefit members of relatively poorer households. However, while social grants are important in addressing extreme poverty, it would be a problem if access to social grants were to create disincentives for these poor rural households to work themselves out of poverty.

Impact of Social Grants on Agricultural Entrepreneurship

The GPS matching approach was used to estimate the heterogeneous impact of social grants on farm labor supply, the entrepreneurial competency index, investment in farm inputs, and farm income generation. Figure 4.1 presents the average dose-response and treatment functions for the impact of social grants on farm labor supply. The DRF reveals how a 10 percent increase in the contribution of social grants to household income affects the household's allocation of labor to farming, while the treatment effect shows the average effect. As indicated in Table 4.3, beneficiary households had been recipients of social grants on average for more than 9 years, and the social grants had been in place before decisions affecting current labor patterns were made. The tests for the common support condition and the balancing property showed that these assumptions were satisfied.

The confidence bands are narrow for treatment values ranging from greater than 0 to 80 percent, suggesting that the results are reliable in the same range. The wide 95 percent confidence bands suggest a high level of uncertainty of the average DRF (Bia and Mattei 2012) above 80 percent, as a result of the small number of dependence levels beyond that point. Thus, the shape of the graph indicating dosages greater than 80 percent is less robust

FIGURE 4.1—THE AVERAGE DOSE-RESPONSE AND TREATMENT EFFECT FUNCTIONS FOR THE IMPACT OF SOCIAL GRANTS ON FARM LABOR SUPPLY



Source: Authors' calculations.

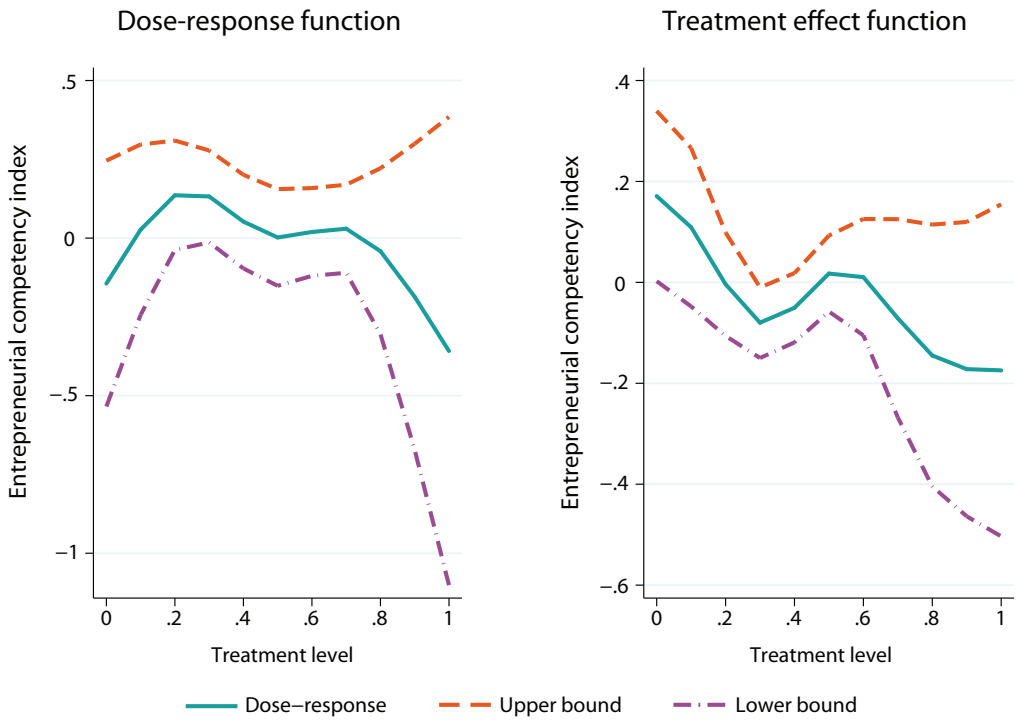
and reliable. The semiparametric estimators are sensitive to small sizes and do not perform well in regions with few observations (Bia et al. 2014). Therefore, the results should be interpreted with caution at dosage levels greater than 80 percent.

The results presented in Figure 4.1 show that the effect of social grants is not uniform at different treatment levels. Figure 4.1 shows that increasing treatment (that is, more dependency on social grants) is associated with increased participation in farming activities at both lower (0–20 percent) and higher (60–80 percent) treatment levels. The implication is that the additional income from social grants, at lower and higher levels of social grant dependency, plays a positive role in household members' participation in farming. As reported by some South African studies in the nonfarm labor participation literature (for example, Ardington et al. 2013; Ardington, Case, and Hosegood 2009; Posel, Fairburn, and Lund 2006; Williams 2007), social grants can help alleviate households' cash constraints, resulting in increased motivation to participate in farming activities. At lower levels, the social grant income is not significant enough to create a dependency syndrome. At higher levels, the households are poorer and have fewer other income sources, so they must participate more in economic activities such as farming to augment their inadequate income.

Figure 4.1 indicates that additional income from social grants results in a decreased incentive to supply more family labor to farming at dosages between 20 percent and 60 percent. This result supports other studies (for example, Abel 2013; Bertrand, Mullainathan, and Miller 2003) reporting that an increase in social grant income increases the reservation wage and lowers labor force participation. This implies that at least some of the social grant income that is in theory targeted toward the elderly, young, or sick ends up being redistributed (as cash or food, etc.) to working age members of the household. The result of this intrafamily redistribution is a significant reduction in the number of man days in which household members engage in smallholder farming activities. However, the decline in labor supply does not occur at the highest dependency levels.

Figure 4.2 shows the impact of social grants on the agricultural entrepreneurial competency index. The graph shows that increasing the contribution

FIGURE 4.2—THE AVERAGE DOSE-RESPONSE AND TREATMENT EFFECT FUNCTIONS FOR THE IMPACT OF SOCIAL GRANTS ON THE ENTREPRENEURIAL COMPETENCY INDEX

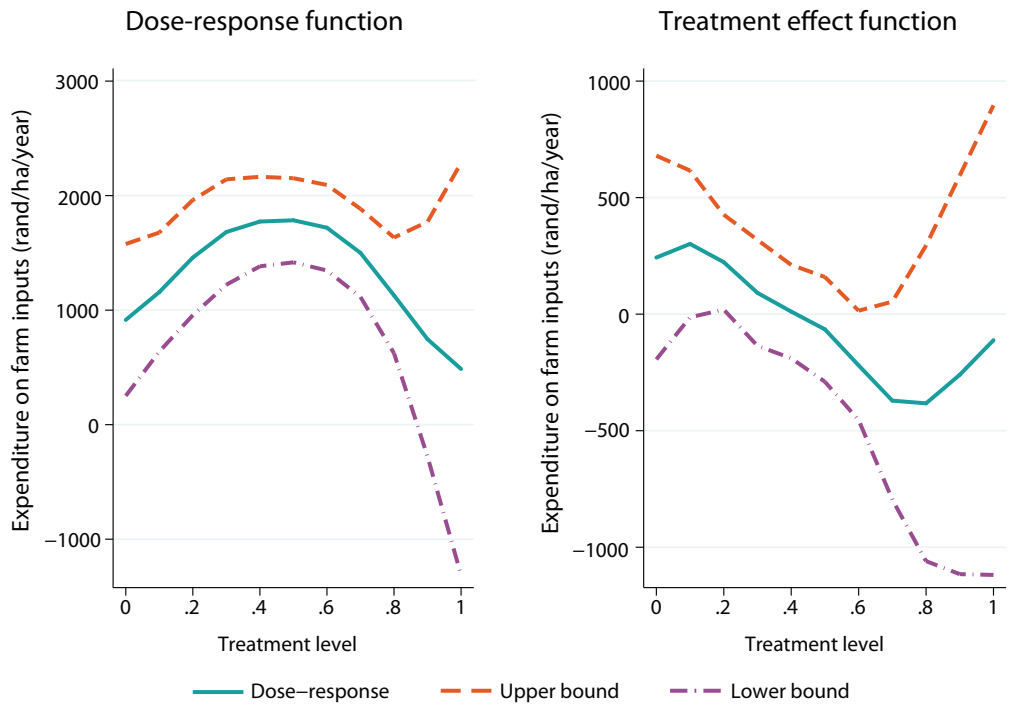


Source: Authors' calculations.

of social grants to household income has a positive impact on farm entrepreneurship at dosages of less than 20 percent. This result indicates that access to social grants can play a positive role in farm entrepreneurship at dependency levels below 20 percent. However, the graph shows that at high social grant dosages (greater than 20 percent), farm entrepreneurship declines with increasing social grant dependency. The GPS results are an improvement on the work of Sinyolo, Mudhara, and Wale (2016a), who reported a negative relationship between the level of dependency on social grants and entrepreneurship after using ordinary least squares. The GPS approach allows us to uncover heterogeneities that cannot be revealed using the homogeneous averages produced by methods such as ordinary least squares.

The GPS results suggest that access to social grants can have a positive effect on agricultural entrepreneurship if the amount of social grant income is kept at a low level relative to total household income. At lower levels, the guaranteed and predictable income from grants allows farming households to take risks and be entrepreneurially oriented. However, once the contribution of social grants increases beyond 20 percent relative to other sources of income, households become dependent and exhibit less motivation to develop their entrepreneurial competencies. For example, increasing the contribution of social grants reduces the pressure on beneficiaries to invest their time or resources in equipping themselves with skills, scanning the market for opportunities, or building and effectively using networks.

FIGURE 4.3—THE AVERAGE DOSE-RESPONSE AND TREATMENT EFFECT FUNCTIONS FOR THE IMPACT OF SOCIAL GRANTS ON FARM INPUT EXPENDITURES



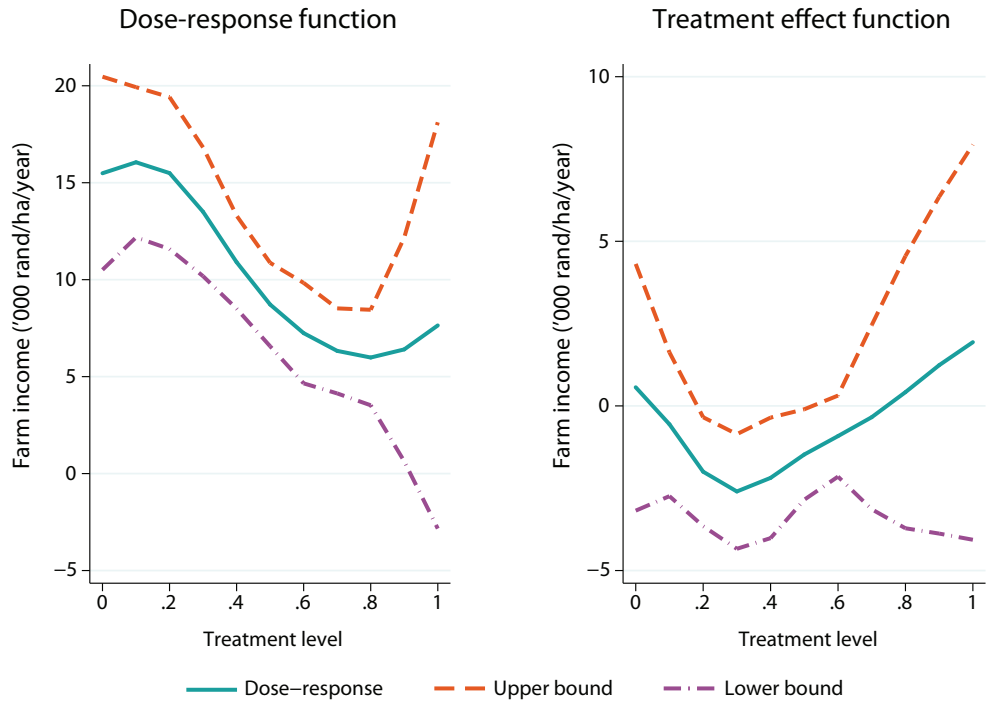
Source: Authors' calculations.

The impact of social grants on households' expenditures on farm inputs is presented in Figure 4.3. The results show a similar trend to the previous figures, indicating that income from social grants relates positively to farm input expenditures at lower levels of social grant dependency. The graph shows that the relationship changes at a treatment level of 50 percent, implying that increasing the contribution of social grants above 50 percent leads to a decline in investment in farm inputs.

The positive relationship is in line with what several authors have reported (for example, Boone et al. 2013; Covarrubias, Davis, and Winters 2012; Mabugu et al.

2013; Todd, Winters, and Hertz 2010), namely, that social grants could positively impact the productive capacity of poor rural households. According to these studies, social grants can improve the livelihoods of the poor by enabling them to invest in longer-term and more sustainable economic activities. In this way, social grants and smallholder agriculture have the potential to complement each other as key livelihood promotion activities among the poor.

FIGURE 4.4—THE AVERAGE DOSE-RESPONSE AND TREATMENT EFFECT FUNCTIONS FOR THE IMPACT OF SOCIAL GRANTS ON NET FARM INCOME



Source: Authors' calculations.

Figure 4.4 shows the relationship between social grants and net income from farming activities. While a minor positive relationship can be observed at lower treatment levels, overall the graph shows a negative relationship between the level of dependence on social grants and income generation from farming. This result suggests that households benefiting from social grants have a higher tendency to be subsistence producers, generating less income from farming and depending more on the social transfers for income. Radel et al. (2016) and Todd, Winters, and Hertz (2010) observed similar results in Mexico. In South Africa, Aliber and Hart (2009); Mabugu et al. (2014); and Sinyolo, Mudhara, and Wale (2017) identified a disincentive effect of social grants on smallholders' commercialization incentives.

Conclusions

Social grants and smallholder farming should play complementary roles in rural areas, as both are important livelihood sources. While the role of social grants in addressing short-term poverty is appreciated, it is important that social grants assist in building entrepreneurship and helping poor households develop capabilities that will enable them to engage in self-sustaining economic activities. The budget pressures in South Africa are high, and more households should be graduating out of government support. This chapter has shown that social grants are well targeted, benefiting the poor who have fewer alternative livelihood options, and that they can potentially play both a positive and negative role in the development of agricultural entrepreneurship in rural areas, depending on households' dependency levels. At

low dependency levels, social grants were found to have a positive effect on farm labor supply, entrepreneurship competencies, and investment in farm inputs. At higher levels of dependency, a negative effect emerged.

The results suggest that social grants can complement other economic activities of the poor, such as smallholder farming. However, for this to happen, the contribution levels of cash transfer programs such as social grants to household income should be kept at low levels. While direct income support for households is important to address hunger and extreme poverty in the short term, it is important that poor households also be afforded opportunities to work themselves out of poverty.

CHAPTER 5

The Impact of Cash Transfer Programs in Building Resilience: Insight from African Countries

Solomon Asfaw and Benjamin Davis[1]

1 This chapter appeared previously as a book chapter in L. Lipper, N. McCarthy, D. Zilberman, S. Asfaw, and G. Branca, et al. (eds.), *Climate Smart Agriculture: Building Resilience to Climate Change, Natural Resource Management and Policy* (New York: Springer International Publishing, 2018). Previous versions of this chapter have been presented at various conferences and workshops at different times. We would like to thank session participants for suggestions.

Almost three-quarters of the economically active rural population in Africa south of the Sahara (SSA) is made up of smallholder farmers, making them important players in national agricultural development plans (Gollin 2014). Thus, agricultural development that contributes to increasing the productivity, profitability, and sustainability of smallholder farming is critical to reducing poverty and improving food security and nutrition. Agriculture in SSA, however, is increasingly exposed to a variety of risks and uncertainties, including market risk, production risks, climate variability, pest and disease outbreaks, windstorms, and institutional risks (Antonaci, Demeke, and Soumare 2012). There has been growing interest at the African and international community levels in increasing the resilience of households and communities, which can be defined as their ability to remain at a certain minimum level of income or well-being despite the presence of shocks (Barrett and Headey 2014). Social cash transfer (SCT) programs represent a key tool for increasing resilience to shocks. The main premise is that by providing a steady and predictable source of income, cash transfer programs can enhance household- and community-level resilience by improving human capital, facilitating changes in productive activities by relaxing liquidity constraints, improving natural resource management, and improving the ability to respond to and cope with exogenous shocks (for example, Handa et al. 2016; Asfaw et al. 2012). The aim is to strengthen and improve resilience for rural producers to allow them to prevent future fluctuations in consumption and move to the next welfare level (Antonaci, Demeke, and Soumare 2012).

Government strategies for managing agricultural risks at the household or community level have taken different forms in different countries but are generally classified into three groups. The first group is related to risk mitigation activities designed to reduce the likelihood of an adverse event or reduce the severity of actual losses. Risk mitigation options are numerous and varied (including irrigation, use of resistant seeds, improved early warning systems, and adoption of better agronomic practices). The second form is linked to risk transfer, such as commercial insurance and hedging. The last group deals with resilience-improving mechanisms to withstand and cope with events ex ante. Examples of these government strategies include social safety net programs, buffer funds, savings, strategic reserves, contingent financing, insurance, and so on.

Unlike in other parts of the world, most farmers in SSA have no access to government or market-based risk management tools. When they do, government programs or private-sector initiatives to manage price and production instability are often insufficient. Moreover, social protection programs are seldom institutionalized and are rarely used as risk management instruments to address food and nutrition insecurity. However, an increasing number of African governments over the last 15 years have launched social protection programs including cash transfers, workfare and public works programs, and in-kind safety nets.[2]

SCT programs in African countries have tended to be unconditional (with regular and predictable transfers of money given directly to beneficiary households without conditions or labor requirements) rather than conditional (requiring recipients to meet certain conditions, such as using basic health services or sending their children to school), the latter being the more common format in Latin America. Most of these programs seek to reduce poverty and vulnerability by improving food consumption, nutritional and health status, and school attendance. There is robust evidence from numerous countries (especially within Latin America and increasingly in SSA) that cash transfers have leveraged sizable gains in access to health and education services, as measured by increases in school enrollment and use of health services. In some cases, conditional cash transfer (CCT) programs

2 In 2016, the International Policy Centre for Inclusive Growth catalogued 127 social protection programs in 39 African countries (Cirillo and Tebaldi 2016).

show stronger effects, but unconditional programs have also been shown to be highly effective (for example, Baird et al. 2014; Bastagli et al. 2016).

Building on the existing literature, this chapter synthesizes the key findings of the From Protection to Production (PtoP) project of the Food and Agriculture Organization of the United Nations (FAO), which studies the impact of SCT programs on household economic decision making. [3] The cash transfer programs studied here are government-run cash transfer programs in SSA. We examine cross-country results to test the magnitude and distribution (that is, the heterogeneity) of the programs' impacts on productivity and economic indicators, and the implications of these impacts for resilience. We also explore the underlying program design and implementation features that mediated the impacts. The chapter is organized as follows. We first provide an overview of selected SCT programs in SSA, and then present a conceptual framework on the linkages between cash transfers and economic impacts and resilience. The next section outlines the impact evaluation design and data collection methods. The final sections offer a synthesis of key cross-country findings and a short conclusion and discussion of policy implications.

Overview of Selected SCT Programs in Africa

SCTs launched by African governments over the past two decades have provided assistance to the elderly and to households that are ultra-poor, labor constrained, caring for orphans and vulnerable children (OVCs), or experiencing a combination of these disadvantages. Typically, ministries of social development manage the programs. The main types of social protection instruments used in African countries include cash transfers, workfare and public works programs, and in-kind safety nets. The most common element of social protection programs is unconditional cash transfers; in 2016, the International Policy Centre for Inclusive Growth identified 70 social protection programs in Africa that included an unconditional cash transfer component (Cirillo and Tebaldi 2016). The next most common components are cash for work, CCTs, social support services, and school feeding, each with around 20 programs or program components on the continent in 2016 (Cirillo and Tebaldi 2016).

Workfare and public works programs supply temporary employment for recipients able to contribute their labor in return for benefits, at the same time creating public goods in the form of new infrastructure, improvements to existing infrastructure, or performance and delivery of services (del Ninno, Subbarao and Milazzao, 2009). In-kind safety nets (such as food aid, supplementary and school feeding programs, and so on) help recipients access food, healthcare, education, and other basic goods and services. Other common instruments in parts of southern Africa include social insurance programs—primarily social pensions and health insurance.

Some of the African social protection instruments implemented during the last decade include Burkina Faso's nationwide school feeding program under the Burkinabé Response to Improve Girls' Chances to Succeed (BRIGHT) integrated program, Ethiopia's Productive Safety Net Program (PSNP), the Livelihood Empowerment Against Poverty (LEAP) program in Ghana, the Kenyan Cash Transfer for Orphans and Vulnerable Children (CT-OVC), the Child Grants Program (CGP) in Lesotho, the Malawi Social Cash Transfer Programme (SCTP), Mozambique's Programa de Subsidios de Alimentos, Rwanda's Vision 2020 Umurenge Program, South Africa's Child Support Grant and Old Age Pensions, Zambia's CGP, and the Zimbabwe SCT. Several other countries, including Uganda, Tanzania, and Liberia, have

3 PtoP is one element of the broader Transfer Project, a collaboration between FAO, UNICEF, the University of North Carolina at Chapel Hill, and Save the Children UK that supports the design and evaluation of public cash transfer programs in several African countries. Many of the impact evaluations cited here rely on data collected through the Transfer Project.

also pursued safety net programs (Asfaw et al. 2012). The remainder of this section describes the programs on which our study focuses.

In Ethiopia, the Social Cash Transfer Pilot Program (SCTPP), initiated by Tigray regional state and UNICEF, aimed to improve the quality of lives of OVCs, the elderly, and persons with disabilities, as well as to enhance their access to essential social welfare services such as healthcare and education, via access to schools in two selected *woredas* (districts) (Berhane et al. 2015); it served approximately 3,800 households as of 2016 (Handa et al. 2018).

The Ghanaian LEAP program provides cash and health insurance to extremely poor households to improve short-term poverty and encourage long-term human capital development. LEAP started a trial phase in 2008 and began expanding gradually in 2009 and 2010 (Handa et al. 2014), reaching around 213,000 households by 2016 (Handa et al. 2018). As the flagship program of the National Social Protection Strategy, it is fully funded from the central government's general revenues and operates in all 10 regions of rural Ghana. Within regions, districts are selected for inclusion based on the national poverty map; within districts, local Department of Social Welfare offices choose communities based on their knowledge of relative rates of deprivation (Handa and Park 2012).

The Kenyan CT-OVC, implemented by the Ministry of Home Affairs, is the government's flagship social protection program, reaching around 365,000 households with OVCs across the country as of 2016 (Handa et al. 2018).

The Lesotho CGP provides an unconditional cash transfer to poor and vulnerable households. The primary objective of the CGP is to improve the living standards of OVCs, including nutrition, health, and school enrollment (Pellerano et al. 2012). The CGP is implemented by the Ministry of Social Development and targeted at poor households with children, including child-headed households. As of 2016, the program was reaching approximately 26,600 households (Handa et al. 2018).

The Malawi SCTP was initiated in 2006 in the pilot district of Mchinji, providing small cash grants to ultra-poor, labor-constrained households. Its objectives include reducing poverty and hunger in vulnerable households and increasing child school enrollment. By March 2015, the SCTP had gone to full scale in 10 districts. Social welfare officers execute the program through the district councils on behalf of the central government (Handa et al. 2015). As of 2016, the SCTP was reaching approximately 170,000 households (Handa et al. 2018).

In 2010, Zambia's Ministry of Community Development and Social Services began implementing its own CGP in the three districts (Kalabo, Kaputa, and Shongombo) with the highest rates of mortality, morbidity, stunting, and wasting among children younger than five. The CGP includes all households with a child less than five years of age. Eligible households receive 55 Zambian kwachas (ZMK) a month (equivalent to about US$12) irrespective of household size, an amount considered enough to purchase one meal a day for everyone in the household for one month. The goal of the program is to reduce extreme poverty and the intergenerational transfer of poverty (Daidone, Davis, Dewbre, Gonzalez-Flores, et al. 2014).

Our impact evaluations focus on measuring the primary objectives of these programs, including food security, health, and nutritional and educational status, particularly of children. Most programs are located in some kind of social ministry and administered by professionals with backgrounds in the social sciences, including economists with specialization in the social sectors. The impact evaluations are most often implemented by research institutions and consulting firms that specialize in the relevant social sectors.

The Role of Cash Transfers in Building Resilience

The potential benefits of cash transfer programs are built around the premise that the provision of regular and predictable cash transfers to very poor households, in the context of missing or thin markets, has the potential

to generate both economic and productive impacts at the household level (for example, Handa et al. 2016; Asfaw et al. 2012; Covarrubias, Davis, and Winters 2012). In rural areas, most beneficiaries depend on subsistence agriculture and live in places where markets for financial services (such as credit and insurance), labor, goods, and inputs are lacking or do not function well. The cash transfers often represent a dominant share of household income and can be expected to help households overcome the obstacles that block their access to credit or cash. Such access, in turn, can increase productive and other income-generating investments, influence beneficiaries' role in social networks, and increase their access to markets, improving their ability to deal with exogenous shocks and thereby strengthening household- and community-level resilience (Asfaw et al. 2012).

The predominant view from the literature is that social protection, including cash transfer programs, may protect beneficiaries from shocks, reduce the use of negative coping strategies that undermine longer-term livelihood sustainability, and reduce households' risk adversity toward more profitable yet more risky activities. One group of empirical literature investigates the impact of social protection on recovery from shocks. Evidence shows that a public works program in India reduced income fluctuations, and one in Ethiopia protected households from the negative effects of crop damage on child growth (Dercon and Krishnan 2003). Nonetheless, although a food-for-work program in Ethiopia increased risk sharing within treated villages, it also reduced households' capability of managing idiosyncratic crop shocks—perhaps because food aid crowded out informal insurance and subsequently left beneficiaries inadequately insured to manage idiosyncratic risk (Dercon and Krishnan 2003). CCTs in Latin America also facilitated recovery from shocks. Other positive effects include reduced child labor in Nicaragua (Maluccio, 2010), protection of consumption for coffee farmers in Nicaragua and Honduras during global price drops, income diversification in Brazil, and a decline in school dropout in Mexico (Maluccio 2005, IEG 2011a).

A second group of empirical studies looks at the impact of social protection on adverse coping strategies. The evidence generally shows a reduction in the use of adverse coping strategies that deplete household assets. One study finds that Ethiopia's PSNP dissuaded 60 percent of beneficiaries from engaging in distress sales during a drought (Devereux et al. 2005). The Malawi SCTP pilot in Mchinji reduced begging for food or money by 14 percent and reduced school dropout rates by 37 percent (Covarrubias, Davis, and Winters 2012). In Ghana and Kenya, respectively, the LEAP and CT-OVC programs reduced child labor, distress asset sales, and indebtedness (Pellerano et al. 2012). The impact on risk-coping behavior is also influenced by gender and program design. In the Mchinji pilot, children in female-headed households benefited from the SCT program via a decline in non-household wage labor and an increase in children's participation in household chores, whereas children in male-headed households experienced only a decline in school absenteeism. Yet these gender-specific outcomes are also a reflection of the constraints facing different households: female-headed households are also single-guardian households that face challenges in balancing domestic work with income-generating activities (Covarrubias, Davis, and Winters 2012). In addition, cash and in-kind transfers may increase social capital and strengthen informal safety nets and risk-sharing arrangements, provided that appropriate mechanisms and an enabling environment are created.

A third group of studies shows that SCT programs can have impacts on household decision making over labor supply, the accumulation of productive assets, and productive activities, which may subsequently have implications for resilience. A meta-analysis of social protection programs including cash transfers, public works, and food transfers found that beneficiaries increased their livestock holdings, farm and nonfarm productive assets, and savings (Hidrobo et al. 2018). Todd, Winters, and Hertz (2010) and Gertler, Martinez, and Rubio-Codina (2012) found that the Mexican Progresa program led to increased land use, livestock ownership, crop

production, and agricultural expenditures, as well as a greater likelihood of operating a microenterprise. From their analysis of a CCT program in Paraguay, Soares, Ribas, and Hirata (2010) found that beneficiary households invested between 45 to 50 percent more in agricultural production than they did before the program and that the program also increased households' probability of acquiring livestock by 6 percent. Martinez (2004) found that the Bonosol pension program in Bolivia had positive impacts on animal ownership, expenditures on farm inputs, and crop output, although the specific choice of investment differed according to the gender of the beneficiary. In contrast, Maluccio (2010) found that the Red de Protección Social program in Nicaragua had muted impacts on the acquisition of farm implements and no impact on livestock or landownership.

With respect to SSA, Covarrubias, Davis, and Winters (2012) and Boone and colleagues (2013) found that the Malawi SCTP led to increased investment in agricultural assets, including farm implements and livestock, and increased satisfaction of consumption by households' own production. Gilligan, Hoddinott, and Taffesse (2009) found that Ethiopian households with access to both the PSNP and complementary packages of agricultural support were more likely than nonparticipants to be food secure, to borrow for productive purposes, to use improved agricultural technologies, and to operate their own nonfarm business activities. In a later study, Berhane and colleagues (2011) found that the PSNP led to a significant improvement in food security status for those who had participated in the program for five years versus those who received only one year of benefits. Moreover, those households that participated in the PNSP as well as the complementary programs had significantly higher grain production and fertilizer use compared to nonparticipants. However, beneficiaries did not experience faster growth in assets (livestock, land, or farm implements) because of the programs (Gilligan, Hoddinott, and Taffesse 2009).

Methodology

Program Evaluation Design and Data

The core of the quantitative analysis for the Kenya, Lesotho, Malawi, and Zambia studies was an experimental design impact evaluation. In Ethiopia and Ghana, the evaluation designs were quasi-experimental. Table 5.1 summarizes the key evaluation design features of the cash transfer programs.

In Kenya's CT-OVC, the impact evaluation utilized a randomized cluster longitudinal design, with the baseline quantitative survey fieldwork carried out in mid-2007. Within each district, two locations were chosen randomly to receive the intervention and two were selected as controls (Ward et al. 2010). This method of randomization was not as robust as in the case of Lesotho (see below) due to the fewer units over which the randomization took place. Approximately 2,750 households were surveyed in 7 districts (Garissa, Homa Bay, Kisumu, Kwale, Migori, Nairobi, and Suba). Two-thirds of households were assigned to the treatment group. These

Table 5.1—CORE EVALUATION DESIGNS

Country	Design	Level of randomization or matching	*N* =	Ineligibles sampled?
Ethiopia	Nonexperimental (PSM and IPW)	Household level within a village	3,351	Yes
Ghana	PSM (IPW)	Household and region	1,504	No
Kenya	Social experiment with PSM and IPW	Location	2,234	No
Lesotho	Social experiment	Electoral district	2,150	Yes
Malawi	Social experiment	Village cluster	3,200	Yes
Zambia	Social experiment	Community welfare assistance committee	2,519	No

Source: Davis and Handa 2015.

Note: All studies are longitudinal, with a baseline and at least one postintervention follow-up; N refers to households sampled at follow-up; IPW = inverse probability weighting; PSM = propensity score matching.

households were reinterviewed two years later (these interviews constituting the first-round study), between May and July 2009, to assess the impact of the program on key welfare indicators (Ward et al. 2010). The reinterview success rate was approximately 83 percent. The second-round follow-up study was conducted between May and August 2011 with a more detailed economic activity module (including questions on wage labor, self-employment, crop and livestock activities, and so on) to capture potential investment and productive activity benefits of the program on families. The household-level analysis relied on data collected at the baseline (2007) and in the second-round follow-up (2011), with a sample of 1,811 households. However, it is important to point out that for many of the outcome variables of interest to the PtoP project, there is only one data point (that is, no baseline).

In Lesotho, participation in the program was randomized at the level of the electoral district (ED). First, all 96 EDs in 4 community councils were paired based on a range of characteristics, with 40 pairs randomly selected for the survey. Within each selected ED, 2 villages (or clusters of villages) were selected, and in every cluster a random sample of 20 households was selected. Baseline survey data were collected, followed by public meetings with a lottery to assign EDs (both sampled and non-sampled) to either treatment or control groups. Selecting the treatment EDs after the baseline survey helped to avoid anticipation effects (Pellerano et al. 2012). The baseline household survey was carried out in 2011 prior to distribution of cash transfers; a follow-up panel survey took place in 2013. A total of 3,102 households were surveyed; 1,531 program-eligible households (766 treatment and 765 control) were used for the impact evaluation analysis, with the remaining 1,571 program-ineligible households used for analysis of targeting and spillover effects. The baseline analysis report (Pellerano et al. 2012) shows that randomization was quite successful.

In Malawi, baseline data were collected in 2013, with a follow-up survey 17 months later, in 2014, and an endline survey in 2015 (Handa et al. 2016). The treatment and control groups each represented about half of the communities sampled. The sample was divided between Salima and Mangochi districts, which counted, respectively, 2,192 and 2,160 households. Of these households, 1,775 and 1,756, respectively, met the eligibility criteria. The longitudinal impact evaluation included 3,531 eligible households and 821 ineligible households at baseline.

In Zambia, the baseline survey was carried out in September–October 2010, with follow-ups in 2012, 2013, and 2014. Communities were randomly assigned to a treatment group (those incorporated into the program in December 2010) or the control (those to be brought into the program at the end of 2013). Baseline data collection began prior to group assignment. The study includes 2,515 households (1,228 treatment and 1,287 control). Analysis of the baseline data shows that randomization appears to have worked well. Greater detail on the randomization process can be found in Seidenfeld and Handa (2011).

For Ethiopia, the impact evaluation design is nonexperimental; the study follows a longitudinal design, with a baseline household survey conducted in mid-2012, followed by separate monitoring surveys and, finally, a 24-month follow-up in 2014. The evaluation sample includes three groups of households: treatment beneficiaries, control households, and ineligible households. The development of ranking lists of eligible households based on meeting targeting criteria was a vital component. Treatment and control households were both selected from the list of eligible households. The sample comprises 3,664 households at baseline, of which 1,629 were beneficiaries and 1,589 were control households. In addition, 446 sample households were randomly selected for the study from households who were not eligible to receive support from the program because they were less poor, had able-bodied members, or both. Attrition between baseline (May–August 2012) and endline (2014) was 8.70 percent, or 4.36 percent per year (Berhane et al. 2015).

The Ghanaian LEAP program impact evaluation took advantage of a nationally representative household survey implemented during the first

quarter of 2012. It focused on seven districts across three regions (Brong Ahafo, Central, and Volta). The initial treatment sample of 700 households was randomly drawn from the group of 13,500 households that were selected into the program in the second half of 2009. Households were interviewed prior to indication of selection, so as to lower the anticipation effect. The baseline survey instrument was an abridged version of the national household survey instrument, and the national survey sample and the treatment household sample were surveyed at the same time by the Institute for Statistical, Social and Economic Research (ISSER) of the University of Ghana–Legon. The strategy was to draw the control households from the national survey using propensity score matching techniques. A comparison group of "matched" households were selected from the ISSER sample and reinterviewed two years later, in March–April 2012, along with LEAP beneficiaries, to measure changes in outcomes across treatment and comparison groups (Handa and Park 2012).

Analytical Methods

In the PtoP project, we seek to answer the question "How would cash transfer beneficiaries have fared in the absence of the program?" The identification of the counterfactual is the organizing principle of an impact evaluation because it is impossible to observe a household both participating in the program and not participating. The goal is to compare participants with nonparticipants who are as similar as possible except for receiving the program, in order to measure the differential impact of the intervention. The "with" data are observed in a household survey that records outcomes for recipients of the intervention. The "without" data, however, are fundamentally unobserved because a household cannot be both a participant and a nonparticipant of the same program (details discussed in Asfaw et al. 2012).

However, the outcomes of nonbeneficiaries may still differ systematically from what the outcomes of participants would have been without the program, producing selection bias in the estimated impacts. This bias may derive from differences in observable characteristics (such as location, demographic composition, access to infrastructure, wealth, and so on) or unobservable characteristics (such as natural ability, willingness to work, and others). Some observable and unobservable characteristics do not vary with time (such as natural ability), whereas others may vary (such as skills). Furthermore, the existence of unobservables correlated with both the outcome of interest and the program intervention can result in additional bias (that is, omitted variables).

The validity of experimental estimators relies on the assumption that the control group units are not affected by the program; this is also referred to as the *stable unit treatment value assumption* (Rubin 1980; Djebbari and Hassine 2011). However, control households can be affected through market interactions and through informal transactions and risk sharing (the latter known as *nonmarket interaction*).

Toward this end, most of the evaluations used two approaches (that is, a difference-in-differences, or DD, estimator, as well as a single-difference approach combined with inverse probability weighting and propensity score matching), depending on the nature of the design and availability of data (details in Asfaw et al. 2012). When baseline data were not available, as is the case for some of the outcome variables in some countries, the single-difference method was applied. When panel data were available with pre- and postintervention information, which is the case for most of the countries, a DD approach was used. By taking the difference in outcomes for the treatment group before and after receiving the cash transfer and subtracting the difference in outcomes for the control group before and after the cash transfer was disbursed, DD is able to control for pretreatment differences between the two groups, in particular the time-invariant unobservable factors that cannot be accounted for otherwise (Wooldridge 2002).

The key assumption is that differences between treated and control households remain constant throughout the duration of the project. If

prior outcomes incorporate transitory shocks that differ for treatment and comparison households, DD estimation interprets such shocks as representing a stable difference, and thus its estimates will contain a transitory component that does not represent the true program effect. When differences between treatment and control groups exist at baseline, the DD estimator with conditioning variables has the advantage of minimizing the standard errors if the effects are unrelated to the treatment and are constant over time (Wooldridge 2002). Control variables are most easily introduced by turning to a regression framework, which is convenient for the DD, or by combining DD with propensity score matching or with inverse probability weighting.

All estimators presented above assume that the cash transfer impact is constant, irrespective of who receives it. Estimating the mean impact of a program or policy based on this assumption is a concise and convenient way of evaluating impacts. This approach is justified (Heckman, Ichimura, and Todd 1997) if researchers and policy makers believe that total output increases total welfare and that detrimental effects of the program or policy on certain parts of the population are not important or are offset by the program—either via an overarching social welfare function or through family members or social networks.

Overall mean impacts are most helpful when complemented with measurements of distributional impact. Even if the mean program effect were significant, whether the program had a significant beneficial or detrimental effect might vary across the distribution of targeted households (Khandker, Koolwal, and Samad 2010). For example, the impact on poorer households as compared with wealthier households is particularly interesting in the context of programs that aim to alleviate poverty.

There are several ways to calculate the distributional impacts of a cash transfer program. For example, one could divide the sample of households and individuals into different demographic groups (for instance, by gender or age cohort), perform a separate analysis on each group, and see if estimated impacts are different. Interacting the treatment group with different household socioeconomic characteristics is another way to capture differences in program effects, although adding too many interaction terms in the same regression can lead to issues with multicollinearity (Khandker, Koolwal, and Samad 2010). Another way to present the distributional impacts of cash transfer programs is by using a quantile regression approach to assess the magnitude of impact for each stratum of households. Simply investigating changes in the mean program effect, even across different socioeconomic or demographic groups, may not be enough when the entire shape of the distribution changes significantly.

Results and Discussion

This section synthesizes key findings from the PtoP impact evaluation reports and discusses the results over three broad groups of outcome variables linked to household resilience: risk management including responses to climate change, investment in livelihood activities, and food security. We focus on quantitative studies and, where applicable, supplement the comparative analysis with results from the qualitative evidence that report on similar outcomes. The discussion draws on results from both midline and endline reports.

Can Cash Transfers Promote Ex Post Risk Management?

By providing a reliable income stream, cash transfer programs improve risk management in poor rural households. An extra source of income can help households provide for school fees and avert the need for children to drop out of school to work on farms. The transfers flowing in and out of households can also change, and households may engage more in social networks through increased giving and so perhaps may be able to rely on these networks in the future. Households can also use the transferred money to pay off debts,

purchase on credit, or save the cash. Table 5.2 presents the cross-country summary of the impact of SCTs on risk-coping strategies, access to credit, community relations, savings, and debt payments.

Beneficiary households were found to have relied less on risk-coping mechanisms thanks to cash transfers. Asfaw, Pickmans, and Davis (2016) found that households in Malawi shifted away from undesirable *ganyu* (casual) labor because of the SCTP. Also, in Malawi, Handa and colleagues (2015) found that the SCTP reduced paid work outside the home for children ages 10–17. In the face of negative shocks, use of cash transfers emerged as the primary coping mechanism for one-quarter of the negative shocks among SCTP beneficiary households, and there were declines in the use of *ganyu* labor and of savings as coping mechanisms. The authors also found a smaller percentage of households engaging in coping mechanisms for negative shocks, particularly among the poorest households (Handa et al. 2015).

In the Tigray region of Ethiopia, the SCTPP reduced the number of hours per day children were engaged in household activities. In particular, children ages 6–12 in beneficiary households worked fewer hours per day on the family farm and across all other activities, compared with those in control households (Asfaw et al. 2015). However, the impact was more mixed in Lesotho: although boys 13–17 may have seen a reduction in engagement in paid work outside the house, girls saw an increase in such work due to the CGP (Pellerano et al. 2014). Pellerano and colleagues (2014) also found a reduction in the level of engagement in occasional and irregular occupations among adults, noting that these results indicate that the cash support effectively worked as a safety net, preventing households from depending on low-paid and precarious occupations. The authors also found CGP beneficiaries to be less likely to send children to live

TABLE 5.2—SYNTHESIS OF KEY FINDINGS

Variable	Ghana	Kenya	Lesotho	Malawi	Zambia	Ethiopia
Ability to manage risk						
Risk-coping mechanisms	+	N/E	+++	++	+	++
Savings	+	N/E	-	N/A	++	N/A
Purchase on credit	+	NS	NS	--	NS	0
Debt payment	++	N/E	-	++	+	N/E
Provide transfer	-	N/E	+	NS	N/E	-
Receive transfer	+	N/E	+	-	N/E	NS
Remittance receipt	+	N/E	-	N/E	N/E	N/E
Agricultural asset						
Agricultural tools	N/E	+	+	++	+++	0
Livestock ownership	N/E	++	+	+++	+++	0
Crop and livestock production and marketing						
Agricultural inputs	0	-	++	++	+++	0
Livestock inputs	N/A	0	0	N/E	NS	-
Land use	N/E	N/E	NS	N/E	++	N/E
Agricultural output	N/E	NS	++	++	++	++
Crop sales	N/E	N/E	0	++	++	0
Livestock by-products	N/E	N/E	+	N/A	N/A	0
Nonfarm enterprise	NS	0	-	0	+++	0
Household welfare						
Food security	+++	N/A	+++	+++	+++	+++
Consumption	NS	+++	+	+++	+++	++
Dietary diversity	0	+++	NS	N/E	++	+
Home consumption of crop production	N/E	+++	N/E	NS	+	N/E

Source: Asfaw et al. (2014), Asfaw et al. (2015), Asfaw et al. (2016,) Asfaw et al. (2017), Daidone et al. (2014a), Daidone et al. (2014b), AIR (2013), AIR (2016), Handa et al. (2014) and Pellerano et al. (2014).

Note: N/A = not available; N/E = not estimated; NS = no shift; 0 = overall mixed shift; + = significant positive impact; - = significant negative impact. One, two, or three + or – signs indicate the level of the impact.

elsewhere by age 6, send children to work by 3, take children out of school by 8, and reduce spending on health by 7 percentage points as a response to shocks within the 12 months before the survey.

The decreased need to engage in negative risk-coping mechanisms because of cash transfers was also shown through increases in school enrollment and other educational outcomes for children. Handa and others (2015) found that children ages 6–17 increased their net school enrollment by 12 percentage points because of the SCTP in Malawi, with slightly stronger impacts when considering primary and secondary school–age children separately. The authors also found the dropout rate to have fallen for primary school–age children by 4 percentage points, and temporary withdrawal (missing more than 2 consecutive weeks of instruction at any time in the past 12 months) to have decreased by 5 percentage points.

By the endline in Ethiopia, Berhane and colleagues (2015) found the SCTPP to have raised enrollment by around 6 percentage points in Hintalo Wajirat, with a particularly strong effect for girls (13 percentage points). Instead of having to take time out of school to earn extra income, children were more readily participating in school thanks to the SCTPP.

In Ghana, the LEAP program reduced the likelihood of school-age (5–17) children's missing any school by 8 percentage points and also reduced the chance of missing an entire week by 5 percentage points (Handa et al. 2014). Among younger children, smaller households appeared to be more protective, with a larger impact on missing any school in smaller households. However, the significant impact on enrollment was entirely driven by larger households. Handa and others (2014) also found the impact on secondary school enrollment for children ages 13–17 to be similar to estimates for South Africa's Child Support Grant (6 percentage points) and Kenya's CT-OVC (8 percentage points).

Though the Lesotho CGP had mixed results for engagement in paid work, the program increased the proportion of children ages 6–19 enrolled in school by 5 percentage points, with a larger impact on older boys, ages 13–17 (Pellerano et al. 2014). AIR (2013) noted that children living in a CGP beneficiary household in Zambia were 1 percentage point more likely ever to enroll in school and 2 percentage points more likely to enroll on time, for every less year of education their mother has. The authors attributed this effect to the CGP's enabling or motivating mothers who had not enrolled their children in school at baseline to change their actions and start enrolling their children in school.

Cash transfer programs were found to strengthen community ties through various channels, but the impact on private transfers was mixed. In Lesotho, the CGP had a significant impact on strengthening the reciprocity arrangements around food sharing in treatment villages. Both the proportion of households receiving and the proportion providing in-kind help in the form of food increased because of the program. The impact was strong and significant, 15 and 18 percentage points, respectively, and the magnitude was larger for households with no labor capacity (Daidone, Davis, Dewbre, and Covarrubias 2014).

Handa and colleagues (2014) found a positive impact on the value of gifts received and the amount of credit extended to others in Ghana. Meanwhile, in Malawi, Asfaw, Pickmans, and Davis (2016) found SCTP beneficiary households to be 4 percentage points less likely to receive a transfer than non-beneficiary households. In Ethiopia, Asfaw and others (2015) found increases in social capital and the subjective belief in individuals' quality of life and control. Treated households were more likely to agree with offering additional support to poor people, to have fewer problems with neighbors, and similarly, to agree that people residing in their community are basically honest and trustworthy. Other opinions of life satisfaction and ability to achieve success were higher among male-headed beneficiary households, compared with male-headed control households. However, in Ethiopia, no impacts were observed in either receipt or giving of private transfers.

Beneficiary households were also found to use proceeds from cash transfer programs to pay off debts. In Ghana, Handa and others (2014) observed beneficiary households saving more and being more likely to repay

debts than nonbeneficiaries. Smaller beneficiary households also reduced their likelihood of holding a loan by 9 percentage points. The authors also found a corresponding significant impact on the amount paid off: 19 percentage points of adult-equivalent consumption (Handa et al. 2014). In Malawi, households overall, and female-headed households and large farm households in particular, reduced debt from previous loans due to the SCTP. Male-headed households and large farm households were also less likely to still owe money for outstanding loans (Asfaw, Pickmans, and Davis 2016) than nonparticipating households. AIR (2016) also found that larger households paid off loans because of the CGP in Zambia.

Can Cash Transfers Contribute to Managing Climate Risk?

Climate change poses severe threats to households' well-being across the world, particularly in low-income countries, where poor households are often exposed to different sources of risk. Adoption of risk management strategies such as social safety nets is becoming gradually more relevant for improving households' ability to manage climate risk. Given the high incidence of climate shocks in Zambia, we also would like to present the findings of Asfaw and others (2017), who shed light on how households respond to the CGP cash transfer in a context of weather instability. These authors conducted additional analyses by merging the Zambia CGP impact evaluation data with rainfall data obtained from Africa Rainfall Climatology version 2, which covers the years 1983–2012.[4] They assessed whether regular and unconditional small cash payments (via the CGP) helped mitigate the negative effects of climate variability, protect and improve smallholders' livelihoods, and ensure food security and nutrition.[5] The authors also investigated how the CGP and climate variability affected households in different quintiles of various welfare and food security dimensions.

Asfaw and colleagues (2017) found that the CGP increased total food and nonfood expenditure, which implies that the treatment increases households' welfare. Because of an increase in food expenditure, both the quantity and the quality of food consumed responded positively to CGP receipt, implying that households benefited from the CGP in terms of food security and nutrition. With regard to the effect of climatic variables on welfare and food security, results from Asfaw and others (2017) showed that overall, households in areas that experienced lower-than-average rainfall had lower levels of daily caloric intake and lower food and nonfood expenditures, and that these effects were most pronounced for the poorest households in the sample. A possible explanation could be that the decline in rainfall had an initial negative impact on agriculture, livestock production, and other water-intensive activities. The decline in volume of production thus affected households' purchasing power, forcing them to improve their coping mechanisms.

Asfaw and others (2017) also found compelling evidence that cash transfer programs play a mitigating role against the negative effects of climate shocks. Households that participated in the CGP had much lower negative effects from weather shocks than nonparticipating households, with the poorest households least affected. This finding indicates the potential of social protection to support food access for households exposed to climate risk. However, the analysis also indicated that although participation in the CGP is beneficial in mitigating the negative effects of climate shocks on food security, it is not enough to fully overcome these effects. Thus, it is important to ensure that SCTs are well aligned with other livelihood and climate risk management programs, including disaster risk reduction activities. This result confirms the findings of authors such as Eriksen, Brown, and Kelly (2005), who found a positive relationship between the ability of people to draw on extra sources of income and their ability to withstand droughts in Tanzania and Kenya, with respect to those without any extra income.

4 Dekads (that is, 10-day periods) at 0.1 degrees covering the period 1983–2012 at the ward level.

5 The outcome variables in the study included total expenditure, food and nonfood expenditure, daily caloric intake, and dietary diversity index.

The Potential of Cash Transfers to Promote Ex Ante Risk Management

Cash transfers contribute to ex ante risk management by increasing household adaptive capacity through the accumulation of productive assets, increased crop and livestock production and productivity, and linkages with output markets. This section looks at various dimensions of the productive process to ascertain whether households were found to have increased spending on livelihood activities, including crop production, crop inputs, and asset building. Given that agriculture represents the primary economic activity of the households studied, investment in agricultural assets and increases in crop production are critical for livelihood strengthening and ex ante risk management. Households can also enhance their resilience by diversifying into different income streams, such as nonfarm enterprises. Table 5.2 presents the cross-country summary of the impact of SCTs on investment in livelihood activities.

Impacts on Accumulation of Productive Assets

Beneficiary households overall (and larger ones in particular) in Zambia owned more axes and hoes and were more likely to own hammers, shovels, and plows because of the cash transfer program (Daidone, Davis, Dewbre, Gonzalez-Flores, et al. 2014). Beneficiary households in Kenya were more likely to own troughs, and male-headed beneficiary households were also more likely to own machetes and sickles (Asfaw et al. 2014). In Lesotho, Daidone, Davis, Dewbre, and Covarrubias (2014) found the CGP to increase the purchase and use of Scotch carts. In Malawi, beneficiary households overall, with both female and male heads, and large farm households owned more agricultural implements (Asfaw, Pickmans, and Davis 2016) than nonbeneficiary households. Handa and others (2015) also found the Malawi SCTP to increase crop production and agricultural assets (sickles in particular). In terms of agricultural asset ownership, beneficiary households in Hintalo Wajirat, Ethiopia, were 6 and 7 percentage points more likely to own plows and imported sickles, respectively (over baseline shares of 47 and 41 percent). In contrast, beneficiary households in Abi Adi, Ethiopia were less likely to own those agricultural implements than nonbeneficiary households. In terms of the number of implements owned, overall there were more negative than positive effects (Asfaw et al. 2015). However, Berhane and colleagues (2015) constructed a farm productive assets index and found that the Ethiopia SCTPP increased scores on it by 2 percentage points in Hintalo Wajirat.

Cash transfers also led to increased livestock ownership in SSA, particularly of smaller animals. Both small and large beneficiary households in Zambia increased livestock ownership, but the impacts were stronger for large households (AIR 2016). Smaller households and female-headed households in Kenya increased their ownership of small livestock (such as sheep and goats), compared with control households. Among smaller households, there was about a 15-percentage-point increase in the percentage who owned small livestock, compared with control households, and female-headed households receiving the transfer increased their ownership by 6 percentage points (Asfaw et al. 2014). Daidone, Davis, Dewbre, and Covarrubias (2014) found the cash transfer in Lesotho to have increased the proportion of households owning pigs by about 8 percentage points and the number of pigs owned by 0.1 percentage point. Whether by number of livestock owned or by livestock ownership percentage, SCTP beneficiaries in Malawi experienced an increase (also noted by Handa et al. 2015) in chickens, goats and sheep, and pigs (Asfaw, Pickmans, and Davis 2016). Meanwhile, in Ethiopia, Asfaw and others (2015) found the impact on livestock ownership to be more mixed, depending particularly on the geographic area in which the transfer was given. Berhane and others (2015) found the SCTPP in Ethiopia to increase households' likelihood of owning any form of livestock by 7 percent in Hintalo Wajirat, with the increase largely driven by an increase in poultry ownership.

Impacts on Crop Production and Productivity

The cash transfer programs evaluated generally led to increased crop production and productivity. Aggregating all crop output by value, the CGP in Zambia increased the value of all crops harvested by ZMK146,[6] approximately a 50 percent increase from baseline, with a larger value increase for smaller households, at ZMK182. Beneficiary households increased their crop production marketing by 12 percentage points and increased their average value of sales (Daidone, Davis, Dewbre, Gonzalez-Flores, et al. 2014).

Production of maize, the main staple commodity, increased in CGP households in Lesotho by around 39 kg more than in the control group, and even more for households with more available household labor. Sorghum production increased by around 10 kg, with a larger impact in severely constrained households, likely because sorghum requires less labor than other major crops. Furthermore, results on home gardening were consistently larger for unconstrained and moderately labor-constrained households, compared with households without adult members fit to work (Daidone, Davis, Dewbre, and Covarrubias 2014).

In Malawi, beneficiary households increased groundnut production and productivity, with fewer and mixed impacts on other crops. Medium-size farm households and male-headed households also increased their maize yields. Ultimately, both male-headed households and medium-size farm households increased the value of their crop production because of the SCTP. Households were more likely to sell any crop, and the value of crops sold increased for female-headed households, small farm households, and medium-size farm households, although it decreased for large farm households (Asfaw, Pickmans, and Davis 2016).

In Ethiopia, Asfaw and colleagues (2015) found households to have decreased their yield of sorghum, particularly in Hintalo Wajirat and among male-headed households. Ultimately, beneficiary households increased the total value of their crop production by 18 percent.

For the Kenya CT-OVC, Asfaw and others (2014) found a negligible impact of the program on crop production. However, there was an impact on the proportion of food consumption coming from households' own production, particularly for smaller households and female-headed households. The average treatment effect on the share of consumption from home-produced dairy and eggs was 20 percentage points for smaller households and 15 percentage points for female-headed households.

Increased crop production and productivity for beneficiary households also came through increases in land and crop input use. The CGP in Zambia increased the amount of operated land by about 34 percent from baseline, and 18 percent more households spent money on inputs, from a baseline share of 23 percent. This increase in money spent on inputs was particularly relevant for smaller households (22 percentage points) and included spending on seeds, fertilizer, and hired labor. The increase of 14 percentage points in the proportion of small households purchasing seeds is equivalent to more than a doubling in the share of households. Small beneficiary households spent ZMK42 more on crop inputs than the corresponding control households, including ZMK15 on hired labor, amounting to three times the value of the baseline mean for overall spending and four times for hired labor (Daidone , Davis, Dewbre, Gonzalez-Flores, et al. 2014).

The CGP in Lesotho significantly increased the share of beneficiary households using pesticides (by 8 percentage points); especially labor-unconstrained households were more likely to purchase pesticides after receiving the CGP. Households purchased seeds more often (by 7 percentage points), although there was no statistically significant change in the intensity of purchase (Daidone, Davis, Dewbre, and Covarrubias 2014).

6 At the time of the study, ZMK5 = US$1.

In Malawi, household expenditure on organic fertilizer increased by 158 Malawian kwachas (MWK)[7] (from a baseline of MWK245). Increases in organic fertilizer expenditure also were found at disaggregated levels (aside from medium-size farm households, who faced no increase) and in expenditure per acre (Asfaw, Pickmans, and Davis 2016). An increase in the likelihood of chemical fertilizer use was also found among male-headed households.

In the case of the Ethiopia SCTPP, female-headed beneficiary households were 4 percentage points more likely to practice a soil and water conservation technique on their land, a noticeable increase over their baseline mean of 14 percent. Female-headed households were also 3 percentage points more likely to hire labor for farm work, from a low baseline mean of 5 percent (Asfaw et al. 2015).

Impacts on Nonfarm Enterprises

On nonfarm enterprises, cash transfer programs were found to have mixed results. In Zambia, beneficiary households were 13 percentage points more likely to operate a nonfarm enterprise than nonbeneficiaries (AIR 2016). Cash beneficiary households participated more often in nonfarm enterprises in Kenya if they were headed by a female but less so if headed by a male; otherwise, no impact was recorded for the overall sample (Asfaw et al. 2014). In Malawi, results on nonfarm enterprise labor were mixed, with beneficiary households less likely to engage in charcoal/firewood enterprises but more likely to engage in petty trade enterprises (Asfaw, Pickmans, and Davis 2016). In Ethiopia (Asfaw et al. 2015) and in Ghana (Handa et al. 2014), no impacts found were at the overall level on the likelihood of participating often in nonfarm enterprises. Pellerano and colleagues (2014) found a reduction in the proportion of households with an enterprise in operation in the 30 days prior to the survey but noted that the reduction was mainly driven by households' engaging less frequently in home brewing, which is generally small in scale and a livelihood strategy of last resort.

Can Cash Transfers Promote Resilience by Enhancing Food Security?

Households consistently more able to consume an adequate amount of food and a more diverse food basket are necessarily more resilient and less food insecure than otherwise similar households. Depending on the availability of data across the different countries, we collected the impacts of cash transfer programs on consumption, dietary diversity, and subjective food security indicators. Table 5.2 presents the cross-country summary of the impact of SCTs on food security, consumption, and dietary diversity.

Impact on Food Security

As expected, the studied cash transfer programs unambiguously increased the food security of beneficiary households. The CGP in Zambia increased the percentage of households eating two or more meals per day by 5 percentage points and raised beneficiary households' overall food security as measured by the food security score of the FAO's Food and Nutrition Technical Assistance Project, or FANTA (AIR 2016).

In Lesotho, Pellerano and others (2014) found that the CGP reduced the number of months that households experienced shortages of food and decreased the proportion of households without enough food to meet their needs for at least 1 month in the previous 12 months. Food security also increased in Malawi due to the cash transfer program: households overall, for example, were 11 percentage points less likely to have worried in the past 7 days about whether they would have enough food. The SCTP also allowed households to eat more meals per day, with effects observed for households at all levels except for large farm households. Medium-size farm households

7 At the time of the study, MWK330 = US$1.

also increased the number of months that last year's maize harvest lasted (Asfaw, Pickmans, and Davis 2016).

In Ethiopia, there was a reduction in the number of months with problems satisfying food needs in the overall sample and among male-headed households. There was no impact on the number of months out of the last 12 that the household ran out of home-grown food, but there were increases in both the number of times a day both children adults in the household ate. Compared with control households, SCTPP beneficiary households were also less likely to have suffered a shortage of food during the past rainy season. With regard to measures of last resort, beneficiary households reduced their likelihood of having consumed seed stock during the past week, compared with control households (Asfaw et al. 2015).

Impact on Consumption Expenditure

Cash transfers also enabled households to better meet their consumption needs. In Zambia, the program significantly increased food spending, with the largest share going to cereals, followed by meats including poultry and fish, then fats such as cooking oil, and then sugars (AIR 2016). The share of households consuming part of their harvest also increased by 6 percentage points, which came from increased groundnut and rice consumption out of home production (Daidone, Davis, Dewbre, Gonzalez-Flores, et al. 2014).

In Lesotho, Pellerano and colleagues (2014) detected a statistically significant CGP effect on food expenditure and total consumption when controlling for covariates, including differences in prices across locations, but at low levels of significance.

In Kenya, although there was no significant impact on consumption expenditure on cereals and legumes, there was an increase in food spending on dairy and eggs. The program had no effect on spending on most of the food consumption categories for larger households, but it caused large increases in three of the categories (dairy and eggs, meat and fish, and fruit) for smaller households. The program had larger and positive impacts on female-headed households compared with male-headed households, as in the case of the share of consumption from home-produced dairy and eggs. Treated households in Kenya also appeared to consume more animal products as well as other foods from their own production, compared with control households (Asfaw et al. 2014).

In Malawi, there were increases in daily per capita calories consumed at all levels, with those increased calories coming from food purchases. Aside from a decrease for male-headed households, there were no impacts on calories coming from households' own production. Such results suggest that households are likely using the cash to buy food directly, although calories coming from their own production may take more time to show impacts. For both extremely poor and non–extremely poor households, the pattern holds up: increases in calories consumed came from purchases rather than from their own production, with decreases in calories consumed coming about due to gifts given and other activities (Asfaw, Pickmans, and Davis 2016).

Berhane and others (2015) found that the SCTPP in Ethiopia reduced the food gap, increased the availability of calories, and reduced seasonal fluctuations in children's food consumption. Meanwhile, Handa and others (2014) found that in Ghana, there was no overall change in food consumption between treated and control households.

Impact on Dietary Diversity

There is also some evidence of improved dietary diversity due to cash transfer programs. In Zambia, there was a clear shift away from roots and tubers (primarily cassava) and toward protein (dairy and meats), indicating a possible improvement in dietary diversity among CGP recipients (AIR 2016). The CGP midline impact evaluation disaggregated consumption results by household size, finding that in smaller households, the impact on food expenditures was concentrated on cereals (accounting for 45 percent of the impact for these households) followed by meat (15 percent), fats (14 percent), and pulses (13 percent). Among larger households, the impact

of the grant on food expenditures was driven by meats (32 percent) and then cereals (30 percent) (AIR 2013). In the end, food expenditures increased for both groups of households because of the cash transfer program (Daidone, Davis, Dewbre, Gonzalez-Flores, et al. 2014).

In Kenya, the results showed no significant impact on consumption expenditure for cereals and legumes. However, there was about a 12-percentage-point increase in food spending on dairy and eggs. The program had no effect on spending on most of the food consumption categories for households with a larger number of members, but it had large, positive, and significant effects on three of the outcomes (dairy and eggs, meat and fish, and fruit) for smaller households. The program typically had larger and positive impacts on female-headed households compared with male-headed households, such as on consumption of animal products. Treated households also appear to have consumed more animal products, as well as other foods, from their own production, compared with control households. Dairy and egg consumption from households' own production increased by about 13 percentage points for beneficiary households, and the impact on other types of food was about 4 percentage points. The average treatment effect for the share of consumption from home-produced dairy and eggs was 20 percentage points for smaller households and 15 percentage points for female-headed households (Asfaw et al. 2014).

In Ethiopia, results from Asfaw and others (2015) showed an increase in household consumption of oils and fats; sweets; and spices, condiments, and beverages because of the SCTPP. This increase was mixed with reductions in household consumption of fruits and meats. Berhane and colleagues (2015) found the SCTPP to have improved dietary quality, as measured by the Dietary Diversity Index, in both May 2012 and May 2014, by 13 and 12 percent, respectively.

In Ghana, although there was no overall change in food consumption between treated and control households, Handa and others (2014) found a significant decline in starches and meats and an increase in fats and food eaten out. Smaller households also saw a decline in alcohol and tobacco consumption. Among Lesotho CGP beneficiaries, the increased spending on dairy and eggs (as well as meat/fish and fruit for smaller households) did not translate into an impact on dietary diversity (Pellerano et al. 2014).

Conclusions and Implications

The analysis of impact evaluation studies shows that cash transfer programs overall have important implications for household resilience. By providing a steady and predictable source of income, cash transfer programs can build human capital, improve food security, and potentially strengthen households' ability to respond to and cope with exogenous shocks, allowing them to diversity and strengthen their livelihoods to prevent future fluctuations in consumption. Many of the programs studied increased investment in agricultural inputs and assets, including farm implements and livestock. Beneficiaries in the studied country programs generally increased the volume and value of their crop production.

Although differing across countries, food security indicators revealed increases in the proportion of food-secure households owing to cash transfer programs, as well as increases in consumption and dietary diversity. Although the impacts on risk management are less uniform, the cash transfer programs seem to strengthen community ties (via increased giving and receiving of transfers), allow households to save and pay off debts, and decrease the need to rely on adverse risk-coping mechanisms.

Finally, the case study of the CGP in Zambia demonstrates the potential for cash transfers to help poor households manage climate risk. Not only was CGP receipt associated with increases in total, food, and nonfood expenditure, and subsequently the quantity and quality of food consumed, but the program was also found to benefit households even when they were facing climate shocks. The CGP's climate-mitigating effect is particularly evident for households at the lowest quintiles of the distribution, meaning that the cash transfer protected poorer households better than richer

households against climate variability. Thus, cash transfers can improve poor households' resilience in the face of an uncertain climate future.

The differences in impacts across countries can be attributed to a variety of factors, including the availability of labor given the demographic profile of beneficiary households, the relative distribution of productive assets, the local economic context, the impact of messaging and soft conditions on spending, and the regularity and predictability of the transfers themselves. In the case of LEAP in Ghana, irregular payments may have prevented households from increasing consumption because consumption is driven by permanent income. Instead, the lumpy flow of cash seems to have promoted declines in the number of households with outstanding loans and increases in the number of households with savings. In Ethiopia, the SCTPP targeted households that were particularly made up of either the elderly or youngsters, which may explain why beneficiary households did not experience increases in labor supply or changes in other dimensions of agricultural production. The amount offered through the Ethiopia SCTPP also was not as high, as a percentage of per capita income, as the payments under other programs that have been found to have widespread impacts.

Cash transfers can be more than just social assistance. Not only can they help vulnerable households avoid the worst effects of severe deprivation, but they can also contribute to economic and social development. Because cash transfer programs impact the livelihoods of households, articulation with other sectoral development programs in a coordinated rural development strategy could lead to synergies and greater overall impact. Complementary measures to maximize the positive spillover of the income multiplier effect generated by the cash transfer program should be targeted not only at cash transfer beneficiary households but also at ineligible households that provide many of the goods and services in the local economy. However, the potential productive impact of the cash transfer is sensitive to implementation, and delays and irregularities in payment can reduce its effectiveness in terms of helping households invest and manage risk.

Existing social protection programs rarely consider climate risk in their design and implementation. Being poverty reduction instruments, social safety net interventions tend to be targeted mainly through economic (wealth and income) criteria. Including environmental risks and vulnerabilities as targeting criteria could help improve the effectiveness of safety nets as risk-coping instruments. Such targeting could be done by developing maps of poverty and climate change vulnerability hot spots or by ensuring effective linkages of social protection management with information and early warning systems. Public works programs, including productive safety nets, can be designed in ways that simultaneously contribute to increasing household incomes; engaging communities in climate-smart agriculture; and generating "green jobs" in areas such as waste management, reforestation, and soil conservation.

CHAPTER 6

The Impact of Humanitarian Food Assistance on Household Food Security during Conflict in Mali

Aulo Gelli and Jean-Pierre Tranchant [1]

1 This chapter is based on Tranchant et al. (2018). Research presented in this chapter was supported by the Partnership for Child Develpment at Imperial College, the International Initiative for Impact Evaluation, Inc. (3ie) and the Bill & Melinda Gates Foundation.

Conflict and political instability are important drivers of undernutrition. Of the six emergency situations currently listed on the World Food Programme (WFP) website, five (Iraq, Lake Chad Basin, South Sudan, Syria, and Yemen) are directly the result of conflict. Depriving populations of access to food is often an explicit war tactic. Armed conflicts are also responsible for weakening food production and health systems and undermining the functioning of markets and institutions (Justino 2012). Armed conflicts have been found to profoundly impact mortality, morbidity, and malnutrition, among other health outcomes (Altare and Guha Sapir 2013). Children exposed to violent conflict at an early age or in utero are found to be more likely to suffer from moderate or severe acute malnutrition, even controlling for household background and nonrandomness of conflict location (see, for example, Alderman, Hoddinott, and Kinsey 2006; Camacho 2008; Akresh et al. 2012; Domingues and Barre 2013; Minoiu and Shemyakina 2014).

Ensuring timely and adequate delivery of food assistance to conflict-affected populations is therefore critical. And indeed, food assistance has become a key element of humanitarian aid. In the past decade, school feeding has been scaled up in emergencies as a rapidly deployable safety net, while generalized food distribution is the largest component of humanitarian assistance globally (Harvey et al. 2010; WFP 2013). However, little is known about the effectiveness of aid, including food aid, in conflict areas. There is evidence of the effectiveness of these types of safety net interventions, but this evidence usually comes from nonemergency, nonconflict contexts. And both the implementation and the effectiveness of food aid are likely different in conflict settings. For instance, it is usually challenging for aid actors to reach vulnerable populations in the most severely conflict-affected areas due to a variety of logistical and political challenges. Indeed, a thematic evaluation of WFP's school feeding operations in emergencies identified a range of context-specific challenges related to implementation, including security, limited accessibility, and weak in-country technical capacity (WFP 2007). Given this dearth of empirically rigorous studies on the effectiveness of any type of humanitarian aid during conflict, this chapter aims to fill an important gap in the literature and provide some insights for aid practitioners.

The chapter is centered on assessing the impact of WFP's food assistance on the food security and nutrition outcomes of rural households in the Mopti region of Mali. In our assessment, we relied on data from a unique precrisis baseline to design a longitudinal, quasi-experimental study based on two survey rounds executed five years apart. Data were collected from 66 communities randomly selected from within food-insecure districts. Study outcomes included household expenditures, food consumption (measured through seven-day recall), and nutritional status in children from two to five years of age. We estimated program impact by combining propensity score matching and difference-in-difference techniques.

We achieved very good balance of potential confounders between the treatment and comparison groups after matching, and the area of common support between the estimated propensity scores for both groups is wide enough to warrant a meaningful analysis. We did find that receipt of emergency food aid helped protect households. This was particularly the case when aid was distributed as school feeding and when at least two forms of food aid were combined. We also found that the effects of food aid on children's height and caloric and micronutrient consumption were mostly concentrated in areas not in the immediate vicinity of conflict, unlike increases in food expenditures, which were driven by households located in close proximity to armed groups.

The remainder of the chapter is structured as follows: we first describe the context and the intervention, and then present the data and empirical strategy, followed by descriptive statistics on conflict and humanitarian aid (and how they overlap). The final sections present key findings and discuss the results.

Country Context and WFP's Emergency Food Assistance

Mali, a vast landlocked country at the heart of West Africa in the Sahel region, is one of the most food-insecure countries in the world, ranked 179 out of 188 on the United Nations Development Programme's 2015 Human Development Index. Life expectancy is 58 years, and the infant mortality rate is 78 per 1,000 live births.

Mali has suffered from a series of political, constitutional, and military crises since January 2012. In particular, the situation was aggravated by the loss of government control of northern territories from April 2012 until January 2013. In early 2012, the National Movement for the Liberation of Azawad (MNLA) allied with Islamist groups and increased its attacks in the north, triggering a coup d'état in Bamako. Conflict events escalated, according to the Armed Conflict Location and Event Data (ACLED) project, from 25 episodes of violence in 2011, to 184 events in 2012, 237 in 2013, and 106 in 2014. The overwhelming majority of the violence took place in the north of the country. An international military intervention in January 2013, known as Operation Serval (Shurkin 2014), and the deployment of a United Nations (UN) mission in July 2013 stabilized the situation in the country. The conflict period involved considerable refugee outflow and internal displacement (UNHCR 2017). In 2013, more than 300,000 internally displaced people (IDPs) were sheltering with host communities in southern Mali. The displaced were dispersed across arid areas where they suffered from food insecurity, also fueling tensions among the various communities. As of November 2016, the number of Malian refugees exceeded 135,000 and IDPs numbered more than 36,000, while approximately 25,000 people were counted as returnees (UNHCR 2017).

Amid these crises, the complex emergency combining drought throughout the country and the conflict in the north was the focus of two projects by WFP in Mali. These two projects reached approximately 100,000 IDPs and 200,000 vulnerable people in the targeted regions of the country. The WFP food assistance activities included in the response are summarized in Table 6.1. These included supplementary feeding to prevent and treat acute malnutrition, generalized food distribution, and school feeding.

TABLE 6.1—INTERVENTIONS INCLUDED IN THE WORLD FOOD PROGRAMME'S FOOD ASSISTANCE ACTIVITIES IN NORTHERN MALI FROM JANUARY 2013 ONWARD

Intervention	Targets	Objectives	Activities
Blanket supplementary feeding	Children 6–59 months and pregnant and lactating women	Help prevent an increase in acute malnutrition	Provide children half a sachet of Plumpy'Sup per day Provide Super Cereal and vegetable oil to pregnant and lactating women Disseminate nutrition and hygiene messages for mothers
Targeted supplementary feeding	Children 6–59 months with moderate acute malnutrition and malnourished pregnant and lactating women	Treat moderate acute malnutrition among children 6–59 months and malnourished pregnant and lactating women	Provide 92 g of Plumpy'Sup per day Rely on partners and community health workers' screening and referral capacities, as well as functioning health centers
Targeted food assistance (generalized food distribution)	Food-insecure populations, internally displaced people, women-headed households, households that have lost income/assets, and households with elderly or disabled people	Assist all accessible moderately and severely food-insecure households and nondisplaced people, displaced people, and host communities	Provide 2,100 kcal per person per day, consisting of cereals, pulses, vegetable oil, and salt, with Super Cereal to increase micronutrient intake
School feeding	Primary school children in areas with high food insecurity	Prevent hunger and provide incentives to arrive on time and attend school until lunchtime (school attendance will also reduce children's exposure to other risks)	Provide two daily meals: a morning porridge of Super Cereal and a midday meal consisting of cereals, pulses, vegetable oil, and salt

Source: Authors.

Data and Methods

Data Sources

This mixed-methods study relied on qualitative and longitudinal quantitative data collected at the household and village levels. The baseline, conducted in January 2012, was undertaken as part of a cluster-randomized trial of school feeding in Mali that was interrupted because of the onset of conflict a month later (Masset and Gelli 2013). As part of this study, 70 villages were randomly sampled among the 35 most food-insecure communes in the Mopti region. In each village, 25 households were randomly sampled for the survey interviews. The baseline survey collected detailed information on household food security, economic activities, and sociodemographics. A follow-up survey was undertaken in January 2017. Anthropometric data were also collected for every child between 2 and 15 years of age in the sampled households. This survey entailed most of the modules from the baseline plus new modules that were added to measure exposure to conflict and emergency aid at both the household and village levels. The key feature of the study is our ability to draw from data collected on the eve of the onset of the armed conflict in Mali, providing us with a rare opportunity to control for preconflict characteristics.

Outcomes of Interest

We considered two levels of outcomes in the survey population based on the analysis of the program theory of the intervention. The first level included measures of household food security calculated from the consumption and expenditure modules of the household survey. These included monthly (food) expenditures; share of food-related expenses in the household budget; dietary diversity; and the quantities of calories, protein, iron, zinc, and vitamin A consumed. All these outcomes were calculated per capita and per adult equivalent. The second level focused on a proxy measure for the nutrition status of children, namely height.

Each of these outcomes should positively respond to the receipt of food assistance. We decided to measure consumption of vitamin A, iron, and zinc, as deficiencies in these micronutrients are widespread and linked with well-known health and nutrition issues. Existing evidence suggests widespread prevalence of micronutrient deficiencies in Mali. Fifty-nine percent of preschool children are estimated to suffer from vitamin A deficiency and 83 percent are anemic (as a result of iron deficiency). The corresponding figures for pregnant women are 17 percent and 73 percent, respectively (WHO 2008, 2009).

Attrition

Due to safety concerns, we were not able to reach 4 of the initial 70 villages covered at baseline, leading to a loss of 91 households. In addition, we were not able to survey 210 households that were included in the remaining 66 villages. Overall, the attrition rate stood at 22 percent including the 4 villages that could not be reached at endline, or 15 percent excluding those villages. Considering the relatively long period between the baseline and follow-up surveys and the conflict situation, these levels of attrition are not surprising. However, they can pose an issue for the estimation of the treatment impact if rates of attrition differ across groups.

We then estimated the likelihood that a household would drop from the sample based on baseline characteristics. Three variables were found to be significantly associated with attrition: household size (attrited households tend be smaller), ethnic group (attrited households are more likely to come from minority ethnic groups), and school infrastructure index (attrition rates increase with this index). To correct for attrition-related bias, we included these variables in the estimation of the propensity score.

Qualitative Research

The qualitative research was undertaken in Bamako and Mopti region at both the district and community levels. Three tiers of interviews were conducted, including

- in Bamako with key stakeholders who provide humanitarian assistance, including the government of Mali, WFP, and international nongovernmental organizations;

- at the district level in the Mopti region, with mayors, health workers (formal and informal, that is, including traditional healers), and other community stakeholders; and
- in selected communities in same-sex focus groups with adult men and women and individually with the same individuals.

Eight different tools were developed for the qualitative research. Two of the research tools were open-ended and required input from the community, including a timeline of events that defines both the conflict and the humanitarian aid response, and a free list of responses to specific questions posed about individual exposure and reactions to the conflict and presence or absence of humanitarian aid. Two additional tools were pretested for inclusion in the household survey modules to assess the implicit impact of the civil conflict and the effects of humanitarian aid via data on individual emotional and physical states.

Mayors of communities that were occupied and unoccupied during the civil conflict were assembled to create a timeline of events and to identify villages located on both sides of the border whose members had diverse experiences during the conflict. The free list questions were posed to them individually, with their responses collected by the data collectors. Community members from the villages that were identified by the mayors were assembled in same-sex groups to create a conflict timeline. Subsequently they were interviewed individually to elicit responses to the free list questions and complete the two short questionnaires. Questioning ended once no new responses to the free list question were generated.

Empirical Strategy

The study entailed two research phases. The first stage was exploratory and dedicated to describing the exposure to conflict and to humanitarian aid in the sample as well as to uncovering potential links between the two. This phase was important given the dearth of prior information in the context of Mopti, and the need to ascertain whether enough variation existed in the sample in terms of exposure to conflict and aid to allow us to adopt our quasi-experimental research approach.

The goal of the second stage of the study was to assess the causal impact of WFP's interventions using quasi-experimental methods. This was a challenging task as it is likely that there are systematic differences between households (and/or villages) that receive food assistance and those that do not. Humanitarian actors want to prioritize the most fragile areas (so food aid recipients would tend to appear poorer compared to nonrecipients in the absence of the intervention), but they may also be prevented from doing so for logistical, economic, or political reasons (so food aid recipients would tend to appear less poor than nonrecipients in the absence of the intervention). In addition to such placement bias, there is a risk that households that receive food assistance within villages where aid is available may be different from households that do not receive aid. Indeed, our data show that not everyone received humanitarian aid within a given locale.

Thanks to the availability of a rich baseline dataset, collected prior to the crisis, we were able to employ a matched difference-in-difference approach to estimate the impact of food assistance in conflict-affected areas. The difference-in-difference approach compares the evolution of the outcomes of interest across treatment and comparison groups. The matching procedure consists of comparing only treatment and comparison households that shared a similar profile at baseline.

The treatment group was made up of households that received food aid between 2014 and 2016, whereas the comparison group refers to households that did not receive aid over this period. Given that food aid coverage was well below 100 percent in the sample villages (the coverage rate was 27 percent for generalized food distribution in villages where generalized food distribution was available and 22 percent for school feeding in villages where school feeding was available), we did not need to rely on comparing households living in different locales in estimating the treatment effects.

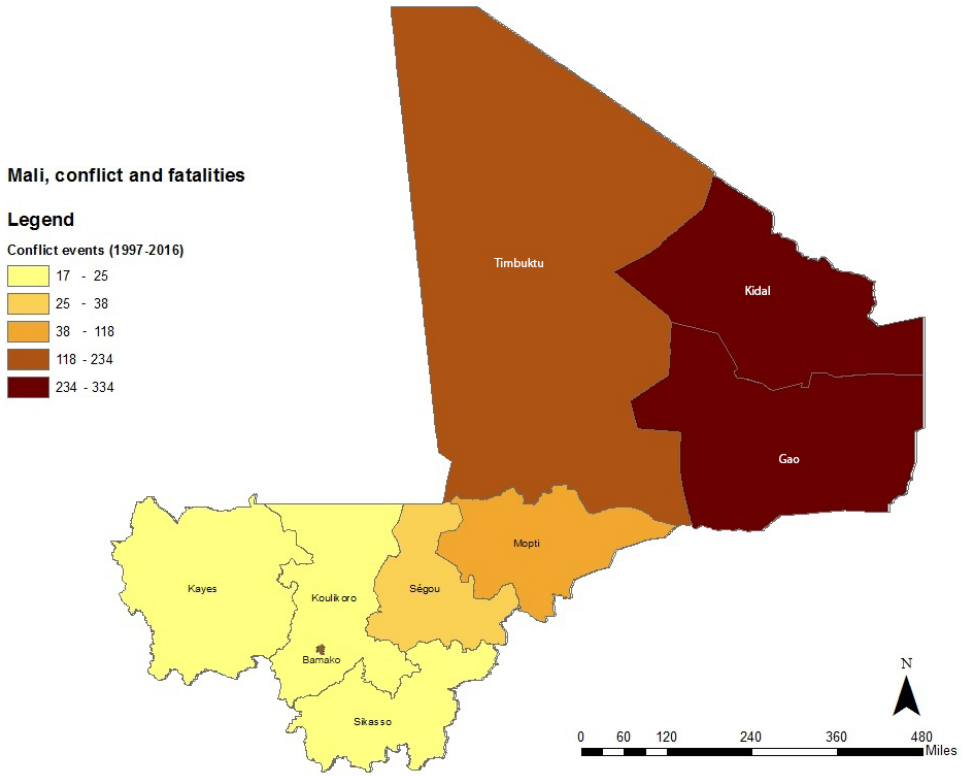
We matched based on the following variables: presence of a secondary school within 5 kilometers, presence of a market within 5 kilometers,

presence of past development projects, village considered very unsafe by teachers, age of the household head, expenditures per capita, household size, dependency ratio, number of food groups consumed, whether the household is polygamous, whether the household head works for pay, amount of land cultivated, share of food in the budget, asset ownership, and presence of armed groups between 2012 and 2014.

The matched difference-in-difference approach has been found to effectively mitigate the issue of selection bias (Chabe-Ferret 2015). First, looking at the change in outcome variables across the treatment and comparison groups (rather than the level of outcomes) allowed us to control for time-invariant systematic differences. Second, the matching procedure enabled us to ensure that households in the treatment and comparison groups were as similar as possible with regard to a wide range of potential confounders.

However, our empirical strategy remained vulnerable to selection bias arising from time-varying confounders. For instance, if areas that received food assistance were also more likely to suffer from negative economic shocks, then we would underestimate the true impact of the intervention. One key concern is whether the presence of armed groups is itself a function of availability of aid. If the delivery of aid in a given locale attracts (or deters) armed groups, then our approach would not be able to disentangle the specific impact of aid from that of the armed groups' presence. To limit the effect of this issue, we estimated the impact of aid received between 2014 and 2016 while we controlled for the presence of armed groups in the period 2012 to 2014. This was meant to alleviate the concern that the presence of armed groups is itself linked with aid delivery.

FIGURE 6.1—TOTAL CONFLICT EVENTS IN MALI BETWEEN 1997 AND 2016, BY REGION



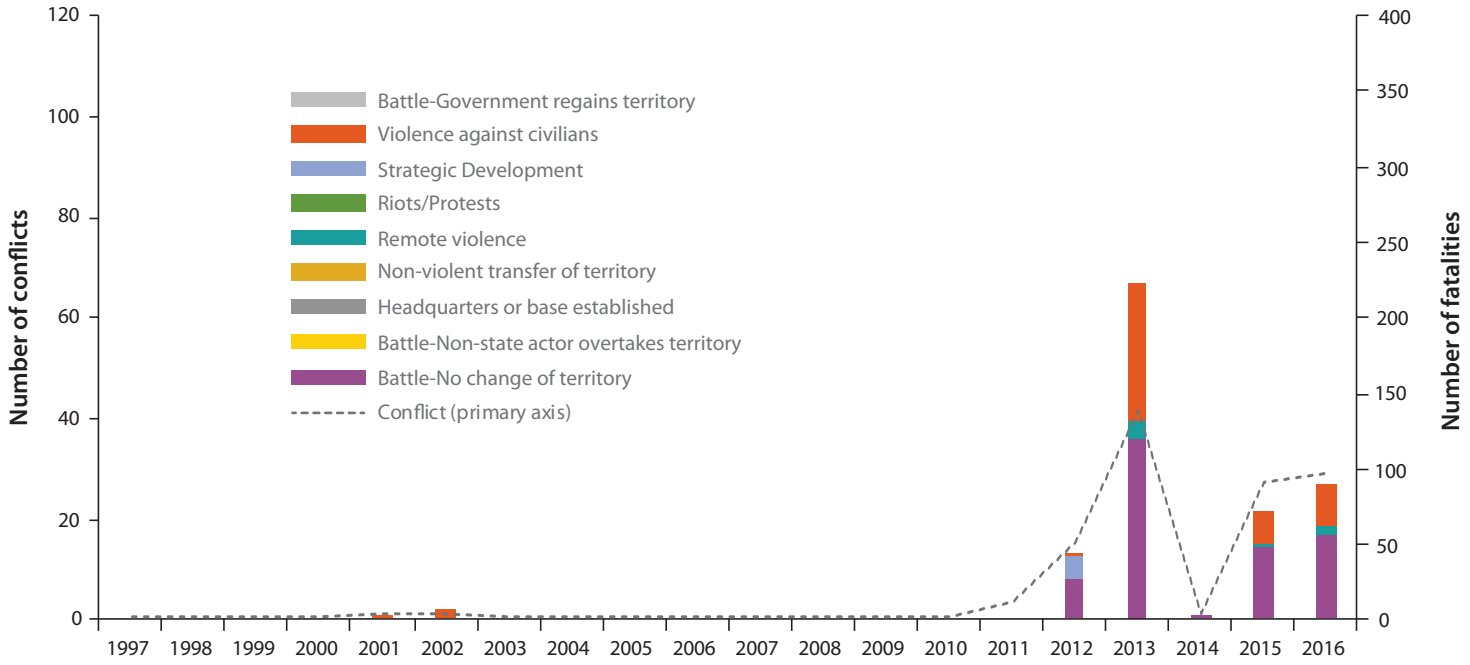
Source: Authors, based on ACLED data.

Conflict and Food Aid in Mopti

Armed Conflict in Mali and Mopti

The analysis of ACLED (Armed Conflict Location and Event Data) project data on conflict in Mali highlighted some important findings. First, the data clearly confirmed the absence of large-scale conflict before 2012 and the surge in conflict intensity between 2012 and 2016. The data also confirmed that the concentration of violent conflict was mainly in the northern regions of Mali (Figure 6.1).

FIGURE 6.2—CONFLICT EVENTS AND FATALITIES IN MOPTI REGION BETWEEN 1997 AND 2016, TOTAL BY YEAR AND EVENT TYPE

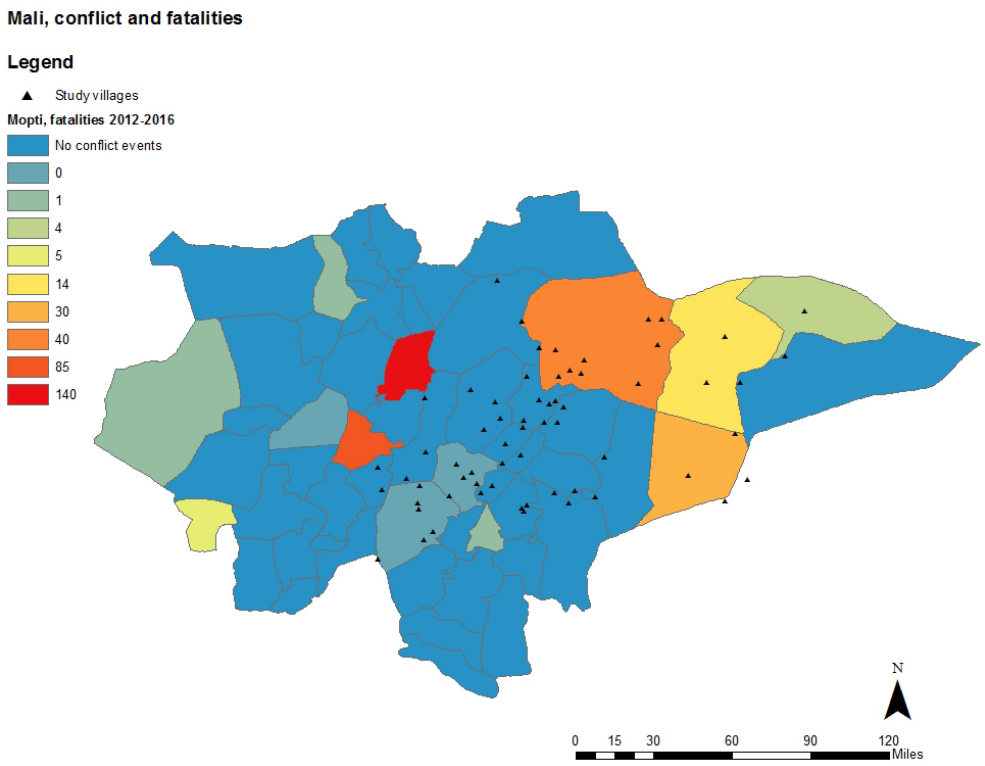


Source: Authors, based on ACLED data.

Second, as Mopti is located between the conflict hot spots in the north and the relatively peaceful southern regions, it experienced a medium intensity of conflict, lower than that of the three northern regions but substantial nevertheless. As in Gao, Kidal, and Timbuktu, the Mopti region witnessed a surge in conflict-related events between 2012 and 2016, with conflict activity peaking in 2013. However, unlike in the three northern regions, which saw an aggregate decline in conflict in 2015 and 2016, in Mopti the number of fatalities increased over the last two years of the period (Figure 6.2). This worrying new trend may herald a different type of conflict-related dynamic in central Mali.

Third, overlaying the location of conflict events with information on delivery of food assistance showed that the villages included in the study were exposed to varying degrees of conflict and humanitarian aid (Figures 6.3 and 6.4). These variations allowed us to conduct a quasi-experimental assessment of the impact of food assistance.

FIGURE 6.3—FATALITIES IN CONFLICT EVENTS IN MOPTI REGION BETWEEN 2012 AND 2016

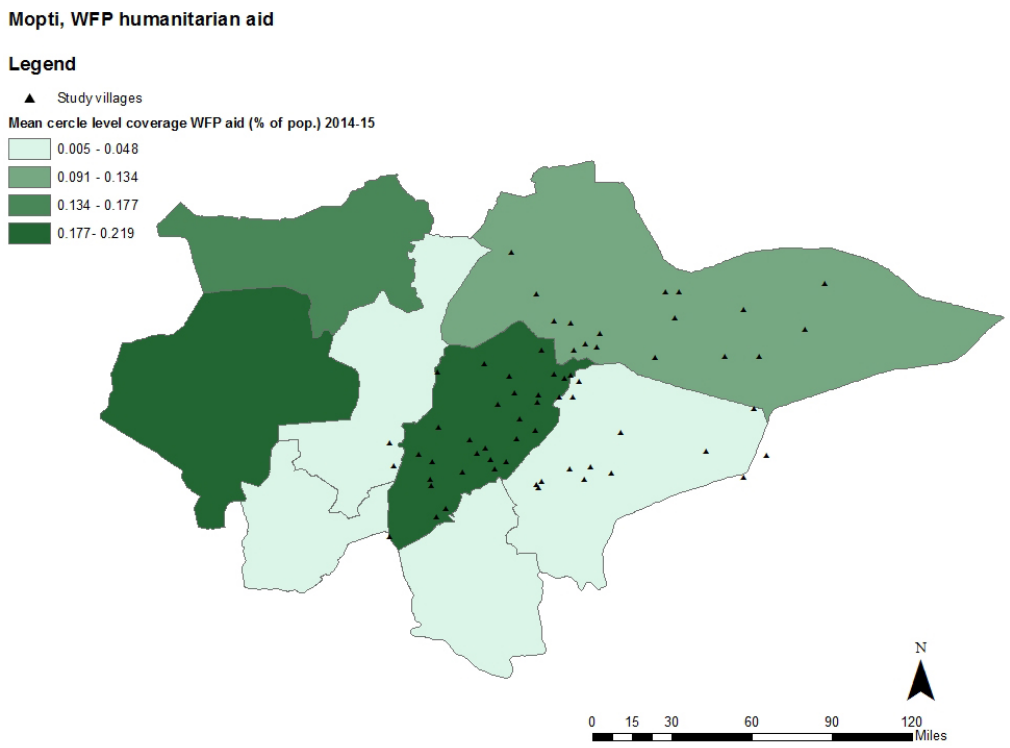


Source: Authors, based on ACLED data.

Exposure to Armed Groups

We primarily captured exposure to armed conflict through questions on the presence of armed groups. Community leaders in 7 villages reported experiencing the presence of armed groups in the locale itself between 2012 and 2014. In 34 villages, community leaders reported that armed groups were not present in the village itself over this period but that armed groups were in the surrounding area. And leaders in 22 villages reported that armed groups were absent from the region. We used this variable of armed groups in the estimations, as opposed to the distance from or extent of violence, in order to capture indirect effects of conflict and insecurity, which go beyond direct exposure to combat (Tranchant, Justino, and Mueller 2014). Specifically, we created a trichotomous variable of exposure to armed groups, which took

FIGURE 6.4—NUMBER OF BENEFICIARIES AND ESTIMATED MEAN COVERAGE OF HUMANITARIAN AID ACTIVITIES BY THE WORLD FOOD PROGRAMME IN MOPTI REGION IN 2014 AND 2015



Source: Authors, based on WFP data (2015).

the value 0 for unaffected villages, 1 for indirectly affected villages (that is, armed groups were present in the vicinity of the village but not in the village itself), and 2 for directly affected villages (armed groups were present in the village).

Conflict Exposure at the Household and Village Level

From the survey data, 23 percent of households overall were exposed to violence linked with the presence of armed groups between 2012 and 2016. Disaggregating by types of violence showed that 17 percent of households

TABLE 6.2—PRESENCE OF ARMED GROUPS AND MOBILITY IN MALI

Response (%)	No armed groups in village or vicinity	No armed groups in village but armed groups in vicinity	Armed groups in village	Pearson's chi-squared statistic
Share of respondents declared fear when traveling:				
to the market to buy food	43	42	67	41.16***
to the market to sell food	41	41	66	42.9***
to look for work	35	38	68	63.3***
to the health center	29	21	53	79.1***
to the aid center	26	20	44	50.0***
to buy/sell agricultural inputs	24	26	46	36.2***
anywhere outside the village	47	49	78	59.4***
Share of respondents' children reduced trips to school	12	17	34	40.4***

Source: Authors.
Note: Asterisks represent the p-value associated with the Pearson's chi-squared test: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

reported that banditry attacks had taken place in their village, 7 percent reported terrorist/armed attacks, 5 percent reported political violence, 2 percent reported kidnappings, and 1 percent reported violence/lynching in the presence of armed groups or destruction of infrastructure.

Conflict, Control, and Violence in the Study Population

There was overlap between presence of armed groups and conflict-related violence in our sample. Whereas 16 percent of households in villages free from the presence of armed groups experienced conflict-related violence, 47 percent experienced conflict-related violence in villages where armed groups had been present. There was a strong discontinuity between villages where armed groups had been present and other villages on all types of conflict-related violence. However, there was not a clear demarcation between villages located in areas where armed groups had been present and villages located in areas free from armed groups. Political violence, kidnappings, and lynchings were more prevalent in the former, but the differences were not substantive, and there was no difference in the prevalence of banditry or terrorist attacks.

The presence of armed conflict also exerted a detrimental impact on households through fear and reduced mobility. Table 6.2 shows the cross tabulation between households' self-reported levels of fear of traveling and presence of armed groups. Households living in villages where armed groups had been present were much more likely to have reduced their travels than households living in villages where armed groups had not been present (irrespective of whether the presence of these armed groups was reported in the wider region). The data also highlighted a widespread fear of traveling in conflict-affected villages, which affected more than 78 percent of households. This translated into fewer trips to the market, the health

TABLE 6.3—PRESENCE OF ARMED GROUPS, SAFETY, AND SOCIAL CAPITAL IN MALI

Share of respondents (%)	No armed groups in village or vicinity	No armed groups in village but armed groups in vicinity	Armed groups in village	Pearson's chi-squared statistic
Feel safe in the community	63	48	47	15.8***
Felt safe in the community over the last 4 years	52	37	20	46.0***
Feel that people in the community commonly discuss problems	94	92	88	4.6*
Feel that people in the community commonly help each other out	92	86	79	14.0***

Source: Authors.
Note: Asterisks represent the p-value associated with the Pearson's chi-squared test: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

center, job fairs, and so on, as well as in reduced trips to school for children. For all the variables in Table 6.2, the Pearson's chi-squared test rejects the null hypothesis that the observed distribution of the variable is independent from the exposure to armed groups.

With regard to feelings of safety (Table 6.3), the presence of armed groups at the regional level was important. Whereas 63 percent of respondents in regions where no armed groups were present felt safe, only 47 percent of respondents in regions with armed groups felt similarly safe. There was a monotonic relationship between proximity to armed groups and reported feelings of safety over the past four years. Fifty-two percent of households in villages without armed groups felt safe, 37 percent of households in villages indirectly affected by armed groups felt safe, and only 20 percent of households in villages directly affected by armed groups felt safe. The relationship between responses connected to social capital and proximity to armed groups was less strong, with the main difference arising between villages with direct presence of armed groups and others.

The qualitative data suggested that security services such as police and the army were largely absent throughout the study period, with services limited to occasional patrols by the Malian army in villages that were unoccupied by armed groups. However, from April 2012 until the French intervention in January 2013, armed groups themselves regularly patrolled villages in the occupied areas. Though basic social services existed before the outbreak of armed conflict, their functioning was heavily impacted. In zones occupied by armed groups, schools and health centers were closed during the full period of occupation, whereas in the nonoccupied zone, this period did not exceed three months. Respondents also indicated that the presence of armed groups caused men, able-bodied household members, and entire families to flee. Fear, panic, and destruction of government buildings, combined with hatred of administrative staff, also caused health and education staff to flee, thus closing health centers and schools. Many pregnant women who were unable to flee found their antenatal care suspended, and postnatal consultations were interrupted as well. It is in this context that respondents thought morbidity and malnutrition in children and lactating women increased considerably. Thus, the focus groups' discussions identified the most vulnerable groups as pregnant women, nursing mothers, the sick, old people, and children for whom health care and school services were no longer available.

Receipt of Humanitarian Aid at the Household and Village Levels

At the village level, generalized food distribution was the most common form of food assistance experienced by the study population, with 51 out of 63 village respondents declaring that generalized food distribution had occurred in their village since 2012. School feeding and targeted supplementary feeding were reported to have been implemented in 26 and 24 villages, respectively. It is interesting to note that targeted supplementary feeding and school feeding programs were mostly implemented in villages where general food distribution was also present. Hence, only 3 villages experienced targeted supplementary feeding or school feeding without any generalized food distribution program. At the household level, 67 percent of households did not receive any food assistance, 23 percent of households received aid in the form of generalized food distribution, 14 percent in the form of school feeding, 2 percent in the form of targeted supplementary feeding, and 2 percent in the form of participation in food-for-work programs. There was limited overlap between modalities of aid at the household level, as only 7 percent of households received two or more forms of aid. The overlap overwhelmingly involved generalized food distribution, which was reported in 94 percent of households that received at least two forms of aid.

Food Assistance and Conflict in the Study Population

Access to aid tended to decrease with greater proximity to armed groups, contrary to what the logic of prioritization of conflict-affected populations would imply, though perhaps reflecting the practicalities of operations during conflict. This relationship manifested itself in a higher likelihood of conflict-affected populations living in villages without any access to aid, and a lower likelihood of conflict-affected populations living in villages with one form of food assistance. Specifically, while all unaffected villages had access to at least one form of food assistance, 10 percent of villages indirectly affected by conflict and almost a quarter (23 percent) of villages directly affected by conflict had no access to food assistance at all. However, villages where armed groups were present were as likely to have access to two forms of aid as villages in peaceful environments.

The relationship between proximity to armed groups and access to aid was not as marked at the household level. The strongest effect of conflict was to reduce the chance of receiving two forms of aid (10 percent in unaffected villages, 7 percent in indirectly affected villages, and 4 percent in affected villages) and a lower likelihood of obtaining school feeding (16 percent, 13 percent, and 9 percent, respectively), in contrast to the village-level results.

Key Findings

Changes in Outcomes during the Study Period

The crisis in Mopti is manifest in that households increased average expenditures per adult equivalent by less than 2,200 CFA francs over the whole period, corresponding to less than US$0.70 per year. It is unsurprising, then, that calorie intake per adult equivalent decreased by 136 calories per day on average, compared to baseline values. Daily consumption of protein, iron, and zinc also tended to decrease in the study population. In contrast, consumption of vitamin A increased by 430 micrograms, a near doubling of the baseline value. Insights from the qualitative research confirmed that households had been exposed to a range of shocks and stresses throughout the five-year survey period, including erratic rainfall, drought, flash flooding, poor harvests, loss of harvest due to pests, and migration to the south in search of employment in the mining sector.

Table 6.4 displays changes in study outcomes between baseline and endline, by exposure to armed groups. Surprisingly, households located nearer to the armed groups (that is, armed groups were present in their village or in the vicinity) increased their (food) expenditures substantially more than households living in regions free from these groups' presence. Intake of calories, iron, and zinc tended to decrease the most in villages indirectly affected by the presence of armed groups and to decrease the least in villages directly affected by the presence of armed groups. This pattern could signal that the presence of armed groups was rather innocuous and/or that food assistance was more effective in areas directly affected by the conflict. Decreased calories coupled with increased expenditures suggests that the increases in expenditures in households in proximity to rebels were driven by increases in prices. The increase in vitamin A consumption was equally strong when armed groups were present in the village or region. Examining child growth, however, reveals that children in directly affected villages grew by about 2 centimeters less than their counterparts in villages indirectly affected or unaffected by the presence of armed groups, which is consistent with increased expenditures being due to inflation.

TABLE 6.4—MEAN CHANGES IN STUDY OUTCOMES BETWEEN 2012 AND 2017, BY EXPOSURE TO ARMED GROUPS

Response	No armed groups in village or vicinity	No armed groups in village but armed groups in vicinity	Armed groups in village
Monthly expenditures per adult equivalent (CFA francs)	196.1	1,839.2	3,041.6
Monthly food expenditures per adult equivalent (CFA francs)	-21.2	1,277.0	1,929.3
Share of food expenditures in household budget (%)	0.02	0.04	0.07
Calories (kcal) consumed daily per adult equivalent	-17.5	-71.5	144.6
Protein (g) consumed daily per adult equivalent	-10.1	-10.8	-8.9
Iron (mg) consumed daily per adult equivalent	-2.8	-2.7	-1.8
Zinc (mg) consumed daily per adult equivalent	-2.6	-1.6	2.8
Vitamin A (mcg) consumed daily per adult equivalent	307.6	356.1	493.6
Dietary diversity score	-0.5	-0.5	-1.7
Height (cm) of children 2–5 years old in 2012	24.7	24.3	22.6

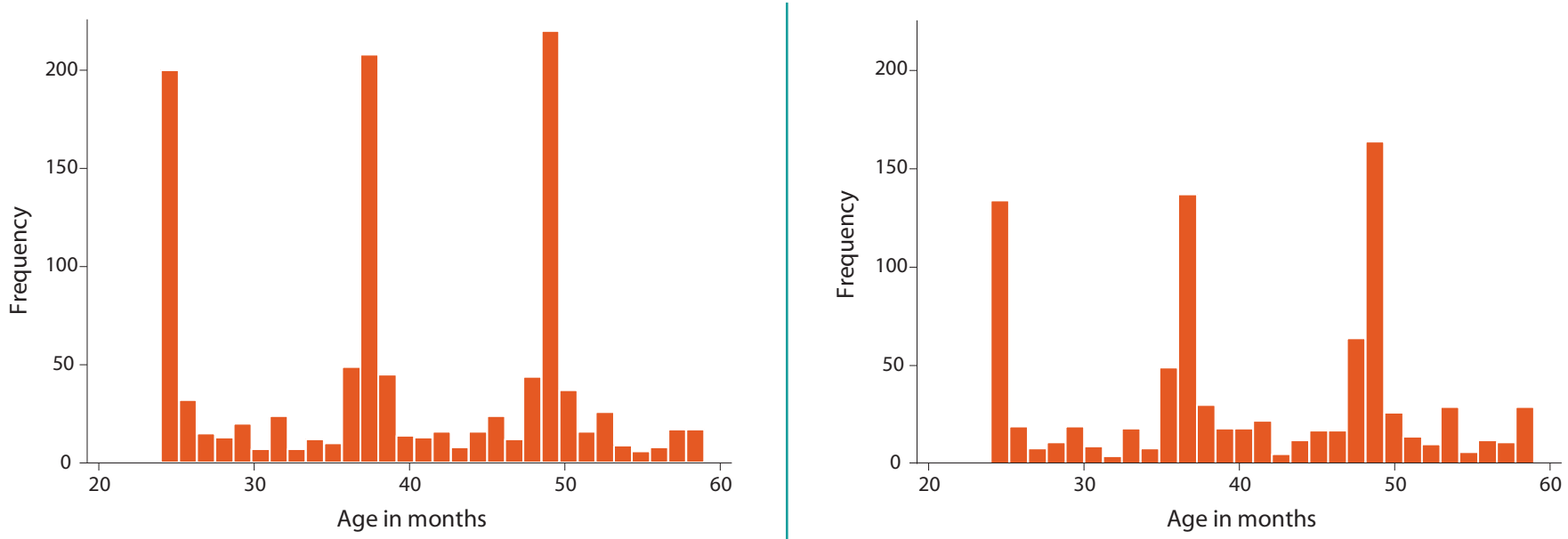
Source: Authors.

Households that received any aid (and especially school feeding) increased their (food) expenditures more than households without access to aid. The opposite holds true for generalized food distribution, however, and households that received two forms of aid saw the smallest increases in expenditures. The share of food expenditures in the budget did not vary significantly with aid categories. Caloric intake decreased the most for households that received generalized food distribution aid and two forms of aid, which may indicate that aid prioritized the most vulnerable. Consumption of protein, iron, and zinc did not significantly change over the period, and no strong pattern emerged with respect to aid. Consumption of vitamin A increased the most for recipients of aid (in any form). Finally, there is no obvious relationship between child growth and aid status.

Anthropometry and Recording Error in Dates of Birth

Figure 6.5 presents the distribution of ages in months in the two survey rounds for children under five years of age, showing a clear tendency of heaping at specific ages. Analysis of the distribution of months of birth showed evidence of heaping during the months of January and December.

FIGURE 6.5—DISTRIBUTION OF CHILDREN'S AGES IN MONTHS AT BASELINE AND ENDLINE, CHILDREN UNDER 5 YEARS OF AGE IN MALI



Source: Authors

Similarly, analysis of the distribution of days of birth found heaping on the first and last days of the month. Heaping was far more pronounced at baseline, suggesting that the recording of dates of birth had improved during the survey period.

The analysis of the nutrition status of young children was therefore limited by this well-documented issue related to misreporting of dates of birth, which is common in areas of low parental education like Mali (Oshaug et al. 1994; Grellety and Golden 2016; Larsen, Headey, and Masters 2017). In a first stage, we limited the scope of the analysis of anthropometric data to weight for height (repeated cross-sections of children ages two to five years) and to changes in height within the youngest cohort in the panel study population, including children ages two to five at baseline.

Balance and Overlap

Very few household-level covariates were found to predict a household's likelihood to receive aid. Household heads who identified as workers were more likely to receive generalized food distribution aid (but marginally less likely to receive any form of aid), and households that dedicated a larger share of their budget to food were less likely to participate in school feeding programs. Households with a higher value of assets were also more likely to participate in school feeding programs. Village-level covariates were

more important in terms of allocation of aid. Aid was less likely to be received in villages with access to a nearby market (remote areas seem to have been prioritized), in villages perceived to be very unsafe at baseline (although this did not influence school feeding), and in villages where armed groups were present (for generalized food distribution and school feeding). The likelihood of receiving any aid or generalized food distribution was also lower in villages located in regions where armed groups were present. Finally, the existence of past development projects before the baseline explains access to food aid in subsequent years. After weighting, none of the covariates displayed significant imbalance (defined as the standardized difference being greater than 0.1 standard deviation).

The distribution of the estimated propensity scores displayed a high degree of overlap across the treatment and comparison groups. Nevertheless, to estimate the treatment effects, we restricted the sample to the area of common support, leading us to drop about 750 observations out of 2,750, for an actual sample size of around 1,980 observations (see Table 6.5; the actual figures vary across our definitions of the dependent variable and the variables of interest).

Estimating the Impact of Humanitarian Aid

In the first set of estimations, we assumed that the whole study population was affected by the conflict, whether directly or indirectly. Such a view is consistent with insights from the survey data, which show that in areas where armed groups were not present, almost half

TABLE 6.5—ESTIMATIONS OF THE IMPACT OF FOOD ASSISTANCE ON HOUSEHOLD FOOD EXPENDITURES, FOOD CONSUMPTION, AND CHILDREN'S HEIGHT (FULL SAMPLE, MALI)

	Any aid	GFD	SF	1 form	2 forms
	(1)	(2)	(3)	(4)	(5)
ΔMonthly expenditures (CFA francs)	2,332.37 (1,522.6) [1,970]	3,208.77* (1,947.04) [1,973]	2,228.95 (1,480.4) [1,962]	2,159.05 (1,995.67) [1,968]	2,804.18 (2,028.2) [1,649]
ΔMonthly food expenditures (CFA francs)	1,873.02 (1,567.08) [1,971]	2,680.5 (1,915.8) [1,974]	2,364.1* (1,393.5) [1,963]	1,468.1 (2,152.0) [1,969]	**3,108.3**** **(1,434.3)** **[1,646]**
ΔFood expenditures as % of budget	-0.001 (0.016) [1,969]	0.000 (0.021) [1,972]	0.008 (0.021) [1,961]	-0.001 (0.017) [1,968]	-0.015 (0.026) [1,645]
ΔCalories (kcal) consumed daily	-2,979.5 (3,515.6) [1,996]	-4,463.1 (6,211.8) [1,998]	1,390.9 (1,285.1) [1,987]	-4,057.4 (4,633.7) [1,994]	970.95* (502.4) [1,674]
ΔProtein (g) consumed daily	-62.1 (73.3) [1,979]	-95.4 (108.3) [1,982]	36.5 (30.3) [1,971]	-91.3 (112.15) [1978]	**36.7**** **(17.4)** **[1,650]**
ΔIron (mg) consumed daily	-16.7 (21.5) [1,982]	-25.9 (36.1) [1,984]	9.0 (8.0) [1,973]	-23.4 (23.0) [1,980]	**7.73**** **(3.67)** **[1,653]**
ΔZinc (mg) consumed daily	-40.6 (45.6) [1,992]	-59.2 (91.2) [1,994]	13.57 (16.6) [1,983]	-53.3 (53.3) [1,990]	7.08 (5.8) [1,664]
ΔVitamin A (mcg) consumed daily	128.4 (84.5) [1,978]	168.4 (113.4) [1,981]	**270.3***** **(82.9)** **[1,970]**	88.3 (95.8) [1,975]	247.04* (147.7) [1,651]
ΔDietary diversity score	0.026 (0.157) [2,290]	0.291 (0.195) [2,294]	-0.231 (0.252) [2,282]	0.051 (0.189) [2,288]	-0.251 (0.274) [1,920]
ΔHeight (cm)	-0.107 (1.444) [1,947]	-0.652 (1.784) [1,953]	0.045 (1.529) [1,960]	-0.305 (1.445) [1,956]	0.818 (3.201) [1,866]

Source: Authors.

Notes: GFD = generalized food distribution; SF = school feeding. Bootstrapped standard errors in parentheses. Number of observations in square brackets. All expenses are scaled per adult equivalent. The variables "1 form" and "2 forms" refer to the number of forms of aid received by the household, as indicated by the types of aid variables. Estimations for height restricted to children under 5 years of age at baseline. *p < 0.1, ** p < 0.05,*** p < 0.01. Coefficients that remain statistically significant at the 10% level after adjustment for multiple hypothesis testing are indicated in bold.

(47 percent) of the households reported fearing travel outside their village. Such a high proportion indicates widespread insecurity and fear, even in areas that were supposedly out of the direct reach of armed groups. In addition, the proportion of household respondents who feared traveling outside their village was virtually the same in villages not directly affected by armed groups but where armed groups were present in the wider region. This suggests that the demarcation between areas not affected and areas indirectly affected may not be very clear (unlike the distinction between indirectly and directly affected villages). Household respondents tended to feel safer in areas supposedly out of reach of armed groups than in villages indirectly affected by armed groups (63 percent versus 48 percent), but the very high proportion of respondents who felt unsafe in either area further justified considering the whole study population as affected by insecurity.

Generalized food distribution was found to increase total expenditures, whereas school feeding and the combination of two forms of aid were found to increase food expenditures. These effects were statistically significant at the 10 percent level. In terms of total expenditures, the effect of generalized food distribution was estimated at 3,208 CFA francs per month per adult equivalent, corresponding to an increase of 20 percent from baseline. For food expenditures, the impact of school feeding was 2,364 CFA francs per month per adult equivalent, equivalent to an increase of 21 percent from baseline values. There were also positive effects on micronutrient availability from household food consumption during the seven-day recall period. Households that received two forms of aid were found to have a statistically significant (at the 5 percent or 10 percent level) increase in their availability of calories, protein, iron, and vitamin A. The magnitude of these effects was substantial, ranging from 29 percent of the baseline value for calories to 50 percent of the baseline value for vitamin A. Consumption of vitamin A also strongly increased for recipients of school feeding, and the effect was significant at the 1 percent level. A marginally significant negative effect of two forms of aid was found for weight-for-height z-scores; however, no effects were found on the prevalence of moderate acute malnutrition (not reported). There was no statistically significant effect of any type of food assistance on height.

Heterogeneity Analysis by Level of Conflict Exposure

The treatment effects reported above were estimated under the assumption that the entire sample was affected by insecurity. In the subsequent estimations, we investigated whether stronger, or more direct, exposure to armed conflict influenced the impact of food assistance. Specifically, we estimated the impact of aid on three subgroups: (1) villages unaffected by the presence of armed groups, (2) villages indirectly affected by the presence of armed groups (they were present in the region but not in the village), and (3) villages directly affected by the presence of armed groups. The number of observations was small for estimations on the subsample of directly affected villages. We dropped from the table of results all the estimations that were based on fewer than 30 observations in either the treatment or control group at baseline and/or endline. This condition was always met on the subsamples of unaffected and indirectly affected villages. For directly affected villages, however, the condition was systematically violated for school feeding and when there were two types of aid. There was also an insufficient number of observations to estimate the impact of any treatment variable on children's height.

One word of caution is necessary about the interpretation of the findings in this section. These estimations are meant to assess whether the impact of food aid is heterogenous with respect to the presence of armed groups. But they are not meant to estimate the causal effects of conflict itself, nor are we claiming that the interaction between food aid and conflict is fully identified in an econometric sense. In other words, we are not claiming that the presence of armed groups is exogenous in these estimations.

In villages with no armed groups in the region (Table 6.6), humanitarian aid in the form of school feeding had a positive impact on food expenditures, whereas generalized food distribution was found to increase total food expenditures. These results were comparable in magnitude and statistical precision to those presented in Table 6.5. However, the positive effect of aid on food consumption found for the full sample was not present for the subsample of "conflict-free" villages, with the exception of vitamin A consumption. Iron consumption was even slightly lower for households receiving two forms of aid than for others. A marginally significant negative effect of generalized food distribution was found for weight-for-height z-scores in children under five years of age.

In villages where armed groups were present in the region (Table 6.7), total and food expenditures tended to be higher for aid recipients than for other households, but the standard errors of the estimates were quite large, so that none of these effects are statistically distinguishable from zero. Aid was, however, responsible for a strong increase in food consumption. Households receiving two forms of aid were found to have their availability of calories, protein, iron, and zinc increase by 47, 74, 68, and 35 percent, respectively. These effects were statistically significant at the 1 percent level for protein, at the 5 percent level for iron, and at the 10 percent level for calories and zinc. Furthermore, generalized food distribution was found to significantly increase caloric intake, by 52 percent ($p < 0.05$) and zinc consumption by 64 percent ($p < 0.1$), while school feeding was found to

TABLE 6.6—ESTIMATIONS OF THE IMPACT OF FOOD ASSISTANCE ON HOUSEHOLD FOOD EXPENDITURES, FOOD CONSUMPTION, AND CHILDREN'S HEIGHT (SAMPLE: VILLAGES NOT AFFECTED BY ARMED GROUPS, MALI)

	Any aid	GFD	SF	1 form	2 forms
	(1)	(2)	(3)	(4)	(5)
ΔMonthly expenditures (CFA francs)	1,716.8 (1,538.4) [718]	3,296.6* (1,957.6) [704]	2,439.1 (1,806.03) [721]	1,372.7 (2,013.4) [712]	-999.0 (2,682.2) [658]
ΔMonthly food expenditures (CFA francs)	916.9 (1,265.7) [717]	1,684.4 (1,658.8) [699]	2,375.4* (1,274.6) [718]	336.1 (1,682.9) [708]	-409.1 (2,156.5) [657]
ΔFood expenditures as % of budget	-0.021 (0.026) [711]	-0.036 (0.031) [694]	-0.002 (0.038) [714]	-0.018 (0.035) [701]	-0.049 (0.045) [653]
ΔCalories (kcal) consumed daily	-9,000.6 (7,605.1) [750]	-1,300 (1,600) [684]	26.1 (368.0) [703]	-1,300.0 (1,200.0) [692]	-362.1 (648.8) [644]
ΔProtein (g) consumed daily	-205.3 (220.8) [694]	-289.1 (297.9) [676]	-2.6 (11.2) [694]	-288.5 (321.8) [684]	-19.3 (18.6) [635]
ΔIron (mg) consumed daily	-57.2 (61.3) [690]	-78.8 (76.7) [674]	-2.8 (2.7) [692]	-79.0 (79.1) [680]	-7.0* (3.9) [635]
ΔZinc (mg) consumed daily	-120.7 (113.5) [682]	-167.8 (166.4) [665]	-5.75 (6.05) [685]	-168.06 (148.8) [672]	-8.7 (9.1) [628]
ΔVitamin A (mcg) consumed daily	153.7 (102.3) [705]	256.4* (148.9) [689]	275.8** (126.67) [704]	20.4 (89.1) [698]	**307.35***** **(114.9)** **[643]**
ΔDietary diversity score	-0.03 (0.247) [806]	0.386 (0.330) [790]	-0.236 (0.413) [810]	-0.171 (0.338) [798]	0.14 (0.466) [744]
ΔHeight (cm)	-2.222 (2.817) [745]	-3.813 (2.798) [669]	-1.302 (3.204) [699]	-0.837 (2.215) [706]	-5.609 (4.450) [725]

Source: Authors.

Notes: GFD = generalized food distribution; SF = school feeding. Bootstrapped standard errors in parentheses. Number of observations in square brackets. All expenses are scaled per adult equivalent. The variables "1 form" and "2 forms" refer to the number of forms of aid received by the household, as indicated by the types of aid variables. Estimations for height restricted to children under 5 years of age at baseline. *p < 0.1, ** p < 0.05,*** p < 0.01. Coefficients that remain statistically significant at the 10% level after adjustment for multiple hypothesis testing are indicated in bold.

TABLE 6.7—ESTIMATIONS OF THE IMPACT OF FOOD ASSISTANCE ON HOUSEHOLD FOOD EXPENDITURES, FOOD CONSUMPTION, AND CHILDREN'S HEIGHT (SAMPLE: VILLAGES INDIRECTLY AFFECTED BY ARMED GROUPS, MALI)

	Any aid	GFD	SF	1 form	2 forms
	(1)	(2)	(3)	(4)	(5)
ΔMonthly expenditures (CFA francs)	1,253.4 (2,733.7) [1,036]	2,762.5 (4,181.1) [1,021]	229.6 (2,528.7) [981]	1,139.75 (3,938.15) [1,032]	3,100.8 (2,361.9) [764]
ΔMonthly food expenditures (CFA francs)	654.5 (2,847.8) [1,036]	1,498.2 (3,872.12) [1,019]	714.8 (2,810.4) [980]	226.9 (3,713.4) [1,032]	2,839.28 (1,767.8) [763]
ΔFood expenditures as % of budget	0.001 (0.024) [1,043]	-0.002 (0.030) [1,028]	0.025 (0.027) [981]	0.009 (0.029) [1,038]	-0.016 (0.039) [770]
ΔCalories (kcal) consumed daily	554.13 (704.6) [1,066]	**1,737.4**** **(699.44)** **[1,050]**	51.17 (800.12) [1,004]	378.5 (848.7) [1,061]	1,572.5* (875.1) [795]
ΔProtein (g) consumed daily	15.1 (25.1) [1,062]	35.9 (32.04) [1,046]	11.86 (27.3) [998]	3.2 (28.09) [1,057]	**72.04***** **(27.5)** **[785]**
ΔIron (mg) consumed daily	6.42 (6.06) [1,064]	11.76* (1.74) [1,049]	3.23 (5.3) [1,003]	4.25 (5.39) [1,059]	**15.76**** **(6.4)** **[791]**
ΔZinc (mg) consumed daily	6.09 (9.2) [1,083]	20.78* (10.74) [1,064]	-3.33 (11.9) [1,014]	4.94 (8.73) [1,077]	12.03* (7.23) [805]
ΔVitamin A (mcg) consumed daily	1.115 (117.93) [1,066]	-184.7 (180.4) [1,049]	240.4** (114. 7) [1,005]	13.35 (158.3) [1,059]	38.0 (196.38) [801]
ΔDietary diversity score	-0.179 (0.230) [1,238]	-0.004 (0.355) [1,218]	-0.326 (0.357) [1,164]	-0.04 (0.28) [1,230]	-0.904* (0.498) [924]
ΔHeight (cm)	2.265 (1.791) [1,002]	3.273 (2.286) [979]	-0.070 (1.842) [965]	0.829 (1.645) [1,006]	7.244*** (2.661) [961]

Source: Authors.

Notes: GFD = generalized food distribution; SF = school feeding. Bootstrapped standard errors in parentheses. Number of observations in square brackets. All expenses are scaled per adult equivalent. The variables "1 form" and "2 forms" refer to the number of forms of aid received by the household, as indicated by the types of aid variables. Estimations for height restricted to children under 5 years of age at baseline. *p < 0.1, ** p < 0.05,*** p < 0.01. Coefficients that remain statistically significant at the 10% level after adjustment for multiple hypothesis testing are indicated in bold.

increase vitamin A availability by 48 percent ($p < 0.05$). Interestingly, the provision of two forms of aid increased the height of children ages two to five years at baseline by approximately 7 centimeters in the intervention households compared to controls, which is equivalent to an increase of about 8 percent from baseline. A marginally significant negative effect of generalized food distribution was found for weight-for-height z-scores in children under five years of age.

In villages with armed groups present (Table 6.7), a significant positive impact was identified on food expenditures in households receiving any aid, generalized food distribution, or one form of aid, with effect sizes of substantively larger magnitude compared to those observed in the full sample. Consumption of zinc was also significantly increased for recipients of any food aid (or one form of aid). No statistically significant results were found for the other outcomes.

Multiple Hypothesis Testing

Each table of results displays 9 food security–related coefficients (and 1 coefficient for nutrition) as well as five treatment variables. Overall, each table shows 45 coefficients for food security (and 5 coefficients for nutrition). In Table 6.5, eight food security coefficients (out of 45) are statistically significant. In Tables 6.6 and 6.7, six and eight food security coefficients are statistically significant, respectively. In Table 6.8, five food security coefficients out of 30 are statistically significant.

Setting the rate of type I error at 5 percent, we would expect to find 1 in 20 coefficients to be statistically

TABLE 6.8—ESTIMATIONS OF THE IMPACT OF FOOD ASSISTANCE ON HOUSEHOLD FOOD EXPENDITURES, FOOD CONSUMPTION, AND CHILDREN'S HEIGHT (FULL SAMPLE, MALI)

	Any aid	GFD	SF	1 form	2 forms
	(1)	(2)	(3)	(4)	(5)
ΔMonthly expenditures (CFA francs)	7,478.9 (4,887.3) [220]	7,191.2 (4,590.3) [216]	. . [43]	5,946.3 (3,742.8) [208]	. . [45]
ΔMonthly food expenditures (CFA francs)	**8,639.6***** **(3,312.7)** **[223]**	**7,907.1**** **(3,616.6)** **[219]**	. . [42]	6,197.5** (3,217.2) [210]	. . [46]
ΔFood expenditures as % of budget	0.022 (0.06) [214]	0.013 (0.073) [211]	. . [41]	0.003 (0.061) [200]	. . [49]
ΔCalories (kcal) consumed daily	2,474.7 (1,848.8) [223]	2,387.5 (1,725.2) [218]	. . [41]	1,758.0 (1,194.2) [209]	. . [46]
ΔProtein (g) consumed daily	135.7 (93.8) [224]	140.3 (97.5) [219]	. . [41]	102.7 (66.65) [209]	. . **[48]**
ΔIron (mg) consumed daily	35.02 (24.86) [223]	35.27 (26.94) [218]	. . [41]	26.05 (17.8) [210]	. . **[47]**
ΔZinc (mg) consumed daily	34.15* (17.9) [223]	32.15 (19.6) [218]	. . [42]	26.71* (13.84) [209]	. . [46]
ΔVitamin A (mcg) consumed daily	522.2 (471.8) [205]	230.5 (311.17) [202]	. . [38]	349.6 (280.9) [194]	. . [44]
ΔDietary diversity score	0.203 (0.621) [242]	0.226 (0.549) [238]	. . [44]	0.122 (0.605) [226]	. . [54]
ΔHeight (cm)	-0.107 (1.444) [1,947]	-0.652 (1.784) [1,953]	0.045 (1.529) [1,960]	-0.305 (1.445) [1,956]	0.818 (3.201) [1,866]

Source: Authors.

Notes: GFD = generalized food distribution; SF = school feeding. Bootstrapped standard errors in parentheses. Number of observations in square brackets. All expenses are scaled per adult equivalent. The variables "1 form" and "2 forms" refer to the number of forms of aid received by the household, as indicated by the types of aid variables. Estimations for height restricted to children under 5 years of age at baseline. *p < 0.1, ** p < 0.05,*** p < 0.01. Coefficients that remain statistically significant at the 10% level after adjustment for multiple hypothesis testing are indicated in bold.

significant even if food assistance had no impact across the board. Thus, we would expect only 2 to 3 coefficients (out of 55) to be statistically significant in each table. The numbers shown above thus suggest that food aid did have a real impact.

Nevertheless, with nine variables, the risk of having at least one false positive among food security variables reaches 37 percent, much higher than the intended 5 percent rate. To deal with this issue, we have adjusted the p-value associated with each food security coefficient, following the procedure proposed by Sankoh, Huque, and Dubey (1997). These adjusted p-values are consistent with a family-wide rate of false positives of 5 percent. As a result of the adjustment, p-values increase, and the lower the mean correlation between a given variable and the other outcomes, the larger the adjustment. If variables are completely unrelated, the Sankoh, Huque, and Dubey (1997) procedure is the same as a Bonferroni adjustment.

In each table, we have indicated in bold which food security coefficients remain statistically significant (at the 10 percent level) after adjusting for multiple hypothesis testing. In Table 6.5, half the variables remain statistically significant. In Tables 6.6, 6.7, and 6.8, the corresponding figures are 17, 38, and 40 percent, respectively.

Discussion

In this mixed-methods study, we examined new survey data to assess the impact of food assistance on food security and nutrition outcomes during conflict in northern Mali. The findings presented in this study highlight several important considerations.

First, the survey data showed that during the five years after the conflict peaked, households experienced continued food insecurity, as evidenced by the modest increases in average expenditures per adult equivalent (less than 1,250 CFA francs over the whole period, corresponding to less than a 1 percent increase) as well as decreases in overall food consumption and micronutrient availability.

Second, the survey data underlined the extent and intensity of conflict exposure in the study population. More than one in five households in our study were exposed to violence linked to the presence of armed groups, including episodes of banditry, terrorist/armed attacks, political violence, kidnappings, and destruction of infrastructure. Of the 68 villages included in the survey, 11 (16 percent) were still experiencing the presence of armed groups at the time of the follow-up survey in January 2017, with most of these villages reporting that the presence of armed groups had persisted following the coup in 2012. Only 3 of the 55 villages that did not have armed groups present at the time of the follow-up survey had experienced their presence previously. These groups were violent and were perceived as threats by the population. The data also indicated that the presence of armed groups overlapped with conflict-related violence, as well as with fear and reduced mobility in the communities, affecting actions such as visits to farms, markets, health centers, and schools. These findings confirm the potential for conflict to affect households' food security and nutrition through a range of direct and indirect channels, as also highlighted by the focus groups and individual interviews. Respondents described how the fleeing of government staff and subsequent closing of health centers had important consequences in terms of the provision of basic health services for pregnant women, infants, and young children. Though coverage of these services was by no means pervasive before the conflict peaked in 2013, the interruptions in the few services that were available at the community level were likely to have directly affected nutrition and health among these vulnerable groups. Moreover, the data also suggested that the resulting limited mobility had indirectly exacerbated the negative effects of conflict on households more broadly, including limiting visits to farms and markets, affecting the food environment and food security in an already highly food-insecure context.

Third, the household and village surveys suggested that humanitarian aid—including food assistance in the form of generalized food distribution, school feeding, and other modalities—had been scaled up in the study areas during the five-year period following the 2012 coup. Of the different forms of food assistance, generalized food distribution was most common, followed by school feeding. Coverage of targeted supplementary feeding, a key intervention to prevent and treat acute malnutrition, was extremely low in the study population. Moreover, the survey data also indicated that access to aid tended to decrease with greater proximity to armed groups, as highlighted by the higher likelihood of conflict-affected households to live in villages without any access to aid, though this relationship was not as marked at the household level. These findings suggest that the logistics of safely scaling up aid in conflict areas may override the necessity to reach the most vulnerable populations. Of particular relevance to this study is the very low coverage of targeted supplementary feeding, thus reducing the likelihood of identifying the possible effects of WFP food assistance on malnutrition in infants and young children.

Fourth, the analysis of treatment effects suggests that the scaling up of food assistance by WFP and development partners in Mali had important positive impacts on the food security of the targeted population. We find evidence of protective effects on household total expenditures and food expenditures as well as on food consumption and on changes in height in children ages two to five years at baseline (but the latter effect is restricted for children living in villages indirectly affected by the conflict). The positive impacts were particularly pronounced in households receiving two forms of food assistance. The effects on food consumption were comparable to those reported in the literature on social assistance in development settings. A recent meta-analysis of social assistance programs including 48 studies of

39 social protection programs found that transfers increase monthly food expenditures by 17 percent on average (Hidrobo et al. 2015), compared to the 25 percent estimate found in our study. The fact that the receipt of food assistance causes food consumption to increase is consistent with an endowment effect when food assistance is inframarginal (that is, the food transfer is less than the value of what the household would have consumed in its absence). If food is a normal good (as it typically is), the food transfer relaxes the budget constraint and leads to greater consumption of both food and other goods (see, for example, Margolies and Hoddinott 2014).

The analysis of the nutrition status of young children was hampered by the well-documented issue relating to the recording of dates of birth in areas of low parental education like Mali (Oshaug et al. 1994; Grellety and Golden 2016; Larsen, Headey, and Masters 2017). This recording error is of concern when calculating height-for-age indicators for young children. To minimize the bias from recording error, in this report we limited the scope of the analysis of anthropometric data to changes in height within the youngest cohort in our study population as well as in weight for height in repeated cross-sections for children ages two to five years. The analysis of the panel data identified a large protective effect of aid on the height of children in the cohort ages two to five at baseline (of the order of 0.5 standard deviations), where armed groups were present near the targeted communities, though not present in the communities themselves. The effect was concentrated on households receiving at least two forms of aid (usually generalized food distribution with school feeding). In the repeated cross-sectional study in children ages two to five years, we found evidence of a marginally significant negative impact on weight for height and no effect on acute malnutrition. However, this finding should be interpreted with caution, as the age distributions in the two cross-sections were substantially different, thus making meaningful comparisons difficult across the two points in time. Sensitivity analysis, including outcomes from the single cross-section at follow-up (using propensity score matching but not difference-in-differences), found no evidence of impacts on anthropometry. Further sensitivity analysis focusing on the recording of dates of birth is currently under way to allow for a more detailed assessment of child nutrition in the study population.

Limitations

The study was limited by several important considerations. First, as the allocation of treatment was not random, there is a high risk of selection bias related to any unobserved characteristics that are correlated to both selection into food assistance and the study outcomes. The panel structure of the dataset (and a precrisis baseline) allowed for risk mitigation by estimating the impact of emergency food assistance with a matched difference-in-difference approach. This removed selection bias stemming from unobserved time-invariant (but not time-varying) differences between the treatment and comparison groups.

Second, we had to deal with nonrandom attrition. Some baseline characteristics were significantly different between households that were lost to follow-up and those we were able to trace and reinterview. We introduced these variables in the estimation of the propensity scores to mitigate the threat to internal validity. However, the fact that 4 out of 70 villages were entirely lost to follow-up due to safety concerns means that we were not able to draw inferences from the most severely conflict-affected areas.

A third limitation stems from the sample size, which is quite small due to a combination of the attrition rate and missing observations for key variables of interest (or control variables). This contributes to reducing the scope of the study and limits our ability to conduct subgroup analyses (focusing our analysis on types of aid or types of contexts). In particular, the subsample of households directly affected by conflict is quite small, so results for this group should be interpreted with caution. However, we still had enough observations to meaningfully compare the effect of aid across aid modalities for the general population as well as to compare the effect of aid in non-conflict-affected versus indirectly affected areas.

A fourth, more general, limitation is simply due to the challenge of conducting household surveys in a context such as Mali. The ongoing conflict situation has restricted our ability to travel to all survey sites and has put a strain on the data collection team. For security reasons, the teams could not travel at night and thus had to complete the interviews in a short span of time. We believe that the relatively high rate of missing observations is mostly due to this constraint, as enumerators could not afford to wait for additional respondents to return home and undertake lengthy interviews.

Conclusions and Highlights for Policy Makers

In settings characterized by chronic food insecurity and conflict, food transfers may have a protective effect on the food security and nutrition of vulnerable populations. Furthermore, there is emerging evidence that in these particular contexts, providing two forms of food assistance may be more effective than one form of transfer alone.

The findings on changes in linear growth in children ages two to five at baseline in populations indirectly affected by conflict suggest that, in these contexts, food assistance may also provide a platform to improve children's growth outside the priority age group for nutrition interventions during the first thousand days. These findings will require further detailed investigation.

Considering that coverage of targeted supplementary feeding was extremely low (around 2 percent) in the study population, the null results on moderate acute malnutrition in the repeated cross-sections and single cross-section at follow-up are not surprising. This finding is consistent with the literature on social transfers, indicating that the provision of household food transfers, or generalized food distribution alone without specific complementary foods targeting young children, generally does not result in improvements in the nutrition outcomes of young children.

Evidence from this study suggests that there is scope to improve the design and scale-up of food assistance to improve nutrition outcomes during conflict. Increasing the coverage of nutrition-specific interventions during conflict, including the provision of specialized complementary foods for supplementary feeding, appears to be a critical gap. This coverage gap may also be due to the need to have elements of the health system working at the community level to ensure adequate service provision. As health systems are often targeted by conflict actors, this may pose a critical constraint on operations in conflict settings. The findings suggest that in terms of intervention design, systematically bundling different forms of food assistance alongside generalized food distribution may be an effective strategy to support vulnerable populations during conflict. This is likely to be particularly important in terms of inclusion of nutrition-specific interventions that are essential to support nutrition for vulnerable groups (see point above).

Providing evidence on how to optimize the cost-effectiveness of food assistance packages is an important area for further research. The evidence presented in this chapter highlights some of the critical trade-offs that humanitarian operations face in conflict-affected settings, involving on the one hand program scale and cost-effectiveness, and on the other the practicalities of operating in areas under the control of armed groups, including issues relating to security, governance, and transparency. There is clearly no silver bullet in terms of addressing these trade-offs during operations. Understanding the political economy of food assistance in these contexts is a critical starting point to improve the effectiveness of operations.

CHAPTER 7

The Role of Social Protection in Improving Child Well-Being and Care in Africa

Keetie Roelen

Despite important strides in the fight against poverty in the past two decades, many children in Africa live in poor and vulnerable conditions. South of the Sahara, 1 in 5 children grow up in extreme monetary poverty (UNICEF and World Bank 2016), and two-thirds live in multidimensional poverty (OPHI 2017). Estimates suggest that by 2030, 9 out of 10 children suffering from extreme monetary poverty will be living in Africa south of the Sahara (UNICEF 2016).

Social protection is now widely recognized to constitute a key component of the response to poverty, including child poverty (UNICEF and Global Coalition to End Child Poverty 2017). Interventions that seek to be in the best interest of the child are referred to as "child-sensitive social protection." The concept started to gain traction in 2009 when various international partners, led by UNICEF, came together to formulate the Joint Statement on Advancing Child-Sensitive Social Protection (UNICEF 2009). The statement outlines a range of guiding principles, including early intervention, inclusion of children's voices, and prevention of adverse consequences. Subsequent work on child-sensitive social protection has highlighted the notion that "child-sensitive" does not equate with "child-focused" and that child-sensitive social protection is therefore not limited to interventions that target children directly, such as child grants. Rather, the premise of child-sensitive social protection is to "assess interventions against the extent to which they respond to children's practical and strategic needs" (Roelen and Sabates-Wheeler 2012, 292).

Roelen and Karki Chettri offer the following definition of child-sensitive social protection:

> Child-sensitive social protection (CSSP) refers to social protection programmes or a system of programmes that aim (i) to maximise positive impacts on children, when and where appropriate and (ii) to minimise potential unintended side effects or perverse incentives. This encompasses both direct interventions (i.e. child-focused or targeted) and indirect interventions. (2016, 13)

We use this comprehensive understanding as a backdrop for the analysis in this chapter because it highlights the need to look beyond interventions targeted at children and to consider both the positive and negative effects on children of any intervention.

Social protection as a policy tool for tacking child poverty and vulnerability has recently gained much momentum. At the global level, this momentum is evidenced by the commitment to reducing child poverty in all its forms and the establishment of nationally appropriate social protection floors by 2030, as proposed in Sustainable Development Goal targets 1.2 and 1.3, respectively. In Africa, strong commitment to social protection for children also exists. For example, the sixth International Policy Conference on the African Child, held in 2014, established a 12-point plan to advance child well-being in Africa through social protection (ACPF 2014). This commitment in the region is impressive, especially considering the fairly short history of social protection. As pointed out by Devereux, Webb, and Handa (2011), until the late 1990s and early part of the following decade, narratives surrounding the well-being of Africa's poorest and most vulnerable were premised on strong mechanisms of community support and household coping strategies, with a limited role for the state. The abandonment of structural adjustment in the mid-1990s, coupled with the HIV/AIDS epidemic and the acknowledgment that other types of aid were not effectively reaching their goals, has contributed to the emergence of social protection—and social assistance in particular—as an important element of national policies across the continent (Devereux, Webb, and Handa 2011; Garcia and Moore 2012).

This chapter aims to provide an overview of the role of social protection in improving child well-being and care in Africa by considering progress made and gaps to be addressed. First, it reflects on coverage, highlighting the rapid expansion of social protection and reflecting on undercoverage among particular groups of children. Second, it provides an overview of the impact of social protection on children, considering direct and indirect income effects, psychosocial and behavioral effects, and structural constraints. Third, it offers reflections on the way forward, particularly in relation to the design

and implementation of programs. Note that this chapter focuses primarily on social assistance, referring to interventions that offer cash or in-kind support on a noncontributory basis.

Reaching Poor and Vulnerable Children

The provision of social protection has expanded rapidly across Africa in the last two decades. Based on a review of 39 countries, Cirillo and Tebaldi (2016, 9) found that "in the last 15 years the number of programmes in African countries has almost tripled." The proportion of the population that benefits from some form of social protection has also increased dramatically. One in four people and one in three poor people living in Africa south of the Sahara are now covered by either social assistance, social insurance, or labor market programs (World Bank 2018).

Children are the most common target group across social protection programs, representing at least half of those targeted across programs in Africa (Cirillo and Tebaldi 2016). According to the most recent International Labour Organization (ILO) World Social Protection Report (for 2017–2019), 13 percent of children in Africa now have access to some form of cash benefit (ILO 2017). A closer look at individual interventions indicates that this overall percentage is reflective of their rapid expansion in the last decade; Kenya's Orphans and Vulnerable Children Cash Transfer (CT-OVC) program increased its recipients from 3,000 in its pilot phase in 2007 to 340,000 in 2015 (Asfaw et al. 2013; Bosworth et al. 2016), and the Child Support Grant in South Africa increased coverage from 1 million children in 2000 to 12 million in 2015 (Stotsky, Kolovich, and Kebjah 2016). According to the ILO, 28 (out of 54) countries in Africa had at least one program focused on children or families anchored in national legislation in 2015 (ILO 2015).

Apart from including children as a target group, interventions are also often designed to benefit children. In considering conditional cash transfer (CCT) programs, for example, conditions are most commonly tied to behavior that aims to achieve better outcomes for children. School attendance is the most popular type of conditionality, followed by health checks. Only a few programs stipulate the need for birth registration or child nutrition. Almost half of these programs entail more than one condition (Cirillo and Tebaldi 2016).

Notwithstanding these strides, considerable gaps persist. Compared with a global average of 35 percent of children, or of households with children, receiving any type of child or family benefit, Africa's coverage rate of 16 percent is lower than any other region's (ILO 2017). Most programs are targeted to relatively small proportions of the population, leading to exclusion of poor and vulnerable children due to undercoverage as a result of limited resources, and to exclusion errors as a result of targeting errors. Both types of exclusion are likely to affect families and children most in need, and most notably children living outside of household or family settings. The vast majority of social protection is targeted or delivered to households or individuals living in households. As a result, many of the most marginal and vulnerable children—those who do not live in households—are left out by design. These include children in institutional care, children on the move, and children living on the streets (Roelen, Delap, et al. 2017).

At present, very limited information is available about the scale of exclusion because no estimates exist on the numbers of children living outside of family settings and therefore excluded from social protection. This knowledge gap signifies the scope of the problem: a first step in aiming to reach the "missing children" with an appropriate form of social protection is to understand who and where they are.

Changing Lives of Children and Their Families

Social protection has been shown to have far-reaching and positive impacts on children and the families they live in. A wide evidence base on the effect of cash transfers, for example, indicates that such programs can reduce

poverty and improve well-being across a range of dimensions, including food security, health, schooling, productive activities, and safe transitions to adulthood (Baird et al. 2013; Bastagli et al. 2016; de Hoop and Rosati 2013; Lagarde, Haines, and Palmer 2007). Nevertheless, social protection may also have negative consequences for children (Blank, Devereux, and Handa 2011), such as school dropout or increased work burdens. These consequences are often unforeseen and unintended, resulting in adverse effects or perverse incentives that limit or reverse programs' potential positive impacts.

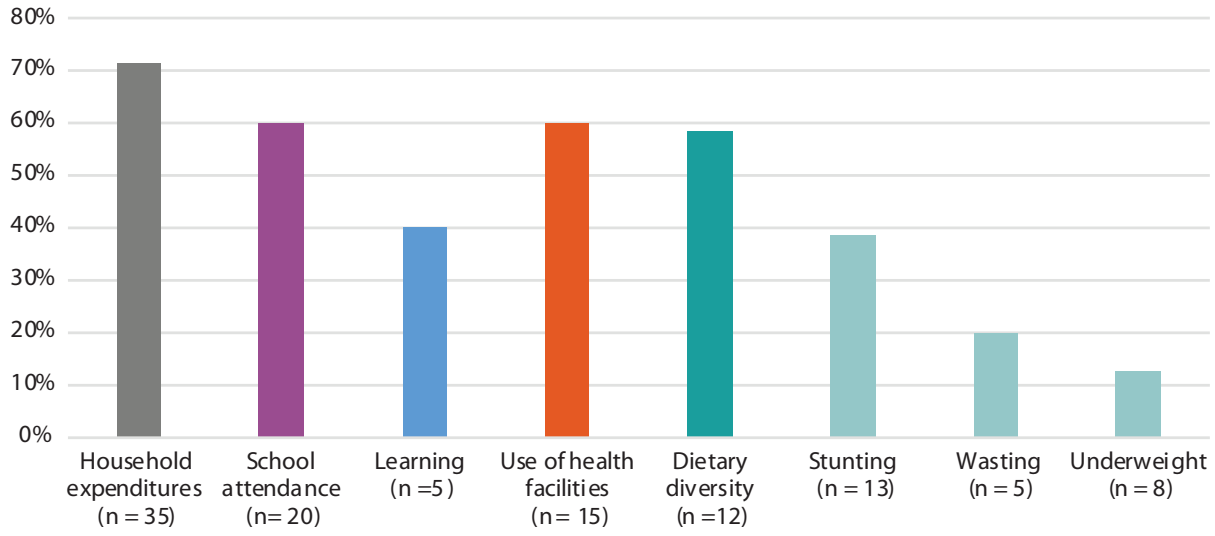
We can consider the role of social protection in children's and their families' lives across three types of effects: (1) direct income effects, (2) indirect income effects, and (3) psychosocial and behavioral effects (see Roelen, Delap, et al. 2017). This section provides an indicative review of findings from throughout the continent to identify main trends and patterns across the three types of effects.

Direct Income Effects

The provision of income through social protection directly reduces one of the largest risk factors undermining child development and care, namely poverty (Walker et al. 2011). Lack of economic resources and budget constraints undermine caregivers' ability to provide for their children's basic needs and can lead to family separation or loss of parental care (Roelen, Delap, et al. 2017; Roelen, Devereux, et al. 2017). Regular cash payments can alleviate these constraints and help households smooth their consumption. Indeed, the direct income effect of transfers on material aspects of children's well-being has been well documented, including improvements in nutritional, health, and educational outcomes (Attah et al. 2016; Bastagli et al. 2016). In qualitative research in Ghana, Rwanda, and South Africa, caregivers and children considered the direct income effect of cash transfers to be very powerful, allowing for the purchase of a greater quantity and diversity of food, as well as school materials, health insurance, and clothing (Roelen, Delap, et al. 2017). Although evidence is less well established, poverty reduction through direct provision of income may also increase family cohesion. Regular transfers may prevent the need for migration, for example, and thereby prevent family separation (Barrientos et al. 2014).

The available evidence also reveals areas in which social protection has been less successful than anticipated. Figure 7.1 provides an overview of the proportion of studies reporting positive and significant impacts of cash transfers in a range of different outcome areas (based on Bastagli

FIGURE 7.1—PROPORTION OF STUDIES REPORTING SIGNIFICANT AND POSITIVE IMPACTS



Source: Based on Bastagli et al. 2016.

et al. 2016). The findings indicate that programs are highly successful in increasing household expenditures and improving access to services, notably schooling and health services. However, learning and nutritional impacts are far less widespread. The direct income effect of social protection for children is thus most powerful in relation to issues for which budget constraints pose the most important barrier to effecting positive change; the effect is less powerful when it comes to outcome areas in which other constraints—such as quality of services, knowledge, attitudes, and practices—may come into play.

Furthermore, direct income effects are not unequivocally positive. Negative effects are unintended but can have real adverse consequences. In reference to migration, for example, transfers may allow parents to seek work elsewhere and leave their children in the care of others (with the transfers compensating for the cost of child care), as happened in South Africa (Barrientos et al. 2014). There are also concerns regarding the misuse of money, in particular that the receipt of transfers may exacerbate alcohol consumption or substance abuse. Although notions that such misuse occurs on a large scale have been dispelled (Evans and Popova 2017), female caregivers in both Rwanda and South Africa indicated that diversion of funds to the purchase of alcohol (especially by men in the family) impedes social protection's positive impact on children in two ways: first, it reduces the amount of money available to support children's well-being, and second, it may subject them to abusive behavior as a result of adults' substance use (Roelen, Delap, et al. 2017).

Literature regarding the role of social protection—and cash transfers in particular—also reflects concerns that transfers may incentivize carers to provide foster or kinship care for primarily monetary reasons. In Botswana, for example, social workers reported that some individuals caring for orphans may be doing so primarily for material reasons as a result of the CT-OVC program, which is targeted at orphans. In this way, the program could be contributing to the "commodification" of children (Roelen, Long, and Edstrom 2012). Social workers in South Africa have raised similar concerns about cash transfers for children in foster care (provided by the Foster Child Grant) that are two or three times larger than transfers for children in poor families (provided by the Child Support Grant) (Roelen, Delap, et al. 2017). It should be noted, however, that these findings do not represent direct evidence of such perverse incentives and in fact may be informed by a combination of direct exposure to, experiences with, and negative narratives around the provision of kinship and foster care.

Indirect Income Effects

Social protection may also lead to indirect income effects for children. In other words, changes in income as a result of transfers received through social protection set in motion other processes that subsequently impact children's lives. One such dynamic is the effect of greater income security on psychosocial well-being. Relatively recent but expanding research shows that receiving regular transfers can reduce poverty-induced stress and psychosocial tensions (Buller et al. 2016). This effect is not exclusive to adults but also holds for children. In Kenya, for example, regular transfers provided through the CT-OVC program were found to improve boys' mental health and life outlook (Handa et al. 2012).

The reduction of stress can be considered a positive effect in and of itself, but it reaches even further in terms of care for children. It can lead to improved relationships between carers, between children, and between carers and children. In Tanzania, cash transfers improved relationships within resource-constrained grandparent-headed households due to lower stress levels (Hofmann et al. 2008). A cross-country study in Ghana, Kenya, Lesotho, and Zimbabwe concluded that cash transfers can improve the psychosocial well-being of both parents and children, and improve relationships between peers and with teachers (Attah et al. 2016). Mullainathan and Shafir (2013) argue that being certain of a regular stream of income and not having to worry (or worrying less) about making ends meet increases available cognitive bandwidth; that is, it allows for more headspace to engage

in other activities, including caring for children, with full attention. The interaction between greater income security, lower poverty-induced stress, and improved relationships may lead to greater self-esteem and sense of self. In Rwanda, a male beneficiary of the Vision 2020 Umurenge Programme (VUP) indicated that being better able to provide for his children as a result of program participation and the ensuing positive effects for the family made him feel like a better parent (Roelen, Delap, et al. 2017).

Beyond Income

Notwithstanding the power of direct and indirect income effects, transfers in and of themselves are not sufficient for improving children's care and well-being. The wide and expanding evidence base regarding the impacts of social protection clearly points at both the power and the limits of cash transfers. Although they lead to strong positive results in reducing the material aspects of poverty and supporting access to services, they fail to significantly improve key development outcomes for children, such as nutrition and learning. These findings have led to growing momentum around the design of "cash plus" programs that aim to combine cash with complementary services (Roelen, Devereux, et al. 2017).

An increasing evidence base attests to the importance of such additional components in achieving positive psychosocial impacts for adults and children. An evaluation of a comprehensive "graduation" program in Burundi found that regular face-to-face training and coaching sessions for adult program participants with case managers were considered crucial in achieving and reinforcing positive nonmaterial change for the adult participants and their children (Roelen and Devereux 2018). Findings from Nigeria's Child Development Grant Programme show that a combination of cash transfers, education, and behavior change communication (BCC) had a large positive impact on both female and male caregivers' knowledge and beliefs about healthy infant and young child feeding practices (OPM 2018).

Nevertheless, the psychosocial and behavioral effects of social protection may not be universally positive. Particular design features may lead to unintended but adverse effects. Public works programs give rise to particular concerns regarding child well-being and care. The work requirement attached to the receipt of cash or food under such programs has implications for the demand for labor within families and may lead to children's being involved in work activities or, more commonly, to children's providing substitute labor for adult members within the household. Some cash-for-work programs that ask participants to provide labor in exchange for transfers—such as the Productive Safety Net Programme (PSNP) in Ethiopia and the National Rural Employment Guarantee Act in India—have been found to increase girls' workloads at the expense of study or leisure time as they take on domestic chores and unpaid care work (Hoddinott, Gilligan, and Taffesse 2011; Holmes and Jones 2013). In Rwanda, female VUP beneficiaries struggle with the balance between participating in public works, performing unpaid work, and spending time with their children. Children may be left on their own, without adult care or even food during the day, and older children may be pulled out of school to care for their younger siblings (Roelen, Delap, et al. 2017).

Social protection programs—particularly in their implementation—may also inadvertently cause or reinforce feelings of shame and stigma, potentially with devastating consequences (Roelen 2017). As much as the interaction between service providers and beneficiaries can be positive, it can also lead to negative impacts. Pejorative and derogatory treatment or judgmental and inconsiderate attitudes expressed toward program beneficiaries by administrators and social workers can undermine dignified and respectful treatment, with negative psychosocial effects. These results interact with the poverty-induced shame that is common across the globe, including Africa (Walker et al. 2013). The interaction between poverty, shame, and undignified implementation of social protection can cause great harm, particularly to children. Research in relation to the Child Support

Grant in South Africa found that some female applicants would rather forgo the receipt of transfers if it meant they would no longer face judgmental questions about their personal situation from program administrators (Wright et al. 2014).

Structural Constraints

It is important to highlight the role of structural constraints when discussing the role of social protection in improving child well-being and care in Africa. Social protection is essentially a demand-side intervention, playing into the role of families and individuals as they work to improve their living conditions. However, supply-side issues and contextual barriers often represent key hurdles for families and children to improving their own well-being, and social protection can go only so far in trying to address these constraints. Failing to recognize these limitations would undermine both the importance of social protection and the role of families in fighting to overcome child poverty. In Ethiopia, for example, a core objective of the Integrated Nutrition Social Cash Transfer pilot program (within PSNP 4) is to improve nutritional outcomes for children. BCC is given particular emphasis in this pilot, premised on the notion that caregivers lack knowledge about feeding and sanitary practices. However, qualitative research among program participants indicated that drought was the most important reason that these individuals and their households were unable to engage in hygienic practices such as handwashing (Roelen, Devereux, and Kebede 2017). Greater acknowledgment of such structural constraints may support greater cross-sectoral collaboration while also precluding unwarranted conclusions that social protection is ineffective.

Where Next?

The wealth of evidence and experience now available from across Africa allows for reflections on the future direction of social protection in a bid to improve its positive impact on children and prevent potential unintended adverse consequences or perverse incentives—in other words, to make social protection more child sensitive.

The design of interventions is crucial in effecting positive change. A comparative review of the impact of cash transfer programs highlighted that, regardless of intervention type or modality, design features such as transfer size are key to achieving impact (Bastagli et al. 2016). This section elaborates on three issues in relation to child-sensitive social protection and the design of interventions that can have far-reaching implications for child well-being and care, namely "cash plus" approaches, the balance between paid and unpaid work, and linkages between social protection and child protection.

"Cash Plus"

The "cash plus" (cash+) approach to social protection refers to interventions with cash transfers at their core that are complemented with other interventions. The rationale for this approach is grounded in the acknowledgment that budget constraints form an important, but not the sole, barrier to improving the well-being and care of children (Roelen, Devereux, et al. 2017). Social, cultural, and structural constraints may result in lack of access to high-quality services; limited allocation of monetary resources to children's basic needs (as opposed to other household needs) and lack of knowledge may impede optimal feeding, health, and parenting practices. Interventions that are premised on the "cash plus" approach offer services complementary to cash transfers in a bid to address the set of constraints faced by families and children in a more holistic manner. Complementary services can be integral to the program, such as BCC or additional in-kind benefits, or external to the program, such as health insurance for program beneficiaries (Roelen, Devereux, et al. 2017).

Emerging evidence on "cash plus" approaches, such as the one in Nigeria (OPM 2018), show promising results in terms of strengthening social protection's role in improving child well-being and care in Africa. Two caveats are important to keep in mind: First, there is a risk of

overburdening individual interventions by layering their design with too many components. Doing so makes the program increasingly complex and difficult to implement and administer. It also adds to an already ambitious set of objectives for social protection, potentially setting programs up for failure when these objectives are not met. Second, "cash plus" programs—and indeed social protection as a whole—cannot sufficiently address structural issues. As argued above, social protection is primarily geared at addressing constraints at the family level. Multisectoral collaborations will be vital for tackling supply-side issues that hinder efforts to improve the well-being of children.

Balance between Paid Work and Unpaid Care Work

An appropriate balance between paid work and unpaid care work is crucial to support child well-being and care. Research shows that dual engagement in paid work and unpaid care work results in a considerable burden in terms of time and effort, particularly for women and girls (Chopra and Zambelli 2017). Despite the importance for children of an appropriate balance between types of work, and despite the drudgery and burden experienced by women and girls as a result of the combination of types of work, this issue is often overlooked within the design of social protection programs (Cookson 2018). As highlighted above, programs that incentivize paid work—such as public works—may have negative effects for children by exacerbating an unequal distribution of work across household members and adding to the burden and drudgery within the household as a whole or for individual members, including children.

The design of social protection interventions needs to take greater account of the tensions between paid work and unpaid care work, both by paying closer attention to the extent to which programs adversely reinforce the drudgery and burden of the combination of work, mostly for women and girls, and by looking at how programs may be (re-)designed to promote a better balance and thereby a higher quality of care for children. The former entails a widening of the monitoring and evaluation framework to incorporate issues such as time use, gender norms, and care for children. The latter entails design considerations that take into account a range of conditions that need to be in place to support a better balance of work in relation to child care. An increasing number of countries, including Ethiopia and Rwanda, are providing child care as part of public works programs to begin to address this concern. However, as Chopra and Zambelli (2017) point out, this tactic should be complemented with high-quality and accessible public services, as well as decent and well-paid work.

It should, however, be noted that there may be a tension between, on the one hand, creating a better balance between paid work and unpaid care work for women (and redressing gender norms more generally) and, on the other, promoting greater well-being for children. The design of social protection is often gendered, with policy makers preferring to give cash to mothers rather than fathers for the presumed positive impact on children (Cookson 2018). Although building on this dynamic may lead to more beneficial outcomes for children in the short term, it also reinforces women's role as main caregivers and is likely to add to the time they spend on unpaid care work. More critical debate is necessary to consider and address this tension in support of better care for children.

Linking Social Protection and Child Protection

The policy areas of social protection and child protection are part and parcel of the response to children and their vulnerabilities, particularly because poverty (the primary concern of social protection) and child protection violations (the primary concern of child protection) are intricately linked. Poverty in and of itself undermines child well-being and care. In addition, it is an important factor in causing or reinforcing other types of child protection violations, including child labor, trafficking, abuse, and neglect (Jones 2011; Barrientos et al. 2014). Despite this overlap, the two policy areas have largely developed in silos (Roelen, Long, and Edstrom 2012). It is increasingly recognized that this dichotomy is artificial (Shibuya and Taylor 2013) and compromises the effectiveness of efforts to respond to the wide set of

needs of vulnerable children. At the household level, a strong delineation between issues of child protection and social protection is not relevant, and an integration of policy efforts therefore makes sense.

At the same time, it is important to point out that actions to provide social protection for children should not be confused or equated with child protection. Notwithstanding strong overlaps in the vulnerabilities they seek to address, child protection interventions are distinctly different from social protection. Child protection interventions aim to prevent and respond to violence, exploitation, and abuse (Blank, Devereux, and Handa 2011). Often such child protection violations are rooted in poverty and marginalization, which is the remit of social protection. Policy responses may overlap, such as in the form of psychosocial support or linkages to services, and these overlaps are bound to increase with the implementation of "cash plus" interventions. Nevertheless, core child protection interventions such as legal aid and redress fall outside of the remit of social protection. Given the overlap and mismatch of policy areas, the strongest potential for linkages lies in the establishment of strong case management and referral mechanisms at the community level that allow for coherent identification of and response to the specific needs of vulnerable children.

Conclusion

Africa has experienced a rapid expansion of social protection across the continent, and more children than ever before are now covered by one or more programs. Social protection—and cash transfers in particular—has proven itself to be a powerful tool for improving child well-being and care, ranging from the material to the psychosocial aspects. At the same time, there are impact gaps with respect to nutrition, learning, and other outcomes, and some interventions may cause adverse effects. The strong momentum regarding social protection, coupled with the available knowledge about what works and does not work, provides a strong foundation for strengthening social protection's role in improving the well-being and care of Africa's children. "Cash plus" programming, paying greater attention to the balance between paid work and unpaid care work, and strengthening the linkages between social protection and child protection are areas in which particular mileage is to be gained in moving forward.

CHAPTER 8

Livelihood, Cash Transfer, and Graduation Approaches: How Do They Compare in Terms of Cost, Impact, and Targeting?

Munshi Sulaiman

Between 1990 and 2013, the share of the world's population living on less than US$1.90 a day dropped from around 35 percent to 11 percent (World Bank 2016). According to these estimates, 767 million people still live in extreme poverty, and achieving further improvements poses new challenges. Much of the progress in poverty reduction has been driven by the stable economic growth in East Asian, and to a lesser degree in South Asian, countries. Progress in Latin America and the Caribbean has slowed, and the reductions in extreme poverty have consistently been very low in Africa south of the Sahara, where currently more than half of the world's extreme poor live. It would be practically impossible to reach the Sustainable Development Goal of eliminating poverty through growth alone, as this would require accelerating growth rates to unprecedented levels for most of the countries while keeping inequality unchanged (Yoshida, Uematsu, and Sobrado 2014). Continued reductions in extreme poverty will, therefore, require targeted interventions to help the poorest households increase their standard of living.

Identifying effective social protection programs that can reach the extreme poor and make sustainable changes in their livelihoods is critical to this effort. Social protection programs address various constraints faced by the extreme poor, including poverty, skill gaps, and vulnerability to shocks. In the literature, the set of activities (or interventions) that are included in social protection programs varies, along with definitions of the term. Basic social assistance, also known as a safety net, constitutes "protective social protection." Devereux and Sabates-Wheeler (2004) provide a framework that highlights conceptual and practical differences among *protective, preventive, promotive*, and *transformative* social protection. This chapter broadly follows the *promotive* social protection definition, which includes the creation of economic opportunities and safety nets to reduce poverty or prevent it. Although most social protection initiatives have the common goal of reducing extreme poverty, the specific interventions and the pathways intended to help people out of extreme poverty differ. For example, cash and in-kind transfers can be intended as a safety net to protect against consumption shocks or to encourage investment; training and technical support are often designed to improve productivity; community mobilization programs that encourage collective action may mitigate coordination failure or facilitate the achievement of economies of scale; or value chain initiatives may be designed to create new economic opportunities. In recent years, a number of innovative approaches have been adopted and scaled to improve these programs by combining livelihood protection and promotion (Grosh et al. 2008). Such comprehensive approaches recognize the linkages between the constraints faced by the very poor: little economic and social capital, and limited technical skills or low aspirations.

In this chapter, we look into three types of approaches that are common in development programming due to their potential to help increase the incomes of the extreme poor. *Graduation programs* take a holistic and integrated approach to extreme poverty reduction by simultaneously tackling the interrelated challenges faced by the very poor. *Livelihood development* programs consist of a wide range of interventions to help the poor acquire productive assets, build skills, or create new market opportunities. In practical terms, graduation programs can be viewed as a subset of livelihood programs with a specific focus on targeting the extreme poor, providing a comprehensive support package in a sequential manner to help recipients build profitable microenterprises, and ensuring a time-bound graduation pathway out of extreme poverty (de Montesquiou et al. 2014). Cash transfers are often associated with small regular payments to the poor for consumption support, but larger *lump-sum cash transfers* (for example, as implemented by the nongovernmental organization GiveDirectly) have shown potential to help the poor invest in income-generating assets with substantial returns. Lump-sum cash transfers have a relatively stronger focus on enhancing economic opportunities by relaxing capital constraints, unlike conditional transfers (for example, Progresa), which incentivize a particular behavioral change (such as school enrolment or using health

services), or unconditional cash transfers in distressed or humanitarian situations, which act as a social safety net.

The amount and quality of evidence on the effectiveness of these social protection programs varies significantly. Although there are fewer examples of graduation programs and lump-sum cash transfers compared to the long history of livelihood initiatives, the impact of these programs has been assessed more rigorously than that of livelihood programs. The CGAP (Consultative Group to Assist the Poor)–Ford Foundation Graduation Program coordinated 10 implementations of the program, 8 of which included randomized control trials (RCTs) to evaluate impact. Lump-sum cash transfers are unusual in that they have been delivered primarily in the context of research-led experiments to learn about returns to capital in small enterprises (for example, de Mel, McKenzie, and Woodruff 2009; Karlan et al. 2014; Fafchamps et al. 2013; Beaman et al. 2014). In particular, GiveDirectly, which specializes in unconditional cash transfers, was founded by economists who incorporated rigorous research from the outset. However, despite having the longest history of implementation (typically since the 1970s) and diversity of interventions, livelihood development programs were, until recently, rarely rigorously evaluated.[1]

With all three models offering the potential to have an impact on economic opportunities, the key questions for policy makers are: which approach achieves the greatest impact given its costs, how long do these impacts last, and do they benefit the extreme poor? The clearest way to answer these questions is through cost-effectiveness analysis. However, the answer will depend on the objectives of the policy maker: the cost-effectiveness of a program can vary greatly depending on the population served and the types of outcomes measured. Cost-effectiveness analysis compares the impact achieved on a particular domain per dollar of delivery cost. This chapter conducts such a comparative analysis of poverty alleviation programs, with a focus on graduation, livelihood, and cash transfer programs. We take income and consumption as the primary metric of impact, with a primary interest in long-term outcomes. This review, conducted during 2014–2016, identified 48 livelihood, graduation, and cash transfer initiatives with both impact evaluations and project-specific cost data. These cases are used to develop a distribution of cost-effectiveness to identify the best options for increasing the incomes of the extreme poor.

We find that targeting the extreme poor is not a common feature of the livelihood and lump-sum cash transfer programs, while the graduation approach deliberately targets the extreme poor. Though livelihood programs vary significantly in per beneficiary cost, the median cost is the highest for graduation programs and the lowest for cash transfers. In terms of impact, *consistency* of impact is assessed based on how often the impact estimates of an approach are in the same direction and statistically significant, whereas *sustainability* refers to impact measured at least a year after the interventions are completed. We find that graduation programs are the most consistent in having significant positive impact across sites, and livelihood programs show limited sustainability of impact. In the meta-analysis, the annual household consumption gain as a proportion of total program cost is the highest for cash transfers (0.27), followed by livelihood programs (0.20) and the graduation approach (0.11). However, livelihood programs that have randomized evaluations have a lower impact-cost ratio (0.09) compared to graduation programs. Moreover, livelihood programs for which impact is measured at least a year after the end of the interventions have an even lower impact-cost ratio (0.07). Cash transfers have the least amount of evidence of long-term impact, while graduation programs have the most robust evidence of sustainable impact. There is also a suggestion of possible publication bias in the studies of livelihood programs, but not for the studies of graduation and cash transfer programs.

1 By rigor, we mean the attention to counterfactual and attribution in measuring impact. While RCTs have become popular in measuring impact and are often used as the benchmark for rigor, other approaches for achieving reliable impact estimates are also receiving increased attention by practitioners.

One of the main limitations of this meta-analysis is that we compare the impacts and costs of different approaches under different settings with often very diverse target populations. The influence of these contextual and sample differences on the conclusions cannot be fully accounted for in the cost-effectiveness comparison. Therefore, studies that compare these approaches in the same setting are more reliable. More recently, a few RCT studies have endeavored to perform such direct comparisons. Sedlmayr, Shah, and Sulaiman (2017) compare the graduation approach with a similar-sized unconditional cash transfer in Uganda. This study finds that the graduation approach has a larger effect on consumption compared to cash transfers two years after the end of the interventions. A similar comparison by Chowdhury et al. (2017) in South Sudan shows that both cash transfer and graduation programs increase household consumption but that the graduation approach has a longer-term effect on assets. Shapiro (2017) also conducted a direct comparison in Kenya, where he finds no significant difference in the impact of cash and livestock transfers on assets and consumption. Cash transfers do have a greater impact on the recipients' sense of autonomy and self-respect. However, unlike the other two studies that measure effects two years after the transfers, this study measured these effects six months after. Sedlmayr, Shah, and Sulaiman's (2017) study also included a third variation that includes "soft training" with the cash transfer and finds positive changes on a number of outcomes from this add-on component. Hassan, Mutiso, and Sulaiman (2018) find that lumping two months' unconditional cash transfers together and labeling them as an income-generation activity grant can increase the likelihood of the recipient owning a microenterprise (and generating income) compared to a conventional monthly unconditional cash transfer six months after the transfers.

Based on the findings from the meta-analysis and the direct comparison results, we conclude that the graduation approach has the most robust evidence of having a sustainable impact on the extreme poor and that cash transfers are most impactful in the short run. While cash transfers are attractive because of their simplicity, ease of scale-up, and agency-enhancing element, there is potential to make greater use of these transfers by building microenterprise development into this approach. Livelihood approaches have diverse entry points but generally bypass the extreme poor. Policy makers need to find ways to make these programs more inclusive and effective for the extreme poor.

Data and Methodology

Inclusion Criteria

For the meta-analysis of cost-effectiveness, the study used annual household consumption gain as a proportion of total program cost as the main indicator. For impact, we used indicators that measure poverty reduction across different contexts but do not require imputing values. Therefore, we used the programs' effect on consumption (and income where consumption measures were not available). Although this is a restrictive definition of impact for many of the programs (which may have an impact on other indicators such as assets or food security as well), it has the advantage of comparability over more comprehensive cost-benefit analyses, which require a wide range of assumptions in measuring benefits. Given the diversities in the types of livelihood interventions and the lower quality of evidence on impacts for livelihood programs compared to unconditional lump-sum grants and graduation programs, we adopted different strategies for screening these three types of programs. For livelihood programs, we used existing systematic reviews to identify papers that had been prescreened for quality; we performed a primary screening for evaluations of lump-sum cash grants; and we took the seven graduation cases from two papers, Banerjee et al. 2015 and Bandiera et al. 2013.

The filtering and data compilation process used for the livelihood programs is as follows:

Step 1: Identify initial case sources

We used five systematic reviews that are focused on the promotion of food security and agricultural sector development through technical and business training for farmers. The references are Bodnár and Piters (2011), Nankhuni and Paniagua (2013), Masset et al. (2011), IEG (2011), and Phillips, Waddington, and White (2014). The Bodnár and Piters study, for the Dutch Policy and Operations Evaluation Department (IOB), shortlists 38 studies of interventions in agricultural production, value chains, market regulations, and land security. The Nankhuni and Paniagua review, for the International Finance Corporation, examines papers evaluating farmers' training interventions published between 2009 and 2012. Although this review also focused on financial access initiatives, those were not considered in our review. Masset et al. (2011) review agricultural interventions targeting nutritional outcomes. The review by the Independent Evaluation Group (IEG) at the World Bank contains the longest list, of 85 studies with links to agriculture. Finally, Phillips, Waddington, and White (2014) provide a meta-analysis of the role of targeting in reducing poverty through farmer field schools. Screening from these reviews gave us 198 studies evaluating 182 programs (we refer to all the case studies covered in our comparative analysis as "cases").

Step 2: Screen program evaluations

We excluded 63 evaluations because the interventions did not involve working directly with households (focusing instead on macroeconomic policy reforms, trade reforms, etc.). We excluded 22 evaluations of microcredit interventions. Credit is often a component of livelihood programs, but we excluded purely microcredit evaluations because of our focus on comparing the cost-effectiveness of programs that can reach the extreme poor. There is ample evidence of microcredit not reaching the extreme poor, and the impacts are much more limited (see, for example, Banerjee, Karlan, and Zinman 2015). We assessed whether a program was reaching the extreme poor by using the descriptive statistics of the profile of the beneficiaries relative to the general population of the country (or community, if available).[2]

Step 3: Screen for impact and cost information

To meet our objective of conducting a simple impact-cost analysis, we looked for information that would allow us to estimate annual consumption or income gain and the intervention's cost per household. If such information was not available in the cited report, we extended our search for other evaluations or reports of the same program. For 18 cases, we collected cost information from various web resources containing program budgets and outreach information. We dropped 56 programs for which impact estimates of either consumption or income were not available (9 cases), cost data could not be obtained (12 cases), or both (35 cases). In addition, 7 cases were dropped for other reasons, such as impact estimates using aggregate data or only trend analysis without any comparison group.[3]

We conducted a primary search to identify cash transfer programs that involve unconditional lump-sum grants. Although there are several good reviews of conditional cash transfers (typically involving small regular payments with the condition or expectation that households will meet certain goals such as school attendance and immunizations), these were

2 See Annex 2 of Sulaiman (2016) for a case-by-case assessment of programs' targeting.

3 Annex 3 in Sulaiman (2016) details the excluded cases and a brief explanation of each.

not included in this review given our focus on investment and livelihood development.[4] We used the projects listed on the Abdul Latif Jameel Poverty Action Lab (J-PAL), Innovations for Poverty Action (IPA), and International Initiative for Impact Evaluation (3ie) sites to identify these cases. During this search, we screened 23 studies that met the criteria specified in step 2 above, of which 15 met the screening criteria of step 3. However, only 11 of these studies are considered unconditional lump-sum cash grants, while 4 are included as livelihood cases, as they are more similar to livelihood programs than unconditional cash grants. A case was included beyond this search because of its importance as a predecessor of graduation model (case 20).

Through this screening process, we identified 39 livelihood and 11 cash transfer cases. However, 9 of the livelihood cases could not be included in the meta-analysis due to these studies' not reporting the statistical significance of the impacts. After dropping these cases, we finally included 30 livelihood, 7 graduation, and 11 cash transfer cases in our comparative analysis. Table 8.A.1 in the appendix lists the livelihood and cash transfer cases by case location and source for selection.

Conversion of Impact and Costs to Comparable Metrics

Even within the limited scope of measured impact on consumption and income, there are important differences in the variable construction in the selected studies—for instance, using log value instead of monetary units, or per capita versus household-level measures. We converted all these different measures into annual household-level impact in US dollars, using the commercial exchange rate for the respective years. It is to be noted that the use of commercial or purchasing power parity does not affect the comparison of impact-cost ratios because both use the same denominator. Comparing only the costs or impacts across the cases obviously is influenced by the choice of exchange rate. We used the exchange rate because it is the amount needed as investment in the interventions. If a program evaluation included both income and consumption, we preferred the consumption measure, as consumption tends to be more accurate and comprehensive (including transfers and home production, for example). For livelihood cases, we used impact on household consumption (13 cases), total household income (8 cases), and income from the specific activity supported by the respective interventions (9 cases). For lump-sum cash transfer cases, the distribution was four, one, and six, respectively. We used consumption for all the graduation cases. Because the studies also differ in the ways consumption or income variables are constructed, depending on the survey tools, the values are not strictly comparable. Since this chapter uses the estimates reported in studies, though, it was not possible to create a comparable variable without accessing the primary data for each study. While this limitation introduces measurement error, the comparisons are valid if the studies are not systematically different with regard to the aggregate consumption and income calculations across the three types.

For costs, we use the same exchange rates used in converting impacts. Per beneficiary cost was measured by dividing the total implementation budget by the number of direct beneficiaries (14 cases) where per household cost estimates were not reported in the evaluations.[5] We used these two variables to measure the ratio of impact to every dollar spent as our benchmark indicator of cost-effectiveness. For the standard errors (or *t*-statistic/*p*-value) of the impacts, we used the same factors as those used to rescale the standard errors of the respective impact estimates.

4 There are also new evaluations that assess the impact of conditional cash transfers on livelihood outcomes (for example, Mochiah, Osei, and Osei-Akot 2014). We did not include such cases in our review because livelihood development is a secondary objective for these programs and the continuity of cash transfers in conditional cash transfer programs makes cost comparison difficult.

5 There is a key difference between the cash and livelihood programs in terms of cost estimation. For all the cash transfer cases, cost is measured as the amount of grant funding that is provided to the beneficiary, without including any operational cost. In our comparative analysis, we impute a 10 percent operational cost, which is discussed in the subsequent section.

Description of the Interventions

Graduation Approach

Small cash transfers, capital transfers, skill development, and financial services are carefully sequenced in the graduation approach to make sustainable improvements in the livelihoods of the extreme poor. The first graduation program was initiated by BRAC in Bangladesh in 2002 and reached more than a million households by 2018. Motivated by the initial success of the model, CGAP and the Ford Foundation launched a major initiative to pilot the model at 10 sites between 2006 and 2014 to learn how well it could be adapted outside Bangladesh. The CGAP–Ford Foundation Graduation Pilots were mostly delivered over 18–24 months per household, following a local market assessment to identify potential livelihood activities that extremely poor households could engage in. Beneficiaries were selected through a rigorous targeting process to identify the poorest: generally, a participatory wealth ranking in which the community identified the poorest households, along with a proxy means test to reduce inclusion error. The intervention started with cash stipends to support subsistence while beneficiaries developed new livelihoods. Through a consultative process with the household members, appropriate enterprises were determined for each household. Following initial training on the selected enterprise, the assets required to start the livelihood activity were transferred. The assets or enterprises were primarily livestock and small nonfarm businesses. This asset transfer was followed by regular coaching to provide technical assistance on enterprise management as well as to assist beneficiary households in coping with shocks and various social pressures. Depending on the site, beneficiaries were provided with bank accounts as a secure place to save their income, or neighboring beneficiaries were mobilized as a savings group. In some cases, a component of mobilizing community elites was added to create a more supporting environment for the extreme poor.[6]

RCT results for the graduation approach conducted in six countries demonstrate significant positive impacts on employment, income, and welfare.[7] While there are some variations in the magnitudes of the impacts across the sites, the pooled estimates demonstrate substantially large impacts on a range of livelihood outcomes (Banerjee et al. 2015). Among the economic indicators, the program increased per capita consumption by 0.12 standard deviations (or 5.8 percent) compared to the control group, household income by 0.38 standard deviations, assets by 0.26 standard deviations, time spent in earning activities by 0.10 standard deviations, food security by 0.11 standard deviations, and financial inclusion by 0.21 standard deviations. Most of these impacts were sustained (or even increased) a year after the households completed the program. There were also positive impacts, although relatively less strong, on health status, political involvement, and women's empowerment. A different RCT, conducted by Bandiera et al. (2013), of the program implemented at a much larger scale by BRAC in Bangladesh also finds similar positive impacts on employment, income, assets, and consumption. Two studies looked at the sustainability of the effects at seven years (four years after the end of interventions) in Bangladesh (Bandiera et al. 2017) and in West Bengal (Banerjee et al. 2016). Both studies find that these longer-term impacts are greater than the short-term effects.

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

7 There are two randomized evaluations of graduation programs not included here: one, in India, of Swayam Krishi Sangam's (SKS's) program, does not have sufficiently comparable data, and the results from a pilot in Yemen are not available yet.

Lump-Sum Cash Transfers

More recently, there has been growing interest in the adoption of unconditional cash transfers as a social protection tool. The relative simplicity of lump-sum cash grants and the potential for mobile money to facilitate scaled delivery at a low operational cost are the key attractive features of these unconditional lump-sum cash transfers. An RCT of GiveDirectly in Kenya showed positive impacts from cash transfers averaging $513 on consumption, assets, and food security. Haushofer and Shapiro (2013 and 2016) followed up after 4.3 months of transfers, on average, to measure the short-term effects. A three-year follow-up study of this experiment by Haushofer and Shapiro (2018) finds that the sustainability of the effects depends on the measurement approach, and the conservative estimates do not show long-term effects on consumption.

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

Because most of the cash transfer cases were research initiatives, several of them compare the impacts of different intervention models. The variations are cash versus in-kind transfer (cases C4, C5, and C11 in Table 8.A.1), credit versus grant (cases C1 and C7), and grants that are conditional on training or a business proposal (cases C7 and C9). For all these cases with multiple intervention arms, we focus on the particular treatment group receiving a cash grant with relatively thin or no other supports, with the objective of assessing the impact of unconditional lump-sum cash grants.

Livelihood Development Programs

Livelihood development programs, which have a much longer history in poverty reduction strategies, cover a wide variety of specific interventions. Common interventions for these programs in rural contexts include training and technical assistance promoting new farming technologies, organizing farmer groups to encourage collective action, and creating linkages in agricultural supply chains. These interventions are sometimes combined with cash grants or in-kind (usually seed and fertilizer) support and access to financial services. Community infrastructure creation, such as small irrigation schemes, and land security in terms of land titles also fall within the scope of livelihood development programs. These programs typically use combinations of these interventions.

We identified 11 groups of interventions carried out by the livelihood programs included in the meta-analysis (Figure 8.1). Training is the most common element of these livelihood programs. More than 60 percent of the livelihood programs offered some sort of training related to income-generating activities. It is also important to note that there is significant diversity in the content and modalities of the training interventions. Examples of training include teaching a new technology at farmer field schools, visits to demonstration plots, natural resource management in participatory action research, classroom training on microenterprise development, and management of group enterprises. Some of the training

sessions on technology focused on general productivity-enhancing techniques and a few were specific to a new crop variety.

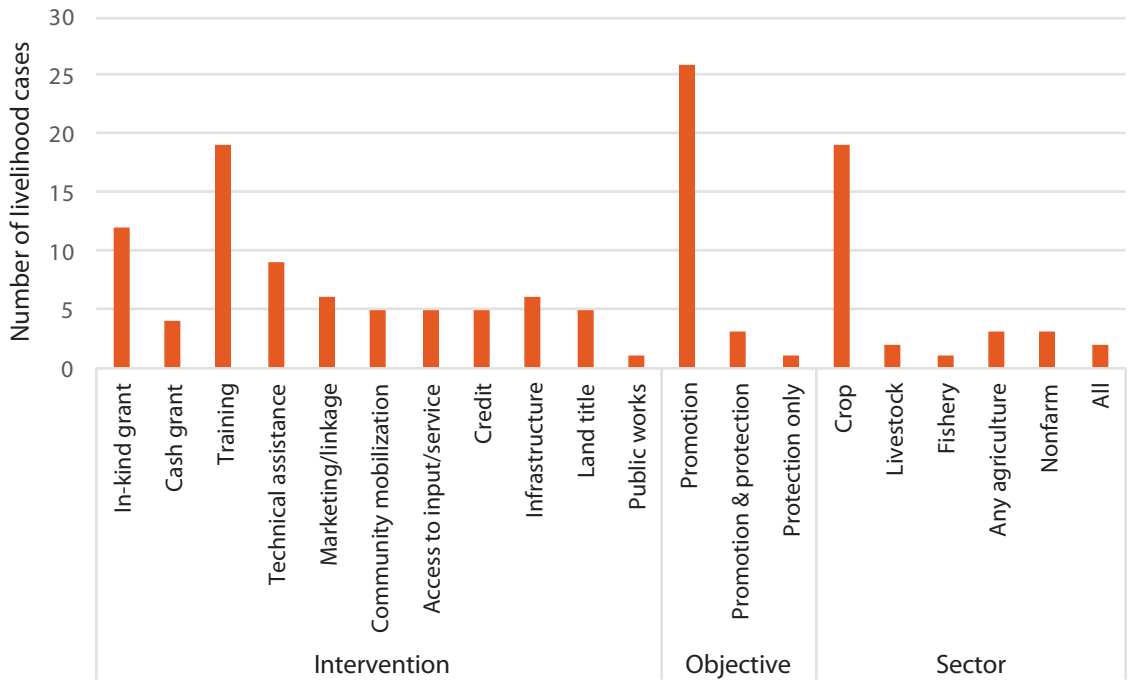
The second most frequent intervention is in-kind transfers, with 40 percent of the livelihood cases involving these transfers. About half of the transfers were "crop packs" composed of seed and fertilizer. The value of these crop packs varied substantially across the cases: the Zimbabwean Agricultural Recovery Program transferred crop packs valued at $20 to $40 in different years (case L8 in Table 8.A.1), an input subsidy program in Mozambique charged farmers $32 for a pack worth $117 (case L24), and the Millennium Development Authority's (MiDA) program for farmers in Ghana transferred a "starter pack" worth $230 (case L1). These crops packs are typically combined with training to promote a new technology—for example, MiDA provided 29 hours of training on new technology to farmer groups through nine weekly modules followed by a starter pack of seed and fertilizer (case L1). Other in-kind transfers related to agriculture include tools and livestock, and on rare occasions land. Only one case in our review, the Micro-Entrepreneurship Support Program (case L28) in Chile, provided in-kind transfers for nonfarm businesses. The assets transferred in this program were equipment and inventory.

Cash transfers are usually executed in livelihood cases that focus on nonfarm enterprise development. Four of our selected livelihood programs included cash grants. Among the other common interventions, creating market linkages or value chain development was included in six livelihood programs. This intervention was primarily used as part of a package, and none of the programs actually enhanced market linkages on its own without any other intervention. Examples of value chain initiatives are promoting export of organic coffee in Uganda by Kawacom Uganda Limited (Sipi Coffee Promotion, case L5), support to potato growers in Ecuador (Plataformas, case L16), and support for export crops in Kenya (DrumNet, case L22). Kawacom connected small-scale coffee growers with the organic coffee market in Europe by providing support for attaining certification, regular price information, and advice on improving productivity. The Plataformas program created an alliance between farmers and agricultural service suppliers, nongovernmental organizations, and research institutes. With an objective of creating a direct linkage between potato farmers and high-value markets, avoiding traditional intermediaries, this program provided training on integrated pest management at farmer field schools and established a collective distribution chain. DrumNet provided a four-week orientation course on specific export crops (beans, baby corn, or passion fruit), in-kind loans for inputs, and marketing services (collection, export, etc.) meeting EurepGAP requirements. This particular program, however, was discontinued a year after the evaluation ended because the farmers failed to maintain quality requirements. Among the six programs with infrastructure development as an intervention, three cases featured irrigation projects. These irrigation interventions included building new irrigation canals, rehabilitating old canals, and constructing small-scale dams. These cases also included formation of water management committees at the community level. Five programs addressed issues of access to land and land titling. While all five programs were part of the national land reform agenda, two of them also transferred land to smallholder farmers and landless households.

The key aspect that emerges from this discussion of interventions is the diversity in these programs' composition, even within this limited scope of agribusiness and food security. A few of these programs are actually not very different from the graduation approach in their intervention composition. The key feature that makes the graduation approach distinct within this spectrum of livelihood programs is the comprehensiveness of the package, with sequencing of the interventions to build new livelihood opportunities for the extreme poor.

Although the livelihood programs (30 cases) vary substantially in their specific interventions, there is less diversity in their objectives or sectoral focus (Figure 8.1). All the selected livelihood cases have direct or indirect

FIGURE 8.1—DISTRIBUTION OF COMPARISON LIVELIHOOD PROGRAMS



Source: Sulaiman (2016).

links with the objective of increasing the income of beneficiary households. Considering the distinction between protection and promotion in safety nets, more than 80 percent of the cases (26 out of 30) are primarily driven by livelihood promotional objectives. The prominence of livelihood promotion in these cases is similar to that in both the graduation approach and cash transfers. Although the consumption and health supports have protective notions, the overwhelming objective of the graduation approach is livelihood promotion. Of the remaining livelihood cases, three programs deliberately combined elements of both protection and promotion, while only one case can be identified as having an exclusive focus on protection.

As noted earlier, the graduation approach has adopted a specific model within the spectrum of livelihood programming. Consequently, a few livelihood cases seem very similar to the graduation model. The Productive Safety Net Program (PSNP, case L4) in Ethiopia is one of the most comprehensive social protection programs in Africa south of the Sahara. This program includes a number of intervention components, including public works and direct support (cash and food transfers) as protection, and credit, training on new agricultural technology, and irrigation development to enhance the productivity of rural agriculture. In fact, the graduation experiment in Ethiopia was layered on a group of PSNP beneficiaries.[8] The International Food Policy Research Institute has performed several evaluations on various components of PSNP, and we consider the evaluation measuring the impact of direct transfers layered on public works (Gilligan, Hoddinott, and Taffesse 2009). Among the other examples of combining protection and promotion, the Income Generation for Vulnerable Group Development (IGVGD, case L20) in Bangladesh is in several ways a predecessor of the graduation approach. Although less comprehensive than PSNP, the IGVGD program also combined food transfers with skill development and access

8 The Ethiopian sample of the six-country study by Banerjee et al. (2015) compares the graduation model to the control group, which was regular PSNP beneficiaries, essentially showing the additional effect of layering graduation on PSNP.

to financial services in order to create a pathway out of extreme poverty. Development of the graduation approach has drawn from the lessons learned from the implementation shortfalls and limitations of the IGVGD program (Matin and Hulme 2003).

Targeting

Rigorous targeting through a comprehensive multistage process is one of the key features of the graduation approach. This focus on targeting is driven by the objective of reaching the extreme poor and the high cost of erroneous inclusion. Studies of unconditional lump-sum cash transfers are focused mostly on owners of micro- and small enterprises and do not primarily target the extreme poor. Similarly, the livelihood programs reviewed had less of a focus on targeting compared to graduation programs. Prioritization of targeting the extreme poor varied according to the objectives in these livelihood programs.

The Rural Business Program of the Millennium Challenge Corporation in Nicaragua is an example of a "typical" rural livelihood program (case L2). Organizing both farmers and nonfarmers into groups, this program offered technical advice on project development and matching investment grants. Targeting was not prioritized in this program, as it focused on individuals with relatively higher potential for success, and consequently the majority of the beneficiaries in this program were from the upper 50 percent of the rural income distribution (Carter, Tjernstrom, and Toledo 2011). The study also found that the impacts were more strongly visible among the less poor at midline and that the overall impacts become weaker one year after the midline. The need for targeting is also highlighted in many livelihood programs in the rhetoric of avoiding "elite capture" or programs ostensibly meant for the poor benefiting better-off households. There are also examples of livelihood programs generating more equitable impacts. In the evaluation of the Women's Income Generating Support (WINGS) program for the extreme poor in Uganda (case L21), Blattman et al. (2013) found an overall 33 percent increase in consumption, a more than 60 percent increase in labor hours, and a more than fourfold increase in savings. Although the program impacts were lower for the households at the lower end of the initial consumption distribution when measured in terms of absolute increase in consumption, the impacts were comparable in terms of percentage gains.

Since there is no common indicator available for these programs to measure targeting effectiveness, our assessment of the programs' focus on targeting is based on a qualitative review of their emphasis on reaching the poorest and/or descriptive statistics from the evaluation reports. Based on this assessment, three (27 percent) of the cash transfer and 10 (33 percent) of the livelihood programs were reaching the extreme poor.[9] The cash transfer evaluations targeting the extreme poor are Macours, Premand, and Vakis (2012) in Nicaragua (case C3), GiveDirectly by Haushofer and Shapiro (2013) in Kenya (GiveDirectly, case C6), and de Mel, McKenzie, and Woodruff (2014) in Sri Lanka (SIYB, case C10). The Nicaraguan cash transfer was an experiment layered on a conditional cash transfer program that used proxy means testing to determine eligibility. GiveDirectly used simple housing characteristics (whether the house had a thatch roof) to identify eligible households. The study by de Mel (2014) had two distinct samples: business owners earning less than $2 a day and women without a business who were interested in starting one.

Among the 10 livelihood cases targeting the extreme poor, very few had as substantial a focus on targeting as the graduation approach. The Ruti irrigation program (case L12) in Zimbabwe adopted a combination of geographical and household targeting, with the majority of the beneficiaries living on less than £1 per capita per day. This case also had a strong focus on targeting women farmers. A second example of reaching a specific

9 Although we define the extreme poor as those living on less than $1.25 a day at purchasing power parity, we could not apply this definition in categorizing the targeting of programs. Annex 2 in Sulaiman (2016) provides the details used for each program in our classification of targeting.

TABLE 8.1—TARGETING IN INCLUDED CASES

	Target extreme poor		All
	Yes	No	
Number of livelihood programs	**10**	**20**	**30**
Interventions focusing on crop(s)	4 (40%)	15 (75%)	19 (63%)
Intervention package includes in-kind grant	7 (70%)	5 (25%)	12 (40%)
Short-duration interventions [< 2 years]	8 (80%)	7 (35%)	15 (50%)
Program started before 2001	3 (30%)	8 (40%)	11 (37%)
Program started during 2001 to 2005	2 (20%)	8 (40%)	10 (33%)
Program started since 2006	5 (50%)	4 (20%)	9 (30%)
Per beneficiary cost of US$300 or more	8 (80%)	9 (45%)	17 (57%)
Number of cash transfer programs	**3**	**8**	**11**
Number of graduation programs	**7**	**0**	**7**

Source: Sulaiman (2016).

vulnerable group is a program in Liberia (case L29) that targeted young (under 30 years old) ex-combatants with very little education who were engaged in casual labor. The baseline survey for this program shows that the average monthly income of the beneficiaries was less than $50 per month. The importance of greater focus on targeting is also noted in the meta-analysis of the farmers' school model (Phillips, Waddington, and White 2014).

Table 8.1 provides a basic comparison of the livelihood programs by their emphasis on targeting the extreme poor. Programs targeting the extreme poor are less likely to focus on productivity improvement and increasing income through crop production. Since most crop-sector interventions require the household to own or have access to enough land to adopt the promoted new technology and the financial capacity to make the required investments, extremely poor households are less suited for such interventions. However, programs that offer in-kind grants are more likely to focus on targeting.

Programs targeting the extreme poor are more likely to be short-duration interventions (less than two years) compared to nontargeted ones. Interestingly, we observe targeting being more prominent in more recent programs. While 38 percent of the cases targeting the extreme poor launched their programs after 2006, only 20 percent of the other livelihood cases were started during this period. Although it is plausible that the recent evaluations focused more on targeted programs, creating this distribution, this pattern is encouraging in the context of the agenda of reducing extreme poverty. Finally, we find that livelihood programs targeting the extreme poor are likely to be more expensive (with a cost per beneficiary of more than $300) than nontargeted interventions. This difference in cost clearly shows the importance of considering the differences in target populations when interpreting results from our cost-effectiveness measures.

Comparing Costs

The costs reported here are in US dollars using the exchange rates prevailing at the time of program implementation. For half of the livelihood programs, the cost per beneficiary was calculated using the total program expenses and the number of direct beneficiary households. The other livelihood program evaluations reported costs per beneficiary. In cases where both figures are available, we used the per beneficiary costs reported in the evaluations.

The cost of cash transfer programs, in contrast, is the size of the cash grants made to the beneficiaries. Since most of the cash transfer interventions were executed as part of a research project, the operational costs are rarely discussed. Even if the actual transaction costs for making these grants could be obtained, they would not be comparable to regular development intervention costs. One of the key features of the GiveDirectly program is the very high cost-efficiency in selecting poor households (selection took place remotely using satellite imagery of roofing materials) and

transferring the grants via mobile money. GiveDirectly was able to do this with an average cost per households of 10 percent of the grant size. To make the "research" cash transfers better reflect the real-world costs of running programs, we increased the cost of other cash transfer projects by 10 percent of their average grant size. Although this provides a practical guideline, we recognize that the transaction costs in other contexts may not be the same as GiveDirectly's experience in Kenya. Nonetheless, it is a convenient estimate of the lower bound.[10]

With this key distinction regarding the inclusion of operational costs, the average cost of the cash transfer programs is much lower (at $232) than that of the livelihood programs ($779). As expected, the range in cost per beneficiary is much wider for livelihood programs—extending from a low of $2.36 a high of more than $3,700—compared to the cash transfer cases. The size of cash grants ranged between $84 and $480. The three least expensive livelihood programs were land certification (case L11) as part of economic reform in Vietnam, at $2.36; support for export crops in Kenya (case L22), at $12; and the Participatory Livestock Development Project (case L18) in Bangladesh, at $81. At the higher end, two livelihood programs spent more than $3,500 per beneficiary. These most expensive programs were Productive Business Services (case L13) in El Salvador and the Farmer Training and Development Project (case L15) in Honduras, at $3,721 and $3,655, respectively. Unsurprisingly, considering the comprehensive package of interventions, the average cost of the seven graduation initiatives is the highest ($1,147) among the three program types (Table 8.2).

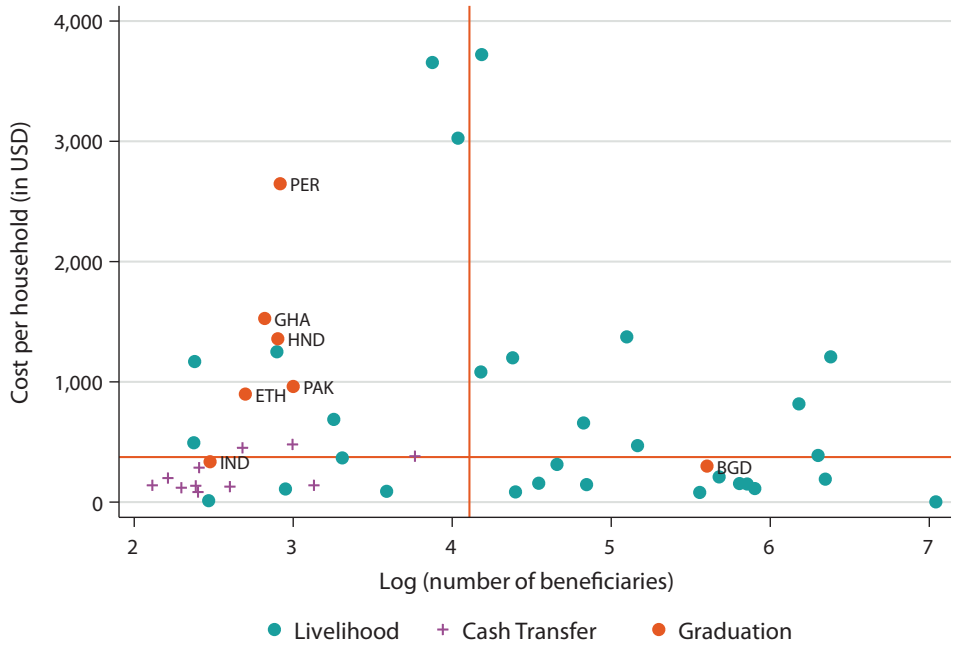
Figure 8.2 plots the cost and scale of all the cases. On the horizontal axis of the graph, the number of beneficiaries is presented in log scale. Therefore, a change from four to six represents a 100-fold increase in the number of beneficiaries. The red lines show median values for all the observations plotted. Given the larger number of livelihood programs in this pool

TABLE 8.2—AVERAGE COSTS OF PROGRAMS

Type of program	Average cost
Lump-sum cash transfers	$232
Livelihood programs	$779
Graduation programs	$1,147

Source: Sulaiman (2016).

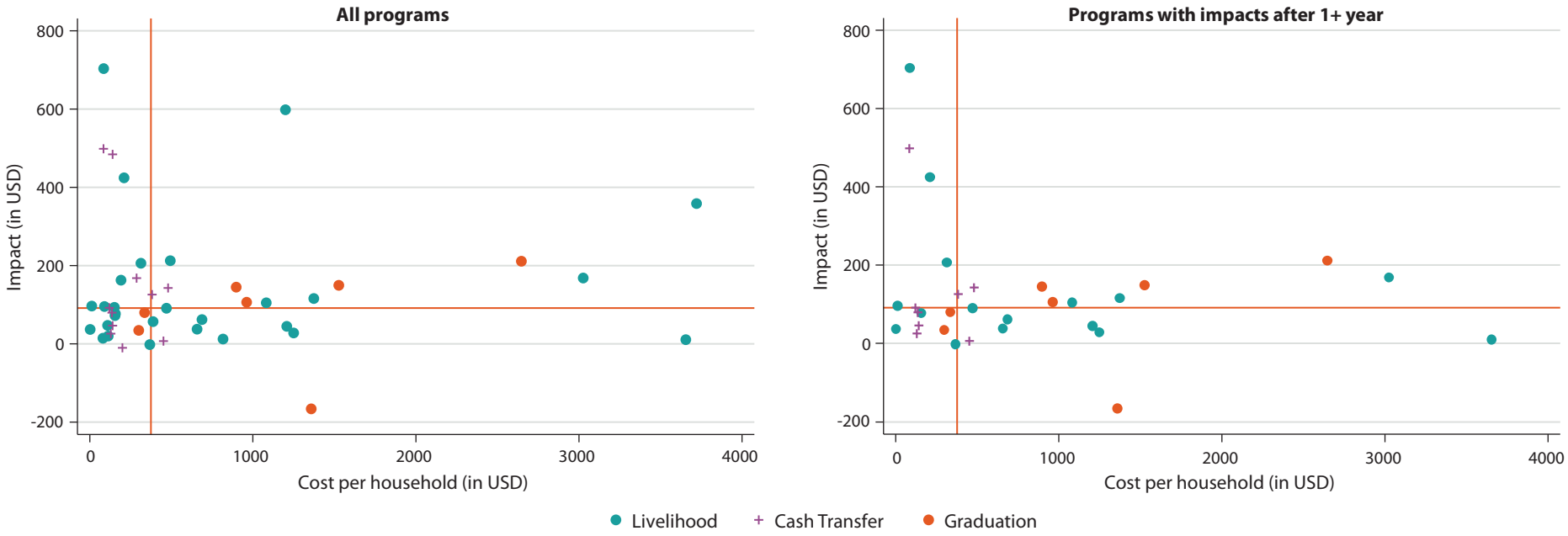
FIGURE 8.2—SCALE AND COST BY TYPE OF PROGRAM



Source: Sulaiman (2016).

10 Changing the overhead cost to 30 percent (which is a reasonable upper bound) does not change the order of cash transfers in the ranking by either cost or impact-cost ratio.

FIGURE 8.3—COST AND IMPACT BY PROGRAM TYPE



Source: Sulaiman (2016).

of cases, the median values divide these cases roughly into equal size. We see that most of the graduation cases had higher than median costs. Cash transfer cases, reflecting the nature of research projects, were implemented at relatively small scales. Many of the costlier livelihood programs were also implemented at quite large scales. Obviously, these cases had very large total program budgets.

Impact Evidence

As discussed in the methods section, we converted all the point estimates from the impact evaluations into annual gains in consumption or income. For programs with impact estimates available for both income and consumption, we used the consumption estimates, as these tend to be more reliable for poor households with irregular sources of income. Figure 8.3 plots these impact estimates and per beneficiary costs. There are two programs (both livelihood cases) with extremely large impact values, which we eliminated from the graphs to keep the scales within a meaningful range.[11]

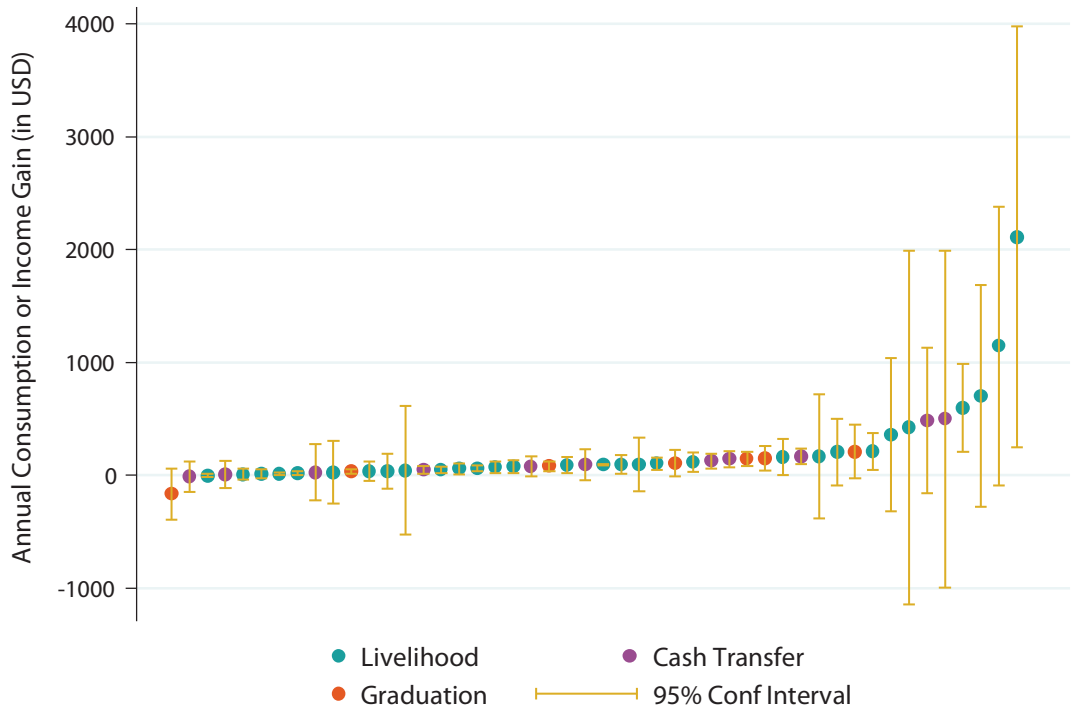
Somewhat surprisingly, there is no clear relationship between per beneficiary cost and impact. One would expect a higher investment per household to generally yield larger impact (Figure 8.3). Most of the cash transfer cases are located around the median impact value, except for a couple of studies showing very large impacts (over $400). Of the seven

11 The two cases are Kenya Dairy Development Project (case L17), with estimated impact of $2,112, and Ruti Irrigation Scheme (case L12) in Zimbabwe, with an impact estimate of $1,147. As we discuss below, both these estimates are also very imprecise, with a large standard error.

graduation initiatives, four had impact estimates above the median. Overall, this simple comparison of cost and impact does not reveal the superiority of any of our three groups of cases over the others. In the second plot, only those cases with impacts measured at least one year after the end of the intervention are shown. In this graph, graduation cases become predominant in the high cost–high impact quadrant.

Figure 8.4 shows the 95 percent confidence intervals for all the impact estimates in ascending order. As we can see, the cases with the eight largest impact estimates (six of which are livelihood programs, and two are cash transfers) had very large confidence intervals. In other words, we have very little confidence that these estimates are statistically different from no impact. The fact that all eight of the highest impact estimates also have starkly larger confidence intervals points to an underlying reporting bias problem driven partly by the tendency of small studies to generate large (but false) treatment effects. An assessment of "small study bias" in the included cases shows that there are signs of possible publication bias for the livelihood programs but not for the cash transfers or graduation.[12]

FIGURE 8.4—IMPACT ESTIMATES WITH CONFIDENCE INTERVAL



Source: Sulaiman (2016).

Meta-analysis of Cost-Effectiveness

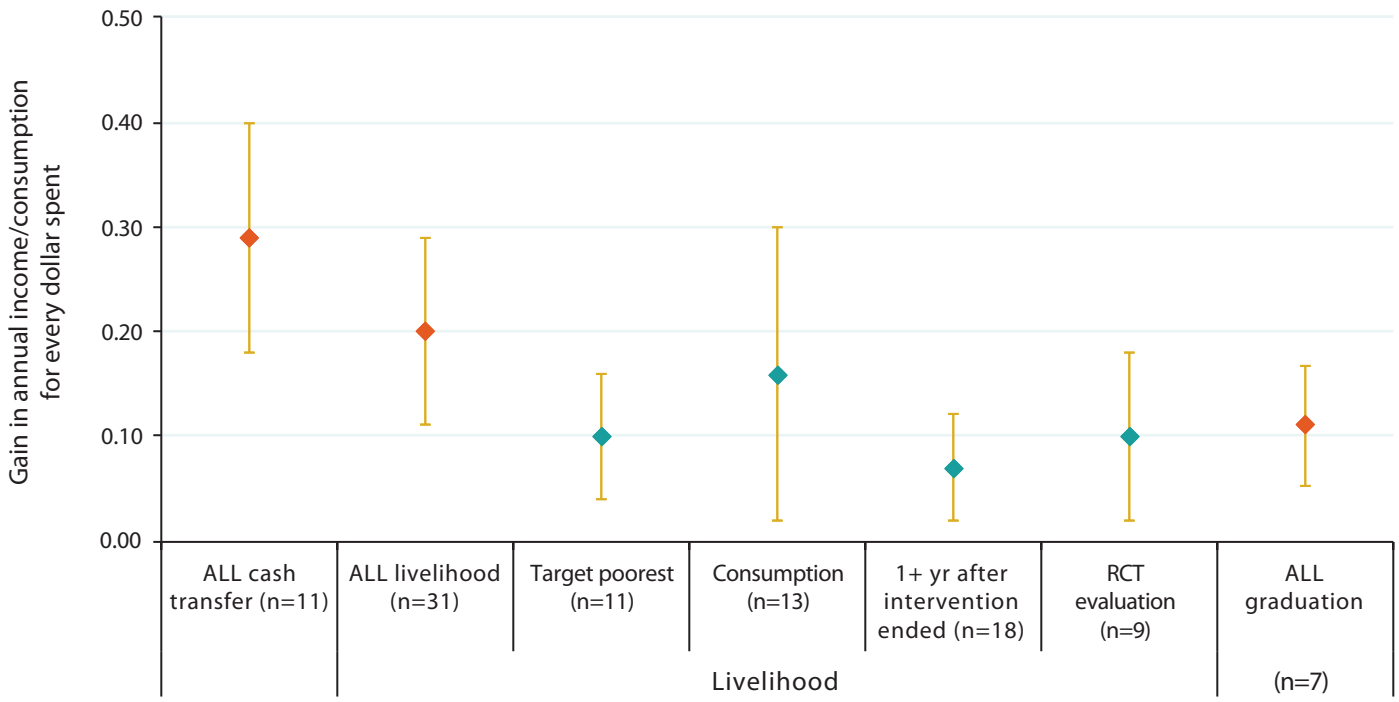
Figure 8.5 presents the overall meta-average of impact-cost ratios of the three groups of cases and the subgroups of livelihood cases. These ratios do not make any assumption of continuation of the impacts in the future to estimate net present values. Overall impact-cost ratios are 0.29 for cash transfer cases, 0.20 for livelihood cases, and 0.11 for graduation cases. However, when we restrict the comparison to livelihood cases that target the extreme poor or measure "long-term" effects, the graduation approach has similar impact-cost ratios. The 18 livelihood cases that measured impacts at least one year after the end of the intervention yield an average impact-cost ratio

12 See Annex 1 in Sulaiman (2016) for the specifics of this analysis of bias.

of 0.07, and the 11 programs that targeted the poorest have an average impact-cost ratio of 0.1. Both are not significantly different from the meta-average of graduation programs.

Looking at the five livelihood cases that targeted the extreme poor and measured long-term impacts, we obtain a meta-average impact-cost ratio of 0.09 (result not shown in Figure 8.5). However, this average is essentially reflective of two cases: WINGS (case L21) in Uganda and the Community Based Rural Land Development Project (case L26) in Malawi. In the meta-average, the WINGS case receives a 67 percent weight and the Malawi case a 31 percent weight. WINGS has strong similarities to the graduation approach, and this creates the challenge of having to compare individual cases in which the comparison, essentially, is of a graduation approach with an "almost graduation" approach.

FIGURE 8.5—COST-EFFECTIVENESS COMPARISON



Source: Sulaiman (2016).
Note: Standard errors are estimated separately for each set of studies in meta-regression. RCT refers to randomized control trial.

Similar challenges exist in performing a subset analysis of cash transfer cases. There are only two cash transfer cases that targeted the extreme poor and had long-term results. The transfer in Nicaragua (case C3) has an impact-cost ratio of 0.27 (significant at less than the 1 percent level) and the cash grant for business start-up by female entrepreneurs in Sri Lanka (case C10) has a ratio of 0.18 (not significant). The Nicaragua study by Macours, Premand, and Vakis (2012) shows that the impact on annual household income is about $40 ($30 from nonfarm businesses and $10 from livestock rearing), compared to the estimated annual household consumption gain of $142. Moreover, with a relatively small effect on productive assets (about $15), the long-term change in consumption expenditure appears unrealistically high.

An alternative way to reflect on sustainability is assessing how the impact estimates change for individual evaluations over time. While a few

of the livelihood and cash transfer cases in our review conducted impact assessments at different points in time, the graduation initiatives have strong evidence of the sustainability of the impacts. All six CGAP–Ford Foundation pilot initiatives have impacts measured both at the end of interventions and a year after. The graduation case in Bangladesh was evaluated at the end of the intervention and two years after.[13] Two graduation evaluations also measured the impact five years after the end of the intervention. These evaluations demonstrate that impact on economic indicators (including consumption) persists in the follow-up surveys. In Bangladesh, the results are more encouraging because the estimated impact on total consumption significantly increases between the end of the intervention and the long-term follow-ups. However, the livelihood and cash transfer cases show a reverse trend. There are four cases (two livelihood programs and two cash transfers) with impact estimates at multiple points in time. These show a declining trend between their respective midlines and endlines. The livelihood cases—the Rural Business Program in Nicaragua (case L2) and the Input Subsidy Program in Mozambique (case L24)—show a substantial decline in effect sizes. The cash grant experiment by de Mel, McKenzie, and Woodruff (2009) in Sri Lanka (case C4) found that the impacts were much higher in the four quarters immediately after transfers than a year later. Another experiment in Sri Lanka by de Mel, McKenzie, and Woodruff (2014) also showed that the initial improvements in business practices dissipated after two years (case C10). Based on this analysis, the graduation approach clearly has an advantage in terms of sustainability of impacts.

Similar within-case variations can be used for assessing the equitability of the impacts. Some of the evaluations measure heterogeneity of impact by the initial poverty status of the beneficiaries. The results are somewhat mixed for livelihood and cash transfer cases. For example, for the agroforestry program in Kenya (case L9), adoption of the promoted technology was similar between the poor and the nonpoor. However, Munro (2003) reports that asset-rich households were more likely to have benefited from the crop pack interventions under the Agricultural Recovery Program (case L8) in Zimbabwe. The cash transfer experiment by Fafchamps et al. (2011) showed no effect of capital transfers on extremely poor women (case C11). Quantile treatment effects of the graduation approach find large variations in the magnitude of the impacts, but all the groups in the sample showed an increase in consumption one to two years after the end of the interventions. These individual cases, in addition to the more recent studies discussed that compare different approaches in a single study setting, indicate the superiority of the graduation approach as a tool for sustainable economic development for the extreme poor over both livelihood programs and cash transfers. However, given the superiority of cash transfers in the short run, it is necessary to measure the sustainability of the impact to reach a firmer conclusion.

Our case screening was based on the availability of impact estimates for consumption or income. Although we have impact estimates for additional indicators from the graduation evaluations, most of the livelihood and cash transfer cases do not report these outcomes. Consequently, we cannot conduct a similar analysis of impacts on other livelihood outcomes based on these cases.

13 More recent evidence by Bandiera et al. (2017) shows that the impacts on consumption and assets could be even higher after seven years from baseline. However, this estimate uses the trends for the control group from baseline to the two follow-ups (two and four years after) to construct a seven-year counterfactual since the control group received treatment after the fourth year from baseline. Banerjee et al. (2016), however, provide a stronger case of longer-term impact in West Bengal in India.

Conclusion

With the objective of providing a comparative assessment of alternative approaches to making sustainable reductions in extreme poverty, this review compiled data from three types of social protection tools. We find that targeting the extreme poor is not a common feature of the livelihood and lump-sum cash transfer programs. Average delivery cost is the highest for graduation programs and the lowest for cash transfers, while livelihood programs have a large diversity in per beneficiary cost. In terms of impact, graduation programs are the most consistent in making significant positive impacts across sites and in the longer term, while livelihood programs and cash transfers generally lack evidence of sustainability of impact among the extreme poor.

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

For our outcome of interest, long-term impact on the extreme poor, both graduation and livelihood cases show a positive impact with similar impact-cost ratios. The livelihood programs meeting these criteria vary widely and include agricultural reforms, irrigation, a women's income-generation program, land redistribution, and ex-combatant reintegration. The breadth of these programs supports no clear policy recommendation for scaling programs. However, growing evidence from the direct comparison of graduation and lump-sum cash transfers indicates the greater cost-effectiveness of the graduation approach. Based on current evidence, lump-sum cash transfers have perhaps the most potential to reduce poverty, while the graduation approach has the largest and most consistent body of evidence to support its actual impact on extreme poverty.

Appendix

TABLE 8.A.1—LIVELIHOOD AND CASH TRANSFER PROGRAMS INCLUDED IN THE STUDY

Sl	Case title	Country	Case source
Livelihood cases			
L1	MiDA Farmer Based Organization (FBO) Training	Ghana	Nankhuni and Paniagua (2013)
L2	Rural Business Program	Nicaragua	Nankhuni and Paniagua (2013)
L3	National Agriculture Advisory Services (NAADS)	Uganda	Nankhuni and Paniagua (2013)
L4	Productive Safety Net Program (PSNP)	Ethiopia	Masset et al. (2011)
L5	Sipi organic coffee contract farming scheme	Uganda	Bodnár and Piters (2011)
L6	Farm Input Subsidy Program (FISP)	Malawi	Bodnár and Piters (2011)
L7	Comprehensive Agrarian Reform Program (CARP)	Philippines	Bodnár and Piters (2011)
L8	Agricultural Recovery Program (ARP)	Zimbabwe	Bodnár and Piters (2011)
L9	Agroforestry in Western Kenya	Kenya	Bodnár and Piters (2011)
L10	National Titling and Registration Program in Peru (PETT)	Peru	Bodnár and Piters (2011)
L11	Land-use certificate	Vietnam	IEG (2011)
L12	Ruti Irrigation Scheme	Zimbabwe	Nankhuni and Paniagua (2013)
L13	Productive Business Services (PBS)	El Salvador	Nankhuni and Paniagua (2013)
L14	Water to Market (WtM)	Armenia	Nankhuni and Paniagua (2013)
L15	Farmer Training and Development Project (FTDP)	Honduras	Nankhuni and Paniagua (2013)
L16	Plataformas	Ecuador	Nankhuni and Paniagua (2013)
L17	Kenya Dairy Development Project (KDDP)	Kenya	Masset et al. (2011)
L18	Participatory Livestock Development Project (PLDP)	Bangladesh	Masset et al. (2011)
L19	Farmer Field Schools in Cajamarca	Peru	Phillips, Waddington, and White (2014)
L20	Income Generation for Vulnerable Group Development (IGVGD)	Bangladesh	Author
L21	Women's Income Generating Support (WINGS)	Uganda	IPA

TABLE 8.A.1—LIVELIHOOD AND CASH TRANSFER PROGRAMS INCLUDED IN THE STUDY

Sl	Case title	Country	Case source
L22	DrumNet	Kenya	J-PAL (Theme: Agri)
L23	Development of Sustainable Aquaculture Project (DSAP)	Bangladesh	Masset et al. (2011)
L24	Input Subsidy Program	Mozambique	J-PAL (Theme: Agri)
L25	Land title reform by SOMALAC	Madagascar	IEG (2011)
L26	Community Based Rural Land Development Project	Malawi	IEG (2011)
L27	Peruvian Irrigation Subsector Project	Peru	IEG (2011)
L28	Micro-Entrepreneurship Support Program	Chile	J-PAL (Theme: Fin)
L29	Ex-combatant reintegration program	Liberia	IPA
L30	Agriculture Development (Fadama)	Nigeria	IEG (2011)
Cash transfer (unconditional lump-sum) cases			
C1	Self-selection into credit markets in Mali	Mali	J-PAL (Theme: Agri)
C2	Agricultural decisions after relaxing constraints	Ghana	J-PAL (Theme: Agri)
C3	Transfers, diversification, and household risk strategies	Nicaragua	J-PAL (Theme: Fin)
C4	Returns to capital in microenterprises	Sri Lanka	3ie
C5	Experimental Evidence on Returns to Capital and Access to Finance	Mexico	3ie
C6	Unconditional cash transfer	Kenya	IPA
C7	Stimulating Microenterprise Growth	Uganda	Author
C8	Youth opportunities program in northern Uganda	Uganda	J-PAL (Theme: Fin)
C9	Human and financial capital for microenterprise development	Tanzania	3ie
C10	Business training and female enterprise start-up	Sri Lanka	3ie
C11	Returns to capital in microenterprises	Ghana	IPA
Graduation cases			
G1	Graduation pilots in six countries	India, Pakistan, Ethiopia, Ghana, Peru, Honduras	Banerjee et al. (2015)
G2	Targeting Ultra-poor Program (TUP)	Bangladesh	Bandiera et al. (2013)

Source: Author.
Note: 3ie = International Initiative for Impact Evaluation; IPA = Innovation for Poverty Action; J-PAL = Abdul Latif Jameel Poverty Action Lab.

CHAPTER 9

Heterogeneity in Target Populations and Locations: Reflections on the Challenges for Poverty Targeting

Rachel Sabates-Wheeler

Despite long-held aspirations of increased productivity for small-scale agriculture in Africa south of the Sahara (Lipton 1977, 2009), productivity gains in many countries of the region have failed to materialize, especially for the rural poor (Jayne et al. 2003, Ellis 2010, 2012). Positive changes have been unevenly felt. These outcomes, together with significant population growth in the poorest regions, changes in climate, and limited opportunities for off-farm employment, mean that rural populations in Africa will continue to be substantial and will still need to sustain their living primarily from agriculture for the foreseeable future (Losch, Fréguin-Gresh, and White 2012). This situation is exacerbated by a lack of opportunities for economic diversification, limited options for employment outside agriculture and the informal sector, and widespread poverty (whereby median incomes are estimated to range between US$0.50 and US$2.00 in purchasing power parity per person per day) (Losch, Fréguin-Gresh, and White 2012).

Over the past 15 years a response to this precarious situation has been to increase the coverage of social protection, not only as a way of protecting lives but also as a means of risk insurance and livelihood promotion. The extent of need as well as the limited budgets available for funding these programs means that, depending on the objective, program implementers need to decide on how to target the available resources, and to whom. If there is a reason to believe that poverty correlates with the age profile or dependency profile of a household, then program implementers might choose to target elderly people or households with a greater number of children. However, in the context of widespread poverty, many programs prefer to provide general transfers to the poorest households or those most in need.

Nevertheless, identifying the poorest and most vulnerable for selection into social programs is a perennial challenge facing program implementers and continues to be a source of lively debate in social protection design and delivery. In addition to tight budgets, other reasons for rationing (and therefore targeting) social programs include the desire to ensure that the most vulnerable are reached, to maximize the poverty-reducing impact of the program, and to attract or retain the support of key constituencies.[1] Poverty-targeted social transfers, mainly in the form of predictable and regular cash payments (but also in the form of food, assets, and vouchers) are the instrument of choice for many development partners and governments of lower-income countries for addressing predictable food insecurity and hunger (Grosh et al. 2008; Adato and Hoddinott 2010; Hulme, Hanlon, and Barrientos 2012). As reported by Honorati, Gentilini, and Yemtsov (2015), 130 low- and middle-income countries have at least one noncontributory unconditional cash transfer (UCT) program (including poverty-targeted transfers and old-age social pensions), with growth in program adoption especially high in Africa, where 40 countries out of 48 in the region now have a UCT, the number having doubled since 2010.

Despite the growing popularity of cash transfers, several studies have shown that the targeting mechanisms frequently used within these programs lead to substantial inefficiencies and can often be ineffective at enabling a program to deliver on its intended outcomes. Work by Ellis (2012) argues that in the context of deep and widespread poverty in rural Africa, poverty-targeted transfers can create significant social tensions between the "included" and the "excluded." Using a rather arbitrary targeting eligibility cutoff in the face of tight budgets and in a context in which everyone is poor calls into question the social acceptability, as well as the political attractiveness, of targeting.

There are additional reasons why poverty targeting might not deliver on the intended outcomes, even when errors of inclusion and exclusion are small, that relate to assumptions of homogeneity in heterogeneous target

1 See Devereux et al. (2017) for a full discussion of targeting rationale.

groups and misguided assumptions about the individualized use of cash transfers. This chapter aims to illustrate these challenges by drawing on in-depth knowledge of a limited number of recent and active social protection programs implemented in eastern Africa. Specifically, it focuses on three challenges inherent to poverty targeting that constrain the achievement of program objectives: (1) the difficulty of identifying the poorest from among the poor, particularly in a context in which a large proportion of households holds the view that "we are all poor here"; (2) heterogeneity in household characteristics within a target population that is assumed to be relatively homogeneous; and (3) provision of "individual/household" transfers in diverse social and cultural contexts.

The chapter is framed around these three challenges, illustrated by drawing upon four cases with which the author has substantial familiarity: the Productive Safety Net Program (PSNP) in Ethiopia; the Hunger Safety Net Program (HSNP) in Kenya; and the Vision 2020 Umurenge Program (VUP) and the Concern Worldwide Graduation Program, both in Rwanda.[2] These examples were chosen because they share commonalities in social protection provision. First, Ethiopia, Kenya, and Rwanda all have relatively well developed, nationally embedded social protection systems in place. Second, the programs reviewed are all targeted at poor households. Third, all include cash transfers as the primary intervention but are complemented by other support interventions such as training, public works, and financial services. Fourth, monitoring or evaluation studies have been undertaken for all these programs. Finally, the programs chosen are similar in design to other large-scale programs being implemented throughout eastern and southern Africa, and therefore lessons will be largely applicable and transferable. Drawing on these cases, we discuss the implications of the three challenges and conclude by offering suggestions for policy.

Targeting the Poor

The targeting challenge is how to accurately and cost-effectively identify and register households or individuals who are eligible to receive resource transfers, thereby screening out those who are defined as ineligible. Of course, the corollary of this challenge is to successfully deliver the social resource to the eligible households. Targeting is frequently an expensive and time-consuming activity, and typically trade-offs need to be made between targeting accuracy and targeting costs. Suboptimal targeting can result in large inclusion errors (whereby noneligible people are included) and exclusion errors (whereby eligible people are excluded), which represent a significant waste of scarce resources (often public) and may undermine the program's effectiveness and longer-term political support.[3]

The term *poverty* in *poverty targeting* defines the intended eligible population. The obvious challenge when poverty defines the target group is how to measure poverty and where the threshold for eligibility will be drawn (that is, what separates the poor from the nonpoor, or the ultra poor from the poor). The poverty-targeting approach requires selection criteria that successfully identify those most in need of the limited resources that governments may make available for social cash transfers. This requirement usually means that poverty-targeted transfers rely on proxy indicators of need to accomplish beneficiary selection.

In a context of high administrative capacity and data availability, verified means testing using accurate personal income data (usually from administrative and occupation-based records) would be the obvious way to target the households and people who are most in need, and this is precisely the method used in many higher-income countries. This type of testing is not often used in low- and middle-income countries due to its high demand

2 The latter is the only one of these programs implemented by a nongovernmental organization. The others are nationally owned and supported programs.

3 The need to target social transfers (as opposed to providing universal coverage) is typically justified in the context of tight budget parameters and limited political appetite for large-scale spending on long-term support for the poorest.

for data and for the administrative capacity to verify the data (Coady, Grosh, and Hoddinott 2004). Furthermore, accurate means testing of semi-subsistence rural households or households making a living in large, unregulated informal sectors is an impossibility. Therefore, other targeting mechanisms are frequently employed, such as the following:[4]

- *Categorical targeting* identifies specific demographic groups who display a higher level of poverty or risk of vulnerability. These include specific groups of children, elderly people, or people living with disabilities. Categorical targeting is a popular method, particularly in combination with other methods, such as community validation.
- *Geographic targeting* targets locations with high levels of poverty and vulnerability for support. It is a relatively straightforward method with low administrative costs but often goes hand in hand with high targeting errors.
- *Proxy means tests* (PMTs) use multiple indicators to identify the poor and vulnerable. Typically, a PMT collects data on observable characteristics of an individual or household to obtain a score that proxies the resources available at the household level. Commonly included indicators are housing materials, ownership of durable goods, and the educational attainment of household members. This method is considered to be more accurate than geographic or categorical targeting, but it is more demanding in terms of data and administrative capacity.
- *Self-selection* (for instance, for the labor requirement in public works programs) relies on the program design to ensure that only the most vulnerable and those in need benefit from the program. It does so by offering low transfer levels or making it difficult to obtain transfers. Although it is considered effective, there may be considerable social and psychosocial costs associated with self-targeting (White 2017).
- *Community-based targeting* (CBT) delegates beneficiary identification and selection to community members, often a group of community representatives or elders who use their local knowledge to inform decisions about who is to benefit from the cash transfers. Because most of these community mechanisms work on a voluntary basis, administrative costs are low. Results are mixed in terms of accuracy, and the potential for incurring social costs is relatively high.

Overall, the empirical evidence confirms that targeting does benefit the poor. In a review of benefit incidence of more than 100 programs, Coady, Grosh, and Hoddinott found that targeted programs provide "approximately 25 percent more resources to the poor than would random allocations" (2004, 2). However, they also found that the way targeting is conducted matters for both the effectiveness and the efficiency of outcomes. Coady, Grosh, and Hoddinott (2004) found that when ranked in terms of their ability to reach the poor, targeting mechanisms performed differently. Self-targeting on public works was the most accurate in terms of identifying the poor, followed by geographic targeting and means testing. After these, proxy means testing, CBT, and categorical targeting achieved small pro-poor benefits. Categorical targeting of older people performed worst. In the years since their study, many more poverty-targeted programs have been implemented and some evaluated. The next section reviews some more recent evidence that corroborates the work of Coady, Grosh, and Hoddinott (2004).[5]

4 The description of targeting mechanisms and methods draws on Sabates-Wheeler, Hurrell, and Devereux (2015), Coady, Grosh, and Hoddinott (2004), and Devereux et al. (2017).

5 It also includes a short review on the findings on mechanisms in Devereux et al. (2017).

The Challenges of Identifying the Poorest from among the Poor

Given the need to target and the range of mechanisms available, why is it that targeting the poorest of the poor is such a difficult, and sometimes elusive, goal? As convincingly demonstrated by Ellis (2012) in his review of the implications of poverty-targeted cash transfers for social, economic, and political difference in rural Malawi, Zambia, and Ethiopia, the process of differentiating the target group of the poorest from other, almost as poor, households is an incredibly difficult, at times impossible, task. In many rural contexts, particularly in Africa south of the Sahara, the income and consumption distribution of poor households is so flat that the task of deciding the cutoff threshold for program eligibility means that targeting can be both socially and politically divisive. Consider that a cash transfer targeted to the poorest 5–10 percent of a community might well have poverty-reducing impacts for them and change their poverty status (that is, their place in the local income distribution) relative to the less poor households comprising the 10th to 20th percentiles of the income distribution. Ellis (2012) discusses the likely resentment from poor but noneligible households in these situations.

Empirical work by Sabates-Wheeler, Yates, Wylde and Gatsinzi (2015) on poverty targeting in Rwanda shows that, even putting social and political tensions aside, the measurement and identification of proxy indicators that correlate with extreme poverty is technically no small feat. The VUP began in 2008 and builds on the same basic design as Ethiopia's PSNP. The VUP aims to reduce extreme poverty in Rwanda through providing regular and predictable cash transfers, either as payment for short-term public work or through unconditional transfers to labor-constrained households. It also offers financial assistance, via low-interest loans to program beneficiaries, for investing in productive enterprises. Households eligible for the VUP must be extremely poor.

In the first few years of the VUP, cash transfers were targeted using a traditional community poverty mapping process, known as *Ubudehe*. As a concept, *Ubudehe* has its roots in the traditional practice of working together to solve problems. As a social categorization process, it first took place in 2001. Communities categorize themselves into one of six well-being groups and use this analysis to discuss local development priorities. Although the categorization got off to a promising start in the early days, with high levels of participation, over time the process has become increasingly administrative. Villages no longer produce social maps; rather, data collected by the *Ubudehe* committee is entered manually into a table and processed by computer. Moreover, research findings from a study supported by the Rwandan Civil Society Platform (Sentama 2013) found that of 250 households interviewed, 83.6 percent stated that they were very dissatisfied with the category in which they had been placed. Only 6 percent indicated that they were satisfied or very satisfied with their categorization.

A quantitative analysis verified the unsatisfactory targeting results by correlating consumption poverty and *Ubudehe* status (Sabates-Wheeler, Yates, Wylde and Gatsinzi 2015). It showed that the richest quintile was equally as likely to be allocated the lowest *Ubudehe* status as the poorest (indeed, the likelihood was fairly consistent across all consumption quintiles). The analysis suggested that 62 percent of the extreme poor would be excluded from the national poverty-targeted cash transfer program—the VUP—because they were not in the lowest *Ubudehe* categories.

Due to the increasingly nontransparent process whereby households were being placed into *Ubudehe* categories, along with the heightened incentive for households to belong to a lower category (because of the number of social benefits attached to categories 1 and 2), the government of Rwanda decided, in 2014/2015, to introduce "objective" indicators as a complement to the community approach at the village level. A first step in this direction was to correlate a range of objective poverty indicators, such as housing quality, electricity access, type of latrine, level of education, livestock ownership,

TABLE 9.1—LIGHTING SOURCE AND TOILET TYPE BY CONSUMPTION QUINTILE, PERCENTAGE OF RURAL HOUSEHOLDS, RWANDA

Quintile	Asset				
	Electricity	Oil lamp	Battery	Pit latrine (improved)	Flush toilet
Lowest	2	10	21	23	1
Second	1	13	23	20	6
Third	6	18	22	23	6
Fourth	15	27	22	23	10
Highest	76	32	12	11	77
Total	100	100	100	100	100

Source: Sabates-Wheeler, Yates, Wylde, and Gatsinzi (2015).

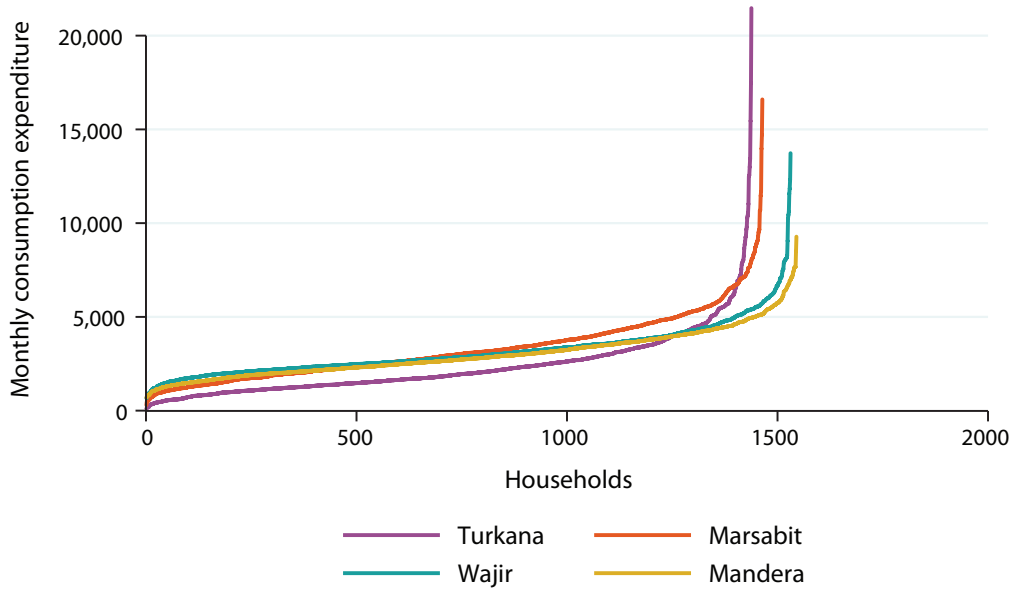
and so on, with consumption poverty. The findings demonstrated that the variables, on their own, are not strong predictors of poverty. For instance, Table 9.1 shows that although electricity use for lighting or flush toilet ownership is helpful for identifying the richest, these variables do not allow for differentiation among the poor because there is insufficient variation across quintiles to be useful.

The indicators shown in the table either only separate the richest quintile from the rest or are too evenly distributed across quintiles to be relevant. Unfortunately, there are simply no easily identifiable variables (or combinations of variables) that can clearly and accurately distinguish the poorest from those who are better off. Even the construction of simple asset indexes was unable to help with poverty targeting because so many poor households were scored identically. A frequently overlooked reason for this difficulty is the fact that poverty is so widespread among the population, with very little variation in poverty levels at the lower end of the distribution, that any "simple" form of targeting, amid high levels of rationing, is bound to lead to large errors of inclusion and exclusion.

A similar poverty profile threw up comparable challenges for targeting the poorest in northern Kenya's HSNP, a UCT program (Merttens et al. 2013; Merttens et al. 2017b). Launched in 2009, the HSNP aims to reduce extreme poverty by delivering regular cash transfers to some 300,000 poor and vulnerable individuals in four districts—Mandera, Marsabit, Turkana, and Wajir. Targeting in this context presents considerable challenges, not just logistical but also in terms of defining an appropriate and identifiable target population: appropriate in terms of being consistent with the program's objective to reduce extreme poverty and identifiable in terms of exhibiting specific observable and verifiable characteristics.

Impact evaluations and targeting effectiveness evaluations by Sabates-Wheeler, Hurrell, and Devereux (2015), Silva-Leander and Merttens (2016), and Merttens et al. (2017a, 2017b) showed that the extent and uniformity of poverty in areas targeted by the HSNP (Figure 9.1) makes it very

FIGURE 9.1—DISTRIBUTION OF HSNP DISTRICTS' POPULATION BY CONSUMPTION, KENYA



Source: HSNP2 Impact evaluation survey 2016.

difficult for the program to accurately identify the poorest households. The overall finding was that HSNP Phase 1 targeting was mildly pro-poor on aggregate, with HSNP beneficiaries 13 percentage points more likely to fall into the bottom 51 percent of the consumption distribution (the program coverage rate in evaluation areas). Exclusion and inclusion errors in the HSNP were found to be very high in both Phase 1 and Phase 2—roughly similar to what would have been achieved under a random targeting rule—and targeted beneficiaries were not considerably worse off than nonbeneficiaries in terms of monetary poverty (Silva-Leander and Merttens 2016).

During the first phase of the HSNP program (2010–2014), three different poverty-targeting methods were trialed to determine which would be most effective in identifying the poorest households. Two of the mechanisms were variants on categorical targeting (the dependency ratio and the presence of older persons), and the third was CBT. An analysis of the relative accuracy and effectiveness of these three mechanisms by Sabates-Wheeler, Hurrell, and Devereux (2015) showed that in terms of the comparative accuracy of the indicators as proxies for poverty, CBT came out as performing the best. Furthermore, CBT was more likely to be perceived as a fair process by households and communities. Old-age targeting was the least effective of the mechanisms trialed in northern Kenya simply because old age was not strongly associated with poverty. So, although the program might have performed well in identifying older people for an old-age targeting criterion (96 percent of beneficiaries fulfilled this eligibility criterion), the fact that older people in northern Kenya are not generally poor means that this was not a good poverty proxy.

Of the three targeting mechanisms being piloted, Sabates-Wheeler, Hurrell, and Devereux (2015) judged CBT to be the most pro-poor (with beneficiaries 17 percentage points more likely to fall into the bottom 51 percent of consumption), but its performance was dependent on context; in some places, CBT was regressive. Due to CBT's reliance on relative rankings, rather than objective or absolute poverty criteria, it is not sensitive to variations in poverty levels across localities and regions. In northern Kenya, poverty and food insecurity vary substantially across districts. Similarly, in Rwanda, poverty varies markedly between rural and urban areas. Yet localized relative rankings mean that CBT will frequently identify the same proportion of poor households in all districts, regardless of the district's overall relative wealth or poverty.

Sabates-Wheeler, Hurrell, and Devereux (2015) identified other challenges to using CBT, including the possibility of non-deliberate exclusion of certain groups and households in the targeting process—perhaps due to disabilities associated with old age, which can lead to elderly people being absent from critical targeting meetings. A second challenge was the deliberate exclusion of newcomer groups or poor individuals, either by the community process or due to elite capture of the program benefits. Such forms of deliberate exclusion can be seen in the targeting study of the HSNP (Sabates-Wheeler, Hurrell, and Devereux 2015) and in recent evaluations of the PSNP in Ethiopia (Berhane et al. 2016). Without external, independent verification, elite capture of benefits can plague social protection programs, particularly those using CBT. Our findings resonate with those of Coady, Grosh, and Hoddinott (2004), who found that CBT achieved the most variable results of all mechanisms.

In an attempt to improve the accuracy of targeting for Kenya's HSNP program at the end of Phase 1, the analysis by Sabates-Wheeler, Hurrell, and Devereux (2015) simulated targeting outcomes using a simple PMT methodology and compared them with the simulated results of three other methods. The simulation exercise showed that a PMT would have performed better than single categorical indicators such as the old age and dependency ratio targeting methodologies. Based on Phase 1 recommendations, a new targeting system was developed that used a PMT and community-based validation. A Phase 2 targeting analysis by Silva-Leander and Merttens (2016) showed no major improvement in the accuracy of

targeting the poorest, again due to the difficulty of targeting in northern Kenya—in particular, due to the flat consumption distribution and the wide extent of poverty. Silva-Leander and Merttens offered the following assessment:

> The extent and uniformity of poverty in areas targeted by HSNP2 made it difficult to accurately identify the poorest households using either the PMT or CBT targeting mechanisms. Exclusion and inclusion errors are very high, and targeted beneficiaries are not considerably worse off than nonbeneficiaries in terms of monetary poverty. Importantly, the targeting performance appears to be very close to what would have been achieved if a random targeting rule had been used. This raises serious questions about the cost-effectiveness of the current targeting mechanism (2016, 6).

The study concluded that "geographic targeting is the most efficient way to target the poor en masse, but pure geographic targeting (i.e., deriving beneficiary quotas based on geographic poverty rates alone) has proved not to be politically feasible" (Silva-Leander and Merttens 2016, 4). Within-district geographic poverty targeting, seen as more palatable, is now being piloted.

In summary, as shown in the cases of the VUP and the HSNP, accurate poverty targeting in contexts of very high poverty levels proves extremely difficult to implement. In Rwanda, asset indicators are unable to effectively distinguish the poorest quintiles from the less poor. The same phenomenon is illustrated by the consumption expenditure indicator in Kenya—the flat distribution means that it is very difficult to identify a cutoff threshold for targeting the poorest.

Although there appears to be a general consensus in the global reviews that a combination of targeting mechanisms that includes objectively verifiable indicators (such as simple PMT scorecards) as well as community-based validation would work well, the foregoing review of recent targeting efforts clearly shows the importance of understanding the contextual nature of poverty before choosing an appropriate targeting mechanism or proxy(ies) for poverty.

Targeting Assumptions about the Homogeneity of Poor Households Undermine Program Objectives

Poverty targeting at scale and where means testing is not possible typically requires that assumptions be made about the correlation of location or identifiable characteristics, such as age, gender, or disability, with poverty. For instance, dependency ratio targeting is usually based on evidence or assumptions that households with high dependency ratios are likely to be poorer. The same can be said for targeting older persons, although the evidence presented above from the HSNP in Kenya showed that old age was not a good predicator of poverty in that context. Even in cases in which a proxy, such as a disability or asset ownership, does correlate with income or consumption poverty, the blueprint implementation of a social protection program for the identified population still does not account for heterogeneity within that population, and this shortcoming can strongly undermine the achievement of program objectives. Put simply, assumptions of homogeneity across program-eligible households—that is, that they are all equally disadvantaged or vulnerable—lead to unnecessary inefficiencies and ineffectiveness in social protection programs. This section considers how these assumptions in targeting lead to suboptimal and unintended impacts.

Using panel survey data from a model graduation program implemented by a nongovernmental organization (NGO) in Rwanda, Sabates-Wheeler, Sabates Aysa, and Devereux (2018) tested some hypotheses around enablers and constrainers that predict different livelihood pathways.

TABLE 9.2—SUMMARY OF DETERMINANTS OF LIVELIHOOD TRAJECTORIES IN DIFFERENT OUTCOME AREAS FOR PARTICIPANTS OF A GRADUATION PROGRAM IN RWANDA

Determinant	Female-headed	# of adults	Initial assets	Dependency ratio	Initial livestock	Initial land	Co-op member	Location
INDICATOR: Trajectory								
BASIC NEEDS: Improvement versus crashing out	NEGATIVE	POSITIVE	ns	NEGATIVE	ns	ns	ns	ns
LIVESTOCK: Improvement versus crashing out	ns	POSITIVE	ns	ns	POSITIVE	POSITIVE	POSITIVE	POSITIVE
ASSETS: Improvement versus crashing out	ns	POSITIVE	POSITIVE	NEGATIVE	ns	POSITIVE	ns	POSITIVE

Source: Summary of data in Sabates-Wheeler, Sabates Aysa, and Devereux (2018).
Note: "ns" indicates that this variable was not statistically significant in explaining the trajectory of change.

They found that only 28 percent of beneficiaries managed to sustain program benefits two years postprogram across all three outcome indicators. The program provision was not tailored appropriately to households' needs, the authors indicated, because heterogeneity in program participants' households and circumstances was typically not taken into account during targeting, implementation, or beneficiary removal from the social protection program. In terms of intended program outcomes, overlooking this heterogeneity in household and context characteristics led to muted effects.

Sabates-Wheeler, Sabates Aysa, and Devereux (2018) identified four livelihood trajectories for program participants—improvement, decline, crashing out,[6] and late improvement—and econometrically evaluated the comparative performance of households on these different trajectories in relation to three outcome areas: food security and basic needs, livestock holdings, and household assets. The analysis (summarized in Table 9.2) showed clearly that some household characteristics, such as gender of household head, labor availability, and initial livestock/asset ownership, affect the household's trajectory of change. Table 9.2 shows that the odds of being on an improvement trajectory (measured in terms of food security and basic needs) are lower for female-headed households than for male-headed households. The raw results indicated that the probability of a female-headed household's being on an improvement trajectory was significant and approximately half that of a male-headed household. The amount of effective labor (measured by the number of adults in the household) was positive and significant for the improvers in comparison with those crashing out across all outcome indicators. Specifically, the results showed that for an increase in labor availability of one adult, the odds of being on an improvement trajectory relative to crashing out were 1.70 times for the basic needs outcome, 1.97 times for the asset outcome, and 1.94 times for the livestock outcome. Furthermore, the findings showed location to be a critical factor in enabling households to effectively use any social protection to their advantage. The location dummy variable proxied for a range of factors that were not specifically identified in the survey data, such as limited market linkages, worse service delivery, and physical remoteness. Sabates-Wheeler, Sabates Aysa, and Devereux (2018) concluded that "graduation" from social protection programs requires a full understanding of the heterogeneity of

6 Crashing out refers to those who either never rose above the targeting threshold (during the transfer) and have declined in welfare indicator since leaving, and those who improved but have, since the end of the transfer, declined below baseline threshold levels.

beneficiaries being targeted in different programs as well as the context in which people live and work.

Similar conclusions can be drawn from evaluations of Kenya's HSNP, which illustrate how program impacts are felt differentially by different population groups. In addition to estimating the overall average program impact, which was shown to be mildly pro-poor, the Phase 1 impact evaluation (Merttens et al. 2013) assessed the degree to which program impact varied across different types of households.[7, 8] This impact heterogeneity analysis assessed the variation in program impact across a number of dimensions:[9]

1. Consumption expenditure: Is program impact stronger for relatively poorer households?
2. Household size: Because the transfer value is not indexed to household size, the effective per capita value of the transfer is larger for smaller households; is the program impact therefore stronger for smaller HSNP households?[10]
3. Mobility status: Is the program having a differential impact on HSNP households depending on whether they are partially or fully mobile or fully settled? The trend observed at Follow-Up 1 was that mobile households tended to show increased impact.

The trends observed in Phase 1 showed that although the impacts after 1 year on consumption and poverty were not significant overall, HSNP households that were initially poorer, mobile, or smaller did experience an impact.[11] Heterogeneity analysis revealed that the impact on dietary diversity was most marked for households that were poorer, smaller, or mobile, and, again, there was a positive impact on dietary diversity for relatively poorer households at Follow-Up 2. As with consumption expenditure, the results showed an increased impact on food expenditure for poorer and smaller households. After two years, the program was found to have a significant impact on consumption expenditure and poverty, with HSNP households some 10 percentage points less likely to fall into the bottom national income decile. In addition, a larger and significant impact on poorer and smaller households was found. In other words, the impact on poverty was being driven by HSNP households that were relatively poorer or smaller.[12]

Basing programs on the implications of the above findings is not easy, inasmuch as it would be prohibitively costly and administratively impossible to tailor support to the needs of each and every household. Yet, where there are obvious patterns, such as in regard to labor availability, initial asset profiles, and gender of household head, different groups can be targeted to receive adapted packages of support for variable time frames. Only with some thought given to appropriate support for specific groups will a program stand some chance of achieving resilience-building program objectives.

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7 The Phase 1 impact evaluation data were collected over the course of three rounds comprising a baseline round (August 2009 – November 2010), a follow-up 1 round (November 2010 – November 2011), and follow-up 2 round (February 2012 – November 2012).

8 For the Phase 1 impact analysis, there were 20 treatment and 20 comparison (control) sublocations, with 1,224 HSNP households (the treatment group) and 1,212 control-group households across four districts of northern Kenya from 2009 to 2012 (Merttens et al. 2013).

9 Variations in impact between targeting mechanisms were analyzed at Follow-Up 1—one year later—but did not reveal any systematic differences across the targeting mechanisms. This finding is not surprising, because the targeting report shows a large degree of overlap in the characteristics of beneficiaries targeted by age, dependency ratio, and CBT, so it makes sense that the HSNP impact did not vary by targeting mechanism.

10 Households were classed as small if they had fewer members than the median household size found at baseline.

11 Due to sample attrition, which particularly affected mobile households, and the reduction in overall sample size, this analysis could not be performed at Follow-Up 2.

12 A heterogeneity analysis was also performed for households that had received a larger cumulative per capita value of transfer. The impact was significant and positive for these households also.

The Difficulties of Targeting in Diverse Social and Cultural Contexts

Despite the variety of mechanisms available for targeting, in almost all social protection programs, the eligible participant is identified as an individual (or carer for an individual if the eligible person is a child or has a severe disability) or a household (although even when a household is the eligible unit, an individual[s] must be named as the recipient of the transfer). The "individualization" of entitlement delivery and receipt can create challenges in contexts of social norms and living arrangements predicated on sharing and reciprocal support; when the named recipient is highly mobile, such as in the case of pastoralists, internally displaced populations, or migrants; or when the person receiving the transfer is not the best placed to use the transfer for the purposes for which it is intended. This section looks at each of these pitfalls in turn.

Cultures of Sharing and Resultant Transfer Dilution

The notion of setting a transfer value to cover a consumption deficit or food gap, or to provide small asset packages at the individual or household level, can be problematic in some contexts. Take, for instance, the 120 million pastoralists and agro-pastoralists worldwide, of whom 50 million live in Africa south of the Sahara. These groups dwell and move in contexts in which social networks and relationship-based access to social provision are the predominant forms of distribution. "Network-based affiliation and distribution provide important functions under high levels of uncertainty, such as subsistence assurance and risk mitigation" (Sabates-Wheeler, Lind, and Hoddinott 2013, 2). These social norms can undermine intended program effects related to building resilient livelihoods if the transfer amount intended for building the resilience of one person or household is shared across multiple individuals or households.

The extension of the PSNP, in Ethiopia, from the highlands to the lowlands illustrates this very well. When the PSNP was first introduced in 2005, the program was confined to the highland regions, made up primarily of poor rural households that were sedentary in terms of residence but working across the rural-urban space. The PSNP, a poverty-targeted program for food-insecure households in chronically food-insecure areas, using geographic indicators and community validation for targeting, was designed for this population. Districts can choose food, cash, or a mixture of both as a transfer modality, although an increasing preference for cash over the years has meant that the majority of PSNP beneficiaries in the highlands are receiving cash. The objective of the program is to enable households to escape food insecurity, accumulate assets, and over time, build sustainable livelihoods that will allow them to move off the program ("graduate").

In 2008, the PSNP was scaled out to cover the lowland areas, which are characterized by pastoral and agro-pastoral livelihoods. Only food, not cash, was provided in these regions, mainly due to the difficulty of setting up financial delivery services as well as the lack of food markets in some areas. The geography and culture in the lowlands is very different from that of the highlands. Drawing on extensive mixed-methods survey data, Sabates-Wheeler, Lind, and Hoddinott (2013) described how practices of sharing within mutual support networks and the role of informal authority structures in the targeting process moderated and muted intended PSNP impacts. Intense pressure to give support within horizontal networks of the very poor resulted in the dilution of the food transfers provided to any one household. The analysis showed that payment levels were low in the majority of the nine *woredas* (districts) studied. In six of the *woredas*, transfers were 10 kg or less per capita (whereas the per capita transfer entitlement should have been 15 kg). As coverage rates rose, per capita grain payments fell (in one woreda to as low as 2 kg per person), reflecting the tension of ensuring that individuals and households got the "right" amount as set by the program and the pressure to provide food support to as many community dwellers as possible. In fact, in four *woredas*, coverage exceeded

70 percent, and in one, coverage was almost universal. Sabates-Wheeler, Lind, and Hoddinott (2013) argued that this situation was reflective not only of sharing cultures but also of the pressure on local-level targeting staff to include as many of their community members as possible in the PSNP.

Although the program could be argued to provide an important safety net against hunger and severe deprivation, this transfer dilution undermined the program objectives for resilience building. In other words, the sharing of transfers is a critical cultural practice for ensuring survival for many (a fundamental objective of a safety net), but it is a problem for the program vision of asset and resilience building.

In communities where sharing and reciprocity are endemic, individualized targeting of transfers, however "perfect," is an inadequate tool for promoting significant economic transformation of livelihoods. The intended per capita transfer value is split across multiple households and individuals, thus muting any proposed impacts (calculated on the assumption that an individual receives a specific amount). In these contexts, where communities display strong horizontal bonding, local universal support tailored to community needs is likely to be more effective in building economic resilience than individualized, targeted support. More recent evidence from successive rounds of PSNP evaluation data over a six-year period (2010–2016) shows that the targeting of the PSNP in the lowlands has failed to improve, with the better off as likely to be PSNP beneficiaries as the poorest. The analysis shows that in addition to pressure to dilute transfers, suboptimal targeting results reflect local notions of "fairness" in these areas—that everyone should benefit regardless of wealth (Lind et al. 2018).

High levels of vulnerability and widespread poverty in pastoral areas imply that there is a great need to provide social protection in these areas. However, it appears that program design and delivery suited to the agrarian-based livelihoods of the highlands are not appropriate for the lowlands. Other forms of social protection that find their rationale in community- or clan-based provision may be more appropriate.

Targeting People on the Move

Another challenge is the difficulty of targeting mobile populations—such as pastoralists, migrants, and internally displaced persons. In the lowlands of the Horn of Africa, livelihoods have historically been based on pastoralism and transhumance. In this livelihood context, the culture of sharing is intricately related to the mobility of the adult male household members with the livestock over large tracts of land. These long periods of male absence from the larger family, combined with smaller, polygamous household units across multiple locations, means that resource distribution and sharing takes on necessarily complex forms. Although livelihoods in the lowlands are much more mixed these days—including agro-pastoralism, pastoralism, farming—the PSNP experience of targeting food transfers to mobile and semi-mobile groups has illustrated two seemingly contradictory challenges: first, the problem of locating mobile groups for targeting processes and provision of food or cash, and second, the interference with herding patterns and transhumance caused by the requirement to be present for the targeting process and at collection points.

Setting up the PSNP in the lowland areas required that all vulnerable households be registered and that the designated household representative (typically the male head of household) be available to come to a "local" collection point on a bimonthly basis to pick up the food transfer. Difficulties in registering households emerged due the absence of household heads (given that heads are usually out with the herds), the movement of households, and the high levels of insecurity and conflict in a number of the districts. Furthermore, if households prioritize receipt of the food transfer, the requirement that household heads be present at a specific collection point severely disrupts the usual mobility and herd pasturing patterns. On the other hand, some mobile groups might deliberately choose to opt out of the program because their livelihoods are not conducive to sedentarization (Scott 2009). Moreover, any survey evaluation that requires interviews with

households is very complicated and costly, due in large part to the process of locating the migrants.

This relatively straightforward case illustrates the large challenges that human mobility/migration poses for the design of social protection. The case of pastoralists is an example of a voluntary internally mobile group. The problems this group faces are exacerbated for the internationally mobile and forcibly displaced, a specific challenge being the lack of coordination and harmonization between different delivering agencies. Cash transfers frequently use some form of software or digital transfer system to distribute cash. They often use a combination of software systems, phones, and vouchers or cash. However, these cash transfer systems are mainly bespoke, disconnected, and not interoperable. This situation is exacerbated when people cross national administrative boundaries (as in the case of displaced populations or migrants) or international borders, particularly in the event of humanitarian and protracted crises. Such movement can mean that some families receive several entitlements, each through a different modality (cash or voucher) and transfer system (mobile, card, software, or other), and from a different agency. Duplication of this sort exists in several protracted crises where harmonization and common platforms have been slow to emerge. Innovations in cash transfer systems for populations on the move are being piloted in a number of countries (Hagen-Zanker, Ulrichs, and Holmes 2018 describes the experience of cash transfers for refugees in Jordan). More work needs to be conducted in this area.

Conclusions

Over the last 10 to 15 years social protection has been heralded as an answer for both the protection of lives and the promotion of livelihoods—that is, as an answer to food security and as a development paradigm for supporting economic growth through building livelihood resilience. Due to substantial need and limited funding, the majority of social protection for the poorest relies on targeting. Therefore, accurate targeting as a form of rationing becomes a critical element of both food security and livelihood support for the poorest.

Drawing on recent work, this chapter has highlighted some real targeting challenges facing social protection programs. These challenges, which are embedded in the respective economic, social, and political contexts, are as important for the predicted success of a program as the technical design and implementation infrastructure. Specifically, this chapter has illustrated the difficulties of identifying the poorest from the poor, the problems for envisaged program impact when heterogeneity of the target population is not taken into account, and the problems for program objectives when endemic sharing is the norm or when populations are mobile. These are some challenges that present themselves in the context of four programs in three different East African countries. However, they are also general challenges facing similar programs (many of which have emerged throughout Africa) in similar contexts throughout the continent (such as the lowland, pastoralist regions of the Horn of Africa, or where populations are on the move or displaced).

This chapter has shown that targeting the poorest works badly where income or asset distributions are flat, making it difficult to distinguish the poorest from the poor. In these situations, a combination of targeting methods appears to work best, such as an objective PMT combined with CBT. Although many development partners and national governments opt for a combination of proxy means testing and community-based validation or targeting due to excessive concern over free riding and inclusion problems, a strong case can often be made for progressive, blanket geographic coverage of entire communities. This approach would substantially reduce the costs of deciding which combination of targeting mechanisms will work best, if at all; minimize exclusion errors; reduce the social tensions created when the poorest of the poor are, overnight, catapulted to income levels higher than those of the moderately poor; and be a more ethical solution in the context of local development. Under a progressive political

agenda, budgetary commitments could follow the geographic expansion of the program across the country.

In fact, this review points to certain factors characterizing intended target populations and their contexts that call into question the justification for targeting at all. As discussed by Devereux (2016), critics of targeting point out that targeting the poor is frequently based on an arbitrary poverty line, whereas (as shown above) the difference in income between those who are identified as eligible and those who are ineligible is negligible—if there is any difference at all. Furthermore, arguments that poverty targeting can create social tension in poor communities lend weight to the proposition that in contexts of widespread poverty, poverty targeting is likely to be very difficult, as well as socially and politically challenging. A more effective way to support the poor is likely to be universal targeting at a localized level, where poverty and location are highly correlated. However, the obvious constraint to the uptake of universal targeting as a policy suggestion is the political milieu of a specific country and culture. For instance, currently in Ethiopia, approximately 8 million people are served by the PSNP, yet there are a further 8 million in need of yearly support through humanitarian emergency appeals. A large proportion of this latter group would be eligible for the PSNP, yet in the context of economic growth, prior political commitments to vulnerability reduction, and budget forecasts, the government will not consider increasing the PSNP caseload.

When universal targeting is not up for discussion (as illustrated in the point above), some recommendations for social protection programming fall out of this brief review. First, for *targeting* to be effective—in the sense that it supports and facilitates program objectives—attention to context, culture, and population characteristics will be critical. Second, *support* delivered through the program must be appropriate and sensitive to the different contexts and livelihoods. Third, *delivery* should be fitting to context. So, for cultures in which sharing is the norm, delivery may need to be provided to clans or communities rather than individual households. Or, where people are on the move, delivery (registration of target populations and designation of payment points) will need to adapt to mobility patterns and locations. E-payments provide obvious delivery advantages for people on the move.

Blueprint roll-out of features in social protection designs frequently includes specific time limits on how long an eligible household can stay on the program—often one to three years for NGO-implemented projects. Another feature is identical packages of support at preidentified times during program participation—for instance, financial literacy training, coaching, savings, and asset transfers. A third feature is identical provision regardless of the location and characteristics of participating households. However, this review shows that heterogeneity in household type, in location, and in population group means that a one-size-fits-all intervention is unlikely to work, especially in regard to targeting eligible households as well as identifying households ready to exit or graduate from a program. Assumptions about similarities within a target group can be misplaced, leading to inappropriate provision for some households and premature graduation for others. Different households need diverse types of support for different lengths of time. A "leave-no-one-behind" agenda requires that we seek to coordinate and deliver the appropriate combination of interventions to different population groups in different contexts.

CHAPTER 10

Targeting Social Safety Nets Using Proxy Means Tests: Evidence from Egypt's Takaful and Karama Program

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1 This chapter draws on findings from quantitative and qualitative impact evaluations of the Takaful and Karama cash transfer program. The team for the quantitative study was composed of Clemens Breisinger, Dan Gilligan (technical lead), Naureen Karachiwalla, Sikandra Kurdi, Hoda El-Enbaby, Amir Jilani, and Giang Thai. The team that authored the qualitative evaluation was composed of Hagar ElDidi, Hoda El-Enbaby, Yumna Kassim (fieldwork lead), Sikandra Kurdi (technical lead), Patti Petesch (technical lead consultant), Yasmine Moataz (consultant), and Karim-Yassin Goessinger (consultant). The IFPRI team gratefully acknowledges very helpful consultations on the design and conduct of the evaluation with the Ministry of Social Solidarity of the government of Egypt, in particular Dr. Nivine El-Kabbag, Mr. Raafat Shafeek, and Eng. Amal Helmy, and advice from Dr. Heba El-Laithy and Dr. Hania Sholkamy. We would like to thank Denis Nitkin for valuable comments on the targeting analysis.

Cash transfer programs (both conditional and unconditional) have become a popular trend in social assistance for policy makers in developing countries in the 21st century. Successful and well-studied models of conditional cash transfer (CCT) programs such as Mexico's PROGRESA (Oportunidades) inspired a range of similar programs especially in Latin America, while there are also strong findings on the impacts of unconditional cash transfer (UCT) programs, which have become popular in Africa south of the Sahara (Adato and Basset 2009). A review of the evidence shows that this type of social assistance program plays an important role in economic development, bolstering incomes and food security for the poor and, in some cases, improving investments by poor households in education and productive assets (Hidrobo et al. 2017).

Given budget constraints, policy makers usually want to target cash transfers toward beneficiaries in poor households. There is an active debate, though, about the best way to do this. Policy makers need to decide how to identify those poor households, whether poor households should be defined in terms of lack of resources or current consumption, how to weigh the risks of exclusion error (failing to enroll beneficiaries who need the program) against inclusion error (providing cash to those who do not need the program), and also consider at which point more precise targeting is worth the extra administrative or political costs. In this chapter, we discuss how a specific mechanism for targeting, the proxy means test (PMT), is viewed in terms of the current debates regarding optimal design of social assistance programs, and we then turn to the specific case study of Egypt to illustrate the advantages and disadvantages of proxy means testing.

Proxy means testing is one of a family of mechanisms used to target social programs to poor households. Other mechanisms include geographic targeting by enrolling only households living in poor regions; categorical targeting by focusing on the elderly or households with children; inducing self-selection such as by requiring work or time commitments that better-off households may find too onerous; community-based targeting by allowing local community members or leaders to identify the neediest households among them; or some combination of the above.

In proxy means testing, detailed household survey data from a sample population are used to generate a formula for predicting the probability that a household is poor based on household characteristics such as education levels, housing characteristics, and asset ownership. The parameters in this formula are estimated using regression analysis, and the predicted poverty level of the household based on this formula is the PMT score. The social program then collects those same household characteristics for all households that are under consideration for the program and the formula is applied to determine their scores. The PMT score can then be used as a criterion for determining eligibility for the program.

The idea of regression-based PMTs for optimally targeting transfers to reduce poverty developed in the academic literature in the early 1990s as an alternative to geographic targeting and in parallel out of program experience in Chile's Ficha CAS. An influential early cross-country comparative study of targeting procedures found that PMT-based targeting best minimized inclusion error (Grosh and Baker 1995). PMT and geographic targeting was used together in PROGRESA, and across Latin America and East Asia: almost all large CCT programs in the early 2000s used PMT as a tool for targeting (Fiszbein and Schady 2009).

The literature reviewing the targeting performance of social programs using PMT mechanisms generally concludes that PMT targeting is imperfect, but that it performs well compared to the alternatives.

Drawing on a dataset covering 122 antipoverty programs in 48 countries to assess the performance of targeting methods, Coady, Grosh, and Hoddinott (2004a) find that PMT-based programs produce good results on average, but with wide variation. Specifically, countries with better capacity for implementation, who have better accountability, and where inequality is more pronounced are better at targeting resources to the poor. Brown, Ravallion, and van de Walle (2016) assess simulated PMT performance in

nine African countries and find that constructing a PMT to try and identify the poorest 40 percent using an extensive set of variables resulted in an average of 30 percent of the nonpoor being included in an idealized setting with perfect implementation, but that the PMT targeting performs slightly better than the alternatives tested. Kidd and Wylde (2011) use econometric simulation exercises using data from Bangladesh, Indonesia, Rwanda, and Sri Lanka to assess the performance of PMT targeting. They find that inclusion and exclusion errors vary between 44 and 55 percent when 20 percent of the population is covered and are as high as 57 to 71 percent when only 10 percent of the population is covered. Thus, the smaller the coverage, the higher are the errors. They conclude that PMTs are susceptible to many types of errors since proxies for income are often not good proxies, are not measured well, and are often not verified. Devereux et al. (2015) similarly conclude from their review that PMT performance is highly sensitive to the proxies chosen because the correlation between household income or consumption varies greatly by indicator. As a result, performance across programs is highly variable.

While PMT targeting performance is good compared with other methods, it is expensive, and it is not necessarily clear that the gains in targeting performance are worth the costs. Ravallion (2007) has called for more attention to the impacts of social assistance programs on poverty, rather than on targeting, which is not necessarily correlated with cost-effectiveness of reaching the poor after accounting for administrative costs. While PMT methods are cheaper than traditional means testing, there are still high administrative costs associated with gathering and verifying the information. For example, home visits by officials are preferred since reporting error is reduced and information can be verified. Though expensive, most Latin American programs use this method. An evaluation of PROGRESA targeting found that the PMT approach increased targeting performance but the use of household surveys was costly enough to question whether purely geographic targeting might be preferable in the poorest rural areas (Skoufias, Davis, and de la Vega 2001). The high cost of household surveys also raises the question of how well PMT targeting will work in countries with less administrative capacity and smaller budgets (Coady, Grosh, and Hoddinott 2004b).

In addition to administrative costs, PMT-based targeting may be hard to explain or justify to the public compared with simpler targeting schemes. Qualitative studies of programs in Latin America found that the poor perceive a great deal of randomness in the selection of beneficiaries by PMT score (Kidd and Wylde 2011). In Indonesia, Alatas et al. (2012) experimentally compared a PMT-targeting method with community-based targeting and a hybrid of both. They find that the community and hybrid methods performed worse objectively than the PMT method when looking at the data but that the community method was seen as more fair and legitimate by community members. A similar hybrid method is used in PROGRESA, where after the application of geographic targeting and a PMT score, community committees review and adjust the list of beneficiaries (Hoddinott and Skoufias 2004).[2]

In several different contexts, studies have shown that good communication with communities plays a key role in the success of PMTs in terms of targeting performance. Duclos (1995) showed theoretically that one of the biggest hurdles in targeting is that those who should be applying to the program do not apply, and inadequate information plays a major role in this. Similarly, in studying a last-resort income support program in Armenia, Tesulic et al. (2014) found that the biggest constraint to targeting was that the poorest did not apply.

There is limited quantitative evidence on the impacts of cash transfers on community solidarity. Attanasio, Pellerano, and Reyes (2009) find

2 It should be noted that it is unclear how well this intention is implemented on the ground as focus groups with communities found that there was a lack of awareness that they could review the beneficiary list (Adato 2004).

evidence that Colombia's PMT-targeted Familias en Acciòn increased social capital as measured by trust games, but only measures this within the set of beneficiaries rather than looking at trust between beneficiaries and nonbeneficiaries. Ellis (2012) shows that because cash transfers are generally uniform, beneficiaries near the threshold can easily end up better off than nonbeneficiaries and thus there is a large potential for transfers to cause resentment.

Qualitative studies, however, have found some cases of nontrivial negative impacts of the perception that targeting is unfair or random on community solidarity. Adato (2004) conducted focus groups in Mexico and heard reports of increased social tensions related to PROGRESA, with nonbeneficiaries starting to feel unwelcome in health centers and less willing to contribute to community cleaning activities and parents' associations. Similarly, in household surveys in Nicaragua, respondents expressed that nonbeneficiaries felt excluded and reported envy, annoyance, and gossip (Adato 2004). MacAuslan and Riemenschneider (2011) report on negative impacts on social relations as a result of cash transfer programs in Malawi and Zimbabwe, especially as a result of targeting and the tension caused by the selection of only some community members. In Zimbabwe, the social tension caused was so severe that recipients said they would have preferred to have all community members receive the transfers, even though this would mean that their own household received less.

In the Middle East and North Africa, traditional social safety net programs primarily used categorical or geographical targeting (Silva, Levin, and Morgandi 2013). Similarly, social spending has historically been ineffective in reaching the poorest in Africa south of the Sahara (Brown, Ravallion, and van de Walle 2016). In particular, universal subsidy programs with very poor targeting as well as other distortionary impacts have been popular in the past. PMTs are seen as the new way forward in the African region with several large PMT-based social assistance programs being launched, including Egypt's Takaful and Karama program. In a recent survey of targeting measures for social safety nets in Africa south of the Sahara, the PMT is referred to as the "standard" tool in targeting to address chronic poverty (del Ninno and Mills 2015) and most of the featured country case studies explored either PMT or combinations of PMT with other metrics as potential ways to improve targeting.

Egypt is a useful case study to examine the effectiveness of PMT targeting in the new generation of CCT programs spreading beyond Latin America. We define targeting effectiveness in terms of the ability of the program to enroll beneficiaries from the lowest two quintiles of the expenditure distribution, following the existing literature. While we have limited information on administrative costs, we do attempt to also account for the social costs of implementing proxy means testing in a context with imperfect administrative capacity to explain the mechanism to the public. Egypt is a large lower-middle-income country with lower inequality and a much more limited budget for social spending than Mexico or Brazil, but the CCT system that it has envisioned is large scale and long term like those in Latin America. This study will describe the extent to which Egypt's CCT program has succeeded in its targeting goals through a combination of the PMT with geographic targeting, as well as pointing to lessons in some of the costs that accompany this targeting.

The chapter is structured as follows. The first section describes the context, goals, and targeting procedures of Takaful and Karama, the new national CCT program in Egypt. We then explain the methodologies and data sources used. The next section presents our quantitative assessment of the targeting successes and challenges of the program as well as a qualitative study of how these targeting procedures and the resulting selection of beneficiaries is perceived by both beneficiaries and nonbeneficiaries. We conclude with lessons for other countries considering using PMT-based methods for targeting social safety net programs.

Takaful and Karama Program

This chapter draws on findings from a quantitative and qualitative impact evaluation of Takaful and Karama conducted by the International Food Policy Research Institute (IFPRI) in 2017 and 2018 (ElDidi et al., forthcoming; Bresinger et al., forthcoming).

Context

Since 2014, Egypt has implemented major macroeconomic reforms—gradual reductions in energy subsidies, imposition of a value-added tax, and liberalization of the exchange rate leading to a 50 percent devaluation of the Egyptian pound. International experience shows that these reforms have the potential to initiate a process of longer-term economic growth and diversification (IMF 2015). International experience also shows that functioning social safety nets play an important role in protecting the poor from the negative impacts that often result from such ambitious reform packages during the first few years of adjustment. As a result, social safety nets can play an important role for medium-to-long-term economic and social development (Alderman 2017) as envisaged in Egypt's Vision 2030 (Egypt, Ministry of Planning, 2015).

Thus, along with the macroeconomic reforms, the government of Egypt began to reform and expand its social protection schemes in 2014. Egypt has a long history of providing social support, notably the long-standing subsidization of its food and social solidarity pension systems, but the redistributive benefits of these programs have been mixed. The food subsidy system goes back to the 1940s and currently covers about 70 percent of the Egyptian population (Egypt, Ministry of Finance 2017). Since 2014, the system has been transformed from a generalized subsidy to a voucher-based system (Ecker et al. 2016). During the macroeconomic reforms, the government increased the size of voucher payments, which is likely to have played an important role in protecting people from the short-term negative impacts of reform (Breisinger et al. 2018). In addition, Egypt launched the Takaful and Karama program, a pair of targeted cash transfer schemes, in March 2015.

Program Description

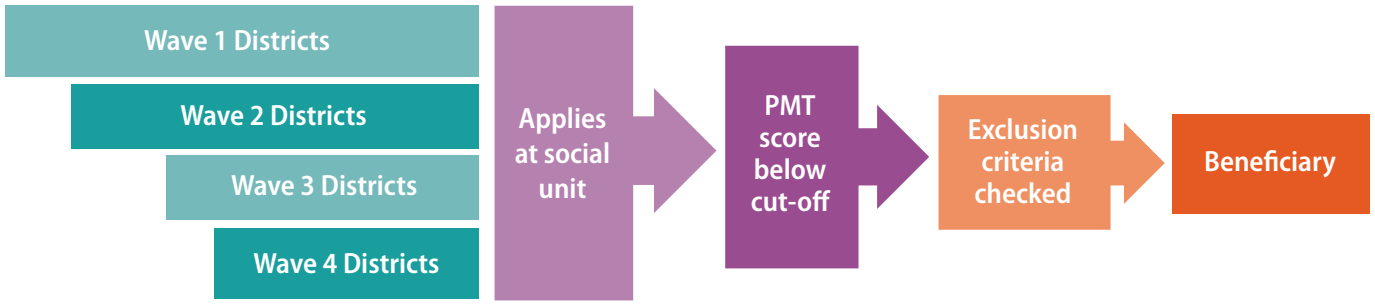
Takaful and Karama is a cash transfer program that seeks to provide income support to the poor and most vulnerable—namely, poor families with children (under 18 years of age), poor elderly (aged 65 years and above), and persons with severe disability. The introduction of the program represents a significant step on behalf of the Egyptian government to increase the share of social spending reaching poor households. It is implemented by the Ministry of Social Solidarity (MoSS) and co-financed by the government of Egypt and the World Bank. The average transfer for participating households is approximately £E460 (460 Egyptian pounds) or about US$26 per month.

The program is divided into two subprograms: Takaful and Karama. Takaful (or Solidarity) is a family income support scheme, conditioned on school attendance and health outcomes, although the conditionality will take effect only from September 2018. Cash transfers will be conditioned on attendance of at least 80 percent of the school days by children ages 6–18 years, and on conducting two visits per year to the health clinics by mothers and children below 6 years; this is in addition to maintaining child growth monitoring records and attending nutrition awareness sessions. Takaful transfers start from a basic amount of £E325 per household, per month, which increases depending on the number of children in the households and their educational level. Households receive £E60 for each child under six years old, £E80 for each child in primary education, £E100 for children in preparatory education, and £E140 for secondary education. Households can receive benefits for up to three children only, who are usually the oldest three children in the households. Karama (or Dignity) is an income support scheme targeted at the poor elderly, persons with severe disability, and orphans. Families can be entitled to both Takaful and Karama benefits. The mother or caretaker of the registered children for Takaful is entitled to

receive the cash, and Takaful is by far the larger of the two subprograms, so 90 percent of the beneficiaries are women.

The Takaful and Karama program was rapidly rolled out in three phases starting in March 2015 and now reaches more people than originally planned. The program has expanded more than originally planned both geographically and in terms of number of beneficiaries. Currently, 1.95 million households or about 9 million individuals are benefiting from Takaful (personal communication, Eng. Amal Helmny, MoSS, Aug. 30, 2018), exceeding the original target of reaching 1.5 million. Although Takaful and Karama is a major step forward in redistributing government resources toward the poor, limited funding means that many poor households are not included. In this study, we analyze and discuss the performance of the Takaful subprogram at reaching the poorest and most vulnerable households within the population of households with children in Egypt.

FIGURE 10.1—TAKAFUL'S TARGETING PROCEDURES



Source: Authors
Note: PMT = proxy means test.

Targeting Procedures

Takaful and Karama's targeting procedures combine geographical targeting with a PMT mechanism and the use of government databases to apply exclusion criteria, as portrayed in Figure 10.1. In addition, each subprogram has other categorical selection criteria: Takaful requires that beneficiary households have children under age 18, and Karama requires individual beneficiaries to be elderly and/or disabled, or (added later) orphaned.

Geographical Targeting

With respect to geographical targeting, the program was first launched in the poorest districts within the poorest governorates in Egypt. The rollout phases were as follows: The first wave in 2015 was launched in the poorest 19 districts of six governorates in Upper Egypt (Suhag, Assiut, Luxor, Qena, Aswan, and Giza), where the poverty rate is 50 percent and above. Through the second wave in 2016, the program expanded to districts where the poverty rate is 30 percent and above. In the third wave in 2017, the program was expanded further, covering districts where the poverty rate goes down to 17.9 percent and above. Finally, wave four went beyond the original plan and opened registration to all districts (Egypt, MoSS 2017).

Proxy Means Test

The Takaful and Karama program uses a PMT to distinguish between eligible and ineligible registrants. Following standard practice, the PMT formula was developed based on regression analysis, where the weights on

different proxy variables are derived from the coefficients in a regression of the proxy variables on log per capita annual expenditure. In Egypt's case, the PMT formula was developed using data from the Household Income, Expenditure, and Consumption Survey for 2012/2013. After identifying plausible variables for inclusion that would be predictive of a household's resources (characteristics of household members, monetary transfers, housing characteristics and assets), the models were built using stepwise regression, as this was found to give the best overall results for reduction of leakage to the nonpoor (El-Sheneity 2014), in spite of including some coefficients with individually illogical signs (that is, a few lower-quality assets or housing characteristics associated with higher predicted expenditure). Different PMT formulas were constructed for six geographic regions in Egypt: urban Upper Egypt, rural Upper Egypt, urban Lower Egypt, rural Lower Egypt, Metropolitan, and Frontier governorates. This disaggregation by region allows for more precision. For example, the degree to which the predictive value of being connected to a public sanitation network differs between urban and rural areas. The final formulas rely on 85 different variables and are kept confidential by the MoSS.

From the perspective of beneficiaries, what the PMT means in practice is that when they apply at the social unit, which is the local MoSS office, they are asked to help complete a detailed form about their household. The form covers the information needed to generate all the 85 variables that go into the PMT calculation. For each household member: the age, the education level completed, whether they are employed, the type of employment, whether they work in agriculture and whether they benefit from social insurance (a pension scheme that covers most formal-sector employees), whether they have health insurance, and whether they are ill or are disabled. For the household as a whole: housing characteristics, electric bill amount, whether the head of household worked abroad and whether any household member receives other forms of social support, and whether or not the household owns from a list of 17 durable household assets (such as a refrigerator and water heater). The responses on household characteristics, asset ownership, and household composition are verified by social unit staff with a household visit. The data from the forms are sent to the central MoSS office where they are entered into a computer system that verifies some of the data against other government databases and automatically applies the PMT formula and calculates the resulting score. Households with higher scores are better off, so households with a PMT score below the threshold are eligible.

Setting the threshold is an important policy choice that strongly influences the targeting outcomes. The current eligibility threshold PMT score of 4,500 for Takaful was selected based on targeting the lowest 40 percent of the population in terms of expenditure (H. El Laithy, professor of Statistics at Cairo University and consultant to the MoSS, personal communication, February 25, 2018). There is a higher threshold of 6,500 for female-headed households in Takaful and of 8,500 for households that include elderly or disabled who are applying for Karama. Prior to this, the eligibility threshold was adjusted several times in response to concerns about getting the correct number of beneficiaries enrolled to accommodate the overall budget. When the threshold was updated, the new threshold was retroactively applied to all households that had registered previously. The administrative data show, however, that there is still a small difference in the probability of current enrollment based on whether the household was eligible at the time it applied, with those that only became eligible retroactively when the threshold changed less likely to be enrolled. This can be explained by the fact that applying the threshold retroactively is not as easy in practice as applying the threshold to new registrants. The household may be difficult for social unit workers to relocate if there were errors in recording the household address and contacts, or the applicant may be resigned to not participating and not follow up on their status as actively as they would if they had just applied.

Exclusion Factors

In addition to the PMT, several exclusion factors are applied automatically during the computerized eligibility determination. These criteria are directly based on data from other government databases. Even if the household is eligible based on the PMT score, it is considered ineligible for the program if any of the binary exclusion criteria apply. The major criteria are:

- The household owns more than 1 *feddan* of land[3]
- The household has a member who benefits from another government pension
- The household member is a government employee
- The household owns a car
- The household receives transfers from abroad
- A household member is enrolled in social insurance (typical for formal-sector jobs)

Targeting Costs

While the direct costs of the transfers are almost entirely financed by the Egyptian government with some co-financing from the World Bank, the administrative costs for setting up the system for collecting and analyzing the necessary data for targeting are fully financed by the World Bank. The budget for targeting and operational support for Takaful and Karama was US$14.3 million, with an additional US$6.7 million budgeted for building a unified national registry to allow for easier targeting of future social assistance programs (World Bank 2015). Because of this agreement structure, the high costs of PMT-based targeting were less of a barrier than they would have been for a purely nationally financed cash transfer program.

Methodology

This chapter draws on an impact evaluation of the Takaful and Karama program conducted by IFPRI in 2017–2018. In addition to evaluating the program impact on household welfare, that study included data collection specifically designed to explore the quality of the PMT targeting and included both quantitative and qualitative data collection, allowing a rich mixed-methods approach to describing both how targeting performed objectively and how it was perceived by households.

As part of the quantitative evaluation, survey data were collected from a representative sample of 1,692 households with children under 18. The sample was stratified at the representative and the governorate level and clustered at the census enumeration area level. The follow-up qualitative evaluation sampled from among the same communities and households included in the sample mentioned above. Six diverse case study communities were selected following the principle of maximum diversity sampling. The six communities consisted of three each from the regions of Upper and Lower Egypt, including one urban community and two rural communities. The two rural communities were selected to include one more dynamic economy where employment rates and daily wages are high and one more static community where employment rates and daily wages are lower. In each community, two ultra-poor beneficiary households, two ultra-poor nonbeneficiary households, one threshold beneficiary household, and one threshold nonbeneficiary household were selected to participate in the study. The designation of "ultra-poor" or "threshold" was based on the quantitative data collection and defined as households with per capita consumption levels that placed them either far below or near the level of households at the PMT cut-off. A male and a female focus group with Takaful beneficiaries was also conducted in each community. The qualitative analysis was based on a combination of cross-case analysis of

3 1 *feddan* = 1.038 acres.

precoded questions in combination with in-depth case studies prepared on each community summarizing the major themes that emerged in responses to questions in that community together with illustrative examples. The quantitative data were collected in July–August 2017, while the follow-up qualitative data were collected in February–March 2018.

Results

Takaful Targeting Efficiency Assessment

Assessing Targeting Efficiency

The targeting objective of the program according to the World Bank project appraisal document was to reach 1.5 million households, with a predicted targeting accuracy of 60 percent, implying that 0.9 million poor households, or 22 percent of all poor households, would be included in the program. In 2015, when this objective was defined, it was estimated that 26.3 percent of Egyptian households fell below the poverty line (World Bank 2015).[4] As mentioned above, the analysts who developed the PMT targeting mechanism set the threshold level of the PMT score at 4,500, with the goal of including the poorest 40 percent of households in the program (H. El Laithy, personal communication, February 25, 2018).

Because of this expanded number of targeted households (from 26.3 percent to 40 percent of the population), the expected coverage of the poorest quintile of households is much lower. The program has received an expanded budget allowing it to reach 1.9 million households at the time of data collection. However, with a 60 percent targeting accuracy, it would only reach 12.5 percent of poor households.

Actual targeting accuracy was 67 percent (with a higher threshold, inclusion errors are reduced so targeting accuracy is easier to achieve), enabling the program to reach approximately 15 percent of poor households. In terms of comparing targeting performance with other countries, we can calculate the normalized share, the percentage of the target group who receives the program normalized by the size of the target group. Using the poorest 40 percent of households with children as the target group, this gives a targeting performance indicator of 0.67/0.4= 1.68. This is a fairly good performance relative to a broad array of social programs included in the review by Coady, Grosh, and Hoddinott (2004a) where the median value of the targeting measure is only 1.25. While there are programs with a greater share of benefits going to the targeted group, Takaful and Karama is in the same range as Mexico's PROGRESA and has a much better targeting performance than Egypt's regressive subsidies scheme, which had a normalized share of only 0.95.

As expected when acceptance is set at a level that makes the poorest 40 percent of households eligible while the program size is limited by budget constraints, the program is accepting a large amount of exclusion error. This is typical of many early CCT programs. It is common for exclusion error to be reduced as the budget increases and the program expands. Currently, due to the overall fiscal situation in Egypt, the program size is not likely to expand significantly in the near future.

In Table 10.1, we examine various statistics by quintile of household expenditure per AEU (adult equivalent unit) among households with children. Note that because we focus only on the subpopulation of households with children, the quintiles mentioned below do not correspond exactly to quintiles in the total population. The share of households with children is large enough, however, and constant enough across the expenditure distribution that our results give a first-order approximation of the incidence of benefits across the whole population and are directly relevant to our goal of measuring how well the program targets the poor within

4 As a result of the macroeconomics reforms mentioned above, the poverty rate has almost certainly increased above that figure, although new estimates will not be available until the latest round of the national consumption survey is released.

the potential beneficiary population. Because household expenditure was measured after households received the Takaful transfers, the expenditures reported below are adjusted for beneficiaries by subtracting the transfer amount that the household reported receiving.

Efficiency of Takaful Registration

In the first part of Table 10.1, we show the efficiency of program registration and outreach efforts. We can see that most people have heard about Takaful. The outreach regarding the program's existence appears to have been very successful, with 82 percent of the sample having heard about Takaful, and this is relatively evenly distributed among the quintile groups. In terms of applying to the program, we see that a higher proportion of the poorest two quintiles apply for Takaful compared with the higher quintiles. This is the result of both self-selection within communities and the geographical rollout that started with campaigns in the poorest areas of the country. We also see that much of the exclusion of poor households occurs at the level of registration, as only 50 percent of households in the poorest quintile and less than half of households in the poorest 40 percent applied to Takaful. Some households that did not sign up were those that did not know about the program, while others knew about the program but thought rightly or wrongly that they would not be eligible due to the exclusion factors.

Efficiency of Beneficiary Selection

The third row of Table 10.1 shows the acceptance rate among those who applied for Takaful by expenditure quintile. More than half of registrants in the lowest quintile of expenditure are rejected, while 13 percent of registrants in the highest quintile are accepted. As described above, this level of inclusion and exclusion error is not atypical of targeting using a PMT score. The PMT score, while predictive on average of household expenditure, is expected to be imperfect at judging individual cases. Additionally, the PMT score does not capture changes in expenditure due to transitory shocks (Alatas et al. 2012). For example, if a household owns a house made of concrete that was inherited decades ago, they may appear as if they own a

TABLE 10.1—TAKAFUL TARGETING BY EXPENDITURE QUINTILE

	Poorest 20%	20%–40%	40%–60%	60%–80%	Richest 20%	Total
Share heard of Takaful (of all households)	0.85 (0.026)	0.82 (0.027)	0.84 (0.026)	0.82 (0.024)	0.79 (0.038)	0.82 (0.019)
Share applied to Takaful (of all households)	0.50 (0.033)	0.42 (0.037)	0.33 (0.034)	0.30 (0.031)	0.17 (0.027)	0.35 (0.023)
Acceptance rate of applicants	0.41 (0.036)	0.23 (0.044)	0.22 (0.042)	0.18 (0.046)	0.13 (0.050)	0.27 (0.035)
Share Takaful beneficiaries (of all households)	0.20 (0.023)	0.10 (0.022)	0.07 (0.016)	0.06 (0.016)	0.02 (0.009)	0.09 (0.013)
Share of HHs that meet at least one exclusion criteria (of all households)	0.17 (0.021)	0.29 (0.027)	0.25 (0.030)	0.35 (0.028)	0.51 (0.040)	0.31 (0.018)
Observations (all)	339	338	339	338	338	1,692
Observations (applicants)	165	137	107	99	52	560
Share of Takaful beneficiaries in this quintile	**45%**	**22%**	**16%**	**12%**	**5%**	**100%**
Share of Takaful benefits received by this quintile	46%	18%	17%	13%	5%	100%
Share of Takaful beneficiaries in this quintile *if all applied*	35%	20%	19%	16%	11%	100%

Source: Authors.

Note: Data are from the weighted nationally representative sample of households with children using counterfactual based on subtraction of the transfer amount. In the upper section, shares are computed out of all households in the quintile except for the third row (Acceptance rate of applicants). In the lower section, the percentage is out of all beneficiaries. Standard errors in parentheses.

large asset that would disqualify them from the program. However, that household may not have the option to liquidate that asset and may have just as limited earning opportunities as a household who is counted as poor because they do not have this asset. The use of exclusion criteria may also be worsening the overall efficiency of beneficiary selection as described below.

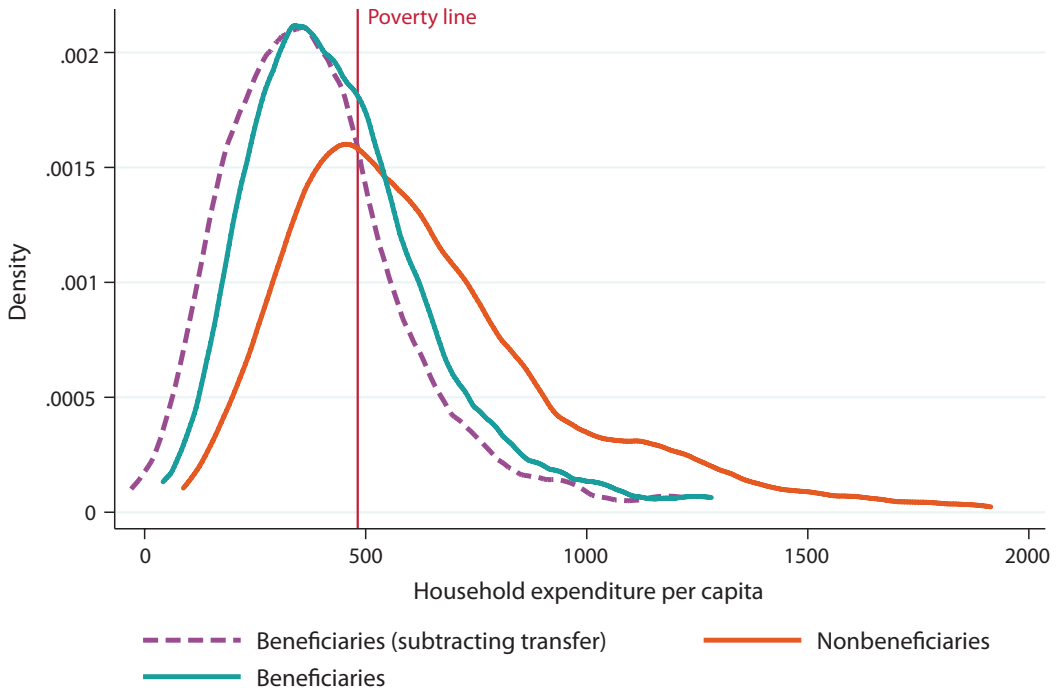
In the final row of Table 10.1, we present a counterfactual conjecture about how effective targeting would have been based on these acceptance rates if households in all quintiles had applied to the program at equal rates (in other words, without the geographic rollout and self-selection). Based on acceptance rates alone, only 55 percent of beneficiaries would have been in the first two quintiles. Due to self-selection and geographical rollout, the actual targeting rate was considerably better.

Overall Targeting Efficiency

In the fourth row of Table 10.1, we show the share of households in each quintile who are actually Takaful beneficiaries. This share is influenced by both the probability of registering for Takaful and the probability of being accepted conditional on registering. Only 20 percent of households in the poorest quintile and 10 percent of households in the second quintile are beneficiaries, for a total coverage of approximately 15 percent of poor households.

This low coverage rate is due to the high cut-off used, which means that the population of poor households is far larger than the share that can be covered by the program. The overall targeting performance of the program meets its goal if poverty is broadly defined, with 67 percent of beneficiary households in the lowest two quintiles of households with children.

FIGURE 10.2—DISTRIBUTION OF EXPENDITURE BY BENEFICIARY STATUS



Source: Authors.

Note: This figure is a kernel density plot of household expenditures for three different groups. Total area under each curve is normalized to one, although the groups are not of equal size.

Exclusion Factors Often Exclude Poor Households

Neglected in the above discussion is the fact that the postregistration selection of beneficiaries is actually a combination of PMT targeting and exclusion factors. While we do not have data on enrollment in social insurance, the first five exclusion factors can be checked in our dataset according to self-reports. (We were not able to verify whether households with exclusion factors were rejected from the program for this reason.) Table 10.1 shows that overall 31 percent of Egyptian households with children meet

at least one of these exclusion criteria. Table 10.1 also shows that, among households in the first quintile, 17 percent of households would not have been eligible for Takaful due to these exclusion factors (some households applied and were rejected while others may have decided not to apply knowing that they would not qualify). The leading exclusion factor among the poorest quintile was receiving a government pension or having a government job. While the use of exclusion criteria does not necessarily aid in overall program targeting given that the poorest households are only somewhat less likely to be excluded by these factors than better-off households, these factors are the most visible and accepted part of the program targeting from the point of view of beneficiaries, as described below.

Urban Poor Households Are Less Likely to Become Beneficiaries

In Table 10.2, we examine heterogeneity of targeting effectiveness in urban as compared with rural areas. Takaful beneficiaries are disproportionately rural, reflecting the geography of poverty in Egypt as well as the geographical targeting during rollout. However, there are still significant numbers of urban poor: approximately one-third of our sample in the lowest two quintiles were located in urban areas. Urban households were somewhat less likely to have heard of Takaful or applied to Takaful. This is likely related to the challenge of outreach in urban areas, where social networks for sharing information are more fragmented. More dramatically, however, 18 percent of urban poor are accepted to Takaful if they apply, compared with 31 percent of rural poor. As a result of both lower application rates and lower acceptance rates, only 9 percent of poor households in urban areas are Takaful beneficiaries, compared with 18 percent in rural areas. This suggests room for improvement in the way that the PMT and exclusion factors act to screen urban beneficiaries. Because the exclusion factors were introduced later in the program, they had a disproportionate impact on urban households, which became eligible to apply only in the later waves of the program.

TABLE 10.2—COMPARISON OF URBAN AND RURAL TARGETING

	Urban households in poorest 40%	Rural households in poorest 40%
Heard of Takaful	0.78 (0.04)	0.86 (0.03)
Applied to Takaful	0.37 (0.04)	0.50 (0.04)
Takaful beneficiary (currently receiving benefits)	0.09 (0.03)	0.18 (0.03)
Observations (all)	229	448
Share of applicants accepted	0.18 (0.05)	0.31 (0.03)
Observations (applicants)	181	379

Source: Authors.
Note: Standard errors in parentheses.

Magnitude of Transfer Amounts Relative to Income for Beneficiaries

For the average beneficiary, the transfer represents only 17 percent of household expenditures, while for the poorest quintile, the size of the transfer is a substantial 25 percent of expenditures (Table 10.3). Recall from above that less than half of Takaful beneficiaries are in this poorest quintile. This points to how an improvement in targeting would also increase program impacts.

TABLE 10.3—TAKAFUL TRANSFER AS A SHARE OF EXPENDITURE

	Poorest 20%	20%–40%	40%–60%	60%–80%	Richest 20%	Total
Share of Takaful transfer in expenditure for beneficiaries	0.25 (0.03)	0.13 (0.01)	0.11 (0.01)	0.15 (0.01)	0.09 (0.003)	0.17 (0.02)
Observations	76	39	26	17	8	137

Source: Authors

Note: Standard errors in parentheses.

TABLE 10.4—COMPARISON OF ACCEPTANCE RATES BY REGISTRATION PERIOD

Registration period	All	Poorest 20%	Richest 20%	Observations
March–November 2015 (Threshold = 5,003)	0.51 (0.08)	0.73 (0.11)	0.33 (0.13)	68
December 2015–September 2016 (Threshold = 4,296)	0.33 (0.04)	0.47 (0.05)	0.17 (0.09)	234
September 2016–July 2017 (Threshold = 4,500)	0.16 (0.03)	0.25 (0.06)	0	220
			Total	522

Source: Authors.

Notes: Data are from the weighted nationally representative sample of households with children, restricted only to registrants for which the registration date is not missing in the survey. Standard errors in parentheses.[5]

Much Higher Acceptance Rates Prior to the Introduction of Household Visits

We also examined how targeting effectiveness changed during the rollout of the program. Table 10.4 presents the probability of acceptance conditional on registration date for applicants in four different registration periods. Because only current beneficiaries are counted, this analysis does not fully capture how targeting changed over time, since some early beneficiaries were later excluded. During the early period, there was a high degree of geographical targeting, reflected in the high probability of enrollment, including accepting one-third of beneficiaries from the highest quintile. This type of inclusion error is much lower for applicants who registered later, and almost zero among applicants who registered since September 2016. On the other hand, poor applicants who registered later are also much less likely to be included. According to the MoSS, during the early phase of the program, there were no household visits to verify housing conditions and assets. This explains the high rate of inclusion error. Even though the PMT formula was secret, households could make some guesses about the types of answers on the application form that would increase the probability of their enrollment in the program, and by relying only on self-reports, there was room for well-off households to underreport their assets. On the other hand, the low rate of exclusion during this early phase points to the positive role of the geographic rollout and campaigns, as social workers took part in active outreach to poor areas, rather than relying on poor households to present themselves at the social unit to apply.

In terms of the cost-effectiveness of the household survey, as a back-of-the-envelope calculation, if we assume that a third of the 17 percent of households in the richest quintile that apply continued to be accepted based on the acceptance rate in the first wave of the program, at least 5 percent of the program's total resources would be lost to leakage to households that are clearly not poor. Although we do not have detailed cost information for the household survey, this is high enough to suggest that the reduction in leakage was almost certainly worth the additional cost.

5 The number of surveys for which the registration date is missing is not very large, only 38 out of 560 (6.7 percent), so we are not too concerned that any systemic variation with other characteristics would change the overall pattern.

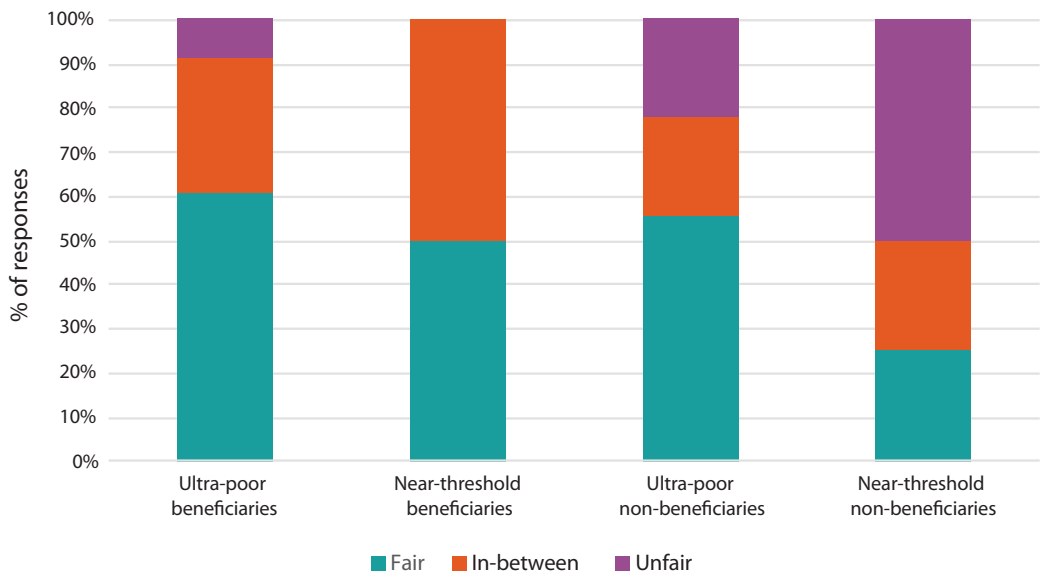
Perceptions of Targeting Outcomes

While the quantitative analysis above gives a precise answer relative to measured household expenditure about targeting efficiency, policy makers may also be concerned about how targeting is perceived on the ground by households.

Perceptions of Targeting Outcomes

In our qualitative survey, we asked participants in the semi-structured interviews whether they viewed the program as very fair, fair, in-between (neither fair nor unfair), unfair, or very unfair. Ultra-poor beneficiaries were the most likely to perceive the targeting process as fair or very fair, while nonbeneficiaries generally, and particularly nonbeneficiaries near the threshold, tended to see less fairness in the selection process (Figure 10.3). Representative of these ultra-poor households, a female beneficiary from the relatively dynamic rural community in Upper Egypt responded that "those who are in are need for it, receive it." Likewise, a woman from the more static rural community in Upper Egypt believes that "those who got the transfer need it and it's helping them with their livelihood."

FIGURE 10.3—FAIRNESS IN TAKAFUL TARGETING AS PERCEIVED BY QUALITATIVE INTERVIEW RESPONDENTS



Source: Authors.
Note: Categories of very fair and fair are combined, as are unfair and very unfair.

That near-threshold nonbeneficiaries reported more perceived unfairness than ultra-poor nonbeneficiaries may be explained by the fact that whereas threshold-level nonbeneficiaries were more likely to be excluded due to the PMT cut-off, ultra-poor nonbeneficiaries were more likely to have been excluded or failed to apply to the program because of exclusion criteria that they knew applied to them. An ultra-poor nonbeneficiary woman describes how knowing the reason for her exclusion made her more accepting of the program targeting:

> "I didn't apply because my husband is an employee. Had I applied and not received the transfer, I would have compared myself to the women who take it. However, I did not apply knowing that I shouldn't, so I don't need to think of why some women took it while I didn't."

In general, though, participants did not only assess the fairness of the beneficiary selection in relationship to their own situation, but also in terms of the situation of other poor households that they knew from the community. For example, a nonbeneficiary woman in rural Lower Egypt shows concern for other poorer nonbeneficiaries that are excluded: "Some families are much worse off than we are, but are not receiving the

transfers." Another female beneficiary from urban Upper Egypt explained, "There are many people in need who don't receive it which is regrettable. In our district we all know each other."

In the focus group discussions, participants discussed how the local poverty line should be defined in their community and then were asked what share of households above and below this self-determined poverty line they observed receiving Takaful transfers. For the question about the share of poor households that receive transfers (the inverse of exclusion error), the choices were most households, three-quarters of households, half of households, or one-quarter or fewer households. For the question about the share of nonpoor households who receive transfers, the choices were half or more, one in five, one in 10, or almost none. Tables 10.5 and 10.6 summarize the perceptions of focus group discussion participants on these targeting outcomes of Takaful. Each tally mark in the tables represents the response of one focus group participant. Table 10.5 shows the share of poor households that focus group participants believed receive the program (the inverse of exclusion error), while Table 10.6 shows the perceived inclusion error.

Perceptions of very high exclusion came up in focus groups in urban areas and in static rural areas, while in the two dynamic rural areas, both of which have a high share of men migrating for work, there were more concerns about inclusion errors.

It is also evident that even within the same community, there is a diversity of views about how well the targeting works. In most communities, the

TABLE 10.5—PERCEIVED SHARE OF POOR WHO RECEIVE TAKAFUL (INVERSE OF EXCLUSION ERROR)

	Upper urban		Lower urban		Lower rural static		Upper rural static		Lower rural dynamic		Upper rural dynamic	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Most households							11111			11111	1	
Three-quarters			111	1			1	1		11	1111	
Half	111		11	11	11111			11	11111	1	1	
One-quarter or less		11111	1			11111	1					111111

Source: Authors.

TABLE 10.6—PERCEIVED SHARE OF NONPOOR WHO RECEIVE TAKAFUL (INCLUSION ERROR)

	Upper urban		Lower urban		Lower rural static		Upper rural static		Lower rural dynamic		Upper rural dynamic	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Half or more									11111	11		
One in five					11					1111	11111	
One in 10					111							
One in 100 or almost none	1111	11111	111111			11111	1111111	111				111111

Source: Authors.

women's focus group mentioned lower exclusion errors than the men's focus group. In at least one community in rural Upper Egypt, this difference in views was reflected in a different perception of who the poor are. The men's focus group considered that their village's many households with family members working abroad should still be considered as poor, while the women's focus group considered households with income from abroad to be too well off to need the program.

Perceptions of the Targeting Process

The qualitative evaluation also allows us to understand in detail how households view the application and selection process. There is general support for the process of verification and household visits to determine who is poor and a broad but imperfect awareness of the exclusion factors. On the other hand, there were many reports of confusion about how the beneficiaries were selected beyond the exclusion factors and about the ability to get a response on the status of applications. This confusion contributed to some cases of discontent with local MoSS officers and reports of increased social tension between beneficiaries and nonbeneficiaries.

General Acceptance of Need for Targeting Mechanism and Checks

During the qualitative data collection, there were many positive mentions by beneficiaries of the verification and exclusion factor systems, as these are seen by community members as evidence that the program makes an effort to exclude those who are better off. For example, a female beneficiary from rural Upper Egypt reported that at the beginning "everyone was applying. Even the rich ones were applying, but now they figured out who needs it and who doesn't." She adds, "when they find that financially comfortable people are getting it, they stop their cards." Respondents mostly felt that their rights are guaranteed through such inspections and verifications, to make sure that those who deserve the transfer receive it, and those who do not stop receiving money. Similarly, an ultra-poor beneficiary from rural Lower Egypt mentioned the checks approvingly: "They check if you have land or own property. And we don't get upset when they come to ask what we own or don't own. Because it's right of them to see our situation and others' situation to pick the right families."

Respondents often mentioned the exclusion factors, showing that there is widespread awareness of these criteria. For example, a nonbeneficiary mother in the dynamic community in rural Lower Egypt explained her answer that targeting is unfair in reference to the exclusion of employees with social insurance: "They are not supposed to give [transfers to] people who have a monthly income. But those who are working on farms for daily wages deserve it, to be able to educate and feed their children." In rural Upper Egypt, a nonbeneficiary and her sister-in-law took the opportunity of replying to the question about program fairness to argue that their own exclusion was unfair, pointing out that "we have no insurance and no car or land, and he is not an employee, and we didn't take it."

Clear but Lengthy Application Process

In terms of the application process itself, Takaful requirements are quite clear to most of those who had applied. A father of four from rural Lower Egypt related that the application process for his family was easy and efficient. "They tell you exactly what to submit and what is still needed. It worked smoothly. There were no challenges. The only challenge was my expired ID which I had to renew first." However, the waiting time to hear back about the application status is unclear and applicants are unsure if they have been rejected. A nonbeneficiary in rural Upper Egypt is still unsure regarding her application status. "We waited five months or so, and you don't know when to expect an answer or if you will get accepted or not."

Unclear Acceptance Criteria

A major challenge with PMT-based targeting is that the acceptance determination is necessarily opaque from the point of view of potential beneficiaries.

The PMT formula itself is kept secret to avoid manipulation. This need for secrecy is especially a concern when, as in Egypt, the components of the PMT score are less visible. Household characteristics such as type of roofing material or sanitation type may be readily visible and hard to easily change, so there is less danger of participants having a general sense of the type of households that receive the program. When the PMT is based on a larger number of characteristics, the targeting efficiency usually improves (Brown, Ravallion, and van de Walle 2016). However, the inclusion of a very large number of variables in the PMT formula, including more easily hidden or misreported household characteristics like ownership of a vacuum cleaner or level of education completed by the parents, means that it becomes harder for observers within the community to discern a reliable pattern in terms of who receives the transfer and who does not. The confusion caused by the PMT-based criteria may also have been particularly strong in Egypt because households concentrated on the exclusion factors being used for targeting. According to one female beneficiary from an urban district in Upper Egypt, "We didn't know the acceptance criteria until they filtered people out and did the checks and their transfers stopped. Nothing was clear, and everyone applied anyway. The papers were clear, but not the criteria." An ultra-poor nonbeneficiary from the same community agreed: "It's very unclear who they pick and don't pick."

Concern about Specific Exclusion Factors

To the degree that households understand the selection process, they mostly concentrate on the exclusion factors. As mentioned above, there were many positive mentions of these exclusion factors showing that the program intended to target the deserving; however, there were also complaints about the way that specific exclusion factors were applied in practice.

Insurance was the disqualifier most mentioned as an obstacle for poor households. Men in the focus group in one community in rural Lower Egypt particularly raised concerns related to insurance, since the village depends on fishing from the Nile, and "anyone who as a fishing permit has to have insurance by default [part of license papers]. So, he cannot receive the transfers, while fishing does not provide him with any income [due to heavy pollution in the river]." In the same focus group, men also insisted that farmers owning a small plot of land should still qualify for Takaful, as they end up making losses on their small farms. A mother-in-law of a beneficiary household in urban Upper Egypt agreed that while people who have cars, land, and so forth should be excluded, some families should likely qualify for Takaful even if receiving "some minor assistance (like insurance)."

Lack of Communication and Transparency Causes Frustration

Although it is not directly related to the targeting mechanism, some frustration about the process of selecting beneficiaries was driven by lack of communication and transparency from the local MoSS office employees to Takaful applicants. A significant number of nonbeneficiaries had applied but had never been informed of their application status. They were either told by their local MoSS office that someone will call them or that they need to reapply, or they have yet to receive information. For example, a young mother of three in rural Upper Egypt is uncertain regarding the status of her application and was given no explanation: "Some of the papers come back with no response. My sister applied twice and they tell her to redo the paperwork from the very beginning, and nothing changes." A man in the focus group discussion in the same community expressed discontent because "these people don't even know the reasons for their rejection." While the PMT-based targeting mechanism makes it hard to give a single reason for rejection, these perspectives suggest that there needs to be a communication strategy that makes it clear that the application has been processed fairly and rejected based on an objective cut-off.

The process of delayed verification of data leading to recalculation of beneficiary status was also not clearly communicated. Some beneficiaries

reported that their card was stopped without any prior notice or any explanation. A poor beneficiary man in rural Lower Egypt was caught by surprise and had no idea why his family's "Takaful transfer stopped suddenly. I filed a complaint but haven't heard back from them."

Regarding concerns about the outreach strategy, IFPRI's qualitative evaluation was not the first to note that communication with applicants and beneficiaries needs improvement. An independent process evaluation in 2016 supported by the World Bank also pointed out communication gaps found especially between the central management and the social units Egypt, MoSS 2016). While the MoSS responded to the findings in this process evaluation by increasing trainings and implementing new communication policies, the continued evidence of confusion suggests that this issue needs further attention.

Concerns about Favoritism

In principle, the local MoSS office simply verifies the applications for completeness and the selection of beneficiaries occurs automatically through the central computer system. However, local MoSS officers do play a role in making sure that the application and notification process works smoothly. The lack of clarity about how beneficiaries are selected and lack of communication about application status combined to make participants suspicious of the role played by the local office workers.

In the dynamic community in rural Upper Egypt, there were a particularly large number of concerns about the staff at the social unit not doing their job correctly and showing favoritism. This was reflected in a complaint during the focus group discussion that "a lot of the documents submitted to the MoSS unit are simply piled on the floor and don't travel to Cairo." A nonbeneficiary mother-in law in this community also reported rumors that "people also say that the social unit workers only send on the documents belonging to the people they want [relatives, and so forth], and burn the rest."

A small number of participants in other communities also mentioned concerns about favoritism. Participants in Lower Egypt also raised concerns related to favoritism, claiming that MoSS employees at the village level would prioritize applications or facilitate paperwork for relatives and friends. A focus group participant in one community in Lower Egypt believes that in his village, "the local MoSS employees do not go out to see the people's living conditions. There is personal preference and laziness involved." A grandmother living with her beneficiary's son's family in Cairo questioned the devotion of local MoSS employees when relating the story of her daughter who had applied for Takaful. "My daughter's name was first on the list, [but] they told her your name is not there, go home, and we will call you … She kept telling them, 'Look for my name. If you do not want to look give me the paper and I will look for it myself,' and then she saw the paper, hers was the first name on the list (of eligibility)."

Corruption is one of the challenges in implementing this type of precise targeting method in countries such as Egypt where administrative capacity and overall trust in the government is limited. The MoSS is making an effort to monitor and clamp down on this type of corruption and has jailed some officers as an example. Additionally, the MoSS has created social accountability committees to foster collective responsibility within the communities. These committees' role is to report any undeserving beneficiary household and to support deserving households in applying to the program. However, these committees were not mentioned by participants in six visited communities in the qualitative fieldwork.

Some Evidence of Increased Social Tensions Caused by Targeting

Frustrations with the selection process may also have contributed to social tensions. In common with other qualitative evaluations focusing on the impact of cash transfers on social relations, respondents agreed that there

were some negative impacts. When asked whether any positive or negative effects existed for nonbeneficiaries, about a third of interview respondents mentioned somewhat unfavorable impacts. A threshold beneficiary, for example, responded, "Yes, I mean people get envious of those who get it. And there's sly comments here and there. But in the end, we're all poor people. No one's really that much more well off than the rest." Mentions of tension between beneficiaries and nonbeneficiaries particularly came up in the community where there were the most complaints about favoritism at the MoSS office. One ultra-poor nonbeneficiary from this community commented, "It created a bit of jealousy between people. Nothing serious, just some looks and perhaps a bit of distance." The social accountability committees that the MoSS created at the community level are also intended as a mechanism to allow community feedback on issues of eligibility.

Overall, the subjective perceptions of the targeting effectiveness fit well with the quantitative findings: the targeting mechanisms generally work to include a higher number of poor households than well-off households; however, respondents are also well aware of individual cases of inclusion or exclusion error. The qualitative data collection helps to show that these targeting errors, even if they are relatively small, have costs in terms of trust in the government and social relations.

Conclusion

This chapter has described the targeting performance of Egypt's Takaful and CCT program as an example of a PMT-based approach to targeting social safety nets. We find that via the combination of the PMT and exclusion factors alone, about 55 percent of beneficiaries would have been considered poor based on a poverty line at the 40th percentile while the addition of geographic targeting increased the incidence to 67 percent. This is in line with what is predicted in the simulation-based literature. The policy choice to use a relatively high cut-off is consistent with a common concern of policy makers with showing low inclusion error rather than with showing low exclusion error. By defining the cut-off at the 40th percentile, inclusion errors are lower than they would be for a more restrictive poverty cut-off. On the other hand, the fact that 45 percent of program beneficiaries are in the poorest quintile shows that households who are poorer were more likely to get accepted into the program than households near the cut-off, pointing again to the helpful role played by the other targeting mechanisms.

Egypt's experience also points to lessons for other countries developing targeted social safety net programs. We show that the higher rate of applications by poor beneficiaries, attributable to both the geographic rollout and outreach focused on poor households as well as self-selection by households, contributed substantially to the program's overall targeting success. The history of the program also shows that while household-level verification is costly, it makes an important difference in terms of preventing leakage, with the difference between the inclusion error in the first wave and subsequent waves of the program. The use of exclusion factors in addition to the PMT-based targeting had a mixed impact. On the one hand, from a quantitative perspective, there is limited evidence that the exclusion factors increased targeting effectiveness. From a qualitative perspective, the exclusion factors were far easier for beneficiaries to grasp than the PMT-based selection process and contributed to an understanding that the program was attempting to be fair. On the other hand, some exclusion factors were applied overly rigorously. The use of these specific factors is now being reconsidered as a revised and updated PMT-based selection process is under development by the MoSS. The qualitative work also shows that clear communication is needed about the PMT-based targeting approach, as the potential exists for confusion about the acceptance criteria in this necessarily opaque method to fuel suspicion about local government officials and exacerbate social tension.

CHAPTER 11

Designing Social Protection Programs

Guush Berhane and Kalle Hirvonen

Rooted in the notion that most poor Africans reside in rural areas and earn their income from agriculture, the Malabo Declaration emphasizes agriculture-led growth as the engine for poverty reduction. But even the most inclusive agricultural growth may not be sufficient to lift everyone out of poverty. In order to take part in and benefit from the growth process, households need to have some basic level of capital (land, productive or durable assets, human capital in terms of health and education, or a combination of these)—and security that these assets will not be depleted in the face of drought or other shocks (Coady, Grosh, and Hoddinott 2004b).

There is now strong evidence that social protection programs can be used effectively to assist those trapped—or at risk of being trapped—in chronic poverty (Andrews, Hsiao, and Ralston 2018; Hidrobo et al. 2018). These programs aim to address chronic poverty through redistribution (transfers) and to protect vulnerable households against falling (further) below the poverty line. Investments in social protection programs are often motivated on the grounds of equity. But they can also contribute to economic growth by encouraging savings (asset accumulation), creating community assets, and addressing credit market imperfections (Alderman and Yemtsov 2014). For example, in Ethiopia, the national safety net program is estimated to contribute to between 0.7 and 1.4 percent of real gross domestic product, even after accounting for the costs of running the program (Filipski et al. 2016).

Encouragingly, social protection programs are becoming increasingly popular in Africa, where their number has tripled in the past 15 years (Hickey et al. 2018). Today, each African country has at least one social safety net program (Beegle, Honorati, and Monsalve 2018). But external funding continues to play an important role in financing these programs, raising concerns about the long-term sustainability of social protection on the continent.[1]

The purpose of this chapter is to give policy makers insights into how to design cost-effective social protection programs. Focusing on social assistance (noncontributory transfers to the poor), we review the literature with respect to three key features of the decision to put such a program in place: targeting, choice of payment modality, and graduation. [2]

How Should Targeting Be Designed in Social Protection Programs?

Costs and Benefits of Targeting

Social protection programs typically aim to target the assistance to the poorest households or individuals. Theoretically, the benefits of targeting are clear. Consider a social protection program with a $100 million annual budget in a country with a population of 10 million people, of whom 2 million are poor. An untargeted transfer program would give $10 to each citizen, whereas a perfectly targeted program would give $50 to every poor individual. All other things constant, the latter program would have more impact in terms of lifting people out of poverty.

However, targeting is easier said than done. Due to imperfect information, identifying the poorest is not straightforward. Thus, program implementers need first to acquire information on the welfare levels of the potential beneficiaries. Collecting this information is costly and reduces the overall budget that can be used for the transfers. There can also be other costs, depending on the targeting method. First, there could be private costs for the beneficiaries. For example, some programs are

1 Bossuroy and Coudouel (2018) estimate that 55 percent of the funding for social protection in Africa comes from development partners.

2 The purpose is not to provide an exhaustive treatment of each topic. As further reading on each topic, we recommend the following: On targeting of social protection programs, see Hoddinott (1999); Coady, Grosh, and Hoddinott (2004a, 2004b); and Ravallion (2015, Chapter 9). For an overview of different payment modalities, see Alderman, Gentilini, and Yemtsov (2017). On graduation, see Devereux and Sabates-Wheeler (2015) and the references therein.

based on self-selection, whereby beneficiaries participate in public works for a small payment or are expected to wait in line in order to receive the transfer. These types of programs carry an opportunity cost in terms of other forgone income-generating opportunities (Coady, Grosh, and Hoddinott 2004b). Alternatively, a strict eligibility criterion may lead households to hide their income or assets—or discourage them from making investments (Coady, Grosh, and Hoddinott 2004b). Second, targeting may also have political costs (see Ravallion 2015, 561). For example, the relatively less poor may feel excluded and decide to vote against the government that initiated the program.[3]

Unsuccessful targeting manifests itself as either exclusion or inclusion errors, or both. Exclusion errors (or undercoverage) arise when some poor households that are eligible are excluded from the program. Inclusion errors (or leakage) are cases in which a nonpoor household is selected into the program. There are many reasons that exclusion and inclusion errors may occur. Exclusion errors may arise due to inadequate budgets, lack of clearly defined eligibility criteria, or lack of proper execution of the set of criteria. Poor households may have limited knowledge about the program and therefore may not apply. Inclusion errors may arise if the program is poorly implemented at the local level.

Targeting errors are also connected to the social protection budget. If the priority is poverty reduction, then exclusion errors should get more weight, but if the priority is to minimize costs, then inclusion errors should get more weight (Hoddinott 1999). Next, we discuss the advantages and disadvantages of different targeting methods, especially with respect to exclusion and inclusion errors.

Different Targeting Methods

Social protection programs can be targeted to the poorest or most vulnerable households in multiple ways. The benchmark is an untargeted transfer program that provides transfers to every person in society. This approach can be effective if the administrative, social, or political costs of targeting are extremely high.

Social protection programs that use income or wealth thresholds to determine eligibility are often considered the most accurate. This targeting method, called *means testing*, is typically used in middle- and high-income countries because these countries tend to have official tax or employment records that facilitate the availability of reliable information on income (wealth or consumption) levels. But in most low-income countries, most people work in the informal sector, and therefore reliable information on incomes is not easy to acquire.

The *proxy means testing* (PMT) method aims to address this problem of imperfect information. The PMT method collects information on selected household characteristics that are thought to be highly correlated with households' level of income or earning capacity. For example, a household that owns a house in good condition (metal roof, cement floor) in addition to cattle and a motorbike is less likely to be poor than one that does not have such commodities. A PMT model aggregates basic household characteristics by assigning different weights to different characteristics. The weights are obtained from an econometric model that regresses household consumption on a set of predetermined, easily observable household characteristics. Characteristics that are highly correlated with consumption get a larger weight in the PMT model. After this econometric exercise, program implementers visit all households in the area and list the assets they own. Each household then gets a score that is basically a weighted sum of the assets it possesses, weights of which come from the regression model.

3 This mechanism could also go another way: poor targeting may cost local leaders (see de Janvry, Finan, and Sadoulet 2012).

Households are then ranked based on their scores, and a certain number of the poorest households are selected to benefit from the program.

Despite the considerable popularity of PMT (Coady, Grosh, and Hoddinott 2004a), there are three main criticisms of the method. First, the main criticism is that PMT is often highly inaccurate in distinguishing poor from nonpoor households (Kidd and Wylde 2011; Brown, Ravallion, and Van de Walle 2018). Using data from nine African countries, [4] Brown, Ravallion, and Van de Walle (2018) find that whereas PMT performs well in reducing inclusion errors, it excludes a large number of poor households. In terms of overall poverty reduction, the authors further find that the gains of PMT over a universal transfer program are marginal. Second, although PMT is sometimes preferred for its transparency, it may be difficult for communities to grasp the method behind it, and as a result, it may become difficult for the local authorities to explain to people why some households are chosen and others are not (Adato and Roopnaraine 2004). In Indonesia, a poorly targeted transfer program was found to undermine social cohesion and increase the incidence of crime in participating communities (Cameron and Shah 2013). Finally, because PMT typically focuses on easily observable assets, it tends to ignore the effect of recent economic shocks on household well-being. Therefore it is better suited for identifying chronically poor households than for capturing transient poverty or vulnerability.

An alternative—and increasingly popular (Coady, Grosh, and Hoddinott 2004a)—solution to address information asymmetries is to ask the communities themselves to identify the poorest households. The underlying assumption here is that communities have better knowledge than program implementers of households' poverty status. In addition, communities may also apply a concept of poverty that is different from the money metric underlying the PMT approach (Alatas et al. 2012). Typically, community leaders rank each household in the community by its poverty or food security status, and the poorest households are selected to benefit from the program. The risk of community-based targeting is that leaders may manipulate the process to favor their friends and relatives. The available evidence suggests that such elite capture is less likely to occur in communities that are more egalitarian and have more transparent decision-making structures in place (Conning and Kevane 2002).

Under geographic targeting, the program is rolled out in certain geographic areas that have a high poverty rate or host a large number of poor and vulnerable households. Similarly, demographic targeting restricts transfers to certain demographic groups, such as the elderly, women, or households with young children. For example, Ethiopia's Productive Safety Net Programme uses geographic targeting (together with community targeting) (Coll-Black et al. 2011) whereas the South African old-age pension program (Case and Deaton 1998) is based on demographic targeting. These targeting instruments are blunt in the sense that, depending on the context, many people who simply reside in the area or belong to the demographic group but are not in real need may end up receiving transfers. Thus, geographic targeting makes sense when the density of poverty is high in the targeted area. Similarly, demographic targeting works best when a large fraction of people in the demographic group are poor.

Self-selection methods, in which everyone is eligible but only the poorest may want to take part in the program, may also be an effective way to target. For example, public works programs typically require program participants to undertake manual labor for relatively low pay. In this case, wealthier households may voluntarily opt out. Other examples of targeting based on self-selection are programs that offer in-kind benefits, such as inferior-quality starchy staples that are not preferred by richer households, or programs in which recipients must stand in line to receive the transfer.

4 Burkina Faso, Ethiopia, Ghana, Malawi, Mali, Niger, Nigeria, Tanzania, and Uganda.

Whatever the targeting method, implementation efficiency and overall implementation capacity cannot be overlooked. International evidence on targeting accuracy suggest that richer countries—supposedly with better administrative capacity—are better at reaching their poor than are lower-income countries (Coady, Grosh, and Hoddinott 2004a; Ravallion 2015, 547–550). It also seems obvious that the choice of targeting method needs to be grounded in the local context. As recommended by Brown, Ravallion, and Van de Walle (2018), it is advisable to pilot and evaluate different targeting methods before a full scale-up. Finally, the evidence provided in Coady, Grosh, and Hoddinott (2004a) suggests that a combination of different targeting methods leads to better targeting accuracy than a single method.

Choice of Payment Modality

Another key decision in social assistance programs is the choice of payment modality: cash, in-kind, or both. [5] In-kind transfers can be in the form of food or nonfood items or services (such as education and health services). They are sourced either locally or internationally and delivered to beneficiaries by the program implementers. Cash transfers can be made via hard cash or electronically, for example using mobile banking. [6] In contrast to in-kind transfers, cash transfers do not restrict the consumption choices of the recipients. Relative to food or in-kind transfers, the cost of administering cash transfers is typically considerably lower (Gentilini 2016b). Cunha (2014) estimated that in Mexico, in-kind transfers were at least 18 percent more costly to administer than cash transfers. The estimates by Hidrobo and colleagues (2014) from Ecuador are of a similar magnitude.

Despite these considerations, in-kind and voucher-based transfers remain more common in low- and middle-income countries than cash transfers (Alderman, Gentilini, and Yemtsov 2017, 6–7). In-kind transfers are often chosen to encourage beneficiaries to consume products or services that are considered beneficial to them. Common examples include food, education, and healthcare (Currie and Gahvari 2008). An important question is whether consumption outcomes actually differ across payment modalities. Research on the consumption effects of different payment modalities in low- and middle-income countries suggests that program beneficiaries mostly spend their extra income on food (Hoddinott and Skoufias 2004; Attanasio and Mesnard 2006; Maluccio 2010; Gilligan et al. 2013). Recent experimental studies comparing different payment modalities find negligible differences in the amount spent on food. Using an experimental design in Ecuador, Hidrobo and colleagues (2014) found that cash, food, and vouchers all increased food consumption. Similarly, using a program that randomly allocated cash or food transfers to recipients in Mexico, Cunha (2014) was unable to reject the hypothesis that both transfer modalities led to the same increase in food consumption. Finally, an often cited concern about cash transfers is that they increase the consumption of temptation goods such as alcohol and tobacco. However, the available evidence does not lend support to this notion (Evans and Popova 2017).

Sometimes, specific conditions lead policy makers to abandon cash payments. First, the obvious precondition for cash payments is that markets exist (Gentilini 2016a). Second, cash transfers are often thought to increase food prices, especially in areas characterized by poorly integrated markets. However, studies from Mexico (Cunha, De Giorgi, and Jayachandran 2018) and Ethiopia (Hoddinott et al. 2018) do not find evidence that they do so, suggesting that these concerns may not be warranted. Rapid food price inflation offers another reason for favoring food transfers. The value of a cash transfer is typically fixed so that it permits the purchase of a certain (food) consumption basket. But if value adjustment is done infrequently (such as only once a year), food price inflation can quickly erode the (real)

5 Payments can also be made in the form of vouchers, typically tied to the purchase of a given good.

6 For a useful review of the advantages and disadvantages of electronic payments, see Bruni, Guven, and Monsalve (2018).

value of the cash transfer. This is what happened in Ethiopia during the 2008 food price spike (Sabates-Wheeler and Devereux 2010).

Finally, in-kind transfers may also be preferred on targeting grounds (Nichols and Zeckhauser 1982; Bearse, Glomm, and Janeba 2000; Currie and Gahvari 2008). As discussed earlier, if identifying eligible beneficiaries is problematic, in-kind transfers are thought to be useful, presumably because they appeal only to those in need. However, in practice, it is difficult to identify products or services that wealthier households are not interested in. Moreover, offering a good or service that is not valued by beneficiaries is unlikely to be efficient, or a good use of public resources.

Graduation

As discussed above, the core objective of social protection programs is to lift households out of chronic poverty into livelihoods that are sustainable. This aspiration implies that after a certain period of support, households are expected to sustainably exit the program. Devereux and Sabates-Wheeler define *graduation* as "leaving a social protection programme after reaching a well-being threshold, once the participant has acquired a set of resources that is expected to equip them for a higher-income future livelihood" (2015, 1).[7]

Graduation is closely linked with overall budget considerations. Increasing the number of households that sustainably graduate from social assistance programs leads to a reduction in the number of beneficiaries. Thus, investments in successful graduation programs could also serve to reduce the fiscal burden of social protection.

However, it is important to note that to graduate, households often need additional support that is not part of the basic safety net package. Emerging research tries to understand what type of support is needed to ensure sustainable graduation. Graduation programs typically involve providing *sequenced* and *intensive* packages of support to the very poor with the aim of raising their well-being above a threshold where they are no longer considered extremely poor and are progressing toward resilient and sustainable livelihoods (Devereux and Sabates-Wheeler 2015).

Graduation is a relatively new concept and there is no blueprint as to which combination works better in what context. Summarizing empirical studies from evaluations of programs in eight countries in Asia and Africa, Devereux and Sabates-Wheeler (2015) describe "graduation-model" programs pioneered by BRAC (the former Bangladesh Rural Advancement Committee) in Bangladesh. The BRAC model, which has been successfully applied in a wide variety of contexts (Banerjee et al. 2015), begins with the recognition that graduation cannot be achieved through cash transfers alone. A holistic approach with complementary promotional interventions such as a household asset-building plan, followed by savings and access to credit as well as coaching in life skills—all combining to guarantee a future stream of income after the program ends—is deemed critical (Hashemi and Umaira 2011). Cash transfers are thus expected to play a protective role, stabilizing household consumption and thereby protecting against asset depletion so the household can meet basic needs and mitigate liquidity constraints as needed for productive investments.

Much more research is needed to better understand different aspects of graduation models. First, there is little evidence on the long-term sustainability of these programs: do graduated households eventually regress to engaging in low-income activities? The available evidence from East Asia suggests that this is not the case; the large positive impacts documented in the short term persist in the medium term (seven years) (Banerjee et al. 2016; Bandiera et al. 2017). Second, can these graduation models be scaled up? In particular, it remains to be seen whether public servants, often burdened with several competing duties, can effectively manage these

7 In the context of the Ethiopian Productive Safety Net Programme, graduation is defined as follows: "Households whose food security status has improved sufficiently that they no longer need transfers are expected to graduate from the program. The key criteria[on] for graduation is that *households achieve food sufficiency in the absence of external support*" (Ethiopia, MoARD 2014, 3-2, emphasis added).

BRAC-type graduation programs, for which implementation intensity is high. Third, can these programs be successful in remote areas characterized by limited economic opportunities? In these areas, moving away from low-productivity activities could be very difficult (Kraay and McKenzie 2014). Therefore, in remote, landlocked geographies, reducing barriers to migrating internally could be a more promising strategy to reduce poverty (De Weerdt 2010; Bryan, Chowdhury, and Mobarak 2014; Hirvonen 2016).

Concluding Discussion

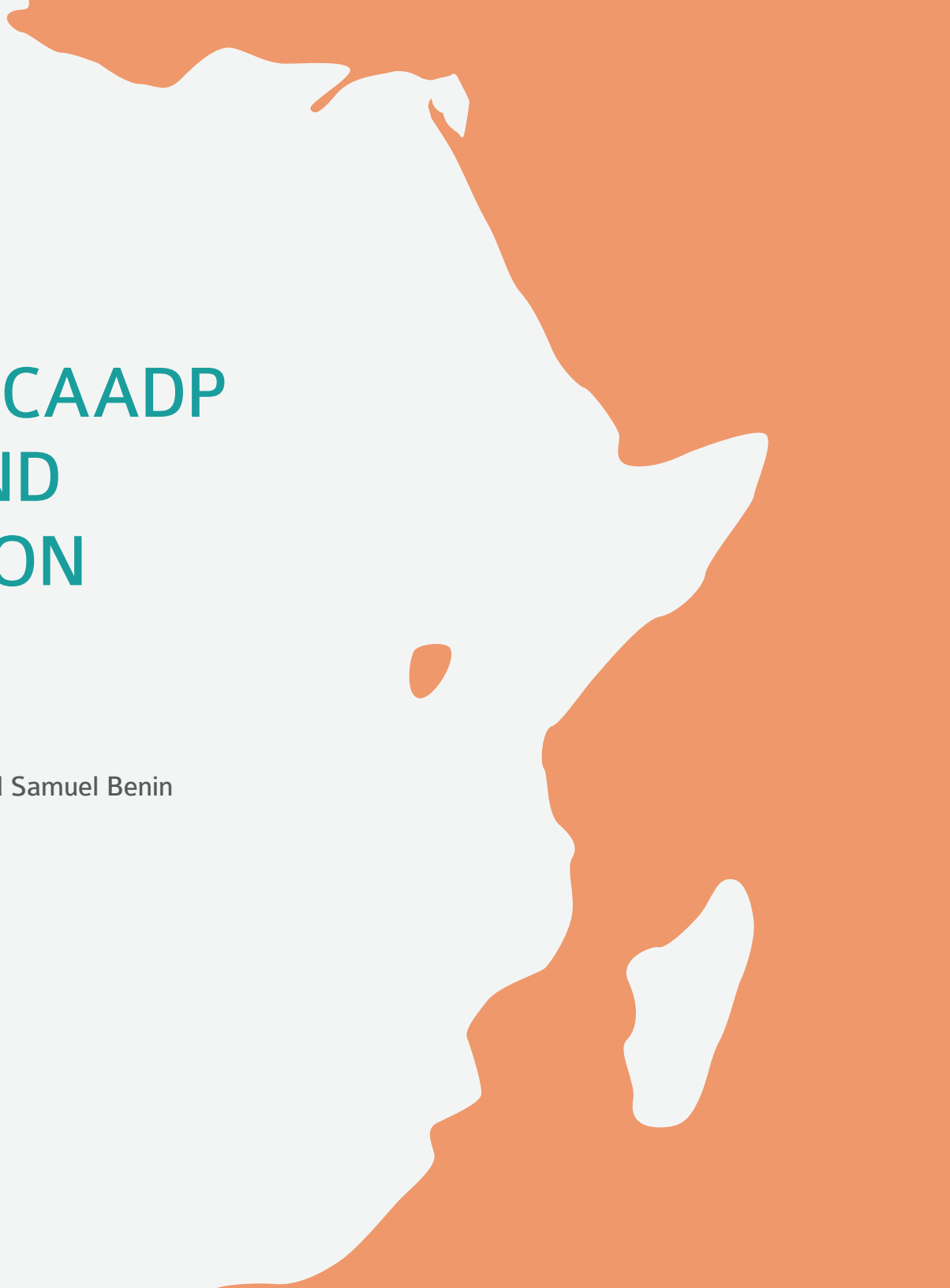
The implementation of social protection programs involves several important decisions, ranging from how transfers should be targeted to what type of transfers should be given (food, cash, or vouchers) and how to promote sustainable graduation from these programs. This chapter has reviewed several options that policy makers have at their disposal regarding these decisions, while pointing out that decisions should be based on and tailored to the local context. Experimenting with small-scale pilots and evaluating different approaches is highly recommended before a full scale-up takes place. Furthermore, monitoring and evaluation (M&E) systems should be developed early on as a core component of program design. Well-functioning M&E systems provide the opportunity to document progress in implementation and to generate information that can be used to improve the overall design of programs.

Finally, to ensure the long-term sustainability of these programs, it is important to move toward domestic financing models. Currently, most low-income countries do not have the capacity to fund their own social protection programs through tax income alone (Ravallion 2010). Therefore, it is imperative to put in place an effective domestic resource mobilization system and strengthen national tax collection systems (Niño-Zarazúa et al. 2012; Bruni, Guven, and Monsalve 2018).

CHAPTER 12

TRACKING KEY CAADP INDICATORS AND IMPLEMENTATION PROCESSES

Tsitsi Makombe, Wondwosen Tefera, and Samuel Benin



The Comprehensive Africa Agriculture Development Programme (CAADP) is Africa's policy framework for transforming the agriculture sector and achieving broad-based economic growth, poverty reduction, and food and nutrition security. It was officially adopted by the African Union (AU) heads of state and government in the 2003 Maputo Declaration on *Agriculture and Food Security* with two main targets: achieving a 6 percent annual agricultural growth rate at the national level and allocating 10 percent of national budgets to the agriculture sector. The commitment to CAADP was renewed at the AU Assembly in 2009. Again in 2014, the AU heads of state and government reaffirmed their commitment to CAADP by adopting the Malabo Declaration on *Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods*. In the Malabo Declaration, they made seven broad commitments including upholding the CAADP principles and values; enhancing investment in agriculture; ending hunger and halving poverty by 2025; boosting intra-African agricultural trade; enhancing resilience to climate variability; and strengthening mutual accountability for actions and results by conducting a Biennial Review (BR) of progress made in achieving the commitments. This chapter discusses progress on key CAADP and BR indicators across different geographic and economic groupings in the continent, comparing trends since adoption of CAADP in 2003 (that is, from 2003 to 2017) with the pre-CAADP subperiod (1995 to 2003).

Brief History of the Indicators Tracked by ReSAKSS

Since 2008, the Regional Strategic Analysis and Knowledge Support System (ReSAKSS) has been tracking progress on core CAADP indicators through its flagship Annual Trends and Outlook Reports (ATORs) and website (www.resakss.org).[1] The indicators tracked and reported on by ReSAKSS have changed over time in response to the evolution of CAADP and the commitments made by the AU heads of state and government. It started with 42 indicators, which were based on the first CAADP Monitoring and Evaluation (M&E) Framework, developed by ReSAKSS (Benin, Johnson, and Omilola 2010). These 42 indicators were organized under six categories derived from the CAADP M&E framework: (A) enabling environment—9 indicators; (B) implementation process—11 indicators; (C) agricultural spending—4 indicators; (D) agricultural productivity and growth—7 indicators; (E) agricultural trade—5 indicators; and (F) development outcomes—6 indicators. Table 12.1 provides an overview of the thematic indicators under the different monitoring frameworks.

With the development of the CAADP Results Framework (RF) by the AU for 2015–2025 (AUC and NPCA 2015), the indicators tracked and reported by ReSAKSS have been reorganized under the three levels of the CAADP RF. Level 1 includes broader development outcomes and impacts to which agriculture contributes, including wealth creation; food and nutrition security; economic opportunities, poverty alleviation, and shared prosperity; and resilience and sustainability. Level 2 includes the outputs from interventions intended to transform the agriculture sector and achieve inclusive growth: improved agricultural production and productivity; increased intra-African regional trade and functional markets; expanded local agro-industry and value-chain development, inclusive of women and youth; increased resilience of livelihoods and improved management of risks in agriculture; and improved management of natural resources for sustainable agriculture. Level 3 includes inputs and processes required to strengthen systemic capacity to deliver CAADP results and create an enabling environment in which agricultural transformation can take place: effective and inclusive policy processes; effective and accountable

1 ReSAKSS was established in 2006 to provide data and knowledge products to facilitate CAADP benchmarking, review, dialogue, and mutual learning processes. ReSAKSS is facilitated by the International Food Policy Research Institute (IFPRI) in partnership with Africa-based CGIAR centers, the African Union Commission (AUC), the NEPAD Planning and Coordinating Agency (NPCA), and leading regional economic communities (RECs).

institutions that regularly assess the quality of implementation of policies and commitments; strengthened capacity for evidence-based planning, implementation, and review; improved multisectoral coordination, partnerships, and mutual accountability in sectors related to agriculture; increased public and private investments in agriculture; and increased capacity to generate, analyze, and use data, information, knowledge, and innovations. There are 38 indicators in the CAADP RF, 14 for level 1, 12 for level 2, and 12 for level 3 (see Table 12.1).

Although the CAADP RF is intended to help track progress in implementing the Malabo Declaration, the CAADP BR process initiated in 2015 has resulted in a new set of 43 indicators (AUC 2017) aimed at tracking the specific commitments in the Declaration through the Africa Agriculture Transformation Scorecard (AATS). The CAADP BR and AATS indicators are organized by the seven Malabo themes: 3 indicators on CAADP process, 6 on investment finance, 17 on ending hunger, 8 on halving poverty, 3 on boosting intra-African agricultural trade, 3 on enhancing resilience, and 3 on mutual accountability (Table 12.1).

As a result of the above changes, and to maintain historical trends, in key indicators for future evaluation studies on CAADP, ReSAKSS has been expanding its database to track the indicators in the CAADP RF and BR, and continues to support CAADP implementation processes. ReSAKSS is currently tracking 58 indicators, and they are available on the ReSAKSS website. These include 42 quantitative indicators on specific CAADP-related actions that have measurable targets and 16 qualitative indicators on the CAADP implementation processes. Trends in the indicators can be seen on the ReSAKSS website, organized under the three levels of the CAADP RF and one additional category that includes "other" important indicators of interest to CAADP stakeholders. However, some of the indicators in the CAADP RF and the CAADP BR/AATS, especially those on access to finance, value-chain development, resilience, and some of those

TABLE 12.1—NUMBER OF INDICATORS BY CAADP MONITORING FRAMEWORK

CAADP Monitoring Framework	Number of Indicators
CAADP M&E Framework (Benin, Johnson, and Omilola 2010)	**42**
Area A: Enabling environment	9
Area B: CAADP implementation process	11
Area C: Government agricultural spending	4
Area D: Agricultural productivity and growth	7
Area E: Agricultural trade	5
Area F: Development outcomes	6
CAADP Results Framework (AUC and NPCA 2015)	**38**
Level 1: Agriculture's contribution to growth and development	14
Level 2: Agricultural transformation and inclusive growth	12
Level 3: Systemic capacity to deliver results	12
CAADP Biennial Review and Africa Agriculture Transformation Scorecard (AUC 2017)	**43**
Theme 1: CAADP processes and values	3
Theme 2: Investment finance in agriculture	6
Theme 3: Ending hunger by 2025	17
Theme 4: Halving poverty by 2025	8
Theme 5: Boosting intra-African trade in agricultural commodities and services	3
Theme 6: Enhancing resilience to climate variability	3
Theme 7: Mutual accountability for results and actions	3

Source: Authors.

disaggregated for women and youth, are not yet included in the ReSAKSS database as the data are not yet available. These missing indicators will be added as data become available.

Objectives of the Chapter

This chapter discusses progress on the 29 CAADP indicators for which cross-country data have been assembled so far—details of the indicators and aggregate statistics are available in the data tables in Annexes 1–3 of this report. In line with the social protection theme of the 2017–2018 ATOR, the chapter also discusses trends in government social protection expenditures. This is done along with a presentation of trends on the CAADP level 3 indicators that includes government spending on agriculture. Details on the indicators and on the aggregate statistics on government social protection expenditures are presented in the supplementary data tables in Annex 5 of this report along with 13 indicators in the "other" category that are relevant for monitoring progress on the CAADP implementation agenda.

Progress in CAADP Implementation Processes

The first decade of CAADP (2003–2013) was largely characterized by an implementation process that provided countries and regions with a clear set of steps to embark on through the CAADP roundtable process. These steps included signing a CAADP Compact, developing national or regional agriculture investment plans (NAIPs or RAIPs), and holding a CAADP business meeting. With CAADP now in its second decade, countries and regions are updating or developing their NAIPs/RAIPs to ensure that they are compliant with the Malabo Declaration commitments. At the country level, the process starts with a Malabo domestication event, led by the African Union Commission (AUC), the NEPAD Planning and Coordinating Agency (NPCA), and regional economic communities (RECs), that convenes CAADP constituencies to discuss and agree on a country roadmap for a NAIP review and refresh process and the subsequent implementation process as well as roles, timelines, and coordination modalities. A NAIP provides detailed implementation plans for achieving CAADP/Malabo Declaration goals and targets. The CAADP BR is an important mechanism for tracking progress toward achieving Malabo commitments which are implemented through Malabo-compliant NAIPs. This section describes country and regional progress in the CAADP implementation process, including NAIP formulation, agriculture joint sector review (JSR) assessments, and the CAADP BR using qualitative and quantitative indicators (details reported in Table L3a in Annex 3d).

Beginning in 2016, the AUC, NPCA, and relevant RECs have organized Malabo domestication events in various countries to launch the Malabo-compliant NAIP process. Among the outputs of these events is a roadmap outlining each country's NAIP development process, including a plan for embedding the NAIP in the country's planning and budgeting processes to ensure it receives adequate financing for successful implementation. To date, domestication events have been held in 16 countries (Table L3(a)). Technical support from ReSAKSS and IFPRI leads to the production of a Malabo Status Assessment and Profile report, which evaluates the current situation in a country and implementation of the first-generation NAIP, and a Malabo Goals and Milestones Report that analyzes requirements for achieving Malabo targets. By August 2018, Malabo Status Assessments and Profiles had been completed for 21 countries; Malabo Goals and Milestone Reports had been completed for 16 countries—that is, all 15 member states of the Economic Community of West African States (ECOWAS) plus Kenya. A total of 19 countries had either drafted and/or reviewed and/or validated their Malabo-compliant NAIPs as of the end of August 2018 (Table L3(a)).

The Malabo Declaration calls for strengthening national and regional institutional capacities for knowledge and data generation and management to support evidence-based planning, implementation, and M&E.

Agricultural JSRs are one means of operationalizing mutual accountability. JSRs provide an inclusive, evidence-based platform for multiple stakeholders to jointly review progress; hold each other accountable for actions, results, and commitments; and, based on gaps identified, agree on future implementation actions. To strengthen mutual accountability, ReSAKSS, at the request of AUC and NPCA and in collaboration with Africa Lead, has to date initiated agricultural JSR assessments in 30 countries. These assessments evaluate the institutional and policy landscape as well as the quality of current agricultural review processes. Areas that need strengthening are identified in order to help countries develop JSR processes that are regular, comprehensive, and inclusive. Of the 30 countries where JSR assessments have been initiated, 7 were completed in 2014 and 12 were completed between 2015 and August 2018, bringing the total number of countries with completed assessments to 19 (Table L3(a)). At the regional level, in June 2016 ECOWAS became the first REC to hold a regional JSR.

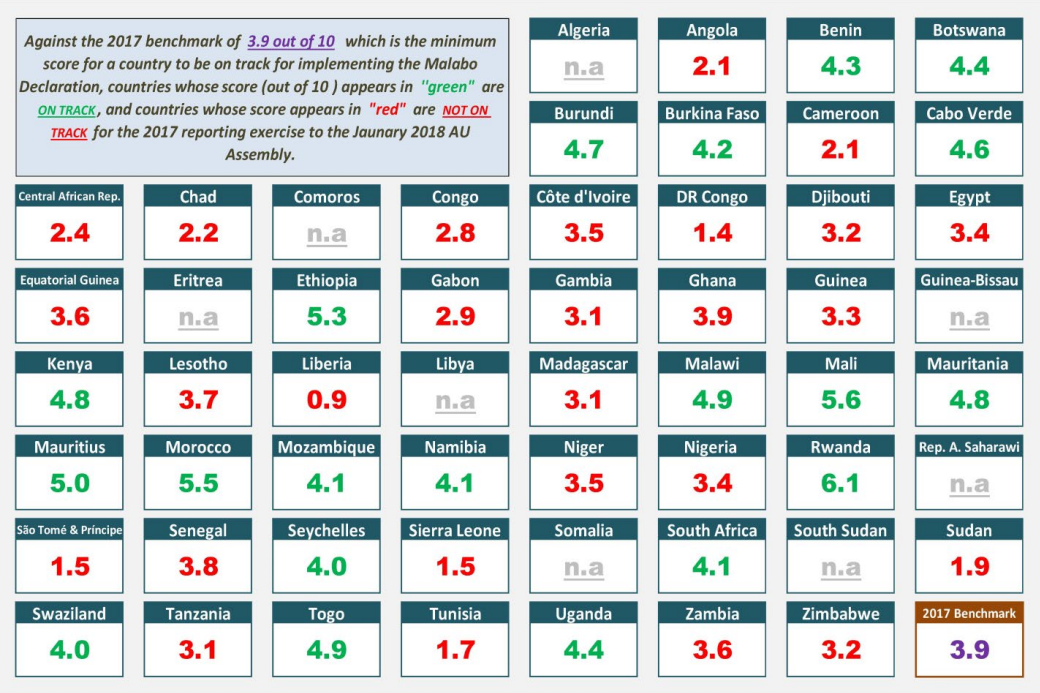
The JSR assessments have revealed insufficiently inclusive JSRs or JSR-like processes; poor participation and weak capacity of non-state actors; weak M&E systems and capacities, especially at the district level; poor interministerial coordination and communication; and inadequate follow-up on and implementation of JSR actions in most of the countries. The experiences and lessons learned during the JSR assessments have been used to strengthen existing JSRs or JSR-like processes and to establish JSRs where they did not exist prior to the assessment, including in Burkina Faso and Senegal. In addition, JSRs now generally result in more evidence-based recommendations on how to improve the status quo, with some countries conducting independent special studies for the reviews. Furthermore, they are more inclusive of non-state actors, occur on a more regular basis, and are more comprehensive in terms of issues covered. In addition, there is better monitoring and follow-up on action plans, and countries are taking steps to strengthen their M&E systems and capacities (Benin et al. 2018).

The CAADP BR is another means of operationalizing mutual accountability by assessing agriculture sector performance at the country, regional, and continental levels as it relates to the achievement of the Malabo Declaration goals. Starting in 2016 and throughout 2017, countries and RECs embarked on preparations for the BR that included training on BR tools and guidelines, collecting and analyzing data, and drafting country and regional BR reports for the inaugural continental BR. By the end of 2017, 52 of the 55 AU member states had launched the BR process and a total of 47 countries had drafted and submitted their BR reports to their respective REC (AUC 2018).

The continental BR report, including the AATS, was adopted by African leaders at the January 2018 AU summit (AUC 2018). Of the 47 reporting countries, 20 obtained an overall agricultural transformation score above 3.94 out of 10, indicating that they are on track to achieve the Malabo commitments by 2025 (Figure 12.1 and Table L3(a)). Rwanda, Mali, and Morocco were respectively awarded the first, second, and third prizes during the summit for making the most overall progress on agricultural transformation. Regionally, however, only eastern Africa and southern Africa are on track to achieve the Malabo commitments with scores of 4.2 and 4.0, respectively. Africa as a whole, with a score of 3.6, is not on track to achieve the commitments.

According to BR report, Africa as a whole has made the most progress in two commitment areas: recommitting to the principles and values of the CAADP by having improved NAIPs, policies, and institutional arrangements to support CAADP/Malabo implementation; and establishing inclusive mechanisms and platforms for mutual accountability and peer review. With more than one-half (27) of the reporting countries not on track to meet the overall Malabo commitments, the BR report and scorecard highlight the challenges that urgently need to be addressed to drive agricultural transformation on the continent. For example, according to the BR report, the continent needs concerted effort to: (1) establish more inclusive public–private partnerships for agriculture commodity value chains, (2) create more job opportunities for youth in agricultural value chains, and (3) support the participation of women in agribusiness. In addition, progress

FIGURE 12.1—THE 2017 AFRICA AGRICULTURE TRANSFORMATION SCORECARD



Source: AUC (2018).

Note: The exact benchmark used is 3.94, which explains why Ghana is not on track with a score of 3.90.

needs to be accelerated with respect to ending hunger, tripling intra-African agricultural trade, enhancing resilience to climate variability, and increasing investment finance for agriculture.

The BR process is proving to be a useful tool for rallying agriculture sector stakeholders and enhancing mutual accountability. The inaugural BR process was hugely successful given the high level of reporting by countries, leadership from AUC and NPCA, coordination of the process by RECs, and the strong support of technical and development partners. The second BR report is scheduled for publication in January 2020, with the preparation process already underway.

Progress in CAADP Indicators

This section discusses Africa's performance on the 29 of the 38 CAADP RF indicators for which data are available, that is 23 quantitative and all 6 qualitative indicators, organized by the three RF levels.[2] Data on the 29 indicators are available in Annexes 1–3. Unlike the qualitative indicators, which are presented primarily at the country level, progress in the quantitative indicators is presented at the aggregate level in six different breakdowns: (1) for Africa as a whole; (2) by AU's five geographic regions (central, eastern, northern, southern, and western); (3) by four economic categories (countries with less favorable agricultural conditions, countries with more favorable agricultural conditions, mineral-rich countries, and middle-income countries); (4) by the eight regional economic communities (CEN-SAD, COMESA, EAC, ECCAS, ECOWAS, IGAD, SADC, and UMA)[3]; (5) by the period during which countries signed the CAADP compact (CC0, CC1, CC2, and CC3)[4]; and (6) by the level or stage of CAADP implementation reached by the end of 2016 (CL0,

2 Several of the indicators are also part of the CAADP BR and AATS.

3 CEN-SAD = Community of Sahel-Saharan States; COMESA = Common Market for Eastern and Southern Africa; EAC = East African Community; ECCAS = Economic Community of Central African States; ECOWAS = Economic Community of West African States; IGAD = Intergovernmental Authority for Development; SADC = Southern African Development Community; UMA = Arab Maghreb Union.

4 CC1 = group of countries that signed the compact in 2007–2009; CC2 = group of countries that signed the compact in 2010–2012; CC3 = group of countries that signed the compact in 2013-2015; CC0 = group of countries that have not yet signed a CAADP compact.

CL1, CL2, CL3 and CL4).[5] Annex 4 lists the countries in the different categories of CAADP compact signing or level of implementation reached. Progress is also reported over different subperiods, with achievement in post-CAADP subperiods—that is, annual average levels in 2003–2008 and 2008–2017—compared with achievement in the pre-CAADP or base subperiod of 1995–2003. The discussion here is largely confined to trends for Africa as a whole and for countries categorized by the year in which they signed a CAADP compact and by the stage of CAADP implementation reached. Presenting the trends by the different groups helps to identify how the implications for strengthening or maintaining desirable trends or for reversing undesirable trends may differ across parts of the continent, without inference to any causal relationships. For trends that seem abnormal, some explanations are provided based on existing knowledge. Unless otherwise stated, all monetary values have been converted into constant 2010 US dollar prices to enhance intertemporal and cross-country comparisons.

CAADP RF Level 1 Indicators: Agriculture's Contribution to Economic Growth and Inclusive Development

Wealth Creation

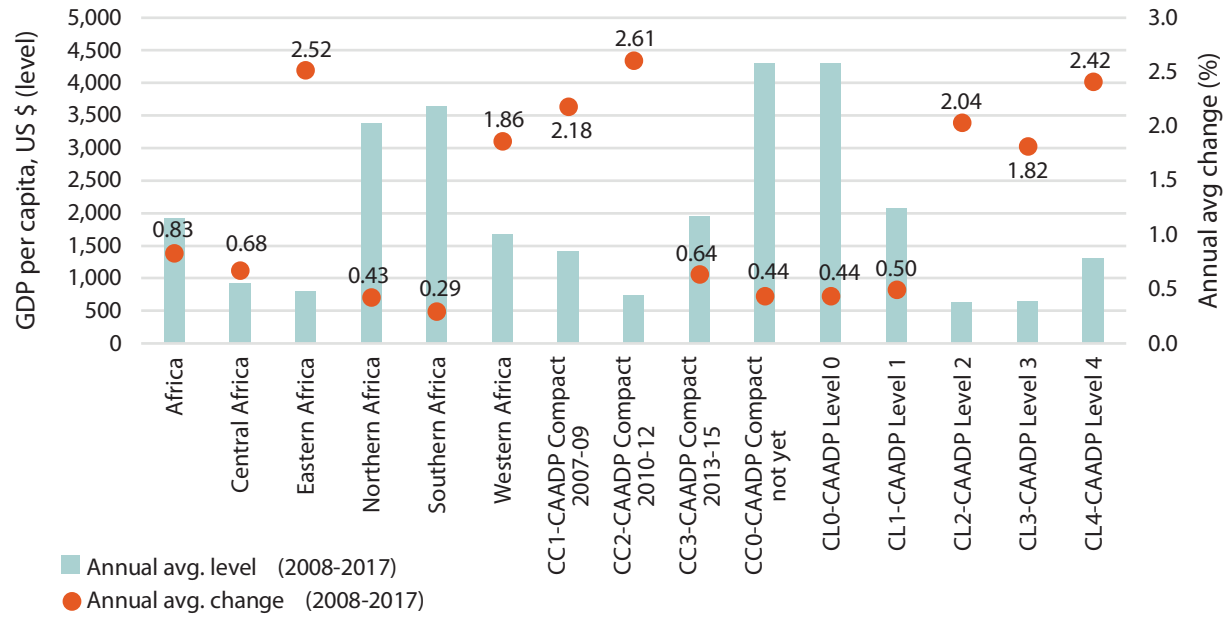
In 2017, growth in gross domestic product (GDP) for Africa as a whole was moderate at 2.6 percent, an improvement from the low growth of 1.4 percent in 2016. This improvement can be attributed to a rebound in oil and agricultural production, and a general improvement in the global economic environment (IMF 2017). Nonetheless, *GDP per capita growth* for 2008–2017 still showed a notable slowdown (largely due to the growth deceleration in 2015 and 2016), with average growth of 0.8 percent, compared to an average of 3.9 percent in 2003–2008 (Table L1.1.1). A similar trend is observed across most of the country classification categories (geographic regions, RECs, and CAADP groups) with the exception of countries with more favorable agriculture conditions, where GDP per capita rose from an average of 3.0 percent in 2003–2008 to 3.5 percent in 2008–2017. Although all CAADP groups experienced a decline in per capita GDP growth in 2008–2017 relative to previous periods, the groups of countries that have been implementing CAADP the longest (CC1 and CC2) or are most advanced in implementing CAADP (CL2, CL3, and CL4) recorded relatively higher growth rates in GDP per capita compared to other CAADP groups (see Figure 12.2 and Table L1.1.1).

Despite the slower rate of economic growth, Africa as a whole and all categories have experienced sustained increases in GDP per capita. Africa's GDP per capita increased from an annual average of US$1,434 in 1995–2003 to US$1,694 in 2003–2008, and reached US$1,920 in 2008–2017 (Table L1.1.1). For this most recent period, 2008–2017, northern and southern Africa, middle-income countries, the Arab Maghreb Union (UMA), and countries that are yet to officially start implementing CAADP (CC0 and CL0) recorded the highest GDP per capita (above US$3,000), while mineral-rich countries had the lowest GDP per capita (US$563).

Since the launch of CAADP in 2003, *household consumption expenditure per capita* has consistently increased for Africa as a whole and across all categories. However, for most categories, the average annual growth in household consumption expenditure per capita was slower in 2008–2017 than in 2003–2008. This includes for Africa as a whole, where it declined marginally from an average of 2.6 percent in 2003–2008 to 2.4 percent in 2008–2017 (Table L1.1.2). But central, northern, and western Africa regions showed slight improvements in household consumption expenditure growth in 2008–2017 compared to 2003–2008. The groups of

5 CL0 =group of countries that have not started the CAADP process or are pre-compact; CL1 =group of countries that have signed a CAADP compact; CL2 = group of countries that have signed a compact and formulated a NAIP; CL3 = group of countries that have signed a compact, formulated a NAIP, and secured one external funding source; CL4 = group of countries that have signed a compact, formulated a NAIP, and secured more than one external funding source.

FIGURE 12.2—GDP PER CAPITA (CONSTANT 2010 US$), 2008–2017



Source: ReSAKSS based on World Bank (2018) and ILO (2018).

countries engaged in CAADP, and especially those that signed a CAADP compact earlier (CC1) and those that have advanced the most in CAADP implementation (CL4), registered higher growth in household consumption expenditure during the CAADP era (2003–2008 and 2008–2017) compared to groups of countries that have not joined or advanced in the CAADP process. Similar to the growth pattern observed with GDP per capita, Africa's household consumption expenditure per capita increased from US$1,013 in 1995–2003 to US$1,132 in 2003–2008, reaching US$1,324 in 2008–2017. Here too, the highest consumption expenditure per capita (above US$2,000 in 2017) was observed in the northern and southern Africa regions, middle-income countries, UMA, and non-CAADP countries (CL0 or CC0), most of which are middle-income countries.

Food and Nutrition Security

Prevalence of undernourishment measures the share of the population whose caloric intake is below the minimum energy requirement. During the post-CAADP periods or after 2003, the prevalence of undernourishment declined steadily for Africa as a whole and across the various categories. As Table L1.2.1 shows, for Africa, the prevalence decreased from 19.9 percent in 2003–2008 to 17.6 percent in 2008–2015. The rate of decline slowed, however, from an annual average of 3.3 percent in 2003–2008 to 0.6 percent in 2008–2015, and the number of undernourished people in Africa remains high, with about one in six undernourished in 2015 (Table L1.2.1). The northern Africa region, UMA, and non-CAADP countries (CCO or CL0) not only had the lowest prevalence rates at less than 5 percent, but they also recorded more rapid rates of decline in undernourishment in 2008–2015 than in 2003–2008. Conversely, mineral-rich countries, middle-income countries, CEN-SAD, and the groups of countries that are further along with CAADP implementation (CL3) experienced increases in the prevalence of undernourishment in 2008–2015 over 2003–2008. In middle-income countries, for example, while there was a decline of 5.2 percent in the share of the population that was undernourished between 2003 and 2008, this share increased by 1.5 percent between 2008 and 2015.

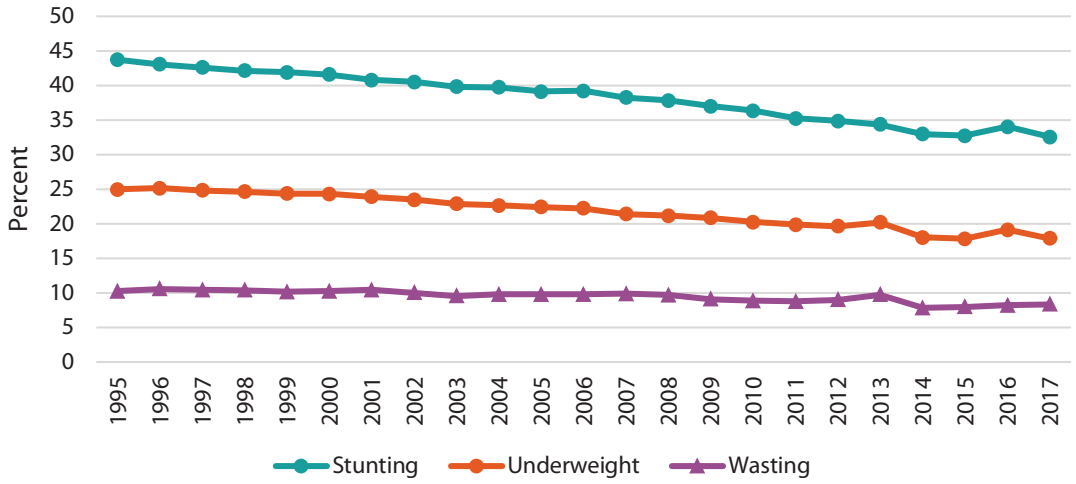
Looking at child undernutrition, Figure 12.3 and Tables L1.2.2A, L1.2.2B, and L1.2.2C reveal that Africa consistently reduced the prevalence of underweight, stunting, and wasting among children under the age of five

years. However, the prevalence rates of underweight and stunting among children have remained rather high for Africa as a whole and for many categories.

For Africa as a whole, the *prevalence of underweight* children under the age of five declined from an average level of 24.3 percent in 1995–2003 to 22.1 percent in 2003–2008 and to 19.5 percent in 2008–2017. Northern Africa, UMA, and the groups of countries that have not joined CAADP, the majority of which are in northern Africa, have the lowest prevalence rates and have experienced some of the fastest declines in underweight among children, particularly in the post-CAADP periods. Southern Africa, countries with more favorable agricultural conditions, and EAC also recorded relatively faster declines in the prevalence of underweight children, especially over the period from 2008 to 2017.

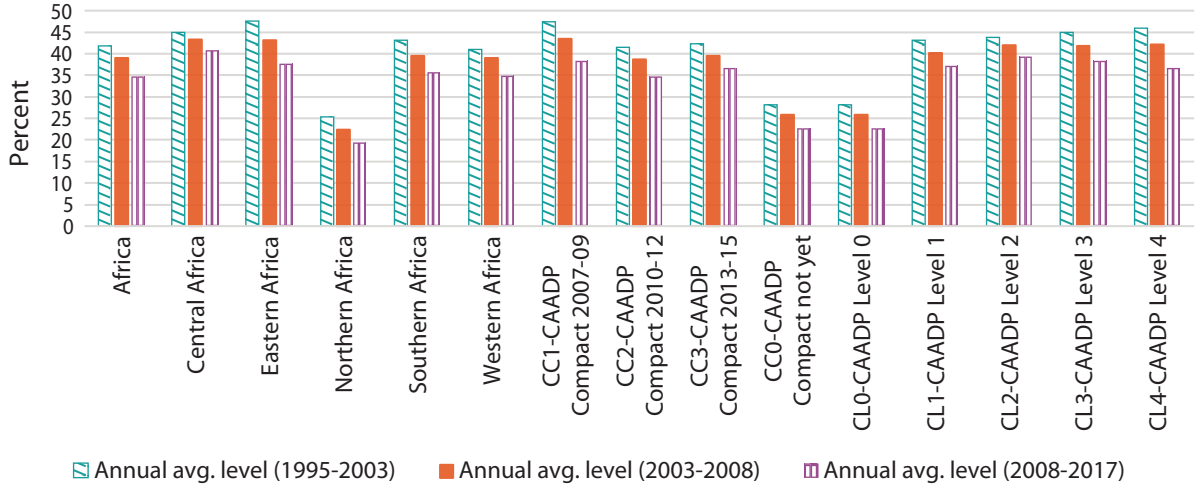
Despite the steady decline in the *prevalence of stunting*, an indicator of chronic malnutrition, among children under the age of five, the prevalence rate for Africa and other categories remains markedly high (Table L1.2.2B and Figure 12. 4). For Africa as a whole, the prevalence rate declined from 41.8 percent in 1995–2003 to 39.0 percent in 2008–2017 and to 34.8 percent in 2008–2017. As of 2017, still about one-third of African children under the age of five were stunted, indicating that a sizable proportion of African children suffer from chronic insufficient

FIGURE 12.3—PREVALENCE OF STUNTING, UNDERWEIGHT, AND WASTING IN AFRICA (% OF CHILDREN UNDER 5 YEARS)



Source: ReSAKSS based on World Bank (2018) and ILO (2018).

FIGURE 12.4—PREVALENCE OF STUNTING IN AFRICA BY GEOGRAPHIC REGIONS AND CAADP GROUPS (% OF CHILDREN UNDER 5 YEARS), 1995–2017



Source: ReSAKSS based on World Bank (2018) and ILO (2018).

nutrient intake and recurrent diseases. The prevalence of stunting is highest in central Africa, countries with less favorable agriculture conditions, and mineral-rich countries, where stunting rates averaged more than 39 percent in 2008–2017. Countries in northern Africa, UMA, and those that had not embarked on the CAADP process (CCO and CLO) had lower but still high prevalence rates of above 15 percent during 2008–2017. Nonetheless, these countries experienced relatively faster rates of decline in the prevalence of stunted children compared to other categories.

The *prevalence of wasting* (low weight-for-height) in children under five, an indicator of acute malnutrition, is much lower in Africa and across all categories than are underweight and stunting. For Africa as a whole, child wasting declined marginally from 10.2 percent in 1995–2003 to 9.7 percent in 2003–2008 and to 8.7 percent in 2008–2017. While the prevalence of child wasting declined in all other classification categories, in recent years it has increased in northern Africa, UMA, and the group of countries that joined the CAADP process later (CC3) and those that have not progressed much in the implementation CAADP process (CL1). In 2017, child wasting remained above 10 percent in countries with less favorable agriculture conditions, the group of countries that signed the CAADP compact later (CC3), and the group that is still early in implementing CAADP (CL1). This shows that child wasting along with child stunting and underweight remain serious challenges that require more concerted measures, such as improving women's education and the quantity and quality of food through micronutrient supplements and biofortification, if countries are to meet the Malabo Declaration goals of ending hunger and reducing stunting and underweight to 10 and 5 percent, respectively, by 2025.

Africa's *dependence on cereal imports* has been increasing, reaching 26.5 percent in 2008–2012. This means that over a quarter of the continent's cereal demand was not met through domestic cereal production. The state of cereal import dependency differs across categories. For example, in 2012, the cereal import dependency ratio was above 40 percent in UMA and ECCAS, northern Africa, and among the groups of countries that have not embarked on the CAADP process (CC0 and CL0) as well as those that have yet to advance in the CAADP process (CL1). At the same time, mineral-rich countries, southern Africa, SADC, and the group of countries that are further in the CAADP implementation process (CL3) not only had a lower cereal import dependency ratio but also experienced consistent declines in the ratio during both post-CAADP subperiods (2003–2008 and 2008–2012). Mineral-rich countries, especially, managed to reduce their cereal import dependency by more than half, from 23.0 percent in 2003to 8.9 percent in 2012. This strong performance was followed by countries that have progressed in the CAADP process (CL3), which reduced their imported cereal dependency from 15.0 percent in 2003 to 8.3 percent in 2012. While raising local cereal production and productivity is fundamental to a country's agricultural development for food security, the rationale for reducing dependency on cereal imports has to be evaluated in the context of the broader goal of boosting intra-African agricultural trade.

Employment

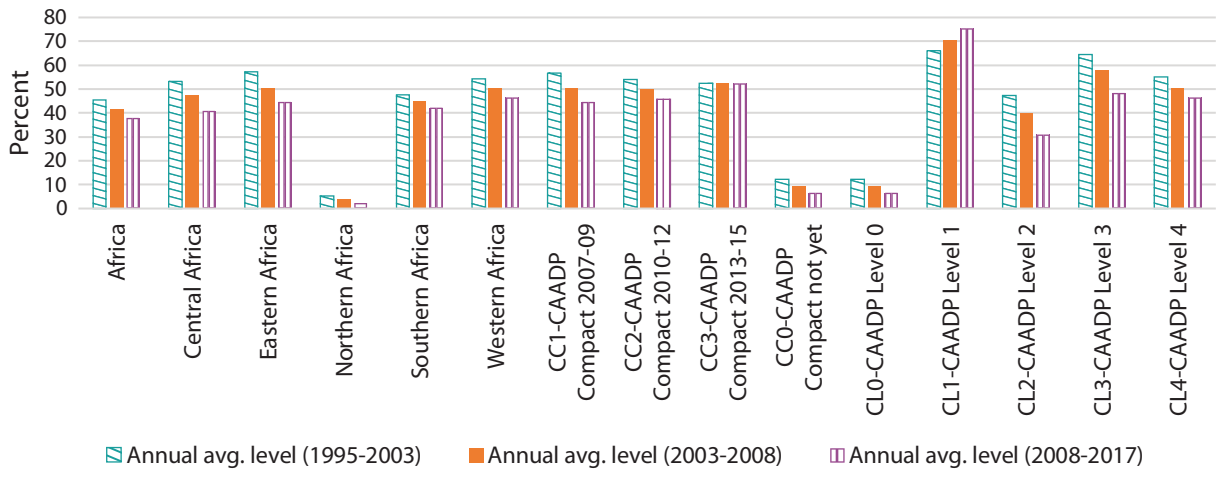
Africa's *employment rates*, expressed as a percentage of the labor force (all individuals aged 15 to 64 years, Table L1.3.1A) have remained moderately high and constant over time. For Africa as a whole, the rate averaged 90.7 percent in 1995–2003 and increased marginally to 91.7 percent in 2003–2008 and to 92.3 percent in 2008–2017. Employment rates expressed as a percentage of the working-age population (all individuals aged 15+ years, Table L1.3.1B) are lower but have also remained fairly constant, averaging 58.6 percent for Africa as a whole in 2003–2008 and 59.4 percent in 2008–2017. Considering both measures, the employment rate is relatively lower in northern and southern Africa regions, middle-income countries, UMA, and non-CAADP countries. Notably, the large discrepancy between the two indicators on employment in Africa reflects the continent's continuous struggle with underemployment, poor quality jobs, and high rates of

youth unemployment (AfDB et al. 2012). Therefore, investment in high labor absorption sectors such as agriculture should be part of job creation strategies in Africa.

Poverty

Africa has made good progress in reducing both the incidence and intensity of poverty, particularly during the post-CAADP periods. Measured by the *poverty headcount ratio at the international poverty line*, 38.1 percent of Africa's population lived below US$1.90 a day in the 2008–2017 period. This is almost a 4-percentage-point reduction from 41.7 percent in 2003–2008. (Figure 12.5 and Table L1.3.4). The reduction in poverty occurred across all categories, with northern Africa and UMA experiencing the biggest declines in poverty of greater than 11 percent between 2008 and 2017. Nonetheless, poverty remains relatively high in several groups despite recent improvements in per capita GDP growth—the poverty headcount was above 40 percent in 2008–2017 in all geographic regions except northern Africa, where it was just 2.3 percent.

FIGURE 12.5—POVERTY HEADCOUNT RATIO AT US$1.90 A DAY BY GEOGRAPHIC REGIONS AND CAADP GROUPS (% OF POPULATION), 1995–2017



Source: ReSAKSS based on World Bank (2018) and ILO (2018).

For Africa as a whole, the *poverty gap*, which indicates the intensity of poverty by measuring the average shortfall from the poverty line of US$1.90 a day, declined from 19.0 percent in 1995–2003 to 16.5 percent in 2003–2008 and to 14.2 percent in 2008–2017 (Table L1.3.3). A similar declining trend is observed across most of the other categories. For example, during the post-CAADP periods or after 2003, significant declines in the poverty gap are seen in northern Africa, UMA, and the group of countries that have advanced in the CAADP process (CL2) and those that are yet to join CAADP (CC0 and CL0). Nonetheless, in 2008–2017, the poverty gap remained highest in the group of countries that have not advanced in the CAADP process (CL1) at 36.6 percent and lowest in northern Africa at 0.3 percent.

Income inequality, measured by the *Gini index*, for all of Africa fell from an average of 44.1 in 1995–2003 to 37.4 in 2003–2008 and to 30.3 in 2008–2017 (Table L1.3.5). Reductions in income inequality were also achieved across all the other categories, with declines of greater than 6 percent in 2008–2017 occurring in central Africa, mineral-rich countries, ECCAS, and in countries that have not advanced much in the CAADP process (CL2). Notably, groups enjoying high levels of GDP per capita, such as northern Africa, middle-income countries, and the countries that have not joined CAADP process (CC0 or CL0), experienced the smallest reductions in the Gini index during the review period.

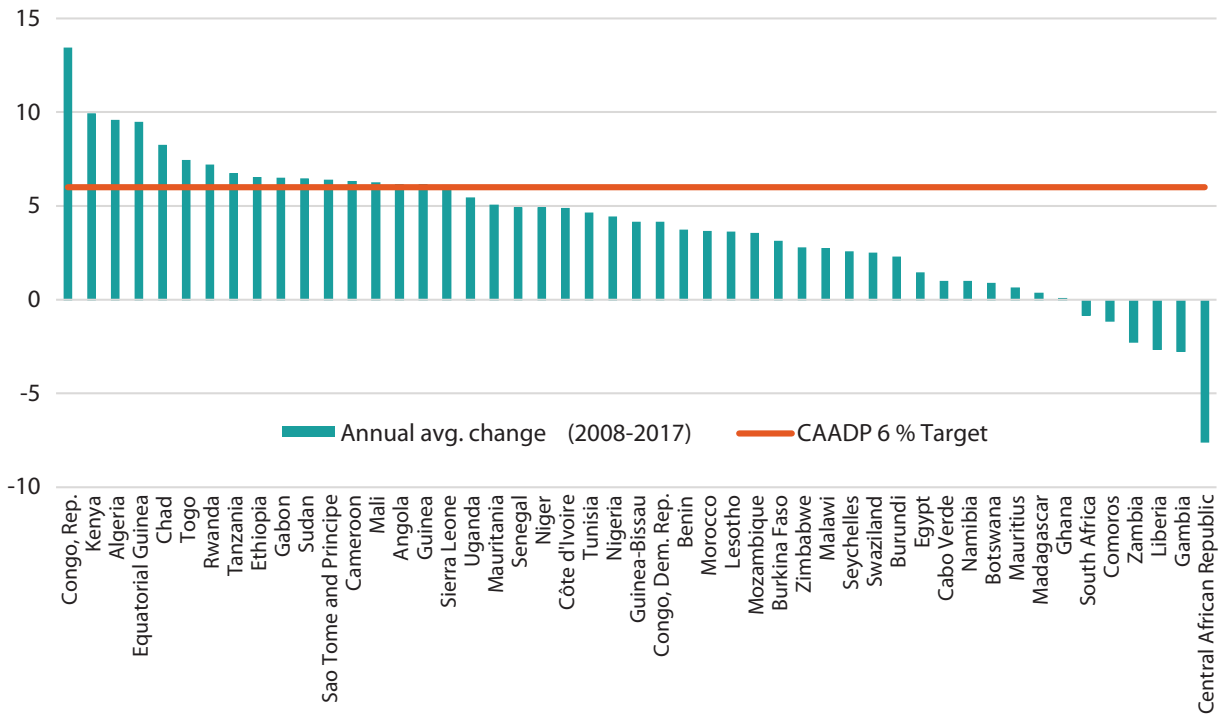
CAADP RF Level 2 Indicators: Agricultural Transformation and Sustained Inclusive Agricultural Growth

Agricultural Production and Productivity

For Africa as a whole, *agriculture value added* rose from an average of US$7.2 billion per country per year in 1995–2003 to US$9.0 billion in 2003–2008 and to US$13.4 billion in 2008–2017 (Table L2.1.1). [6] In the most recent period, 2008–2017, agriculture value added increased for all categories. For Africa as a whole, agriculture value added grew at an annual average rate of 4.3 percent in 2008–2017, up slightly from 4.2 percent in 2003–2008, but below the CAADP target of 6 percent. However, other categories, including northern Africa, countries with more favorable agriculture conditions, EAC, UMA, and the group of countries that signed a CAADP compact in 2010-2012, achieved an annual average growth in agriculture valued added of at least 6 percent in the more recent subperiod of 2008–2017. The groups of countries that signed onto the CAADP earlier (CC1 and CC2) and those that have progressed the furthest in the CAADP process (CL3 and CL4) registered higher agriculture value added growth rates during the post-CAADP periods compared to those that have not yet signed CAADP compacts (CC0 and CL0). A total of 17 countries achieved the CAADP 6 percent target in 2008–2017 (Figure 12.6).

The agricultural production index (API), a measure of the relative level of agricultural production, has consistently increased for Africa as a whole and all the various categories. Table L2.1.2 shows that for Africa, API increased from 80.6 in 1995–2003 to 100.5 in 2003–2008 and 122.8 in 2008–2017. In 2008–2017, API grew at a relatively slower pace than in 2003–2008 for Africa and for most of the other categories, except in eastern Africa, IGAD, UMA, and the groups of countries that signed CAADP compacts later (CC3) and those that have not advanced in implementing CAADP (CL1).

FIGURE 12.6—AGRICULTURE VALUE ADDED, ANNUAL AVERAGE GROWTH (%), 2008–2017



Source: ReSAKSS based on FAO (2018) and World Bank (2018).

6 Monetary values are in constant 2010 US dollars unless stated otherwise.

Over the last 20 years, labor and land have become more productive in Africa as a whole and for many categories. As Table L2.1.3 shows for Africa as a whole, *labor productivity*, measured by agriculture value added per agricultural worker, increased from US$1,011 in 1995–2003 to US$1,137 in 2003–2008 and US$1,378 in 2008–2017. This represents an increase in the annual average growth in labor productivity from an average of 1.4 percent per year in 1995–2003 to 1.6 percent in 2003–2008 and 2.5 percent in 2008–2017. Whereas labor productivity growth was negative in the pre-CAADP periods for several categories, it rebounded during the post-CAADP periods and was positive for all categories during 2008–2017, excepting the southern Africa region. Countries that joined the CAADP process earlier (CC1) and those that are further along with implementation (CL3 and CL4) registered slower growth rates in labor productivity in 2008–2017 than in 2003–2008. Labor productivity has remained relatively much higher in northern Africa, middle-income countries, UMA, and the group of countries that have not embarked on the CAADP process (CC0 and CL0), likely due to higher levels of mechanization.

For Africa as a whole, *land productivity*, measured by agriculture value added per hectare of arable land, increased from US$165 in 1995–2003 to US$205 in 2003–2008 and to US$300 in 2008–2017 (Table L2.1.4). This represents an increase in the annual average growth in land productivity from 3.1 percent in 1995–2003 to 3.2 percent in 2003–2008 and to 5.3 percent in 2008–2017. With the exception of UMA, all other categories witnessed positive growth in land productivity during the entire CAADP era. This is a huge improvement from the pre-CAADP period of 1995–2003 when several categories had negative growth in land productivity. In 2008–2017, notably high land productivity growth rates of above 6 percent were recorded in eastern Africa, countries with more favorable agricultural conditions, COMESA, EAC, IGAD, and in the groups of countries that joined CAADP in 2013–2015 (CC3) and those that have signed a compact and formulated a NAIP (CL2).

Yields of the top five agricultural commodities—cassava, yams, maize, meat, and cow milk [7]—show varied performance between the pre-CAADP subperiod (1995–2003) and the post-CAADP subperiods (2003–2008 and 2008–2017). For Africa as a whole, yields of the agricultural commodities, excluding *milk*, grew slowly in the pre-CAADP subperiod and moderately in 2003–2008, but decelerated in 2008–2016 (Table L2.1.5 A, L2.1.5 B, L2.1.5 C, L2.1.5 D, and L2.1.5 E). For example, *maize yields* grew at an average rate of 1.5 percent per year in 1995–2003, 2.4 percent in 2003–2008, and 0.2 percent in 2008–2016. Despite the slower growth in the later post-CAADP subperiod, average yields have risen over time. For example, *meat yields* rose from 141.7 kilograms (kg) per head in 1995–2003 to 152.8 kg per head in 2003–2008 and to 155.2 kg per head in 2008–2013. Yields of maize, meat, and milk are much higher in northern Africa and in the group of countries that have not yet embarked on the CAADP process (CC0 and CL0), including South Africa and countries in northern Africa, which have high levels of mechanization (Tables L2.1.5C, L2.1.5D, and L2.1.5E).

Intra-African Regional Trade and Market Performance

The signing of the African Continental Free Trade Area agreement by 44 AU member states in March 2018 marked an important milestone toward expanding intra-African trade and achieving the Malabo commitment to triple intra-African agricultural trade by 2025. For Africa as a whole, over the review period, *intra-African agricultural exports* nearly tripled from an average of US$0.6 billion per country per year in 1995–2003 to US$1.7 billion in 2008–2017 (TL2.2.1A).[8] Despite several categories experiencing

7 These five were the commodities with the largest shares in total value of production for Africa as a whole.

8 The value of intra-African agricultural exports and imports for Africa as a whole is expected to be equal. However, Tables TL2.2.1A and TL.2.2.1B show exports to be greater than imports, due to differences in commodities categorized as agricultural by different countries, year of shipment of exports and arrival of imports, treatment of the origin of export versus shipment, and valuation of exports and imports (for details see UNCTAD: http://unctadstat.unctad.org/EN/FAQ.html).

negative growth in exports in 1995–2003, growth rebounded during the post-CAADP periods. As a result, between 1995–2003 and 2008–2017, intra-African agricultural exports more than doubled in southern Africa, middle-income countries, and SADC, and grew almost six-fold in northern Africa. In addition, the groups of countries that joined CAADP early (CCI and CC2) and those that are further along in the implementation process (CL3 and CL4) experienced consistent increases in intra-African agricultural exports during the post-CAADP periods compared to countries that signed on to CAADP later (CC3) and those that have not advanced much in the process (CL1).

As Table L2.2.1B shows, *intra-African agricultural imports* also increased steadily for most categories and tripled in countries with less favorable agriculture conditions over the review period. In 2008–2017, intra-African agricultural imports grew by more than 6 percent in countries with less favorable agriculture conditions, middle-income countries, UMA, countries that have not joined CAADP (CC0 and CL0), and those that are further along in implementing CAADP (CL3). In terms of volume, intra-African agricultural imports are most concentrated in the southern Africa region, SADC, and the non-CAADP countries (CC0 and CL0) (Table L2.2.1B). Although intra-African trade has increased remarkably, it remains below its potential due to several factors including inadequate trade-related infrastructure, limited private sector participation in regional integration initiatives, and institutional weaknesses (Badiane, Odjo, and Collins 2018).

For Africa as a whole and the other categories, the volatility (variation) in domestic food prices over time, as measured by the *domestic food price volatility index*, has trended downward since the 2007 global food price crisis. Domestic food price volatility in Africa fell by an average of 11 percent per year in 2008–2012, compared to the average increase of 3.7 percent per year in 2003–2008 (Table L2.2.2). During 2008–2012, domestic food price volatility was relatively higher in the eastern and southern Africa regions, countries with more favorable agriculture conditions, and the groups of countries that joined CAADP earlier (CC2) and are further along in the CAADP process (CL3). Nonetheless, these groups also had faster rates of decline in volatility during this period. African countries need to maintain low domestic food price volatility in part by boosting domestic agricultural productivity and supply.

Resilience of Livelihoods and Management of Risks

The existence of food reserves and programs and early warning systems is a key indicator for assessing the resilience of livelihoods and production systems to climate variability and for the management of risks in the agriculture sector. As of August 2018, 41 countries had food reserves, local purchase for relief programs, early warning systems, and food feeding programs (Table L3(b)).

CAADP RF Level 3 Indicators: Strengthening Systemic Capacity to Deliver Results

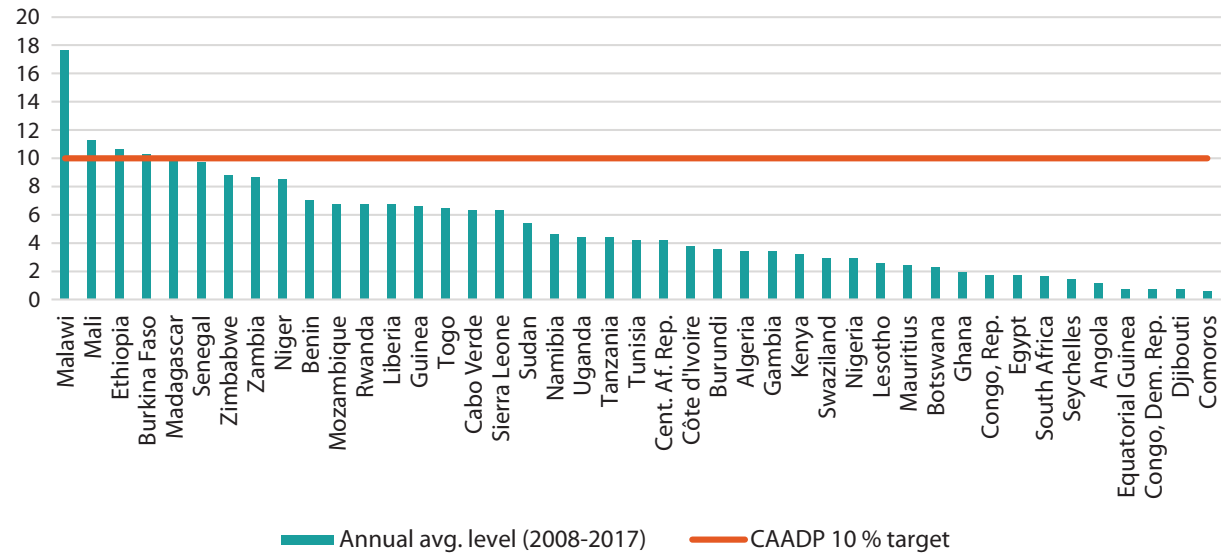
Capacities for Policy Design and Implementation

Progress in the implementation of actions aimed at strengthening systemic capacity for agriculture and food-security policy planning and implementation are presented in Table L3(b). As of August 2018, 13 countries had formulated new or revised NAIPs through an inclusive and participatory process; 26 had inclusive, institutionalized mechanisms for mutual accountability and peer review (mainly JSRs); 33 were implementing evidence-informed policies with relatively adequate human resources in place; 30 had functional multisectoral and multistakeholder coordination bodies—mainly agricultural sector working groups; and 21 had successfully undertaken agriculture-related public-private partnerships (PPPs) aimed at boosting specific agricultural value chains. Furthermore, SAKSS (Strategic Analysis and Knowledge Support System) platforms, which help countries to meet their specific data, analytical, and capacity needs, were established in 14 countries.

Government Agriculture Expenditure

For Africa as a whole, *government agriculture expenditure* rose from an average of US$0.7 billion per country per year in 1995–2003 to US$1.2 billion in 2003–2008, before declining to US$1.1 billion in 2008–2017 (Table L3.5.1). After increasing at over 10 percent in both 1995–2003 and 2003–2008, government agriculture expenditure in Africa experienced negative growth of 4.3 percent on average per year in 2008–2017. Government agriculture expenditure also declined in most categories in 2008–2017, including in western Africa, ECOWAS, and in the groups of countries that signed a CAADP compact earlier (CC1 and CL1) and those that have advanced in the CAADP process (CL4). In these categories, government agriculture expenditure fell by more than 10 percent per year on average in 2008–2017.

FIGURE 12.7—SHARE OF GOVERNMENT AGRICULTURE EXPENDITURE IN TOTAL EXPENDITURE (%), 2008–2017



Source: ReSAKSS based on IFPRI (2015), World Bank (2018), and national sources.

Africa as a whole and most categories have fallen short of meeting the CAADP and Malabo Declaration target of allocating 10 percent of government total expenditure to agriculture. The *share of government agriculture expenditure in government total expenditure* rose marginally from 3.3 percent in 1995–2003 to 3.5 percent in 2003–2008 and then fell to 3.0 percent in 2008–2017 (Table L3.5.2). Only the countries with less favorable agriculture conditions met the 10 percent target, with an average of 12.2 percent in 2003–2008, but this fell slightly to 9.3 percent in 2008–2017. Mineral-rich countries achieved an agriculture expenditure share of more than 8 percent in 2008–2017, while the groups of countries that signed on to CAADP earlier (CC2) and those that have progressed further in the CAADP process (CL4) achieved higher shares than the groups of countries that are not are not part of CAADP (CC0 and CL0). Figure 12.7 shows that only five countries—Burkina Faso, Ethiopia, Madagascar, Malawi, and Mali—achieved the CAADP 10 percent agriculture expenditure target in 2008–2017. Senegal came close with a share of 9.7 percent.

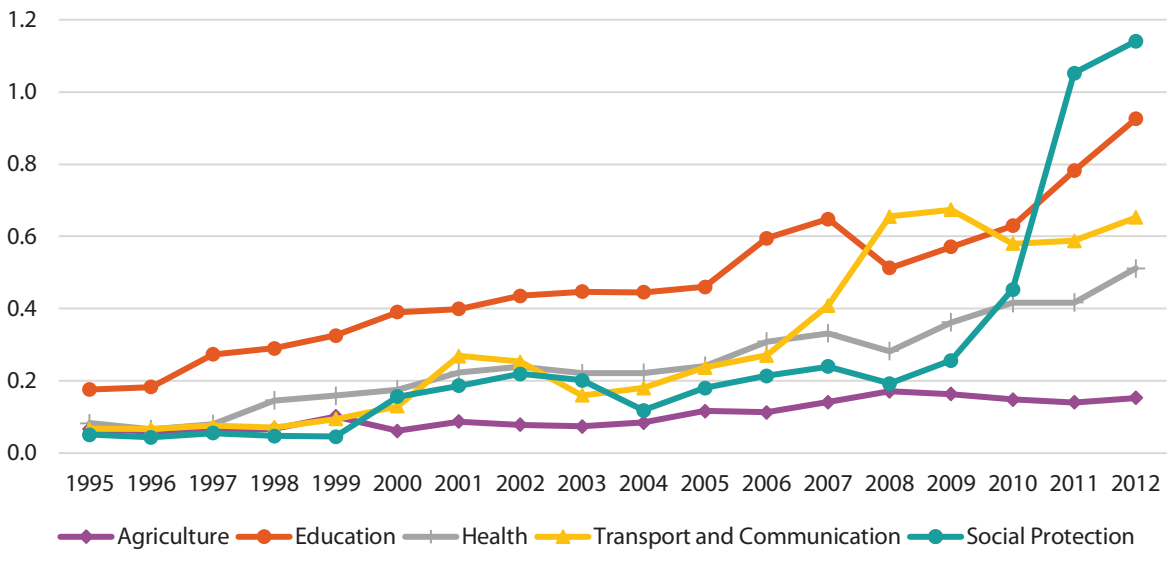
The overall *share of government agriculture expenditure in agriculture GDP* for Africa as a whole rose slightly from 5.7 percent in 1995–2003 to 6.3 percent in 2003–2008 and then decreased to 5.5 percent in 2008–2017 (Table L3.5.3). During the CAADP era, the northern and southern Africa regions, mineral-rich countries, SADC, UMA, and the non-CAADP countries had the highest shares, ranging from 9.8 percent to 17.3 percent,

reflecting their larger agriculture expenditures relative to the size of the sector.

Government Social Protection Expenditures

In keeping with the theme of the 2017–2018 ATOR, this section reviews trends in government social protection expenditures in Africa using two key indicators: per capita government social protection expenditures and the share of social protection expenditures in total government expenditures. Social protection expenditures include spending on sickness and disability, old age, survivors, [9] family and children, unemployment, housing, social exclusion, research and development, and other related goods and services (IMF 2014).

FIGURE 12.8—GOVERNMENT SECTORAL EXPENDITURES FOR AFRICA SOUTH OF THE SAHARA (BILLION 2005 US$)



Source: ReSAKSS based on IFPRI (2015).

The strong momentum to address high levels of poverty and growing vulnerability in Africa led governments to allocate more resources to social sectors, especially starting in the 1990s, with the development and implementation of poverty-reduction strategy papers. Today, a large share of government budgets goes to social sectors for social protection, health, and education at the expense of economic sectors such as agriculture (Figure 12.8). Notably, total government expenditures on social protection for Africa south of the Sahara rose much more sharply than expenditures on other sectors over the past decade, from an average of US$51.3 million per country per year in 1995 to US$1.1 billion in 2012 (Figure 12.8).[10] For Africa as a whole, the share of social protection expenditure in total government expenditure is also much higher than that for agriculture. It rose from an average of 5.2 percent in 1995–2003 to 6.4 percent in 2003–2008 and to 12.5 percent in 2008–2012 (Table O.6.1.A). At the regional level, in 2008–2012, the highest social protection expenditure shares were achieved in northern Africa (24.2 percent), while the lowest shares were witnessed in western Africa (3.9 percent).

In terms of levels, per capita social protection expenditures for Africa as a whole have more than tripled from an average of US$12.9 in 1995–2003 to US$49.3 in 2008–2012 (Table O.6.1B). Regionally, northern and southern

9 Include survivors of a deceased person such as the person's spouse, ex-spouse, children, grandchildren, parents, or other relatives.

10 Figures are in constant 2005 US dollars.

Africa had much higher levels on average, at US$141.3 and US$71.6 respectively, while western Africa had the lowest level of US$4.4 (Table O.6.1B).

Overall Conclusions and Implications

The trends in key CAADP indicators presented in this chapter show that Africa has made good progress since 2003. Broader development outcomes include rising GDP per capita and declining undernourishment, child malnutrition, and poverty. Agriculture value-added grew at a moderate rate of 4.3 percent in 2008–2017, although lower than the CAADP target of 6 percent. Agricultural exports nearly tripled from an average of US$0.6 billion per country per year in 1995–2003 to US$1.7 billion in 2008–2017. These achievements are commendable, despite government agriculture expenditure remaining far below the CAADP 10 percent target at 3 percent in 2008–2017. With a large and increasing share of government expenditure going to social sectors (social protection, health, and education), expenditures for economic sectors like agriculture, transport, and communications have tended to be squeezed.

There are substantial differences in the progress made across different parts of Africa. With respect to agriculture value added growth, for example, the groups of countries that signed onto the CAADP earlier or have progressed the furthest in the implementation process registered higher growth rates compared to those that have yet to start implementation. In addition, whereas a total of 17 countries achieved the CAADP 6 percent agricultural growth rate target in 2008–2017, only five countries (Burkina Faso, Ethiopia, Madagascar, Malawi, and Mali) managed to achieve the CAADP 10 percent agriculture expenditure target in the same period. While these differences reflect differences in input use, technologies, and capital intensities, among others, in agricultural production, they also indicate that blanket interventions for maintaining or increasing desirable trends, or for reversing undesirable ones, are unnecessary and inefficient.

An area that needs critical attention is the level of investments in the agriculture sector from both public and private sources. This is reflected in the CAADP 10 percent agriculture expenditure target, because government expenditure, or public spending in general, is seen as having a huge potential to reduce economic inefficiencies arising from market failures and to reduce inequality in the distribution of goods and services related to differences in initial allocation of resources across different groups and members of society. Since the agriculture and rural sectors tend to suffer the most from market failures and experience low provision of public goods and services, the potential of government agriculture spending to correct these problems is huge. In the same way, it will be important to better target the growing social sector expenditures, especially those that protect human capital and productive assets, so as to maximize their contribution to increasing productivity in agriculture and rural areas and to building stronger, longer-term income streams. Moreover, continued efforts to formulate and implement evidence-based NAIPs, reform trade policies, and invest in market access and port and road infrastructure will go a long way toward facilitating intra-African trade and fostering broad-based growth and the achievement of the Malabo Declaration commitments.

CHAPTER 13

CONCLUSION

Fleur Wouterse and Alemayehu Seyoum Taffesse

Rooted in the recognition that most poor Africans reside in rural areas and earn their income from agriculture, the Malabo Declaration emphasizes agriculture-led growth as the engine for poverty reduction. But even the most inclusive agricultural growth may be insufficient to lift everyone out of poverty. To take part in the growth process and enjoy its benefits, households need a basic level of resources and security to ensure their assets are not depleted in the face of drought or other shocks. Convincing evidence now shows that effective social protection programs can assist those trapped—or at the risk of being trapped—in chronic poverty. In fact, over the last 10 to 15 years, social protection has been heralded as an answer to food insecurity and as a development paradigm that can support economic growth by building livelihood resilience. Today, every African country has at least one social protection program.

The *2017–2018 Annual Trends and Outlook Report* (ATOR) focuses on social protection to advance our understanding of the status of these programs in Africa and highlight opportunities to design and scale up the interventions with the greatest impact. The report has summarized and synthesized the available evidence on successful implementation of social protection programs in rural areas; answered questions and filled in knowledge gaps related to maximizing of the role of social protection in reducing vulnerability and increasing resilience of rural households; and highlighted policy lessons to guide the design and roll-out of national social protection programs, including under the Malabo agenda.

The analysis of the interplay between agriculture and social protection programs and policies and their coordinated implementation reveals the existence of real and positive synergies that can accelerate progress in reducing rural poverty, eliminating hunger, and enhancing resilience and well-being, especially for smallholders. While rapid and sustained poverty reduction primarily requires policies fostering total factor productivity to produce significant cumulative income gains, the evidence shows that social protection programs—such as cash+ and graduation programs—stimulate development of a more skilled workforce capable of responding to changing demand and joining the transition to higher levels of productivity.

Policy implication: Greater coordination of government interventions across ministries to improve the coherence between social protection and agriculture programs and policies would help increase impact among the most vulnerable households.

The benefits and challenges of linking social protection with agriculture are explored through the experience of the Ethiopian Productive Safety Net Program (PSNP). The findings provide valuable guidance for policy and program design and implementation. The PSNP is designed around three interlinked objectives: protection, prevention, and promotion of vulnerable and chronically food insecure livelihoods. The promotion objective of the program aims to enhance agricultural production and productivity. Although the program's impact on community and household asset-building was found to be limited, the PSNP did contribute to consumption smoothing, reduce food insecurity, and minimize productive disincentives. This suggests that a social protection program that incorporates a livelihood promotion objective not only helps to protect poor people from consumption crises but does so without creating significant production disincentives. However, graduation out of the PSNP had been slow. Graduation is a function of many factors, including production disincentives, the ability or inability to create capacity, and the effectiveness of the implementers for graduating clients. The creation of clientelism between donors and recipients, which led to compromising promotion in favor of the transfer (protection) objective of the program, is one reason for slow graduation. Assessing the reasons behind the low rate of graduation and the cost-effectiveness of the program requires a mix of quantitative and qualitative analyses.

Policy implication: A sustainable multi-objective social protection program requires an effective institutional architecture that can mobilize expertise, assign clear responsibilities to stakeholders, and design an

equitable and efficient targeting system. Continuous quantitative and qualitative empirical assessment is essential to generate evidence for learning and to improve the design of subsequent phases of the program.

Cash transfers and other forms of social grants are among the main instruments of social protection. Their effectiveness is demonstrated by the analysis of the impact of cash transfers on rural entrepreneurship among rural farming households in KwaZulu-Natal in South Africa. When the share of transfers in total household income was low, social grants were found to have positive effects on farm labor supply, entrepreneurship competencies, and investments in farm inputs.

Policy implication: Interventions using social grants, when well designed and targeted, can play a complementary and crucial role in fostering economic activities among the poor and vulnerable, such as smallholder farmers.

Cash transfer programs can also be a potent tool to support risk management and build resilience, as demonstrated by impact evaluation studies of programs in several countries including Ethiopia, Ghana, Kenya, Lesotho, Malawi, and Zambia. By providing a steady and predictable source of income, cash transfer programs build human capital, improve food security, and can potentially strengthen households' ability to cope with exogenous shocks. Many of the cash transfer programs led to greater investment in agricultural inputs and assets, including farm implements and livestock. As a result, beneficiaries generally increased the volume and value of their crop production. For Zambia, where data on rainfall were also collected, cash transfers were found to help poor households manage climate risk. The proportion of food-secure households also rose as did consumption and dietary diversity. In addition, cash transfer programs appear to have strengthened community ties, allowed households to save and pay off debts, and decreased the need to rely on adverse risk-coping mechanisms.

Policy implication: Articulation of cash transfer programs with other sectoral development programs in a broader, coordinated rural development strategy could lead to synergies and greater overall impact. Including environmental risks and vulnerabilities as targeting criteria could help improve the effectiveness of social protection as a risk-coping instrument. Complementary measures to maximize the positive spillover of the income multiplier effect generated by these programs should also target the ineligible households that provide many of the goods and services in the local economy. Public works programs, including productive safety nets, can be designed in ways that simultaneously contribute to increasing household incomes, engaging communities in climate-smart agriculture, and generating "green jobs" in areas such as waste management, reforestation, and soil conservation. The potential productive impact of cash transfers is sensitive to implementation. For instance, delays and irregularities in payments can reduce the effectiveness of transfers in terms of helping households invest and manage risk.

In places affected by conflict, food transfers are found to have a protective effect on the food security and nutrition of vulnerable populations. Evidence also shows that combining specialized and general food assistance is more effective than using a single form of transfer. In addition, food assistance in conflict zones may provide a platform to improve growth for children outside the priority age group for nutrition interventions (that is, the first thousand days).

Policy implication: The design and scale-up of food assistance can be improved to ensure better nutrition outcomes in conflict areas. Increasing the coverage of nutrition-specific interventions and including provision of specialized complementary foods for supplementary feeding could boost impacts. Systematically bundling different forms of food assistance alongside generalized food distribution may also be an effective strategy to support vulnerable populations during conflict.

Children are the most common target group for social protection programs in Africa; social protection—and cash transfers in particular—has proven to be a powerful tool for improving child well-being and care, from material to psychosocial aspects. Despite this success, gaps remain in terms of nutritional, learning, and other outcomes, and interventions may

have some adverse effects such as transfers allowing parents to seek work elsewhere and leave their children in the care of others.

Policy implication: The strong momentum for social protection coupled with the available knowledge about what works and what does not work provides a solid foundation for strengthening social protection's role in improving the well-being and care of Africa's children. Going forward, these outcomes could be improved significantly by a focus on cash+ (cash plus) programs, greater attention to the balance between paid and unpaid care work, and strengthening of the linkages between social protection and child protection.

Looking at social protection approaches through the lens of cost-effectiveness, the comparative analysis of 48 graduation, livelihood development, and lump-sum unconditional cash transfer programs reveals that lump-sum cash transfers had the highest impact-cost ratio, that is, the greatest impact for money spent. However, the graduation approach is supported by the most rigorous evidence of long-term impact and produces positive changes more consistently than either the livelihood approach or cash transfers. Graduation initiatives are also more cost-effective than the subset of livelihood programs targeting the extreme poor for which there are long-term impact estimates. A few experimental studies that directly compare graduation with lump-sum unconditional cash transfers also suggest that the graduation approach is more effective.

Policy implication: While lump-sum cash transfers are easier to administer and have the biggest impact in the short run, the graduation approach has the broadest and most consistent body of evidence to support its sustainable impact on extreme poverty.

This report has also reflected on the design of social protection programs and offered corresponding lessons for policy makers. Three challenges inherent to poverty-targeting constrain the achievement of program objectives. First, the difficulty of identifying the poorest among the poor. When income or asset distributions are flat, meaning it is difficult to distinguish the poorest from the poor, a combination of targeting methods may work best, such as an objective proxy means testing method combined with a community-based method. Second, heterogeneity in household characteristics within a target population that is assumed to be relatively homogeneous. Heterogeneity in household type, in location, or in population group means that a one-size-fits-all social protection program is unlikely to work, especially in terms of targeting households for program eligibility or identifying households to graduate from a program. Assumptions about similarities within a target group can be misplaced, leading to inappropriate benefit provision for some households and premature graduation for others. Assuming homogeneity also ignores the diverse needs of households for different types of support and for different lengths of time. Third, provision of "individual/household" transfers in diverse social and cultural contexts. For cultures where sharing is the norm, benefits may need to be delivered to clans or communities rather than individual households. Or, where people are on the move, delivery for registration of target populations and payment points may need to be adapted to mobility patterns and changing locations.

Policy implication: Gradually expanding (progressive) geographic blanket coverage of entire communities would substantially reduce the cost of deciding which combination of targeting mechanisms will work best, if at all, minimize exclusion errors, and reduce social tensions; such universal coverage would also be a more ethical solution in the context of local development. Budgetary commitments could then follow the geographic expansion of the program across the country. Where universal targeting is not deemed possible, effective targeting will require attention to context, culture, and population characteristics. Beyond the targeting, support delivered through the program must be appropriate and sensitive to contexts and livelihoods. A "leave-no-one-behind" agenda depends on coordinating and delivering the appropriate combination of interventions to different population groups in different contexts.

Egypt's Takaful and Karama Program provides a case study to examine the effectiveness of proxy means test (PMT) targeting. For this program,

targeting effectiveness is defined in terms of its ability to enroll beneficiaries from the lowest two quintiles of the expenditure distribution. With a combination of PMT and exclusion factors alone, about 55 percent of beneficiaries would be characterized as poor based on a poverty line at the 40th percentile; the addition of geographic targeting increased the incidence of poverty among beneficiaries to 67 percent. The overall targeting success of the program is largely explained by the relatively higher rate of applications by poor beneficiaries, which is attributed to both the geographic roll-out and outreach focused on poor households and self-selection by households. The history of the program also shows that while household-level verification is costly, it helps prevent leakage. Although exclusion factors did not affect targeting effectiveness, they were found to be easier for beneficiaries to grasp than the PMT-based selection process and contributed to an understanding that the program was attempting to be fair.

Policy implication: Combining PMT with geographical targeting proved effective. However, clear communication about the PMT-based targeting approach is needed to avoid potential confusion about the inclusion criteria, which can breed suspicion of local government officials and increase social tension.

When it comes to the design of cost-effective social protection programs, well-informed decision making on the three key features of these programs—targeting, the choice of payment modality, and graduation—is crucial. Experimenting with small-scale pilot programs with variations in those features, and associated evaluations, can inform decision making. Well-functioning monitoring and evaluation (M&E) systems can document progress in implementation and generate information that can be used to improve the overall program design. External funding continues to play an important role in financing these programs, raising concerns about the long-term sustainability of social protection on the continent.

Policy implication: M&E systems should be developed early on as a core component of program design. To ensure the long-term sustainability of social protection programs, it is important to move toward domestic financing models.

As the official monitoring and evaluation report for CAADP, the ATOR assesses trends and progress on a range of indicators from the CAADP Results Framework, including indicators on government expenditures on social protection and agriculture and on impacts on growth and poverty reduction. Progress has been made in the CAADP implementation process, with several countries now formulating Malabo-compliant national agriculture investment plans (NAIPs) and mutual accountability processes such as joint sector reviews (JSRs) becoming more inclusive, comprehensive, and regular. The inaugural CAADP Biennial Review and Africa Agriculture Transformation Scorecard (AATS) were largely successful, with 47 out of 55 countries reporting and 20 of those considered on track to achieve the Malabo Declaration commitments. However, Africa's economic growth has slowed; continentwide GDP per capita grew at 0.8 percent in 2008–2017 compared to 3.9 percent in 2003–2008. Agriculture sector growth was stronger in 2008–2017, at 4.3 percent, although still short of the 6 percent CAADP target. Nonetheless, 17 countries met the CAADP growth target in 2008–2017.

Over the past two decades or so government expenditures on social sectors such as health, education, and social protection have increased while expenditures on agriculture, despite showing strong growth during the first decade of CAADP, have declined. For example, for Africa as a whole, the share of government social protection expenditure in total expenditures rose from an average of 5.2 percent in 1995–2003 to 12.5 percent in 2008–2012. In contrast, the share of government agriculture expenditure fell from an average of 3.3 percent in 1995–2008 to 3.0 percent in 2008–2017. It is therefore essential to formulate strategies that maximize

the impact of growing social sector investments on agricultural productivity growth—a key driver of long-term poverty reduction.

The Malabo Declaration commits African governments to integrating measures for increased agricultural productivity and growth with social protection programs. As this report has shown, social protection programs can offer a valuable complement to agriculture-focused policies by protecting vulnerable populations and reducing poverty. Maximizing synergies between social protection and agricultural programs can boost agricultural production and productivity, thus contributing to long-term growth and poverty reduction in Africa.

ANNEXES

Core CAADP M&E and Supplementary Indicators

Annexes:
Core CAADP M&E and Supplementary Indicators

This section presents data and trends across three levels of the CAADP Results Framework as well as supplementary data and trends.[1]

The data are presented at the aggregate level for the entire continent (Africa); the five geographic regions of the African Union (central, eastern, northern, southern, and western); eight Regional Economic Communities (CEN-SAD, COMESA, EAC, ECCAS, ECOWAS, IGAD, SADC, and UMA);[2] four economic categories defined by agricultural production potential, nonagricultural sources of growth, and income level; and nine CAADP groups representing either the period during which countries signed a CAADP compact or the level of CAADP implementation reached by countries by the end of 2015. Data for individual countries and regional groupings is available at www.resakss.org.

Technical Notes to Annex Tables

1. To control for year-to-year fluctuations, moving averages are used. Therefore, the values under the column "2003" are averages over the years 2002 to 2004 and the values under the column "2017" are averages over the years 2016 to 2017.
2. Annual average level and annual average change for 2003–2017 include data from 2003 up to the most recent year that is measured and available.
3. Annual average level is the simple average over the years shown, inclusive of the years shown.
4. Annual average change for all indicators is annual average percent change, from the beginning to the end years shown by fitting an exponential growth function to the data points (that is, "LOGEST" function in Excel).
5. For indicators for which there are only a few measured data points over the years specified in the range (such as poverty, which is measured once every three to five years or so), a straight-line method was used to obtain missing values for the individual years between any two measured data points. Otherwise, estimated annual average change based on the measured values is used to obtain missing values either preceding or following the measured data point. In cases where the missing values could not be interpolated, the data are reported as missing and excluded from the calculations for that time period. Any weights used for these indicators are adjusted to account for the missing data in the series.

1 Future Annual Trends and Outlook Reports (ATORs) will report on more of the CAADP Results Framework indicators as more data becomes available.

2 CEN-SAD is the Community of Sahel-Saharan States; COMESA is the Common Market for Eastern and Southern Africa; EAC is the East African Community; ECCAS is the Economic Community of Central African States; ECOWAS is the Economic Community of West African States; IGAD is the Intergovernmental Authority for Development; SADC is the Southern Africa Development Community; and UMA is the Arab Maghreb Union.

6. Values for Africa, the regional aggregations (central, eastern, northern, southern, and western), economic aggregations (less favorable agriculture conditions, more favorable agriculture conditions, mineral-rich countries, and middle-income countries), Regional Economic Communities (CEN-SAD, COMESA, EAC, ECCAS, ECOWAS, IGAD, SADC, and UMA), and CAADP groups (Compact 2007–2009, Compact 2010–2012, Compact 2013–2015, Compact not yet, Level 0, Level 1, Level 2, Level 3, and Level 4) are calculated by weighted summation. The weights vary by indicator and are based on each country's proportion in the total value of the indicator used for the weighting measured at the respective aggregate level. Each country i's weight in region j (wij) is then multiplied by the country's data point (xi) and then summed for the relevant countries in the region to obtain the regional value (yj) according to: $yj = \Sigma i\ wijxi$.

The trend data are organized as follows:

Annex 1
Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development

Annex 2
Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth

Annex 3
Level 3—Strengthening Systemic Capacity to Deliver Results

Annex 4
Country Classification by Period When CAADP Compact Was Signed and Level of CAADP Implementation

Annex 5
Supplementary Data Tables

ANNEX 1a: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.1.1

TABLE L1.1.1—GDP PER CAPITA (constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	1,434	1.1	1,536	1,694	3.9	1,920	0.8	1,965
Central	749	0.0	783	847	2.8	931	0.7	931
Eastern	556	1.5	593	656	4.6	811	2.5	901
Northern	2,534	2.4	2,787	3,053	3.6	3,380	0.4	3,470
Southern	2,882	0.8	3,008	3,292	4.2	3,644	0.3	3,629
Western	1,028	1.1	1,161	1,355	5.3	1,674	1.9	1,744
Less favorable agriculture conditions	456	1.2	493	538	2.8	605	1.4	628
More favorable agriculture conditions	459	0.4	462	492	3.0	615	3.5	698
Mineral-rich countries	440	-1.5	430	460	3.0	563	2.6	611
Middle-income countries	2,267	1.6	2,479	2,772	4.4	3,162	0.7	3,217
CEN-SAD	1,357	1.5	1,490	1,680	4.5	1,956	1.0	2,013
COMESA	960	0.9	991	1,074	3.7	1,201	0.6	1,243
EAC	548	0.9	576	625	3.4	762	2.8	848
ECCAS	866	0.8	932	1,096	7.1	1,331	0.7	1,333
ECOWAS	1,028	1.1	1,161	1,355	5.3	1,674	1.9	1,744
IGAD	556	1.4	591	659	5.0	825	2.5	916
SADC	1,797	0.5	1,852	2,006	3.7	2,192	0.3	2,190
UMA	3,134	2.4	3,488	3,846	3.4	4,115	0.1	4,170
CAADP Compact 2007-09 (CC1)	811	1.2	930	1,107	6.1	1,417	2.2	1,488
CAADP Compact 2010-12 (CC2)	587	0.0	594	632	2.7	749	2.6	828
CAADP Compact 2013-15 (CC3)	1,328	1.8	1,432	1,639	6.3	1,955	0.6	1,973
CAADP Compact not yet (CC0)	3,299	1.9	3,579	3,909	3.6	4,304	0.4	4,386
CAADP Level 0 (CL0)	3,299	1.9	3,579	3,909	3.6	4,304	0.4	4,386
CAADP Level 1 (CL1)	1,387	1.7	1,492	1,729	6.8	2,079	0.5	2,082
CAADP Level 2 (CL2)	552	-0.9	548	574	2.0	643	2.0	696
CAADP Level 3 (CL3)	477	1.6	510	545	3.0	654	1.8	691
CAADP Level 4 (CL4)	801	1.0	893	1,038	5.4	1,314	2.4	1,404

Source: ReSAKSS based on World Bank (2018) and ILO (2018).

ANNEX 1b: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.1.2

TABLE L1.1.2—HOUSEHOLD CONSUMPTION EXPENDITURE PER CAPITA (constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	1,013	0.6	1,068	1,132	2.6	1,324	2.4	1,460
Central	460	-0.9	458	471	1.6	526	2.3	583
Eastern	559	0.1	557	597	3.0	723	2.1	783
Northern	1,546	0.4	1,568	1,596	1.9	1,963	3.1	2,247
Southern	1,857	1.1	1,982	2,111	2.9	2,324	0.9	2,401
Western	762	1.5	889	998	3.5	1,228	3.6	1,415
Less favorable agriculture conditions	373	0.3	392	394	1.3	438	2.1	474
More favorable agriculture conditions	432	0.5	435	448	1.7	498	1.6	529
Mineral-rich countries	301	-1.6	289	313	3.3	341	2.0	382
Middle-income countries	1,434	0.9	1,538	1,648	2.9	1,987	2.8	2,221
CEN-SAD	965	1.0	1,043	1,130	3.3	1,380	3.0	1,550
COMESA	836	-0.1	822	849	2.5	975	1.9	1,057
EAC	430	0.5	434	454	2.4	560	2.9	620
ECCAS	450	2.4	534	559	3.4	772	4.1	922
ECOWAS	762	1.5	889	998	3.5	1,228	3.6	1,415
IGAD	652	0.3	651	699	3.2	848	2.2	924
SADC	1,147	0.6	1,194	1,261	2.5	1,371	0.8	1,414
UMA	1,672	-0.8	1,656	1,609	0.1	1,842	3.2	2,153
CAADP Compact 2007–09 (CC1)	763	1.6	911	1,033	3.7	1,295	3.9	1,500
CAADP Compact 2010–12 (CC2)	436	-0.1	432	452	2.1	503	1.8	550
CAADP Compact 2013–15 (CC3)	769	1.9	858	906	3.7	1,204	3.3	1,374
CAADP Compact not yet (CC0)	2,023	0.6	2,078	2,182	2.6	2,546	2.0	2,763
CAADP Level 0 (CL0)	2,023	0.6	2,078	2,182	2.6	2,546	2.0	2,763
CAADP Level 1 (CL1)	789	1.6	877	930	4.1	1,266	3.4	1,449
CAADP Level 2 (CL2)	415	-0.5	410	429	1.9	460	1.6	507
CAADP Level 3 (CL3)	323	1.0	342	363	2.5	414	2.0	446
CAADP Level 4 (CL4)	702	1.4	804	895	3.3	1,100	3.5	1,262

Source: ReSAKSS based on World Bank (2018) and ILO (2018).

ANNEX 1c: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.2.1

TABLE L1.2.1—PREVALENCE OF UNDERNOURISHMENT (% of population)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2015)	Annual avg. change (2008–2015)	2015
Africa	21.8	19.9	-3.3	17.6	-0.6	17.6
Central	30.2	28.0	-3.1	23.2	-2.2	22.0
Eastern	37.5	34.5	-3.0	30.4	-1.3	29.7
Northern	6.5	6.1	-3.3	4.9	-3.6	4.4
Southern	25.3	23.8	-2.4	20.4	-1.2	20.3
Western	14.9	12.9	-5.7	10.9	-0.1	11.1
Less favorable agriculture conditions	25.6	23.8	-3.1	19.6	-2.2	18.6
More favorable agriculture conditions	35.7	32.8	-3.1	28.9	-1.0	28.5
Mineral-rich countries	39.1	37.9	-1.5	35.0	0.2	36.1
Middle-income countries	11.0	9.6	-5.2	8.4	1.5	8.9
CEN-SAD	14.7	13.0	-4.7	11.7	0.7	12.0
COMESA	29.1	27.1	-2.7	24.3	-0.3	24.6
EAC	33.4	31.4	-1.9	29.9	-0.4	29.9
ECCAS	34.8	30.9	-4.9	23.3	-2.8	21.9
ECOWAS	14.9	12.9	-5.7	10.9	-0.1	11.1
IGAD	37.7	34.1	-3.3	29.1	-2.0	27.7
SADC	28.5	27.0	-2.3	24.4	-0.5	24.6
UMA	7.7	7.1	-3.1	5.2	-6.2	4.4
CAADP Compact 2007–09 (CC1)	21.1	18.5	-4.9	15.2	-1.3	14.9
CAADP Compact 2010–12 (CC2)	33.9	31.8	-2.2	29.2	-0.9	28.7
CAADP Compact 2013–15 (CC3)	34.0	30.5	-4.5	25.2	-0.7	25.3
CAADP Compact not yet (CC0)	6.3	6.1	-1.9	5.1	-2.7	4.8
CAADP Level 0 (CL0)	6.3	6.1	-1.9	5.1	-2.7	4.8
CAADP Level 1 (CL1)	36.2	33.1	-3.6	28.2	-0.8	28.3
CAADP Level 2 (CL2)	25.2	21.5	-6.8	16.0	-1.5	15.8
CAADP Level 3 (CL3)	27.3	26.5	-0.4	26.0	0.3	26.6
CAADP Level 4 (CL4)	26.0	23.2	-4.2	19.6	-1.6	18.9

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: Data is only available from 2000 to 2015.

ANNEX 1d: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.2.2A

TABLE L1.2.2A—PREVALENCE OF UNDERWEIGHT, WEIGHT FOR AGE (% of children under 5)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	24.3	-1.1	23.0	22.1	-1.6	19.5	-1.8	18.5
Central	27.9	-0.7	26.5	25.8	-1.1	23.1	-1.4	21.8
Eastern	28.1	-1.4	26.1	25.3	-1.6	22.1	-2.0	20.3
Northern	8.8	-1.9	8.3	7.0	-4.6	5.8	-2.8	5.0
Southern	18.6	-1.6	17.5	16.1	-3.5	13.4	-2.9	11.9
Western	28.1	-1.5	26.5	25.7	-1.1	23.2	-1.3	23.5
Less favorable agriculture conditions	31.8	-1.2	30.5	30.2	-0.9	28.0	-0.6	27.0
More favorable agriculture conditions	27.3	-1.8	24.8	23.6	-2.5	19.3	-3.0	17.0
Mineral-rich countries	27.6	-0.7	26.1	25.1	-1.4	22.0	-1.6	20.6
Middle-income countries	20.2	-0.8	19.6	18.9	-1.3	17.3	-1.4	17.4
CEN-SAD	23.3	-0.8	22.6	22.1	-0.9	20.3	-1.2	20.3
COMESA	25.2	-0.9	23.8	22.9	-1.7	20.1	-2.0	18.4
EAC	20.9	-2.6	18.5	17.7	-2.1	14.5	-3.1	12.6
ECCAS	28.0	-1.4	26.0	24.8	-2.1	21.6	-1.8	20.2
ECOWAS	28.1	-1.5	26.5	25.7	-1.1	23.2	-1.3	23.5
IGAD	28.7	-1.3	27.0	26.2	-1.6	23.0	-1.8	21.4
SADC	23.7	-1.2	22.1	21.0	-2.1	18.0	-2.2	16.4
UMA	8.5	-1.0	8.4	6.8	-6.5	4.8	-4.6	3.8
CAADP Compact 2007–09 (CC1)	32.1	-1.8	29.6	28.3	-1.9	24.9	-1.8	24.5
CAADP Compact 2010–12 (CC2)	22.4	-1.6	20.5	19.9	-1.6	16.6	-2.5	14.9
CAADP Compact 2013–15 (CC3)	24.2	0.2	24.4	24.1	-0.8	23.7	-0.3	23.7
CAADP Compact not yet (CC0)	11.9	-0.6	11.8	11.0	-2.2	9.5	-2.2	8.6
CAADP Level 0 (CL0)	11.9	-0.6	11.8	11.0	-2.2	9.5	-2.2	8.6
CAADP Level 1 (CL1)	25.3	0.3	25.7	25.3	-0.9	25.1	-0.2	25.2
CAADP Level 2 (CL2)	26.8	-0.6	25.3	24.7	-1.2	21.8	-1.5	20.5
CAADP Level 3 (CL3)	25.9	-1.4	24.4	23.6	-1.3	21.1	-1.4	19.6
CAADP Level 4 (CL4)	28.2	-2.0	25.8	24.5	-2.0	20.9	-2.3	20.0

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in population under 5 years for the region or group.

ANNEX 1e: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.2.2B

TABLE L1.2.2B—PREVALENCE OF STUNTING, HEIGHT FOR AGE (% of children under 5)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	41.8	-1.1	40.0	39.0	-1.0	34.8	-1.6	33.3
Central	45.0	-1.0	43.9	43.2	-0.6	40.8	-0.7	39.6
Eastern	47.5	-1.4	44.7	43.1	-1.7	37.8	-1.9	35.0
Northern	25.4	-3.1	23.0	22.3	2.0	19.4	-3.0	17.3
Southern	43.2	-1.1	41.5	39.5	-2.4	35.7	-1.6	34.0
Western	41.0	-0.8	39.5	39.0	-0.6	34.9	-1.2	34.9
Less favorable agriculture conditions	44.2	-0.5	42.9	43.0	-0.6	40.2	-0.5	39.1
More favorable agriculture conditions	48.5	-1.5	45.4	43.7	-1.9	37.9	-2.2	34.9
Mineral-rich countries	46.4	-1.0	45.2	44.4	-0.7	41.6	-0.9	40.1
Middle-income countries	35.8	-1.1	34.5	33.7	-0.5	30.0	-1.6	29.4
CEN-SAD	37.6	-1.0	36.1	35.8	-0.2	32.2	-1.4	31.5
COMESA	45.0	-1.4	42.6	41.5	-0.8	37.2	-1.9	34.6
EAC	44.2	-1.2	41.8	40.8	-1.4	36.5	-1.8	34.3
ECCAS	46.5	-1.3	44.6	43.2	-1.5	40.0	-1.1	38.6
ECOWAS	41.0	-0.8	39.5	39.0	-0.6	34.9	-1.2	34.9
IGAD	46.9	-1.5	43.9	42.3	-1.7	36.7	-2.0	33.9
SADC	45.9	-1.2	44.1	42.5	-1.7	38.7	-1.5	36.9
UMA	23.0	-1.7	21.2	19.1	-3.1	15.6	-2.8	13.8
CAADP Compact 2007–09 (CC1)	47.4	-1.2	44.9	43.5	-1.3	38.3	-1.5	37.8
CAADP Compact 2010–12 (CC2)	41.4	-1.3	39.5	38.7	-1.0	34.8	-1.7	32.5
CAADP Compact 2013–15 (CC3)	42.2	-1.0	40.8	39.5	-1.7	36.7	-1.0	35.6
CAADP Compact not yet (CC0)	28.1	-1.9	26.6	25.9	0.3	22.8	-2.2	20.9
CAADP Level 0 (CL0)	28.1	-1.9	26.6	25.9	0.3	22.8	-2.2	20.9
CAADP Level 1 (CL1)	43.2	-1.0	41.7	40.2	-1.8	37.3	-1.1	36.2
CAADP Level 2 (CL2)	43.7	-1.0	42.5	42.0	-0.6	39.4	-0.8	38.0
CAADP Level 3 (CL3)	45.0	-0.9	42.8	41.9	-1.0	38.4	-1.1	36.5
CAADP Level 4 (CL4)	45.9	-1.3	43.5	42.1	-1.4	36.7	-1.9	35.4

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in population under 5 years for the region or group.

ANNEX 1f: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.2.2C

TABLE L1.2.2C—PREVALENCE OF WASTING, WEIGHT FOR HEIGHT (% of children under 5)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	10.2	-0.7	9.8	9.7	0.2	8.7	-1.7	8.3
Central	12.3	0.9	11.4	11.1	-1.1	9.1	-2.0	8.4
Eastern	10.1	-0.4	9.8	9.8	-0.4	9.3	-0.7	9.1
Northern	6.1	0.8	6.5	6.3	1.7	7.2	1.9	7.8
Southern	6.5	-2.0	6.2	5.8	-3.1	4.7	-3.2	3.9
Western	13.0	-2.1	12.0	12.1	1.4	10.4	-3.2	9.5
Less favorable agriculture conditions	14.7	-2.3	13.6	13.0	-2.1	11.5	-2.0	10.3
More favorable agriculture conditions	8.9	-1.1	8.3	8.3	-1.6	7.2	-1.5	6.8
Mineral-rich countries	12.6	0.6	11.4	11.1	-1.3	8.8	-2.2	8.1
Middle-income countries	9.8	-0.6	9.7	9.8	2.2	9.3	-1.7	8.9
CEN-SAD	11.6	-1.0	11.1	11.2	1.1	10.3	-1.8	9.8
COMESA	9.8	0.4	9.6	9.7	0.3	9.2	-0.4	9.1
EAC	6.3	-2.3	5.5	5.6	-0.3	4.9	-2.2	4.4
ECCAS	11.4	0.1	10.5	10.2	-1.2	8.2	-2.3	7.5
ECOWAS	13.0	-2.1	12.0	12.1	1.4	10.4	-3.2	9.5
IGAD	10.8	-0.4	10.5	10.5	-0.5	9.9	-0.8	9.7
SADC	9.0	0.0	8.4	8.1	-1.3	6.8	-2.0	6.2
UMA	6.1	1.8	7.0	6.0	-4.8	5.6	0.6	5.7
CAADP Compact 2007–09 (CC1)	12.4	-2.0	11.5	11.6	1.3	10.3	-2.6	9.6
CAADP Compact 2010–12 (CC2)	9.2	-1.0	8.3	8.1	-1.4	6.4	-2.7	5.7
CAADP Compact 2013–15 (CC3)	10.0	1.2	10.4	10.6	0.4	10.7	0.3	10.9
CAADP Compact not yet (CC0)	7.8	0.6	8.2	7.9	-0.1	8.0	0.0	7.9
CAADP Level 0 (CL0)	7.8	0.6	8.2	7.9	-0.1	8.0	0.0	7.9
CAADP Level 1 (CL1)	10.6	1.3	11.1	11.3	0.4	11.4	0.3	11.6
CAADP Level 2 (CL2)	12.6	0.8	11.5	11.2	-1.5	8.9	-2.1	8.2
CAADP Level 3 (CL3)	9.4	-1.6	9.0	8.9	-0.8	8.1	-1.0	7.5
CAADP Level 4 (CL4)	10.8	-2.1	9.9	9.9	0.9	8.5	-3.1	7.8

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in population under 5 years for the region or group.

ANNEX 1g: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.2.3

TABLE L1.2.3—CEREAL IMPORT DEPENDENCY RATIO (%)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2012)	Annual avg. change (2008–2012)	2012
Africa	25.1	25.6	1.2	26.5	0.2	26.5
Central	30.7	29.9	-0.8	30.2	1.9	30.8
Eastern	13.2	13.7	2.6	16.3	-1.5	15.4
Northern	43.9	45.8	3.8	50.6	0.7	51.3
Southern	25.0	26.0	-0.4	23.1	-2.9	22.2
Western	22.6	22.5	-0.7	22.4	2.5	23.3
Less favorable agriculture conditions	13.6	14.4	1.8	16.4	4.7	17.6
More favorable agriculture conditions	14.8	15.6	2.1	17.4	-1.5	16.6
Mineral-rich countries	23.0	19.6	-7.6	12.0	-14.6	8.9
Middle-income countries	32.8	33.5	1.4	34.7	1.1	35.5
CEN-SAD	25.7	26.7	2.6	29.1	1.3	29.7
COMESA	18.7	19.4	3.7	23.1	-1.3	22.0
EAC	13.7	16.3	6.1	20.3	-0.1	19.6
ECCAS	37.5	37.8	-0.2	38.7	2.7	40.3
ECOWAS	22.6	22.5	-0.7	22.4	2.5	23.3
IGAD	13.4	13.6	3.5	16.6	-4.8	14.8
SADC	21.1	21.9	-0.6	20.0	-1.5	19.6
UMA	58.0	58.7	2.2	59.7	-0.6	60.0
CAADP Compact 2007–09 (CC1)	16.9	16.4	-1.1	17.2	1.9	17.5
CAADP Compact 2010–12 (CC2)	21.7	22.7	1.1	23.7	-0.3	23.3
CAADP Compact 2013–15 (CC3)	34.4	35.2	0.9	37.0	1.3	37.5
CAADP Compact not yet (CC0)	35.8	37.7	3.8	40.0	0.1	40.5
CAADP Level 0 (CL0)	35.8	37.7	3.8	40.0	0.1	40.5
CAADP Level 1 (CL1)	35.8	37.2	1.4	39.7	1.0	40.1
CAADP Level 2 (CL2)	32.0	30.8	-0.8	30.9	1.5	31.8
CAADP Level 3 (CL3)	15.0	14.6	-5.7	9.6	-7.9	8.3
CAADP Level 4 (CL4)	19.2	19.3	0.3	20.9	1.2	21.0

Source: ReSAKSS based on FAO (2018), World Bank (2018), and ILO (2018).
Note: Data are only available from 2000 to 2012. For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 1h: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.3.1A

TABLE L1.3.1A—EMPLOYMENT RATE (% of labor force, 15–64 years)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	90.7	0.0	91.0	91.7	0.3	92.3	0.0	92.1
Central	94.7	0.0	95.0	95.3	0.1	95.6	0.0	95.6
Eastern	93.2	-0.1	93.4	93.8	0.1	94.2	0.1	94.5
Northern	84.8	0.5	86.3	88.2	0.9	88.5	-0.2	88.3
Southern	81.0	-0.3	80.5	82.1	0.8	83.7	0.0	83.2
Western	95.5	0.0	95.5	95.6	0.0	95.7	-0.1	94.8
Less favorable agriculture conditions	96.0	0.0	95.7	95.3	-0.2	95.8	0.1	96.0
More favorable agriculture conditions	92.8	-0.1	93.1	93.4	0.1	93.6	0.0	93.7
Mineral-rich countries	94.7	0.1	94.9	95.1	0.1	95.4	0.1	95.6
Middle-income countries	87.6	0.0	88.0	89.2	0.6	90.1	-0.1	89.5
CEN-SAD	92.4	0.1	92.6	92.8	0.1	92.6	-0.1	92.1
COMESA	92.6	-0.1	92.7	93.1	0.2	93.1	0.0	93.2
EAC	94.8	0.0	94.9	94.8	0.0	95.0	0.1	95.5
ECCAS	92.3	0.0	92.5	93.3	0.4	95.1	0.1	95.3
ECOWAS	95.5	0.0	95.5	95.6	0.0	95.7	-0.1	94.8
IGAD	92.1	-0.2	92.2	92.7	0.1	92.8	0.1	93.0
SADC	87.9	-0.1	87.8	88.7	0.4	90.1	0.1	90.1
UMA	79.9	0.9	83.5	86.6	1.2	88.8	0.0	88.9
CAADP Compact 2007–09 (CC1)	94.9	-0.1	95.1	95.5	0.1	95.7	-0.1	94.9
CAADP Compact 2010–12 (CC2)	92.9	0.0	93.0	92.9	0.0	93.0	0.1	93.3
CAADP Compact 2013–15 (CC3)	88.3	0.2	89.0	90.3	0.6	92.8	0.2	93.1
CAADP Compact not yet (CC0)	83.2	0.0	83.6	85.5	0.9	85.7	-0.3	85.1
CAADP Level 0 (CL0)	83.2	0.0	83.6	85.5	0.9	85.7	-0.3	85.1
CAADP Level 1 (CL1)	87.4	0.2	88.0	89.1	0.5	92.0	0.3	92.5
CAADP Level 2 (CL2)	95.1	0.0	95.3	95.7	0.1	95.8	0.0	95.8
CAADP Level 3 (CL3)	95.3	0.0	95.3	95.3	0.0	96.0	0.2	96.5
CAADP Level 4 (CL4)	93.4	-0.1	93.5	93.8	0.1	93.9	0.0	93.4

Source: ReSAKSS based on ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total labor force for the region or group.

ANNEX 1i: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.3.1B

TABLE L1.3.1B—EMPLOYMENT RATE (% of population, 15+ years)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	57.8	0.0	58.0	58.6	0.5	59.4	0.0	59.3
Central	69.4	-0.1	69.3	69.5	0.1	69.6	0.0	69.6
Eastern	68.8	0.0	69.1	69.3	0.1	69.4	0.0	69.3
Northern	39.6	0.2	40.0	41.4	1.4	42.0	-0.4	41.4
Southern	54.4	-0.1	54.7	56.2	1.1	57.1	0.0	57.2
Western	58.5	-0.2	58.1	58.2	0.1	58.6	0.0	58.1
Less favorable agriculture conditions	65.7	-0.1	65.3	65.5	0.3	67.7	0.4	68.4
More favorable agriculture conditions	72.8	0.0	73.5	73.7	0.0	73.1	-0.2	72.6
Mineral-rich countries	67.5	0.1	67.7	67.7	0.0	67.3	-0.1	67.2
Middle-income countries	47.9	-0.2	47.8	48.7	0.8	49.6	-0.1	49.3
CEN-SAD	53.0	-0.1	52.6	52.8	0.3	53.2	-0.1	52.8
COMESA	62.1	0.0	62.3	63.0	0.4	63.4	0.0	63.4
EAC	72.9	-0.4	71.7	71.1	-0.2	71.3	0.1	71.5
ECCAS	69.1	0.0	69.1	69.6	0.4	70.9	0.1	71.0
ECOWAS	58.5	-0.2	58.1	58.2	0.1	58.6	0.0	58.1
IGAD	64.8	0.0	65.0	65.3	0.1	65.0	-0.1	64.8
SADC	63.1	0.0	63.5	64.6	0.7	65.7	0.1	65.9
UMA	38.1	0.6	39.3	40.6	1.0	41.2	-0.2	40.8
CAADP Compact 2007–09 (CC1)	63.1	0.1	63.7	64.3	0.3	65.0	0.0	64.5
CAADP Compact 2010–12 (CC2)	68.1	-0.2	67.5	67.1	-0.2	66.5	-0.1	66.3
CAADP Compact 2013–15 (CC3)	61.5	0.2	62.3	63.3	0.6	65.0	0.1	65.0
CAADP Compact not yet (CC0)	41.2	-0.2	41.2	42.6	1.5	43.1	-0.3	42.7
CAADP Level 0 (CL0)	41.2	-0.2	41.2	42.6	1.5	43.1	-0.3	42.7
CAADP Level 1 (CL1)	59.7	0.2	60.6	61.4	0.6	63.4	0.2	63.4
CAADP Level 2 (CL2)	67.9	0.0	67.9	68.1	0.1	68.2	0.0	68.2
CAADP Level 3 (CL3)	67.3	0.0	67.3	67.8	0.3	69.1	0.3	69.6
CAADP Level 4 (CL4)	64.7	-0.1	64.8	64.9	0.0	64.7	-0.1	64.2

Source: ReSAKSS based on World Bank (2017) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 1j: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.3.3

TABLE L1.3.3—POVERTY GAP AT $1.90 A DAY (2011 PPP) (%)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	19.0	-2.3	17.1	16.5	-1.3	14.2	-2.1	13.0
Central	22.8	-3.9	20.0	18.8	-1.8	15.2	-3.6	13.0
Eastern	22.5	-2.0	19.6	18.7	-1.6	15.8	-2.5	14.0
Northern	1.0	-4.3	0.8	0.7	-5.3	0.3	-11.9	0.2
Southern	21.6	-1.5	20.3	19.8	-2.5	18.1	-0.8	17.1
Western	23.7	-3.1	21.2	20.5	-0.9	17.5	-2.2	16.0
Less favorable agriculture conditions	31.8	-3.7	27.2	25.1	-4.3	16.9	-4.9	14.3
More favorable agriculture conditions	25.0	-2.2	22.0	20.8	-1.8	17.5	-2.6	15.4
Mineral-rich countries	29.5	-3.0	26.0	26.1	-1.5	20.3	-4.1	17.0
Middle-income countries	12.9	-2.4	11.9	11.7	-0.2	11.0	-0.7	10.6
CEN-SAD	16.1	-2.5	14.7	14.5	-0.3	12.8	-1.6	12.1
COMESA	15.3	-1.1	14.2	14.1	-0.2	13.1	-1.2	12.4
EAC	24.9	-0.8	22.9	21.7	-2.0	18.6	-1.8	17.4
ECCAS	23.8	-2.5	21.6	20.9	-1.2	18.1	-2.0	16.7
ECOWAS	23.7	-3.1	21.2	20.5	-0.9	17.5	-2.2	16.0
IGAD	18.1	-3.1	15.1	14.2	-1.7	11.1	-4.1	8.9
SADC	25.4	-1.0	23.7	22.9	-2.0	20.9	-1.0	19.8
UMA	1.6	-5.5	1.2	0.9	-9.4	0.3	-16.1	0.2
CAADP Compact 2007–09 (CC1)	23.2	-3.3	20.2	19.6	-0.9	16.7	-2.2	15.1
CAADP Compact 2010–12 (CC2)	24.4	-2.1	21.8	20.4	-2.4	16.5	-3.2	14.4
CAADP Compact 2013–15 (CC3)	21.6	0.2	22.2	22.3	0.7	23.7	0.5	24.1
CAADP Compact not yet (CC0)	3.7	-4.0	3.1	2.6	-8.3	1.7	-4.9	1.3
CAADP Level 0 (CL0)	3.7	-4.0	3.1	2.6	-8.3	1.7	-4.9	1.3
CAADP Level 1 (CL1)	30.9	1.3	32.4	33.0	1.4	36.6	1.1	38.3
CAADP Level 2 (CL2)	20.5	-5.2	16.8	15.2	-3.7	9.3	-8.8	6.0
CAADP Level 3 (CL3)	28.7	-2.9	25.4	23.4	-3.9	16.5	-4.7	13.8
CAADP Level 4 (CL4)	23.1	-2.5	20.6	20.0	-0.8	17.7	-1.8	16.3

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 1k: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.3.4

TABLE L1.3.4—POVERTY HEADCOUNT RATIO AT $1.90/ DAY (2011 PPP, % of population)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	45.4	-1.4	42.8	41.7	-0.9	38.1	-1.3	36.0
Central	53.2	-2.8	49.3	47.3	-1.5	40.9	-2.3	37.0
Eastern	57.2	-1.4	52.4	50.4	-1.2	44.6	-1.7	41.3
Northern	5.2	-4.1	4.6	4.0	-4.7	2.3	-11.6	1.3
Southern	47.7	-0.8	46.1	44.8	-1.7	42.2	-0.5	41.0
Western	54.2	-1.6	51.3	50.4	-0.4	46.5	-1.2	44.4
Less favorable agriculture conditions	68.7	-1.9	63.3	61.2	-1.8	50.7	-2.6	46.0
More favorable agriculture conditions	60.1	-1.5	55.4	53.4	-1.2	47.6	-1.7	44.2
Mineral-rich countries	58.9	-0.7	57.3	57.1	-0.2	52.1	-1.3	50.1
Middle-income countries	32.3	-1.5	30.7	30.2	-0.6	28.5	-0.7	27.6
CEN-SAD	38.0	-1.1	36.7	36.5	0.0	34.7	-0.8	33.8
COMESA	40.5	-0.8	38.6	37.9	-0.5	35.2	-1.2	33.4
EAC	58.7	-0.3	56.6	55.1	-0.9	51.2	-0.7	49.8
ECCAS	56.3	-1.9	53.0	51.5	-1.1	46.2	-1.5	43.4
ECOWAS	54.2	-1.6	51.3	50.4	-0.4	46.5	-1.2	44.4
IGAD	51.2	-2.1	45.5	43.2	-1.5	36.5	-2.6	32.3
SADC	55.9	-0.6	53.8	52.6	-1.2	49.6	-0.5	48.3
UMA	7.1	-5.1	5.5	4.5	-7.5	2.3	-14.0	1.1
CAADP Compact 2007–09 (CC1)	56.6	-2.0	51.7	50.3	-0.9	44.6	-1.8	41.3
CAADP Compact 2010–12 (CC2)	54.0	-0.9	51.6	50.0	-0.9	45.7	-1.2	43.7
CAADP Compact 2013–15 (CC3)	52.5	-0.8	52.7	52.6	0.0	52.5	0.0	52.2
CAADP Compact not yet (CC0)	12.3	-3.4	10.6	9.4	-6.1	6.5	-5.0	5.1
CAADP Level 0 (CL0)	12.3	-3.4	10.6	9.4	-6.1	6.5	-5.0	5.1
CAADP Level 1 (CL1)	66.2	0.9	69.0	70.6	1.0	75.6	0.9	78.5
CAADP Level 2 (CL2)	47.4	-3.2	42.7	40.1	-2.1	31.1	-3.9	26.1
CAADP Level 3 (CL3)	64.6	-1.5	60.7	57.9	-1.9	48.4	-2.4	44.2
CAADP Level 4 (CL4)	55.1	-1.5	51.4	50.3	-0.6	46.5	-1.2	44.2

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 1l: Level 1—Agriculture's Contribution to Economic Growth and Inclusive Development, Indicator 1.3.5

TABLE L1.3.5—GINI INDEX

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	44.1	-2.5	39.5	37.4	-2.5	30.3	-4.4	24.0
Central	55.5	-3.6	46.4	42.4	-3.1	30.3	-6.9	21.0
Eastern	40.1	-2.3	36.1	34.6	-2.3	28.6	-3.6	23.2
Northern	33.5	-1.4	31.3	30.4	-1.2	26.1	-2.8	22.2
Southern	59.1	-2.2	53.7	52.3	-1.3	43.2	-4.3	34.1
Western	42.2	-2.6	38.0	35.3	-3.4	28.6	-4.6	23.0
Less favorable agriculture conditions	43.5	-2.9	38.5	37.0	-2.6	28.9	-4.5	22.9
More favorable agriculture conditions	43.5	-2.6	38.6	36.5	-2.5	29.5	-4.1	23.2
Mineral-rich countries	56.0	-3.4	47.2	43.6	-3.1	31.5	-6.5	22.3
Middle-income countries	41.9	-2.0	38.6	36.7	-2.3	30.7	-4.0	25.3
CEN-SAD	40.2	-2.4	36.4	34.3	-2.9	27.5	-4.5	22.2
COMESA	42.8	-2.4	38.1	36.1	-2.6	29.5	-4.1	23.2
EAC	41.0	-2.1	37.2	35.8	-2.6	28.2	-4.4	23.0
ECCAS	54.5	-3.4	45.8	42.3	-3.0	31.1	-6.4	22.1
ECOWAS	42.2	-2.6	38.0	35.3	-3.4	28.6	-4.6	23.0
IGAD	40.3	-2.5	36.0	34.1	-2.9	27.9	-3.6	22.2
SADC	54.1	-2.6	47.5	45.4	-1.9	35.7	-5.1	27.3
UMA	36.4	-2.4	31.9	31.3	-2.3	23.5	-4.1	19.6
CAADP Compact 2007–09 (CC1)	40.8	-2.7	36.5	34.3	-3.4	28.5	-4.0	23.0
CAADP Compact 2010–12 (CC2)	45.7	-2.8	39.9	37.3	-2.6	28.2	-5.5	21.4
CAADP Compact 2013–15 (CC3)	48.3	-2.6	42.9	40.0	-2.6	32.0	-4.7	24.9
CAADP Compact not yet (CC0)	42.5	-1.5	39.7	38.9	-0.8	33.3	-3.3	27.8
CAADP Level 0 (CL0)	42.5	-1.5	39.7	38.9	-0.8	33.3	-3.3	27.8
CAADP Level 1 (CL1)	49.9	-2.8	43.5	40.3	-2.9	32.0	-5.5	24.6
CAADP Level 2 (CL2)	54.3	-3.3	45.8	42.1	-2.9	30.2	-6.6	21.3
CAADP Level 3 (CL3)	45.5	-2.2	41.6	39.2	-3.1	31.7	-4.0	25.6
CAADP Level 4 (CL4)	41.7	-2.7	37.2	35.1	-2.9	28.6	-4.3	22.9

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 2a: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.1

TABLE L2.1.1—AGRICULTURE VALUE ADDED (billion, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	7.2	4.8	9.0	9.8	4.2	13.4	4.3	15.7
Central	2.6	-3.4	2.3	2.4	0.2	3.4	5.6	4.1
Eastern	8.8	3.6	9.5	9.8	2.0	12.8	5.0	15.2
Northern	6.5	2.6	7.4	7.3	-1.3	10.4	6.8	13.3
Southern	3.7	1.5	4.0	4.2	4.8	5.3	1.6	5.7
Western	12.6	8.2	19.0	22.1	6.0	30.5	4.2	35.5
Less favorable agriculture conditions	1.5	4.8	1.8	2.0	2.7	2.8	5.9	3.5
More favorable agriculture conditions	3.4	0.3	3.5	4.2	7.1	7.0	6.6	8.8
Mineral-rich countries	2.9	-6.2	2.2	2.3	1.8	2.8	2.8	3.2
Middle-income countries	10.9	5.9	14.2	15.5	4.2	21.6	4.6	25.4
CEN-SAD	10.1	6.7	13.4	14.8	4.2	20.7	4.8	24.4
COMESA	8.1	3.0	8.4	8.6	1.8	10.5	4.0	12.1
EAC	5.5	0.3	5.7	6.2	3.4	10.4	7.8	13.7
ECCAS	2.5	0.1	2.7	3.0	5.1	5.2	5.9	6.2
ECOWAS	12.6	8.2	19.0	22.1	6.0	30.5	4.2	35.5
IGAD	10.8	4.2	11.7	11.8	1.7	16.2	5.8	19.6
SADC	3.8	0.0	3.9	4.2	4.6	5.5	2.7	6.2
UMA	6.1	2.4	6.9	6.8	-1.7	9.8	7.2	12.8
CAADP Compact 2007–09 (CC1)	13.9	7.8	20.8	24.4	6.6	34.4	4.2	40.1
CAADP Compact 2010–12 (CC2)	3.0	-0.8	3.0	3.2	3.2	4.9	6.5	6.3
CAADP Compact 2013–15 (CC3)	6.7	5.1	7.5	7.6	1.1	8.7	2.8	9.4
CAADP Compact not yet (CC0)	6.7	1.5	7.2	7.2	1.1	8.9	3.4	10.4
CAADP Level 0 (CL0)	6.7	1.5	7.2	7.2	1.1	8.9	3.4	10.4
CAADP Level 1 (CL1)	6.8	5.2	7.6	7.7	1.1	8.8	2.8	9.5
CAADP Level 2 (CL2)	2.4	-5.5	2.0	2.0	1.0	2.5	4.7	3.1
CAADP Level 3 (CL3)	1.8	2.8	1.9	2.2	5.3	3.1	4.7	3.8
CAADP Level 4 (CL4)	12.2	7.2	17.7	20.8	6.5	29.7	4.6	35.1

Source: ReSAKSS based on FAO (2018), World Bank (2018), and ILO (2018).
Note: For regions or groups, level is weighted average per country, where weight is country's share in total agricultural land area for the region or group.

ANNEX 2b: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.2

TABLE L2.1.2—AGRICULTURAL PRODUCTION INDEX (API) (2004–2006 = 100)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2014)	Annual avg. change (2008–2014)	2014
Africa	80.6	2.9	91.3	100.5	3.2	122.8	3.0	134.4
Central	92.9	0.0	93.5	101.4	3.3	125.6	2.9	136.0
Eastern	77.6	4.0	91.8	100.6	3.2	129.8	4.5	146.2
Northern	78.0	3.2	90.2	100.7	3.3	124.9	2.5	134.0
Southern	85.6	2.7	93.5	102.9	4.0	142.2	2.8	149.3
Western	79.6	3.4	90.7	99.6	3.0	114.4	2.8	126.5
Less favorable agriculture conditions	82.2	4.0	94.4	103.7	4.1	136.3	3.4	150.3
More favorable agriculture conditions	80.0	3.2	91.3	101.0	4.0	131.6	3.6	144.4
Mineral-rich countries	93.4	-0.6	93.8	101.0	2.6	127.5	2.6	133.8
Middle-income countries	79.4	3.3	90.9	100.1	3.0	119.1	2.8	130.1
CEN-SAD	79.7	3.5	91.3	100.3	3.0	116.2	2.5	126.7
COMESA	82.6	2.7	92.5	101.5	3.4	122.1	2.5	130.6
EAC	77.9	3.5	91.3	99.9	3.8	126.1	3.8	138.4
ECCAS	88.1	0.7	92.3	102.6	4.4	142.4	3.4	153.6
ECOWAS	79.6	3.4	90.7	99.6	3.0	114.4	2.8	126.5
IGAD	77.2	4.4	92.1	100.6	2.6	124.4	3.8	138.7
SADC	87.7	1.3	93.2	101.9	3.9	138.7	3.6	150.0
UMA	75.6	2.9	88.9	98.5	1.8	131.1	3.4	141.8
CAADP Compact 2007–09 (CC1)	77.7	3.7	90.3	99.7	3.3	117.6	3.2	130.9
CAADP Compact 2010–12 (CC2)	82.0	1.6	88.0	95.9	3.3	120.1	3.3	131.4
CAADP Compact 2013–15 (CC3)	80.6	3.8	92.4	101.4	3.0	140.1	5.3	159.1
CAADP Compact not yet (CC0)	79.9	2.9	91.2	101.0	3.3	124.0	2.2	132.0
CAADP Level 0 (CL0)	79.9	2.9	91.2	101.0	3.3	124.0	2.2	132.0
CAADP Level 1 (CL1)	81.3	3.8	93.4	101.2	2.4	138.1	5.2	155.5
CAADP Level 2 (CL2)	92.7	-0.3	92.9	101.3	3.5	124.1	2.8	134.9
CAADP Level 3 (CL3)	81.3	3.7	94.1	102.0	2.9	127.1	3.1	139.6
CAADP Level 4 (CL4)	78.3	3.5	90.2	99.7	3.5	119.7	3.2	132.3

Source: ReSAKSS based on FAO (2018) and World Bank (2018).
Note: Data are only available from 1995 to 2014. For regions or groups, level is weighted average, where weight is country's share in total agriculture value added for the region or group.

ANNEX 2c: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.3

TABLE L2.1.3—LABOR PRODUCTIVITY (agriculture value-added per agricultural worker, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	1,010.6	1.4	1,101.7	1,137.3	1.6	1,378.0	2.5	1,517.4
Central	623.6	-4.7	517.1	496.4	-1.5	582.2	3.4	670.2
Eastern	546.7	-0.9	517.0	526.5	1.5	697.5	4.4	804.3
Northern	3,137.8	2.3	3,410.4	3,444.1	0.2	4,486.1	4.4	5,397.9
Southern	806.6	0.4	824.2	840.0	2.6	928.1	-0.3	916.4
Western	1,424.3	5.3	1,883.4	2,061.1	3.6	2,526.9	2.1	2,734.6
Less favorable agriculture conditions	554.4	0.6	575.6	583.4	-0.2	672.2	3.0	755.0
More favorable agriculture conditions	393.1	-2.1	364.3	390.5	3.3	515.2	3.4	582.8
Mineral-rich countries	532.8	-4.7	433.3	427.8	0.4	456.8	0.4	475.6
Middle-income countries	2,282.9	3.9	2,744.8	2,886.1	2.2	3,738.2	3.7	4,279.2
CEN-SAD	1,570.3	3.7	1,862.8	1,957.8	2.1	2,429.9	2.9	2,703.1
COMESA	749.9	-0.8	699.7	698.8	0.7	830.8	2.5	914.8
EAC	460.5	-2.2	431.2	443.3	0.8	604.0	4.9	724.6
ECCAS	583.0	-3.5	523.7	530.8	0.7	690.6	3.5	778.0
ECOWAS	1,424.3	5.3	1,883.4	2,061.1	3.6	2,526.9	2.1	2,734.6
IGAD	608.4	-0.6	565.6	572.2	1.5	781.2	5.0	912.8
SADC	615.9	-2.4	574.5	583.8	2.0	669.6	0.8	693.4
UMA	3,048.4	1.2	3,294.3	3,248.4	-1.6	4,473.5	6.4	5,652.0
CAADP Compact 2007–09 (CC1)	994.8	4.0	1,273.0	1,410.5	4.2	1,748.8	2.1	1,886.7
CAADP Compact 2010–12 (CC2)	519.1	-2.0	480.3	481.0	0.2	589.0	3.0	667.7
CAADP Compact 2013–15 (CC3)	1,022.5	1.9	1,047.2	1,012.3	-0.8	1,275.2	4.6	1,449.7
CAADP Compact not yet (CC0)	3,400.1	2.1	3,683.5	3,731.7	1.0	4,796.3	3.9	5,704.9
CAADP Level 0 (CL0)	3,400.1	2.1	3,683.5	3,731.7	1.0	4,796.3	3.9	5,704.9
CAADP Level 1 (CL1)	1,057.8	1.9	1,079.6	1,043.5	-0.8	1,305.2	4.4	1,462.5
CAADP Level 2 (CL2)	602.6	-4.9	492.4	475.1	-0.8	534.6	2.6	606.5
CAADP Level 3 (CL3)	505.5	-0.1	489.8	512.7	2.1	596.3	1.6	635.9
CAADP Level 4 (CL4)	811.0	3.0	986.7	1,072.7	3.4	1,346.8	2.5	1,476.3

Source: ReSAKSS based on World Bank (2018) and UNCTAD (2017).

ANNEX 2d: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.4

TABLE L2.1.4—LAND PRODUCTIVITY (agriculture value-added per hectare of arable land, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	164.6	3.1	190.9	205.2	3.2	299.8	5.3	364.6
Central	126.2	-3.3	112.4	113.1	0.4	148.3	4.8	179.8
Eastern	138.8	1.3	143.0	153.2	3.5	304.9	10.5	432.5
Northern	346.0	2.9	384.4	391.9	0.5	507.9	4.1	602.2
Southern	60.3	1.9	65.2	69.4	4.4	88.4	2.0	95.7
Western	259.7	6.0	352.5	391.2	4.4	535.8	3.9	620.6
Less favorable agriculture conditions	47.1	3.5	54.5	58.1	2.0	79.6	5.5	97.6
More favorable agriculture conditions	141.7	-0.3	141.2	158.8	5.2	247.0	6.7	322.6
Mineral-rich countries	145.9	-3.5	125.0	128.4	2.1	153.5	2.1	171.0
Middle-income countries	210.2	4.7	259.5	278.0	3.1	420.9	5.5	507.7
CEN-SAD	218.1	4.8	268.8	289.3	3.2	439.0	5.5	529.0
COMESA	205.8	1.0	206.2	215.7	2.6	365.3	7.8	485.8
EAC	227.5	0.0	231.6	249.2	2.5	384.3	6.9	495.3
ECCAS	101.3	-1.3	99.9	106.9	2.9	159.1	5.3	191.0
ECOWAS	259.7	6.0	352.5	391.2	4.4	535.8	3.9	620.6
IGAD	146.2	1.9	148.8	158.3	3.7	353.4	11.4	484.4
SADC	79.0	-1.0	78.6	84.0	4.0	112.1	3.5	130.0
UMA	187.8	2.1	208.9	209.0	-1.2	291.7	6.5	367.8
CAADP Compact 2007–09 (CC1)	272.9	5.6	369.6	420.5	5.6	598.3	4.1	693.6
CAADP Compact 2010–12 (CC2)	137.3	-0.3	136.2	142.5	2.0	200.1	5.3	246.3
CAADP Compact 2013–15 (CC3)	83.1	3.3	90.0	91.0	1.0	158.5	9.2	210.7
CAADP Compact not yet (CC0)	164.6	3.1	190.9	205.2	3.2	299.8	5.3	364.6
CAADP Level 0 (CL0)	209.6	2.5	230.2	234.5	1.1	296.2	3.4	344.7
CAADP Level 1 (CL1)	209.6	2.5	230.2	234.5	1.1	296.2	3.4	344.7
CAADP Level 2 (CL2)	76.9	3.4	83.3	84.7	1.2	149.1	9.2	196.8
CAADP Level 3 (CL3)	126.4	-3.5	110.0	110.2	0.7	137.9	4.1	165.5
CAADP Level 4 (CL4)	92.3	1.2	94.9	103.2	3.8	139.5	3.9	162.8

Source: ReSAKSS based on World Bank (2018) and FAO (2018).

ANNEX 2e: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.5A

TABLE L2.1.5A—YIELD, CASSAVA (metric tons per hectare)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	8.6	1.0	8.9	9.3	1.9	9.3	-1.0	9.2
Central	7.8	-0.2	7.6	7.8	1.3	8.1	0.9	8.5
Eastern	8.0	0.1	7.7	7.6	1.9	6.5	-2.3	6.0
Northern								
Southern	6.4	8.4	8.1	8.5	2.8	10.4	1.2	10.3
Western	10.1	-0.4	10.3	10.8	1.5	10.4	-2.3	10.2
Less favorable agriculture conditions	7.0	6.9	8.2	7.8	-0.6	9.5	4.5	11.2
More favorable agriculture conditions	7.5	2.8	7.7	7.6	0.7	7.5	0.2	7.4
Mineral-rich countries	7.5	-0.4	7.4	7.3	-0.2	7.7	1.2	8.1
Middle-income countries	9.9	0.2	10.4	11.1	2.8	10.9	-3.1	10.3
CEN-SAD	9.8	-0.3	10.0	10.5	1.3	10.1	-2.1	9.9
COMESA	8.1	2.4	8.6	8.7	0.0	8.2	-0.5	8.2
EAC	8.4	0.2	8.1	7.8	0.6	6.3	-1.8	6.0
ECCAS	7.6	1.9	8.3	8.7	2.7	9.5	-0.5	9.3
ECOWAS	10.1	-0.4	10.3	10.8	1.5	10.4	-2.3	10.2
IGAD	10.2	9.1	12.6	11.9	-7.3	5.3	-9.9	3.8
SADC	7.3	1.3	7.5	7.8	2.7	8.7	0.4	8.5
UMA								
CAADP Compact 2007–09 (CC1)	10.3	-0.7	10.4	10.9	1.7	10.6	-2.1	10.5
CAADP Compact 2010–12 (CC2)	7.4	1.4	7.5	7.4	0.0	7.2	0.0	7.1
CAADP Compact 2013–15 (CC3)	7.3	4.3	8.5	9.7	6.5	11.0	-2.0	10.3
CAADP Compact not yet (CC0)	7.1	0.7	7.3	7.3	-0.1	7.4	0.2	7.4
CAADP Level 0 (CL0)	7.1	0.7	7.3	7.3	-0.1	7.4	0.2	7.4
CAADP Level 1 (CL1)	6.9	6.5	8.8	9.6	4.7	10.4	-3.1	9.2
CAADP Level 2 (CL2)	7.8	-0.5	7.6	7.9	1.7	8.3	0.6	8.5
CAADP Level 3 (CL3)	8.3	5.3	9.1	8.6	-4.8	6.2	-1.6	6.1
CAADP Level 4 (CL4)	9.2	0.1	9.4	9.8	2.3	10.0	-0.8	10.1

Source: ReSAKSS based on FAO (2018).

ANNEX 2f: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.5B

TABLE L2.1.5B—YIELD, YAMS (metric tons per hectare)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2014)	2016
Africa	10.0	-0.5	10.3	10.6	0.3	9.2	-2.9	8.9
Central	7.4	0.0	7.2	7.7	3.4	8.4	0.2	8.5
Eastern	4.4	0.3	4.3	4.2	0.8	7.6	7.7	7.8
Northern	6.3	-0.1	6.3	6.3	0.0	6.3	0.0	6.3
Southern								
Western	10.3	-0.6	10.5	10.8	0.2	9.3	-3.2	8.9
Less favorable agriculture conditions	8.7	1.6	9.1	9.6	2.3	10.2	0.7	10.3
More favorable agriculture conditions	10.3	2.2	11.5	11.1	-0.1	13.1	2.4	13.6
Mineral-rich countries	7.0	-1.7	6.4	6.5	1.1	7.3	0.7	7.3
Middle-income countries	10.1	-0.7	10.3	10.6	0.3	9.1	-3.3	8.6
CEN-SAD	10.1	-0.5	10.4	10.7	0.2	9.2	-3.1	8.8
COMESA	4.6	-0.8	4.3	4.3	0.6	7.2	7.2	7.4
EAC	5.3	0.2	5.4	5.6	-0.3	8.1	8.8	9.2
ECCAS	7.3	0.0	7.1	7.7	3.3	8.4	0.4	8.6
ECOWAS	10.3	-0.6	10.5	10.8	0.2	9.3	-3.2	8.9
IGAD	4.4	0.3	4.3	4.2	0.7	7.6	6.7	7.7
SADC	5.8	-6.0	4.5	4.5	0.1	4.5	0.0	4.5
UMA	6.3	-0.1	6.3	6.3	0.0	6.3	0.0	6.3
CAADP Compact 2007–09 (CC1)	10.4	-0.4	10.8	11.3	0.8	9.9	-3.4	9.4
CAADP Compact 2010–12 (CC2)	8.8	-1.2	8.4	8.1	-2.3	6.6	-1.7	6.2
CAADP Compact 2013–15 (CC3)	5.8	0.9	5.8	6.4	4.0	6.8	-0.8	6.7
CAADP Compact not yet (CC0)	5.3	0.2	5.3	5.4	0.3	5.4	0.2	5.5
CAADP Level 0 (CL0)	5.3	0.2	5.3	5.4	0.3	5.4	0.2	5.5
CAADP Level 1 (CL1)	5.2	-0.1	5.2	5.3	1.4	5.3	-0.8	5.3
CAADP Level 2 (CL2)	7.3	-0.7	6.8	7.5	4.7	8.6	0.3	8.7
CAADP Level 3 (CL3)	10.0	3.2	10.6	10.7	0.6	9.8	-2.0	9.5
CAADP Level 4 (CL4)	10.2	-0.6	10.5	10.8	0.2	9.4	-3.0	8.9

Source: ReSAKSS based on FAO (2018).

ANNEX 2g: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.5C

TABLE L2.1.5C—YIELD, MAIZE (metric tons per hectare)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	1.7	1.5	1.7	1.7	2.4	2.0	0.2	2.0
Central	1.1	0.3	1.1	1.1	1.6	1.2	0.7	1.2
Eastern	1.6	0.2	1.6	1.5	4.9	1.9	3.3	2.1
Northern	5.5	3.6	6.1	6.3	0.8	6.5	0.7	6.5
Southern	1.6	2.0	1.6	1.7	2.2	2.1	-0.5	1.9
Western	1.4	1.9	1.5	1.6	2.0	1.7	-1.3	1.6
Less favorable agriculture conditions	1.1	0.6	1.1	1.2	3.0	1.8	3.2	1.9
More favorable agriculture conditions	1.4	-0.4	1.3	1.3	4.0	1.6	3.2	1.7
Mineral-rich countries	1.0	-0.1	1.1	1.2	1.1	1.5	4.8	1.5
Middle-income countries	2.1	3.7	2.3	2.5	2.6	2.7	-1.9	2.6
CEN-SAD	1.9	2.3	2.0	2.1	0.6	2.1	-1.2	2.0
COMESA	1.8	0.5	1.8	1.9	2.6	2.3	3.1	2.4
EAC	1.6	-0.6	1.5	1.4	4.7	1.6	2.3	1.7
ECCAS	0.9	0.5	0.9	1.0	1.3	1.1	3.2	1.2
ECOWAS	1.4	1.8	1.5	1.6	2.0	1.7	-1.7	1.6
IGAD	1.6	1.3	1.6	1.8	3.9	2.2	5.1	2.5
SADC	1.5	0.9	1.5	1.5	3.6	1.8	1.1	1.9
UMA	0.6	3.3	0.8	0.7	-2.7	0.8	-1.1	0.7
CAADP Compact 2007–09 (CC1)	1.4	1.3	1.5	1.6	4.2	1.9	0.5	1.9
CAADP Compact 2010–12 (CC2)	1.4	-0.2	1.3	1.3	4.1	1.5	1.9	1.6
CAADP Compact 2013–15 (CC3)	1.0	-0.9	1.0	1.0	-2.7	1.0	4.1	1.1
CAADP Compact not yet (CC0)	3.0	4.6	3.5	4.0	5.8	5.0	0.7	5.2
CAADP Level 0 (CL0)	3.0	4.6	3.5	4.0	5.8	5.0	0.7	5.2
CAADP Level 1 (CL1)	0.9	-2.5	0.8	0.8	-5.6	0.8	6.7	0.9
CAADP Level 2 (CL2)	1.1	1.4	1.1	1.1	0.8	1.2	0.8	1.2
CAADP Level 3 (CL3)	1.4	1.5	1.5	1.6	4.7	2.2	0.9	2.2
CAADP Level 4 (CL4)	1.4	0.3	1.4	1.5	4.4	1.7	1.4	1.7

Source: ReSAKSS based on FAO (2018).

ANNEX 2h: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.5D

TABLE L2.1.5D—YIELD, MEAT (indigenous cattle, kilograms per head)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2013)	Annual avg. change (2008–2013)	2013
Africa	141.7	0.6	147.1	152.8	1.4	155.2	-0.4	153.8
Central	143.8	-0.8	139.7	139.3	0.2	141.5	0.6	143.4
Eastern	116.4	1.0	125.4	129.5	1.0	129.0	-1.1	125.6
Northern	176.0	1.4	185.3	212.7	6.1	238.0	0.1	238.6
Southern	211.6	0.5	214.5	223.4	1.2	227.3	-0.2	225.6
Western	124.3	-0.3	122.8	122.4	0.0	119.4	-0.6	118.1
Less favorable agriculture conditions	123.1	-0.4	121.6	121.6	0.1	116.4	-1.0	114.4
More favorable agriculture conditions	122.2	0.8	130.3	135.1	1.2	134.2	-1.2	130.5
Mineral-rich countries	136.5	0.4	137.5	135.0	-0.2	139.0	0.8	140.7
Middle-income countries	164.8	0.7	170.1	181.4	2.5	192.5	0.4	193.3
CEN-SAD	131.8	1.0	141.4	149.5	2.2	153.2	-0.7	150.5
COMESA	131.0	1.3	143.1	153.1	2.4	158.8	-0.6	156.9
EAC	122.3	1.8	142.2	152.3	2.1	148.3	-2.6	139.1
ECCAS	148.7	-0.2	145.1	142.1	-0.4	142.6	0.5	144.1
ECOWAS	124.3	-0.3	122.8	122.4	0.0	119.4	-0.6	118.1
IGAD	118.0	1.7	132.1	137.6	1.2	138.2	-1.1	134.6
SADC	169.6	0.6	172.8	178.1	1.0	177.9	-0.6	175.1
UMA	179.8	1.5	187.0	187.5	0.5	187.9	0.5	190.0
CAADP Compact 2007–09 (CC1)	121.0	-0.3	119.7	119.5	0.0	117.1	-0.5	116.2
CAADP Compact 2010–12 (CC2)	124.7	1.0	136.1	142.1	1.5	141.9	-1.3	137.0
CAADP Compact 2013–15 (CC3)	134.0	1.0	137.3	136.4	-0.1	137.0	0.3	137.8
CAADP Compact not yet (CC0)	191.8	0.8	199.8	219.9	3.9	240.1	0.2	239.9
CAADP Level 0 (CL0)	191.8	0.8	199.8	219.9	3.9	240.1	0.2	239.9
CAADP Level 1 (CL1)	133.4	1.1	137.3	136.4	-0.2	136.4	0.1	136.8
CAADP Level 2 (CL2)	133.9	-0.2	132.4	130.8	-0.1	132.6	0.8	134.7
CAADP Level 3 (CL3)	136.4	0.1	136.8	136.7	0.0	133.3	-0.4	132.3
CAADP Level 4 (CL4)	118.4	0.4	125.0	129.2	1.1	128.7	-1.2	125.0

Source: ReSAKSS based on FAO (2018).
Note: Data are only available from 1995 to 2013

ANNEX 2i: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.1.5E

TABLE L2.1.5E—YIELD, MILK (whole fresh cow, kilograms per head)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2014)	Annual avg. change (2008–2014)	2014
Africa	545.5	1.4	579.5	569.0	-0.7	563.0	0.4	557.9
Central	914.1	0.6	934.4	938.2	0.2	928.8	-0.2	933.9
Eastern	377.8	2.8	435.2	407.5	-2.5	372.2	-1.1	349.1
Northern	1,179.5	4.6	1,375.5	1,579.2	4.9	1,862.1	0.7	1,840.1
Southern	1,336.1	-1.1	1,347.4	1,413.6	0.9	1,443.5	1.1	1,492.5
Western	255.5	-0.8	247.0	253.5	1.8	258.5	-1.0	243.7
Less favorable agriculture conditions	510.9	-1.0	475.1	470.0	-0.3	456.8	-0.6	443.6
More favorable agriculture conditions	370.7	4.3	463.1	441.6	-2.6	390.0	-1.1	368.1
Mineral-rich countries	603.3	-1.5	582.8	573.1	-0.5	594.6	0.1	579.9
Middle-income countries	743.3	-0.7	713.8	722.4	1.3	864.6	3.9	935.5
CEN-SAD	524.8	1.0	537.1	526.7	0.0	560.2	0.6	551.5
COMESA	467.1	2.6	535.9	513.3	-1.7	466.9	-1.4	429.0
EAC	3,86.7	3.1	429.5	417.0	-1.7	424.9	0.1	412.8
ECCAS	781.4	0.4	791.4	785.8	-0.2	801.4	0.2	791.7
ECOWAS	255.5	-0.8	247.0	253.5	1.8	258.5	-1.0	243.7
IGAD	415.9	2.7	481.0	446.3	-2.7	398.8	-1.4	370.5
SADC	671.5	-0.7	644.8	634.8	-1.1	633.9	1.2	656.1
UMA	1,175.3	4.9	1349.8	1,519.5	5.1	1,909.1	2.8	2,055.7
CAADP Compact 2007–09 (CC1)	289.3	6.0	422.0	401.1	-2.8	311.7	-2.9	275.3
CAADP Compact 2010–12 (CC2)	428.6	1.9	455.2	438.1	-1.6	443.9	0.2	438.3
CAADP Compact 2013–15 (CC3)	479.1	-0.8	457.7	423.3	-1.6	429.7	0.8	426.0
CAADP Compact not yet (CC0)	1,209.6	2.0	1,300.0	1,461.1	3.6	1,646.8	1.0	1,669.5
CAADP Level 0 (CL0)	1,209.6	2.0	1,300.0	1,461.1	3.6	1,646.8	1.0	1,669.5
CAADP Level 1 (CL1)	474.6	-0.7	454.0	419.5	-1.7	425.1	0.7	420.6
CAADP Level 2 (CL2)	662.8	-0.7	644.9	623.6	-1.4	611.5	-0.6	591.2
CAADP Level 3 (CL3)	443.1	-1.2	418.8	415.1	0.2	406.5	-0.4	400.8
CAADP Level 4 (CL4)	336.8	5.0	437.0	416.6	-2.8	364.9	-1.3	341.6

Source: ReSAKSS based on FAO (2018).

ANNEX 2j: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.2.1A

TABLE L2.2.1A—INTRA-AFRICAN AGRICULTURAL TRADE, EXPORTS (million, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	601.5	-1.3	518.0	454.9	6.2	1,680.3	14.1	2,276.8
Central	27.0	5.7	34.1	43.2	3.4	37.1	0.8	48.7
Eastern	304.4	-1.8	307.7	317.3	4.8	443.7	0.7	442.6
Northern	72.4	8.6	107.4	190.1	20.5	421.5	3.3	485.1
Southern	1,086.2	-1.2	953.3	851.9	4.8	2,960.8	11.4	3,716.4
Western	166.2	5.7	179.1	163.1	5.9	288.0	5.9	330.2
Less favorable agriculture conditions	66.2	2.1	75.8	96.5	14.8	114.9	1.2	131.0
More favorable agriculture conditions	322.6	-4.4	275.4	259.3	4.6	382.2	2.0	390.3
Mineral-rich countries	101.5	24.1	185.0	246.5	13.0	436.5	8.5	503.5
Middle-income countries	681.2	-0.9	591.4	515.7	6.1	1,991.8	14.5	2,713.9
CEN-SAD	186.6	3.9	202.0	208.4	7.6	370.7	4.3	418.7
COMESA	277.2	-1.2	254.9	276.3	6.6	463.9	3.1	492.8
EAC	374.3	-0.3	377.9	375.1	3.6	504.7	0.6	516.8
ECCAS	26.2	4.9	30.5	35.7	-0.6	31.4	4.1	42.2
ECOWAS	166.2	5.7	179.1	163.1	5.9	288.0	5.9	330.2
IGAD	356.5	-1.5	355.2	385.3	6.8	561.4	0.8	567.1
SADC	1,045.0	-1.0	918.9	803.9	4.4	2,772.8	11.8	3,549.6
UMA	67.7	4.7	78.7	126.9	22.2	305.3	7.3	395.2
CAADP Compact 2007–09 (CC1)	111.0	-0.7	112.8	98.1	12.4	204.7	3.3	198.3
CAADP Compact 2010–12 (CC2)	279.8	3.6	289.9	287.2	1.1	357.8	2.5	402.9
CAADP Compact 2013–15 (CC3)	237.7	-8.8	164.9	128.5	-0.6	144.7	10.2	200.5
CAADP Compact not yet (CC0)	1,069.3	-1.0	931.8	831.8	5.6	2,911.1	11.4	3,655.0
CAADP Level 0 (CL0)	1,069.3	-1.0	931.8	831.8	5.6	2,911.1	11.4	3,655.0
CAADP Level 1 (CL1)	278.7	-2.8	214.0	168.9	-5.4	168.2	8.7	224.6
CAADP Level 2 (CL2)	49.2	3.6	56.5	76.8	7.3	76.1	6.0	122.0
CAADP Level 3 (CL3)	91.1	12.2	147.3	205.3	16.5	460.9	9.0	519.8
CAADP Level 4 (CL4)	211.2	3.3	222.5	204.0	3.9	326.0	3.8	347.0

Source: ReSAKSS based on UNCTAD (2018) and World Bank (2018).

Note: For regions and groups, level is weighted average per country, where weight is country's share in intra-African total exports for the region or group. The value of intra-African agricultural exports and imports for Africa as a whole is expected to be equal. However, Tables TL2.2.1A and TL.2.2.1B show exports to be greater than imports, due to differences in commodities categorized as agricultural by different countries, year of shipment of exports and arrival of imports, treatment of the origin of export versus shipment, and valuation of exports and imports (for details see UNCTAD: http://unctadstat.unctad.org/EN/FAQ.html).

ANNEX 2k: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.2.1B

TABLE L2.2.1B—INTRA-AFRICAN AGRICULTURAL TRADE, IMPORTS (million, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	247.6	4.7	288.3	304.2	4.4	516.9	5.0	579.0
Central	120.2	-7.4	122.7	182.5	12.9	211.5	1.4	182.1
Eastern	107.2	4.4	152.0	174.4	5.2	257.8	0.8	255.9
Northern	137.8	8.3	184.8	196.7	5.1	318.3	3.5	356.0
Southern	332.7	4.9	406.5	414.1	3.2	728.8	5.4	820.8
Western	187.3	6.8	193.4	238.4	8.8	334.3	-0.8	304.4
Less favorable agriculture conditions	58.8	12.8	77.8	108.6	10.3	184.6	6.6	230.0
More favorable agriculture conditions	195.9	-2.7	235.8	333.5	16.1	413.8	-0.8	409.0
Mineral-rich countries	221.9	4.7	290.4	276.3	0.7	372.6	5.1	406.8
Middle-income countries	280.9	6.3	320.0	314.0	1.5	590.2	6.6	691.2
CEN-SAD	168.4	8.4	195.4	226.9	6.6	333.0	-0.3	314.4
COMESA	238.5	1.7	291.6	344.1	9.4	431.2	0.1	419.1
EAC	104.9	4.7	156.5	189.8	6.6	270.1	0.9	273.8
ECCAS	282.4	12.4	361.8	294.0	-8.3	253.3	-0.1	228.8
ECOWAS	187.3	6.8	193.4	238.4	8.8	334.3	-0.8	304.4
IGAD	126.0	8.8	192.1	224.5	5.8	321.8	-0.9	296.9
SADC	315.4	4.1	377.0	387.5	3.7	684.1	5.5	766.7
UMA	125.8	7.7	161.9	157.6	2.4	293.3	6.0	333.9
CAADP Compact 2007–09 (CC1)	224.5	5.6	218.0	257.4	7.1	351.0	-1.6	302.4
CAADP Compact 2010–12 (CC2)	146.4	-0.1	159.1	192.0	7.4	245.2	0.9	247.9
CAADP Compact 2013–15 (CC3)	293.8	5.3	371.4	400.7	5.4	413.2	-0.6	413.7
CAADP Compact not yet (CC0)	275.4	4.6	323.0	328.6	4.3	744.5	7.9	876.0
CAADP Level 0 (CL0)	275.4	4.6	323.0	328.6	4.3	744.5	7.9	876.0
CAADP Level 1 (CL1)	314.1	5.4	386.4	419.0	5.2	433.1	-0.2	430.7
CAADP Level 2 (CL2)	134.5	-8.0	142.6	222.5	17.6	289.0	-5.9	176.0
CAADP Level 3 (CL3)	146.3	12.3	211.0	199.5	-0.2	287.9	9.9	386.9
CAADP Level 4 (CL4)	197.3	5.0	208.4	241.4	5.7	357.0	1.2	366.0

Source: ReSAKSS based on UNCTAD (2018) and World Bank (2018).

Note: For regions and groups, level is weighted average per country, where weight is country's share in intra-African total imports for the region or group. The value of intra-African agricultural exports and imports for Africa as a whole is expected to be equal. However, Tables TL2.2.1A and TL.2.2.1B show exports to be greater than imports, due to differences in commodities categorized as agricultural by different countries, year of shipment of exports and arrival of imports, treatment of the origin of export versus shipment, and valuation of exports and imports (for details see UNCTAD: http://unctadstat.unctad.org/EN/FAQ.html).

ANNEX 2l: Level 2—Agricultural Transformation and Sustained Inclusive Agricultural Growth, Indicator 2.2.2

TABLE L2.2.2—DOMESTIC FOOD PRICE VOLATILITY (index)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2012)	Annual avg. change (2008–2012)	2012
Africa	11.6	12.7	3.7	12.6	-11.0	10.6
Central	7.8	8.7	1.2	9.2	-4.9	6.7
Eastern	11.5	13.5	6.8	14.1	-14.7	10.7
Northern	8.7	10.2	7.6	11.4	-4.8	10.7
Southern	8.9	7.9	6.1	14.8	-21.1	8.2
Western	14.8	15.8	0.9	12.0	-6.7	11.7
Less favorable agriculture conditions	11.5	15.7	3.1	13.5	-8.2	11.1
More favorable agriculture conditions	12.8	14.7	6.3	15.1	-13.5	11.8
Mineral-rich countries	16.7	11.6	-5.2	8.9	-8.5	7.9
Middle-income countries	11.1	11.8	2.9	11.7	-10.2	10.2
CEN-SAD	12.5	14.0	3.6	12.4	-10.2	11.1
COMESA	10.7	12.9	8.1	14.7	-9.4	12.9
EAC	12.7	16.0	7.6	15.5	-17.7	11.0
ECCAS	10.9	9.2	-1.9	8.6	-4.9	7.3
ECOWAS	14.8	15.8	0.9	12.0	-6.7	11.7
IGAD	11.8	15.4	9.7	16.9	-15.7	13.4
SADC	9.6	8.5	3.8	12.9	-19.8	7.3
UMA	8.5	9.2	3.9	9.5	-2.5	8.8
CAADP Compact 2007–09 (CC1)	14.1	15.1	1.0	11.5	-6.3	11.3
CAADP Compact 2010–12 (CC2)	12.7	14.8	6.1	14.6	-13.7	11.9
CAADP Compact 2013–15 (CC3)	10.4	8.1	-3.4	8.5	-6.1	5.9
CAADP Compact not yet (CC0)	8.0	9.3	8.4	13.1	-13.9	9.6
CAADP Level 0 (CL0)	8.0	9.3	8.4	13.1	-13.9	9.6
CAADP Level 1 (CL1)	12.4	8.4	-6.1	8.6	-5.6	6.2
CAADP Level 2 (CL2)	9.6	9.2	-3.2	8.3	-12.2	5.6
CAADP Level 3 (CL3)	14.4	17.5	4.3	15.7	-0.8	15.3
CAADP Level 4 (CL4)	13.7	14.7	2.8	12.4	-10.8	11.2

Source: ReSAKSS based on FAO (2017).
Note: Data are only available from 2000 to 2012. For regions or groups, level is weighted average, where weight is country's share in total food production for the region or group.

ANNEX 3a: Level 3—Strengthening Systemic Capacity to Deliver Results, Indicator 3.5.1

TABLE L3.5.1—GOVERNMENT AGRICULTURE EXPENDITURE (million, constant 2010 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	712.1	11.5	944.6	1,169.4	11.3	1,108.1	-4.3	948.2
Central	49.4	6.9	70.9	88.2	8.3	176.4	11.1	255.6
Eastern	198.3	5.8	276.8	353.0	8.3	430.7	-0.3	456.5
Northern	1,520.2	6.4	1,678.6	1,502.8	-5.9	1,843.2	8.2	2,530.0
Southern	439.6	20.0	711.5	941.6	12.1	917.3	-3.1	842.4
Western	581.1	20.0	914.8	1,374.5	23.1	1,157.2	-12.3	581.3
Less favorable agriculture conditions	101.5	4.9	142.4	178.5	2.9	201.2	5.6	239.8
More favorable agriculture conditions	172.5	4.1	227.9	296.3	9.5	388.9	0.8	420.0
Mineral-rich countries	74.4	2.5	79.5	115.7	17.6	183.9	5.1	238.3
Middle-income countries	926.8	11.2	1,186.8	1,477.9	11.8	1,396.1	-4.4	1,176.8
CEN-SAD	877.2	9.4	1,058.8	1,317.9	12.8	1,098.8	-8.8	717.8
COMESA	1,046.5	5.4	1,076.4	917.4	-7.8	760.1	2.1	909.2
EAC	186.1	3.5	235.0	232.2	1.5	327.3	-1.6	307.4
ECCAS	70.4	5.1	89.8	235.9	38.2	316.6	-5.9	213.4
ECOWAS	581.1	20.0	914.8	1,374.5	23.1	1,157.2	-12.3	581.3
IGAD	229.4	5.5	312.4	426.1	11.6	491.0	-0.5	516.5
SADC	344.2	18.4	556.3	708.6	10.7	705.7	-3.3	647.6
UMA	816.3	13.5	1,316.1	1,477.1	4.0	2,604.4	8.5	3,484.6
CAADP Compact 2007–09 (CC1)	619.2	21.3	983.3	1,443.7	21.6	1,188.4	-11.9	628.9
CAADP Compact 2010–12 (CC2)	148.2	-0.2	163.3	172.4	4.3	286.6	2.8	312.1
CAADP Compact 2013–15 (CC3)	83.4	2.0	92.8	233.4	37.2	312.1	-6.6	208.5
CAADP Compact not yet (CC0)	1,335.8	8.5	1,586.3	1,536.2	-2.3	1,839.7	6.4	2,419.9
CAADP Level 0 (CL0)	1,335.8	8.5	1,586.3	1,536.2	-2.3	1,839.7	6.4	2,419.9
CAADP Level 1 (CL1)	84.1	-0.2	81.9	259.1	45.4	319.4	-11.3	151.7
CAADP Level 2 (CL2)	72.2	2.1	83.9	92.4	4.4	174.5	11.2	257.2
CAADP Level 3 (CL3)	73.2	13.1	108.9	143.0	10.3	187.8	3.1	206.8
CAADP Level 4 (CL4)	524.3	18.4	834.8	1,236.5	21.6	1,050.3	-11.1	587.4

Source: ReSAKSS based on IFPRI (2015), World Bank (2018), and national sources.
Note: For regions or groups, level is weighted average per country, where weight is country's share in total agriculture value added for the region or group.

ANNEX 3b: Level 3—Strengthening Systemic Capacity to Deliver Results, Indicator 3.5.2

TABLE L3.5.2—SHARE OF AGRICULTURE EXPENDITURE IN TOTAL GOVERNMENT EXPENDITURE (%)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	3.3	3.1	3.6	3.5	-1.8	3.0	-0.9	3.1
Central	2.0	-1.0	2.3	2.9	6.4	3.4	1.7	4.2
Eastern	5.8	-0.3	6.0	6.0	-0.7	5.0	-8.1	3.7
Northern	4.6	2.8	4.6	3.7	-10.7	3.0	2.4	3.4
Southern	1.6	10.2	2.2	2.5	3.6	2.1	-2.9	2.0
Western	3.6	-2.8	3.6	4.0	5.3	4.3	2.6	5.2
Less favorable agriculture conditions	10.7	-1.1	11.4	12.2	-2.5	9.3	-0.1	8.8
More favorable agriculture conditions	6.6	-2.9	6.3	6.7	2.2	6.2	-5.7	4.9
Mineral-rich countries	6.5	-2.0	5.8	7.4	13.0	8.1	0.5	8.9
Middle-income countries	2.8	4.9	3.2	3.1	-2.8	2.5	-0.7	2.6
CEN-SAD	4.7	-1.4	4.4	3.8	-5.0	3.0	-0.8	3.1
COMESA	5.8	0.6	5.3	4.3	-7.7	3.1	-2.9	2.9
EAC	4.9	0.0	4.8	4.0	-5.6	3.7	-8.2	2.5
ECCAS	1.4	-4.5	1.3	2.1	15.0	1.7	-5.9	1.6
ECOWAS	3.6	-2.8	3.6	4.0	5.3	4.3	2.6	5.2
IGAD	6.0	0.7	6.5	6.7	0.7	5.3	-8.1	3.9
SADC	1.9	8.2	2.5	2.7	2.2	2.2	-3.4	2.1
UMA	3.5	5.6	4.2	4.2	-3.4	4.2	3.1	4.8
CAADP Compact 2007–09 (CC1)	3.3	1.5	3.8	4.4	5.6	4.3	1.4	5.3
CAADP Compact 2010–12 (CC2)	5.6	-2.5	5.2	5.2	2.0	5.6	-2.3	5.0
CAADP Compact 2013–15 (CC3)	2.1	-8.3	1.6	2.3	12.1	1.9	-7.6	1.7
CAADP Compact not yet (CC0)	3.1	6.6	3.5	3.1	-7.5	2.4	0.6	2.6
CAADP Level 0 (CL0)	3.1	6.6	3.5	3.1	-7.5	2.4	0.6	2.6
CAADP Level 1 (CL1)	2.1	-9.3	1.5	2.1	12.8	1.7	-9.9	1.3
CAADP Level 2 (CL2)	6.0	-5.8	5.0	4.9	-1.7	5.1	3.2	6.3
CAADP Level 3 (CL3)	6.0	1.1	6.4	7.8	7.4	7.4	-2.0	6.6
CAADP Level 4 (CL4)	3.7	-1.1	3.9	4.3	4.5	4.4	-0.5	4.5

Source: ReSAKSS based on IFPRI (2015), World Bank (2018), and national sources.

ANNEX 3c: Level 3—Strengthening Systemic Capacity to Deliver Results, Indicator 3.5.3

TABLE L3.5.3—GOVERNMENT AGRICULTURE EXPENDITURE AS SHARE OF AGRICULTURE GDP (%)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	5.7	3.3	5.9	6.3	3.0	5.5	-2.8	5.0
Central	2.1	2.6	2.8	3.7	9.6	5.5	5.8	6.7
Eastern	3.9	5.4	5.1	5.3	0.0	3.9	-7.7	3.0
Northern	10.2	3.6	10.8	10.1	-3.2	9.8	1.9	10.5
Southern	8.7	8.8	11.2	14.9	9.4	14.3	-1.6	13.4
Western	3.3	-0.3	2.9	3.4	9.0	2.7	-6.8	2.0
Less favorable agriculture conditions	5.7	0.8	7.1	7.8	-3.3	5.8	-0.2	5.2
More favorable agriculture conditions	4.1	1.2	4.7	5.3	3.9	4.7	-4.6	4.0
Mineral-rich countries	6.4	-4.8	5.2	6.8	14.8	10.8	6.4	13.4
Middle-income countries	6.2	3.9	6.2	6.5	2.6	5.6	-2.8	5.1
CEN-SAD	5.4	-0.8	4.5	4.3	-0.1	3.2	-4.7	2.7
COMESA	7.0	1.7	6.9	6.5	-2.6	5.1	-1.8	5.0
EAC	3.1	4.5	3.9	3.6	-0.4	3.2	-8.9	2.1
ECCAS	3.1	-0.6	3.1	6.0	24.9	5.4	-6.7	4.0
ECOWAS	3.3	-0.3	2.9	3.4	9.0	2.7	-6.8	2.0
IGAD	3.8	7.1	5.4	5.8	1.6	3.9	-7.6	3.0
SADC	7.2	7.9	9.1	11.5	7.8	10.8	-3.0	9.6
UMA	10.7	8.4	14.2	15.8	6.1	17.3	-1.5	16.0
CAADP Compact 2007–09 (CC1)	2.9	6.7	3.0	3.6	7.9	2.4	-9.4	1.6
CAADP Compact 2010–12 (CC2)	4.3	-2.1	4.3	4.9	7.3	5.8	-0.6	5.5
CAADP Compact 2013–15 (CC3)	5.0	-4.9	4.1	6.9	20.8	6.2	-8.2	4.4
CAADP Compact not yet (CC0)	10.3	6.1	12.0	12.4	0.1	12.0	0.6	12.3
CAADP Level 0 (CL0)	10.3	6.1	12.0	12.4	0.1	12.0	0.6	12.3
CAADP Level 1 (CL1)	6.8	-7.0	4.9	8.1	20.1	6.4	-10.5	4.1
CAADP Level 2 (CL2)	5.0	-4.7	4.4	4.5	0.9	5.8	5.6	7.3
CAADP Level 3 (CL3)	4.1	7.4	5.4	6.3	6.5	6.4	0.3	6.1
CAADP Level 4 (CL4)	3.2	1.9	3.1	3.6	8.2	3.0	-6.9	2.2

Source: ReSAKSS based on IFPRI (2015), World Bank (2018), and national sources.

ANNEX 3d: Level 3—Strengthening Systemic Capacity to Deliver Results

TABLE L 3(a)—PROGRESS IN CAADP IMPLEMENTATION PROCESS AS OF AUGUST 2018

Country/Region	First generation investment plan				JSR assessment conducted/ initiated	Second generation investment plan			Inaugural biennial review (BR) process			
	Roundtable held and compact signed	First generation investment plan drafted, reviewed, and validated	Business meeting held	GAFSP funding approved (million US$)		Malabo domestica-tion event held	Malabo Status assessment and profile finalized	Malabo goals and milestones report finalized	NAIP drafted and/or reviewed and/or validated	BR report drafted, validated, and submitted to REC	Country on track to meet Malabo Commitments	Country not on track to meet Malabo Commitments
AFRICA*	**42**	**34**	**29**	**17**	**30**	**16**	**21**	**16**	**19**	**47**	**20**	**27**
Central Africa*	***9***	***6***	***4***	***1***	***3***	***1***			***1***	***9***	***1***	***8***
Burundi	August 25, 2009	August 31, 2011	March 15, 2012	$30	Initiated				Drafted	Yes	On track	
Cameroon	July 17, 2013	August 22, 2014								Yes		Not on track
Central African Republic	April 15, 2011	May 21, 2012	December 21, 2013							Yes		Not on track
Chad	December 16, 2013									Yes		Not on track
Congo, Dem. Republic	March 18, 2011	May 21, 2013	November 8, 2013		Yes	Yes				Yes		Not on track
Congo, Republic	December 10, 2013	July 25, 2015	November 17, 2015		Initiated					Yes		Not on track
Equatorial Guinea	December 5, 2013									Yes		Not on track
Gabon	May 10, 2013									Yes		Not on track
Sao Tome and Principe	October 17, 2013	September 2, 2014								Yes		Not on track
Eastern Africa*	***10***	***9***	***7***	***5***	***8***	***5***	***5***	***1***	***4***	***10***	***6***	***4***
Comoros												
Djibouti	April 19, 2012	November 22, 2012			Initiated					Yes		Not on track
Eritrea												
Ethiopia	September 28, 2009	September 25, 2010	December 7, 2010	$51.5	Yes	Yes	Yes	In progress	Drafted	Yes	On track	
Kenya	July 24, 2010	September 14, 2010	September 27, 2010	$30	Yes	Yes	Yes	Yes	Drafted	Yes	On track	
Madagascar	October 21, 2013				Initiated					Yes		Not on track
Mauritius	July 23, 2015				Initiated					Yes	On track	
Rwanda	March 31, 2007	December 8, 2009	December 9, 2009	$50		Yes	Yes		Yes	Yes	On track	
Seychelles	September 16, 2011	October 23, 2015	November 19, 2015		Yes	Initiated	In progress	Initiated		Yes	On track	
Somalia												
South Sudan	Drafted	March 7, 2017								Yes (after continental BR)		Not assessed
Sudan	July 30, 2013	September 7, 2015	October 18, 2016							Yes		Not on track
Tanzania	July 8, 2010	May 31, 2011	November 10, 2011	$22.9	Yes	Yes	Yes			Yes		Not on track
Uganda	March 31, 2010	September 10, 2010	September 17, 2010	$27.6	Yes	Yes	Yes	In progress	Yes	Yes	On track	

TABLE L 3(a)—PROGRESS IN CAADP IMPLEMENTATION PROCESS AS OF AUGUST 2018 *continued*

Country/Region	First generation investment plan				JSR assessment conducted/ initiated	Second generation investment plan			Inaugural biennial review (BR) process			
	Roundtable held and compact signed	First generation investment plan drafted, reviewed, and validated	Business meeting held	GAFSP funding approved (million US$)		Malabo domestication event held	Malabo Status assessment and profile finalized	Malabo goals and milestones report finalized	NAIP drafted and/or reviewed and/or validated	BR report drafted, validated, and submitted to REC	Country on track to meet Malabo Commitments	Country not on track to meet Malabo Commitments
Northern Africa*	***1***	***1***	***1***							***4***	***2***	***2***
Algeria												
Egypt										Yes		Not on track
Libya												
Mauritania	July 28, 2011	February 16, 2012	March 21, 2012							Yes	On track	
Morocco										Yes	On track	
Tunisia										Yes		Not on track
Western Sahara												
Southern Africa*	***7***	***3***	***3***	***2***	***7***	***1***	***1***		***1***	***10***	***6***	***4***
Angola	August 5, 2014									Yes		Not on track
Botswana										Yes	On track	
Lesotho	September 4, 2013				Initiated					Yes		Not on track
Malawi	April 19, 2010	September 16, 2010	September 29, 2011	$39.6	Yes	Yes	Yes		Yes	Yes	On track	
Mozambique	December 9, 2011	December 13, 2012	April 12, 2013		Yes		Initiated			Yes	On track	
Namibia					Initiated					Yes	On track	
South Africa										Yes	On track	
Swaziland	March 4, 2010				Yes					Yes	On track	
Zambia	January 18, 2011	March 15, 2013	May 30, 2013	$31.1	Yes					Yes		Not on track
Zimbabwe	November 22, 2013				Yes					Yes		Not on track
Western Africa*	***15***	***15***	***14***	***9***	***12***	***9***	***15***	***14***	***13***	***14***	***5***	***9***
Benin	October 16, 2009	September 25, 2010	June 7, 2011	$24	Yes	Yes	Yes	Yes	Yes	Yes	On track	
Burkina Faso	July 22, 2010	January 17, 2012	March 26, 2012	$37.1	Yes	Yes	Yes	Yes	Yes	Yes	On track	
Cabo Verde	December 11, 2009	September 25, 2010	November 17, 2010		Initiated		Yes	Yes	Yes	Yes	On track	
Côte d'Ivoire	July 27, 2010	June 20, 2012	September 14, 2012		Yes	Yes	Yes	Yes	Yes	Yes		Not on track
Gambia	October 28, 2009	September 25, 2010	November 5, 2010	$28		Yes	Yes	Yes		Yes		Not on track
Ghana	October 28, 2009	June 9, 2010	June 17, 2010		Yes	Yes	Yes	Yes	Drafted	Yes		Not on track
Guinea	April 7, 2010	September 25, 2010	June 5, 2013		Initiated		Yes	Yes	Yes	Yes		Not on track
Guinea Bissau	January 18, 2011	June 3, 2011					Yes	Yes	Yes			

ANNEX 3d: Level 3—Strengthening Systemic Capacity to Deliver Results, continued

TABLE L 3(a)—PROGRESS IN CAADP IMPLEMENTATION PROCESS AS OF AUGUST 2018 *continued*

Country/Region	First generation investment plan				JSR assessment conducted/ initiated	Second generation investment plan			Inaugural biennial review (BR) process			
	Roundtable held and compact signed	First generation investment plan drafted, reviewed, and validated	Business meeting held	GAFSP funding approved (million US$)		Malabo domestication event held	Malabo Status assessment and profile finalized	Malabo goals and milestones report finalized	NAIP drafted and/or reviewed and/or validated	BR report drafted, validated, and submitted to REC	Country on track to meet Malabo Commitments	Country not on track to meet Malabo Commitments
Western Africa* *cont'd*	***15***	***15***	***14***	***9***	***12***	***9***	***15***	***14***	***13***	***14***	***5***	***9***
Liberia	October 6, 2009	June 9, 2010	June 17, 2010	$46.5	Initiated		Yes	Yes	Drafted	Yes		Not on track
Mali	October 13, 2009	September 25, 2010	November 5, 2010	$37.2	Yes	Yes	Yes		Yes	Yes	On track	
Niger	September 30, 2009	September 25, 2010	December 15, 2010	$33	Yes	Yes	Yes	Yes	Yes	Yes		Not on track
Nigeria	October 30, 2009	June 9, 2010	June 17, 2010		Initiated	Yes	Yes	Yes	Drafted	Yes		Not on track
Senegal	February 10, 2010	June 9, 2010	June 17, 2010	$40	Yes		Yes	Yes		Yes		Not on track
Sierra Leone	September 18, 2009	June 9, 2010	June 17, 2010	$50			Yes	Yes	Drafted	Yes		Not on track
Togo	July 30, 2009	June 9, 2010	June 17, 2010	39	Yes	Yes	Yes	Yes	Yes	Yes	On track	
RECS	***5***	***3***			***2***							
CEN-SAD			1									
COMESA	November 14, 2014											
EAC	June 23, 2017				Initiated							
ECCAS	July 10, 2013	September 5, 2013										
ECOWAS	November 12, 2009	June 9, 2010			yes							
IGAD	October 21, 2013	August 30, 2017	June 17, 2010									
SADC	In progress											
UMA												

Source: Authors' compilation based on NEPAD (November, 2015) and ReSAKSS (2018).
Note: * The item in this row are the number of countries in Africa of the subregion that have achieved the milestone. ** The item in this row are the number of RECs that have achieved the milestone.
GAFSP=Global Agriculture and Food Security Program; JSR=Joint Sector Review

ReSAKSS-ECA

Burundi (COMESA, EAC, ECCAS)
Central African Rep. (Cen-SAD, ECCAS)
Comoros (CEN-SAD, COMESA)
Congo, D.R. (COMESA, ECCAS, SADC)
Congo, R. (ECCAS)
Djbouti (CEN-SAD, COMESA, IGAD)
Egypt (CEN-SAD, COMESA)
Eritrea (COMESA, IGAD)
Ethiopia (COMESA, IGAD)
Gabon (ECCAS)
Kenya (Cen-SAD, COMESA, EAC, IGAD)
Libya (CEN-SAD, COMESA, UMA)
Rwanda (COMESA, EAC, ECCAS)
Seychelles (COMESA, SADC)
South Sudan (IGAD)
Sudan (CEN-SAD, COMESA, IGAD)
Tanzania (SADC)
Uganda (COMESA, EAC, IGAD)

ReSAKSS-SA

Angola (ECCAS, SADC)
Botswana (SADC)
Lesotho (SADC)
Madagascar (COMESA, SADC)
Malawi (COMESA, SADC)
Mauritius (COMESA, SADC)
Mozambique (SADC)
Namibia (SADC)
Swaziland (COMESA, SADC)
Zambia (COMESA, SADC)
Zimbabwe (COMESA, SADC)

ReSAKSS-WA

Benin (CEN-SAD, ECOWAS
Burkina Faso (CEN-SAD, ECOWAS)
Cameroon (ECCAS)
Cabo Verde (ECOWAS)
Chad (CEN-SAD, ECCAS)
Côte d'Ivoire (CEN-SAD, ECOWAS)
Gambia (CEN-SAD, ECOWAS)
Ghana (CEN-SAD, ECOWAS)
Guinea (CEN-SAD, ECOWAS)
Guinea-Bissau (CEN-SAD, ECOWAS)
Liberia (CEN-SAD, ECOWAS)
Mali (CEN-SAD, ECOWAS)
Mauritania (CEN-SAD, UMA)
Niger (CEN-SAD, ECOWAS)
Nigeria (CEN-SAD, ECOWAS)
Senegal (CEN-SAD, ECOWAS)
Sierra Leone (CEN-SAD, ECOWAS)
Togo (CEN-SAD, ECOWAS)

ANNEX 3d: Level 3—Strengthening Systemic Capacity to Deliver Results

TABLE L 3(b)—PROGRESS IN STRENGTHENING SYSTEMIC CAPACITY

Country/region	L2.4.2-Existence of food reserves, local purchases for relief programs, early warning systems and food feeding programs**	L3.1.1-Existence of a new NAIP/NAFSIP developed through an inclusive and participatory process	L3.2.1-Existence of inclusive institutionalized mechanisms for mutual accountability and peer review	L3.3.1-Existence of and quality in the implementation of evidence-informed policies and corresponding human resources	L3.4.1-Existence of a functional multisectoral and multistakeholder coordination body	L3.4.2-Cumulative number of agriculture-related public-private partnerships (PPPs) that are successfully undertaken	L3.4.3-Cumulative value of investments in the PPPs	L3.4.6-Existence of an operational country SAKSS
AFRICA*	**41**	**13**	**26**	**33**	**30**	**21**	**20**	**14**
Central Africa*	***4***	***0***	***2***	***2***	***1***	***2***	***2***	***1***
Burundi	yes		yes	yes	yes	Three	Over € 14 million	
Cameroon								
Central African Republic	yes							
Chad								
Congo, Dem. Rep.	yes		yes	yes		Several PPPs	Not stated	yes
Congo, Rep.	yes							
Equatorial Guinea								
Gabon								
Sao Tome and Principe								
Eastern Africa*	***13***	***3***	***5***	***11***	***9***	***8***	***8***	***4***
Comoros	yes			yes				
Djibouti	yes			yes		Several PPPs	Not stated	
Eritrea	yes							
Ethiopia	yes		yes	yes	yes	Several PPPs	Over US$ 30 million	Initiated
Kenya	yes			yes	yes	More than 10	Over US$ 100 million	yes
Madagascar			yes	yes	yes	Four	Not stated	
Mauritius	yes			yes	yes	One	Not stated	
Rwanda	yes	yes	yes	yes	yes	Three	Over € 10 million	yes
Seychelles	yes			yes				
Somalia	yes							
South Sudan	yes				yes			
Sudan	yes	yes		yes	yes			

ANNEX 3d: Level 3—Strengthening Systemic Capacity to Deliver Results, continued

TABLE L 3(b)—PROGRESS IN STRENGTHENING SYSTEMIC CAPACITY *continued*

Country/region	L2.4.2-Existence of food reserves, local purchases for relief programs, early warning systems and food feeding programs**	L3.1.1-Existence of a new NAIP/NAFSIP developed through an inclusive and participatory process	L3.2.1-Existence of inclusive institutionalized mechanisms for mutual accountability and peer review	L3.3.1-Existence of and quality in the implementation of evidence-informed policies and corresponding human resources	L3.4.1-Existence of a functional multisectoral and multistakeholder coordination body	L3.4.2-Cumulative number of agriculture-related public-private partnerships (PPPs) that are successfully undertaken	L3.4.3-Cumulative value of investments in the PPPs	L3.4.6-Existence of an operational country SAKSS
Eastern Africa* *cont'd*	***13***	***3***	***5***	***11***	***9***	***8***	***8***	***4***
Tanzania	yes		yes	yes	yes	Several PPs across the country and many of them in SAGCOT region with several projects	US$ 3.2 billion by 2030	yes
Uganda	yes	yes	yes	yes	yes	More than 5	Over US$ 218 million	yes
Northern Africa*	***2***	***0***	***0***	***2***	***1***	***1***	***1***	***0***
Algeria								
Egypt	yes			yes	yes	One	Not stated	
Libya	yes			yes				
Mauritania								
Morocco								
Tunisia								
Western Sahara								
Southern Africa*	***10***	***1***	***9***	***9***	***7***	***7***	***6***	***2***
Angola	yes			yes		Five	Not stated	
Botswana	yes		yes	yes				
Lesotho	yes		Yes	yes		Four	Not stated	
Malawi	yes	yes	yes	yes	yes	Four	Not stated	Initiated
Mozambique	yes		yes		yes	Four	Not stated	yes
Namibia	yes		yes	yes	yes	Three	Not stated	
South Africa	yes		yes	yes	yes			
Swaziland	yes		yes	yes	yes	Three	Not stated	
Zambia	yes		yes	yes				Initiated
Zimbabwe	yes		yes	yes	yes	Four		yes

ANNEX 3d: Level 3—Strengthening Systemic Capacity to Deliver Results, continued

TABLE L 3(b)—PROGRESS IN STRENGTHENING SYSTEMIC CAPACITY *continued*

Country/region	L2.4.2-Existence of food reserves, local purchases for relief programs, early warning systems and food feeding programs**	L3.1.1-Existence of a new NAIP/NAFSIP developed through an inclusive and participatory process	L3.2.1-Existence of inclusive institutionalized mechanisms for mutual accountability and peer review	L3.3.1-Existence of and quality in the implementation of evidence-informed policies and corresponding human resources	L3.4.1-Existence of a functional multisectoral and multistakeholder coordination body	L3.4.2-Cumulative number of agriculture-related public-private partnerships (PPPs) that are successfully undertaken	L3.4.3-Cumulative value of investments in the PPPs	L3.4.6-Existence of an operational country SAKSS
Western Africa*	***12***	***9***	***10***	***9***	***12***	***3***	***3***	***7***
Benin	yes	yes	yes		yes			yes
Burkina Faso	yes	yes		yes	yes			yes
Cabo Verde								
Côte d'Ivoire		yes		yes	yes	two	Not stated	
Gambia	yes		yes	yes	yes			
Ghana	Yes		yes	yes	yes			yes
Guinea	yes	yes	yes	yes				
Guinea-Bissau								
Liberia	yes	yes			yes			
Mali	yes	yes	yes	yes	yes	two	More than 10 billion FCFA	yes
Niger	yes	yes	yes	yes	yes			yes
Nigeria	yes		yes		yes			
Senegal	yes	yes	yes	yes	yes	two	US$ 798	yes
Sierra Leone	yes		yes		yes			
Togo	yes	yes	yes	yes	yes			yes

Note: * The item in this row are the number of countries in Africa of the sub region corresponding to each indicator.

** This indicator is from level 2 of the CAADP Results Framework.

SAKSS=Strategic Analysis and Knowledge Support System

ANNEX 4: Distribution of countries by year of signing CAADP compact and level of CAADP implementation reached by end of 2015

PERIOD WHEN CAADP COMPACT WAS SIGNED				LEVEL OR STAGE OF CAADP IMPLEMENTATION REACHED BY END OF 2015				
2007–2009	2010–2012	2013–2015	Not signed	LEVEL 0 Not started or pre-compact	LEVEL 1 Signed compact	LEVEL 2 Level 1 plus NAIP	LEVEL 3 Level 2 plus one external funding source	LEVEL 4 Level 3 plus other external funding source
CC1	**CC2**	**CC3**	**CC0**	**CL0**	**CL1**	**CL2**	**CL3**	**CL4**
Benin	Burkina Faso	Angola	Algeria	Algeria	Angola	Cameroon	Burundi	Benin
Burundi	Central Afr. Rep.	Cameroon	Botswana	Botswana	Chad	Cabo Verde	Gambia	Burkina Faso
Cabo Verde	Congo, Dem. Rep.	Chad	Comoros	Comoros	Congo, Rep.	Central Afr. Rep.	Liberia	Côte d'Ivoire
Ethiopia	Côte d'Ivoire	Congo, Rep.	Egypt	Egypt	Eq. Guinea	Congo, Dem. Rep.	Mali	Ethiopia
Gambia	Djibouti	Eq. Guinea	Eritrea	Eritrea	Gabon	Djibouti	Niger	Ghana
Ghana	Guinea	Gabon	Libya	Libya	Lesotho	Guinea	Sierra Leone	Kenya
Liberia	Guinea Bissau	Lesotho	Morocco	Morocco	Madagascar	Guinea Bissau	Togo	Malawi
Mali	Kenya	Madagascar	Namibia	Namibia	Mauritius	Mauritania	Uganda	Mozambique
Niger	Malawi	Mauritius	Somalia	Somalia	Seychelles	S. T. & Principe	Zambia	Nigeria
Nigeria	Mauritania	Sudan	South Africa	South Africa	Sudan			Rwanda
Rwanda	Mozambique	S. T. & Principe	South Sudan	South Sudan	Swaziland			Senegal
Sierra Leone	Senegal	Zimbabwe	Tunisia	Tunisia	Zimbabwe			Tanzania
Togo	Seychelles							
	Swaziland							
	Tanzania							
	Uganda							
	Zambia							
Count								
13	17	12	12	12	12	9	9	12
AgShare in GDP (%)								
26.4	23.2	15.3	7.4	7.4	15.3	18.8	25.8	25.5

Note: NAIP = national agricultural investment plan. There are three external funding sources considered—Grow Africa, New Alliance Cooperation, and the Global Agriculture and Food Security Program (GAFSP). AgShare in GDP is the average share of agricultural GDP in total GDP for 2003–2017.

ANNEX 5: Supplementary Data Tables

TABLE O.1.1A—AGRICULTURAL ODA (% total ODA)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	3.8	3.6	3.1	5.9	4.5	6.6
Central	2.1	2.2	20.7	3.3	10.1	3.7
Eastern	4.7	4.3	-1.9	6.4	5.1	7.8
Northern	3.8	3.6	-3.0	4.7	3.2	4.4
Southern	2.9	3.5	3.9	5.7	5.5	6.7
Western	5.2	5.2	5.2	5.2	5.2	5.2
Less favorable agriculture conditions	6.7	6.0	-2.0	8.1	2.3	8.3
More favorable agriculture conditions	5.0	5.1	-2.0	7.0	3.6	8.0
Mineral-rich countries	1.6	2.1	23.2	3.3	4.0	3.4
Middle-income countries	3.4	2.6	0.9	5.1	6.1	5.7
CEN-SAD	4.8	3.8	-1.3	6.2	3.1	6.4
COMESA	3.2	3.4	7.2	6.0	7.5	7.5
EAC	4.3	5.0	6.0	6.3	1.8	7.0
ECCAS	1.9	2.3	25.2	4.2	8.9	5.2
ECOWAS	5.2	4.2	1.3	7.4	2.6	7.9
IGAD	4.4	3.8	-2.3	6.4	7.0	7.7
SADC	2.8	3.4	9.8	5.1	4.5	6.0
UMA	5.0	3.9	-10.5	4.7	0.6	3.6
CAADP Compact 2007–09 (CC1)	4.2	3.5	-0.2	7.3	4.6	8.0
CAADP Compact 2010–12 (CC2)	3.8	4.6	10.6	6.0	3.8	7.2
CAADP Compact 2013–15 (CC3)	3.8	2.8	-4.3	5.5	8.9	5.9
CAADP Compact not yet (CC0)	3.5	3.2	-6.6	3.9	5.5	3.7
CAADP Level 0 (CL0)	3.5	3.2	-6.6	3.9	5.5	3.7
CAADP Level 1 (CL1)	3.8	3.0	-3.6	5.6	7.5	5.7
CAADP Level 2 (CL2)	2.8	2.7	13.5	3.2	2.5	3.3
CAADP Level 3 (CL3)	4.2	5.0	7.0	7.5	2.1	7.4
CAADP Level 4 (CL4)	4.5	4.0	1.1	7.0	4.7	8.5

Source: ReSAKSS based on OECD (2018) and World Bank (2018).
Note: Data are only available from 2002 to 2016.
ODA refers to gross disbursements.

TABLE O.1.1B—AGRICULTURAL ODA DISBURSEMENTS (as % of agricultural ODA commitments)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	80.5	75.7	-5.7	72.5	1.6	72.0
Central	72.5	79.4	12.6	69.0	0.7	68.2
Eastern	73.5	78.3	-3.3	73.3	-1.0	60.5
Northern	116.5	70.5	-19.7	70.0	9.9	72.9
Southern	85.2	89.3	-1.7	88.9	3.8	108.9
Western	83.7	75.2	-7.5	72.7	0.1	74.2
Less favorable agriculture conditions	91.8	85.5	-6.5	70.6	-2.7	54.5
More favorable agriculture conditions	79.5	83.2	0.9	79.7	-1.7	72.7
Mineral-rich countries	65.5	86.7	12.8	84.0	-3.7	79.8
Middle-income countries	81.2	70.8	-12.9	71.8	7.7	90.6
CEN-SAD	85.8	67.4	-8.9	69.5	3.0	70.2
COMESA	76.4	79.1	-5.3	70.1	0.6	66.0
EAC	60.6	84.8	15.2	79.5	-4.0	59.9
ECCAS	74.9	78.5	6.5	72.4	-0.1	72.0
ECOWAS	83.7	75.2	-7.5	72.7	0.1	74.2
IGAD	67.7	75.6	-5.7	72.2	1.0	60.6
SADC	80.0	85.5	1.3	84.8	0.1	84.6
UMA	99.3	77.1	-22.5	99.1	18.6	74.5
CAADP Compact 2007–09 (CC1)	79.3	74.9	-10.7	73.1	-0.6	69.5
CAADP Compact 2010–12 (CC2)	73.9	84.7	7.1	78.8	-0.4	76.4
CAADP Compact 2013–15 (CC3)	90.9	77.4	-10.2	70.7	4.6	69.8
CAADP Compact not yet (CC0)	123.5	88.8	-25.7	72.0	12.4	82.5
CAADP Level 0 (CL0)	123.5	88.8	-25.7	72.0	12.4	82.5
CAADP Level 1 (CL1)	80.2	72.5	-11.2	74.2	4.2	59.4
CAADP Level 2 (CL2)	82.8	88.3	6.8	75.2	-5.0	68.3
CAADP Level 3 (CL3)	79.5	99.6	-0.7	72.7	-4.3	53.0
CAADP Level 4 (CL4)	76.7	71.0	-2.4	78.2	1.2	85.3

Source: ReSAKSS based on OECD (2018) and World Bank (2018).
Note: Data are from 2002 to 2016.

ANNEX 5: Supplementary Data Tables

TABLE O.1.1C—EMERGENCY FOOD AID (% of total ODA)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	4.4	4.7	-1.5	4.2	-5.5	4.0
Central	1.7	3.0	27.5	5.2	1.5	5.5
Eastern	9.9	10.9	-8.1	7.5	-9.6	5.8
Northern	1.1	1.6	9.5	1.4	-9.5	1.1
Southern	4.2	3.5	1.2	2.8	-4.3	3.8
Western	0.9	0.8	-8.2	1.8	19.7	2.6
Less favorable agriculture conditions	4.3	5.1	-14.7	6.3	3.7	5.9
More favorable agriculture conditions	5.4	6.0	-4.8	4.9	-7.5	4.6
Mineral-rich countries	1.8	2.2	12.2	2.8	4.8	3.4
Middle-income countries	5.6	5.1	-2.8	3.4	-11.9	2.5
CEN-SAD	3.8	4.8	6.7	4.8	-7.6	3.8
COMESA	7.2	9.3	3.9	7.6	-7.9	6.4
EAC	3.2	3.7	-1.9	3.0	-7.5	2.2
ECCAS	3.8	3.3	1.8	4.3	1.2	4.6
ECOWAS	0.9	0.8	-8.2	1.8	19.7	2.6
IGAD	15.4	16.5	-9.3	10.7	-9.2	8.6
SADC	2.6	2.5	10.5	2.5	-4.4	2.9
UMA	1.1	1.6	9.5	1.4	-9.5	1.1
CAADP Compact 2007–09 (CC1)	5.7	4.5	-15.7	4.5	-0.2	5.2
CAADP Compact 2010–12 (CC2)	1.6	2.2	10.1	2.7	0.9	3.0
CAADP Compact 2013–15 (CC3)	11.9	12.4	4.9	12.0	-10.1	8.3
CAADP Compact not yet (CC0)	5.4	4.2	-46.1	0.5	-9.6	0.4
CAADP Level 0 (CL0)	5.4	4.2	-46.1	0.5	-9.6	0.4
CAADP Level 1 (CL1)	15.4	15.4	5.1	13.5	-10.3	9.1
CAADP Level 2 (CL2)	1.3	2.2	20.8	3.5	4.0	4.1
CAADP Level 3 (CL3)	3.0	3.0	-9.5	3.3	10.2	4.2
CAADP Level 4 (CL4)	3.7	3.5	-10.1	3.4	-3.4	3.7

Source: ReSAKSS based on OECD (2018) and World Bank (2018).
Note: Data are from 2002 to 2016.
ODA and food aid refer to gross disbursements.

ANNEX 5: Supplementary Data Tables

TABLE O.1.2A—GENERAL GOVERNMENT GROSS DEBT (% of GDP)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	53.3	-2.4	45.6	31.3	-14.8	25.6	4.7	32.2
Central	87.6	-0.7	78.4	51.1	-19.1	23.5	4.0	33.1
Eastern	92.7	-4.3	80.2	53.8	-18.9	41.4	2.8	44.1
Northern	46.5	-6.2	37.3	26.3	-15.3	17.8	2.8	21.7
Southern	40.8	-2.7	33.5	26.8	-4.5	36.0	7.9	49.3
Western	52.9	3.6	48.3	28.2	-21.5	16.2	2.5	19.9
Less favorable agriculture conditions	92.6	-1.5	77.1	48.8	-20.3	34.4	3.8	41.1
More favorable agriculture conditions	67.1	-4.5	60.3	43.3	-17.1	34.8	5.3	43.7
Mineral-rich countries	117.9	8.1	132.7	85.8	-19.7	33.6	0.7	44.7
Middle-income countries	48.5	-2.9	40.3	27.8	-13.7	24.0	4.7	29.9
CEN-SAD	54.7	-0.5	50.0	34.0	-16.0	23.0	2.1	26.7
COMESA	64.4	-2.0	62.2	44.8	-15.9	30.3	2.2	35.0
EAC	62.5	-6.1	52.9	35.2	-20.2	29.6	6.9	38.3
ECCAS	97.2	-4.7	72.8	44.6	-22.3	24.7	6.8	36.2
ECOWAS	52.9	3.6	48.3	28.2	-21.5	16.2	2.5	19.9
IGAD	97.5	-2.3	89.6	60.6	-18.4	42.1	1.8	43.6
SADC	45.2	-2.7	37.9	29.8	-6.7	36.2	6.8	48.0
UMA	54.3	-6.4	39.3	25.1	-17.8	19.3	4.1	22.8
CAADP Compact 2007–09 (CC1)	42.1	6.9	42.9	23.0	-26.7	13.3	6.6	18.6
CAADP Compact 2010–12 (CC2)	93.7	-1.9	82.3	57.5	-15.8	39.2	2.6	47.7
CAADP Compact 2013–15 (CC3)	106.5	-5.8	80.0	52.0	-19.1	37.8	4.3	44.9
CAADP Compact not yet (CC0)	36.3	-3.9	30.6	24.2	-7.1	25.3	5.2	31.9
CAADP Level 0 (CL0)	36.3	-3.9	30.6	24.2	-7.1	25.3	5.2	31.9
CAADP Level 1 (CL1)	108.7	-5.4	82.9	54.7	-18.1	40.5	3.7	47.1
CAADP Level 2 (CL2)	84.7	3.0	86.8	62.2	-15.9	29.1	-1.8	31.4
CAADP Level 3 (CL3)	110.6	1.9	105.4	60.4	-26.7	32.4	8.4	49.2
CAADP Level 4 (CL4)	53.8	-0.2	46.8	27.7	-21.8	19.0	5.5	25.3

Source: ReSAKSS based on ADB (2018) and World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.1.2B—GENERAL GOVERNMENT GROSS REVENUE (% of GDP)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	23.8	2.7	25.5	25.7	-0.8	22.3	-2.4	19.6
Central	18.3	3.8	20.7	26.5	9.7	21.9	-3.7	17.1
Eastern	15.7	1.8	18.1	18.9	-0.8	15.9	-1.8	15.2
Northern	26.8	0.2	27.1	28.9	1.7	27.1	-2.6	23.4
Southern	25.7	0.5	25.5	26.9	1.9	28.5	0.0	28.5
Western	22.3	11.3	27.8	23.2	-9.8	13.9	-6.0	9.6
Less favorable agriculture conditions	18.0	2.9	20.7	24.3	5.8	20.8	-0.1	19.9
More favorable agriculture conditions	18.4	0.6	19.7	19.4	-2.7	18.2	0.3	18.3
Mineral-rich countries	14.3	1.9	16.0	15.7	-1.2	16.3	0.7	15.3
Middle-income countries	24.8	2.9	26.5	26.7	-0.8	23.1	-2.7	20.0
CEN-SAD	21.8	4.4	24.4	22.7	-4.4	17.5	-4.2	13.8
COMESA	19.9	-0.5	20.7	21.1	-0.9	19.3	-2.5	16.6
EAC	18.6	-0.4	19.0	19.5	-0.7	17.4	0.1	17.9
ECCAS	25.2	2.8	26.1	31.3	7.3	27.1	-6.5	18.1
ECOWAS	22.3	11.3	27.8	23.2	-9.8	13.9	-6.0	9.6
IGAD	15.4	2.6	18.5	19.0	-1.6	15.2	-2.6	13.9
SADC	24.2	0.6	24.3	25.7	1.9	26.9	-0.1	26.6
UMA	28.7	1.8	30.3	32.6	2.3	30.5	-2.1	27.5
CAADP Compact 2007–09 (CC1)	22.7	13.1	28.9	23.7	-10.7	13.5	-6.7	9.0
CAADP Compact 2010–12 (CC2)	18.2	0.2	19.1	19.5	-0.1	18.7	0.6	18.9
CAADP Compact 2013–15 (CC3)	22.9	2.5	24.6	28.5	4.7	24.2	-6.2	16.8
CAADP Compact not yet (CC0)	25.5	0.3	25.7	27.2	1.8	27.5	-0.5	26.8
CAADP Level 0 (CL0)	25.5	0.3	25.7	27.2	1.8	27.5	-0.5	26.8
CAADP Level 1 (CL1)	24.4	1.8	25.9	28.8	3.2	25.0	-6.5	17.1
CAADP Level 2 (CL2)	12.9	5.3	15.6	21.0	9.4	17.0	-0.2	15.6
CAADP Level 3 (CL3)	19.4	1.1	20.3	21.4	0.7	17.1	1.0	17.9
CAADP Level 4 (CL4)	22.0	9.4	26.8	22.7	-9.1	14.7	-4.6	11.3

Source: ReSAKSS based on ADB (2018) and World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.1.3—ANNUAL INFLATION, GDP DEFLATOR (%)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	11.4	-3.1	8.4	9.1	0.8	9.4	0.7	7.8
Central	4.9	-0.6	3.0	9.4	3.0	1.9	1.9	1.5
Eastern	14.3	-4.1	7.7	11.0	1.4	12.6	0.0	8.3
Northern	6.6	-1.3	5.8	8.4	1.1	7.2	1.2	8.0
Southern	9.0	-0.7	8.7	7.2	0.5	6.7	-0.3	6.7
Western	21.4	-8.9	13.6	11.1	0.1	14.1	1.3	9.2
Less favorable agriculture conditions	6.1	-1.5	4.0	7.7	1.5	3.6	0.3	2.4
More favorable agriculture conditions	9.2	-1.4	7.1	9.7	1.5	9.3	-1.3	6.3
Mineral-rich countries	15.3	-0.8	13.7	17.8	-0.7	8.9	0.5	10.2
Middle-income countries	11.7	-3.4	8.6	8.9	0.8	9.6	1.0	8.1
CEN-SAD	13.9	-5.1	9.2	9.4	0.6	11.9	1.1	9.6
COMESA	9.8	-2.1	8.4	10.0	1.0	12.5	0.5	11.5
EAC	10.8	-1.1	6.3	10.9	1.1	8.7	-1.2	5.5
ECCAS	5.1	-0.7	3.3	9.7	2.8	2.2	1.8	1.9
ECOWAS	21.4	-8.9	13.6	11.1	0.1	14.1	1.3	9.2
IGAD	15.1	-4.7	7.5	10.8	1.5	14.7	0.1	9.5
SADC	9.3	-0.8	8.7	7.6	0.6	6.8	-0.3	6.5
UMA	7.3	-1.7	4.9	7.7	1.1	3.5	1.1	3.2
CAADP Compact 2007–09 (CC1)	23.3	-9.9	14.8	12.0	0.2	15.3	1.2	9.9
CAADP Compact 2010–12 (CC2)	8.9	-1.2	6.1	8.1	1.0	6.4	-0.5	4.8
CAADP Compact 2013–15 (CC3)	11.2	-3.9	6.6	9.5	1.8	9.3	1.7	6.7
CAADP Compact not yet (CC0)	7.4	-0.9	6.8	7.7	0.9	6.9	0.6	7.3
CAADP Level 0 (CL0)	7.4	-0.9	6.8	7.7	0.9	6.9	0.6	7.3
CAADP Level 1 (CL1)	12.7	-4.4	7.6	10.7	1.8	10.4	1.9	7.7
CAADP Level 2 (CL2)	3.9	-0.3	3.4	8.0	1.0	3.6	0.3	3.3
CAADP Level 3 (CL3)	10.6	-1.4	8.1	8.3	0.5	7.9	-0.9	6.0
CAADP Level 4 (CL4)	20.5	-7.8	13.1	11.4	0.4	13.8	0.9	9.0

Source: ReSAKSS based on World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.2.1A—AGRICULTURAL EXPORTS (% of total merchandise exports)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	11.2	-3.4	9.5	7.4	-7.8	9.8	7.5	13.2
Central	5.1	-9.4	3.2	2.8	-4.8	3.2	3.0	4.6
Eastern	46.1	-6.8	33.8	28.8	-6.0	33.9	7.6	43.8
Northern	6.0	-6.9	4.7	4.5	-0.5	7.1	9.8	10.8
Southern	11.4	-2.1	10.1	7.7	-9.4	8.6	5.5	10.7
Western	11.5	1.0	11.7	7.9	-11.4	11.0	10.8	16.8
Less favorable agriculture conditions	22.4	-6.5	15.0	11.2	-3.2	13.3	5.3	18.4
More favorable agriculture conditions	50.0	-2.9	41.4	38.0	-2.2	37.8	-0.2	36.9
Mineral-rich countries	7.0	0.4	7.7	7.6	-5.6	7.0	0.4	6.7
Middle-income countries	8.7	-2.6	7.7	5.9	-8.5	8.1	8.4	11.3
CEN-SAD	12.8	-2.4	11.1	8.3	-8.8	11.8	9.6	17.1
COMESA	21.8	-6.1	14.3	11.1	-7.7	16.3	9.5	22.3
EAC	56.7	-3.9	44.6	43.0	-0.5	42.3	0.6	43.0
ECCAS	3.2	-10.2	2.0	1.5	-8.6	1.9	7.7	2.9
ECOWAS	11.5	1.0	11.7	7.9	-11.4	11.4	10.0	16.8
IGAD	49.0	-8.6	32.3	26.4	-7.8	36.3	10.4	49.5
SADC	12.7	-2.3	11.5	8.9	-9.2	9.8	4.9	11.8
UMA	5.6	-8.6	3.9	3.6	-0.8	5.9	11.7	9.0
CAADP Compact 2007–09 (CC1)	6.6	2.1	7.4	5.3	-11.0	8.3	9.7	12.0
CAADP Compact 2010–12 (CC2)	41.8	-1.3	36.8	32.2	-4.1	29.7	0.3	30.1
CAADP Compact 2013–15 (CC3)	10.2	-6.7	7.3	4.5	-16.8	4.9	12.4	8.3
CAADP Compact not yet (CC0)	7.8	-3.8	6.6	5.7	-3.8	8.4	6.7	10.7
CAADP Level 0 (CL0)	7.8	-3.8	6.6	5.7	-3.8	8.4	6.7	10.7
CAADP Level 1 (CL1)	10.6	-6.2	7.5	4.6	-17.4	4.8	12.8	8.1
CAADP Level 2 (CL2)	16.8	-2.7	15.4	14.0	-5.3	14.0	0.7	15.5
CAADP Level 3 (CL3)	18.7	1.9	20.6	20.5	-0.4	18.6	-1.3	19.1
CAADP Level 4 (CL4)	15.8	-0.8	14.6	10.7	-8.8	15.2	9.1	21.2

Source: ReSAKSS based on UNCTAD (2018) and World Bank (2018).

TABLE O.2.1B—AGRICULTURAL IMPORTS (% of total merchandise imports)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	15.2	-0.4	14.7	13.4	-3.5	14.1	1.0	14.6
Central	17.2	-1.4	17.0	17.2	-1.5	16.4	2.3	18.8
Eastern	21.0	22.0	23.0	24.0	25.0	26.0	27.0	28.0
Northern	20.1	-3.0	17.6	15.6	-2.3	16.2	1.0	16.4
Southern	9.1	1.5	9.6	8.6	-3.7	9.7	1.1	10.8
Western	17.1	3.1	18.1	16.4	-5.2	16.5	1.0	16.3
Less favorable agriculture conditions	21.8	-0.6	20.1	20.6	-2.0	18.9	-0.3	19.2
More favorable agriculture conditions	13.8	-0.2	14.7	13.9	-2.5	13.5	-0.4	14.1
Mineral-rich countries	16.4	0.4	17.3	14.8	-4.2	13.0	-1.6	12.7
Middle-income countries	15.1	-0.5	14.5	13.1	-3.6	14.0	1.3	14.6
CEN-SAD	16.7	-0.1	16.1	14.7	-3.3	15.7	0.9	15.7
COMESA	17.5	-0.5	17.2	15.3	-2.9	16.7	0.3	16.5
EAC	13.4	-3.0	12.0	11.4	-2.2	11.7	0.4	12.4
ECCAS	20.1	-0.4	19.6	18.0	-4.1	17.0	2.3	19.5
ECOWAS	17.1	3.1	18.1	16.4	-5.2	16.5	1.0	16.3
IGAD	14.4	1.1	13.9	12.1	-4.4	13.7	-0.5	13.6
SADC	9.9	0.9	10.5	9.5	-3.6	10.4	0.9	11.4
UMA	19.6	-3.9	16.5	14.8	-1.3	15.1	1.6	16.0
CAADP Compact 2007–09 (CC1)	15.9	3.4	16.7	15.2	-5.8	15.0	0.6	14.4
CAADP Compact 2010–12 (CC2)	17.8	-0.4	17.5	15.9	-2.9	14.7	-0.8	15.0
CAADP Compact 2013–15 (CC3)	17.1	0.9	17.6	15.9	-2.8	18.2	2.7	21.1
CAADP Compact not yet (CC0)	13.8	-2.3	12.8	11.5	-2.4	12.8	1.3	13.5
CAADP Level 0 (CL0)	13.8	-2.3	12.8	11.5	-2.4	12.8	1.3	13.5
CAADP Level 1 (CL1)	17.3	0.9	17.7	15.9	-3.0	18.3	2.8	21.1
CAADP Level 2 (CL2)	22.1	-0.2	22.1	21.4	-0.3	20.6	-1.0	20.6
CAADP Level 3 (CL3)	14.8	-0.5	15.2	13.4	-4.6	11.7	-0.4	12.1
CAADP Level 4 (CL4)	16.2	2.4	16.6	15.1	-5.1	14.7	0.3	14.5

Source: ReSAKSS based on UNCTAD (2018) and World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.2.2—RATIO OF AGRICULTURAL EXPORTS TO AGRICULTURAL IMPORTS

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	0.8	-1.2	0.8	0.7	-5.6	0.6	1.6	0.7
Central	0.5	-7.0	0.4	0.3	-3.2	0.3	-3.5	0.3
Eastern	1.7	-5.2	1.4	1.2	-4.9	1.1	2.3	1.2
Northern	0.3	1.8	0.3	0.4	0.9	0.3	0.6	0.4
Southern	1.3	-3.4	1.1	0.9	-4.2	1.0	2.9	1.0
Western	1.0	-0.9	1.1	0.8	-10.4	0.8	2.6	0.9
Less favorable agriculture conditions	0.5	-8.5	0.4	0.4	3.2	0.5	2.3	0.6
More favorable agriculture conditions	2.2	-3.2	1.7	1.4	-5.2	1.3	0.7	1.3
Mineral-rich countries	0.5	-6.8	0.4	0.4	3.6	0.5	0.3	0.5
Middle-income countries	0.7	0.2	0.7	0.6	-6.3	0.6	1.8	0.6
CEN-SAD	0.8	-0.3	0.8	0.7	-8.3	0.6	1.8	0.7
COMESA	0.9	-1.4	0.8	0.7	-5.5	0.6	1.5	0.7
EAC	2.3	-1.7	2.1	1.8	-6.4	1.4	-0.1	1.5
ECCAS	0.3	-10.3	0.2	0.2	1.2	0.2	-0.4	0.2
ECOWAS	1.0	-0.9	1.1	0.8	-10.4	0.8	2.6	0.9
IGAD	1.7	-7.0	1.3	1.2	-3.5	1.1	2.4	1.2
SADC	1.3	-3.2	1.1	0.9	-4.6	0.9	3.0	1.0
UMA	0.3	-0.3	0.3	0.4	2.2	0.3	0.6	0.4
CAADP Compact 2007–09 (CC1)	0.6	-0.5	0.7	0.6	-9.6	0.6	1.5	0.6
CAADP Compact 2010–12 (CC2)	2.0	-2.7	1.7	1.5	-4.4	1.4	0.7	1.4
CAADP Compact 2013–15 (CC3)	0.8	-5.7	0.6	0.5	-9.7	0.4	3.9	0.5
CAADP Compact not yet (CC0)	0.5	1.9	0.5	0.5	-2.8	0.5	1.4	0.6
CAADP Level 0 (CL0)	0.5	1.9	0.5	0.5	-2.8	0.5	1.4	0.6
CAADP Level 1 (CL1)	0.8	-4.7	0.6	0.5	-9.7	0.4	4.3	0.5
CAADP Level 2 (CL2)	0.8	-7.6	0.6	0.6	-4.3	0.6	0.6	0.6
CAADP Level 3 (CL3)	0.9	-1.4	0.8	0.9	5.9	1.1	-0.4	1.0
CAADP Level 4 (CL4)	1.3	-2.6	1.3	1.0	-8.1	1.0	2.2	1.1

Source: ReSAKSS based on UNCTAD (2018) and World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.3.1—TOTAL FERTILIZER CONSUMPTION (kilogram per hectare)

Region	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2015)	Annual avg. change (2008–2015)	2015
Africa	23.0	22.4	-1.2	24.3	2.8	26.4
Central	5.7	4.1	-1.6	5.0	9.1	6.5
Eastern	8.0	8.6	6.5	11.9	0.9	12.1
Northern	99.6	102.7	-1.2	109.7	2.6	119.8
Southern	35.3	33.7	1.1	34.3	0.9	36.5
Western	6.6	7.4	-0.2	9.9	10.9	11.8
Less favorable agriculture conditions	4.5	6.2	41.1	6.7	14.0	8.8
More favorable agriculture conditions	11.3	12.0	4.5	14.7	1.7	15.6
Mineral-rich countries	9.3	7.6	7.5	11.2	8.7	14.5
Middle-income countries	33.1	32.5	-1.9	35.7	3.0	38.9
CEN-SAD	26.4	26.3	-2.7	28.1	3.1	30.5
COMESA	37.0	35.1	-1.2	37.3	1.0	39.6
EAC	9.4	10.4	1.9	11.9	2.6	13.0
ECCAS	4.8	4.1	5.2	5.9	8.5	7.5
ECOWAS	6.6	7.4	-0.2	9.9	10.9	11.8
IGAD	8.7	9.3	8.0	13.4	0.3	13.1
SADC	25.0	22.6	0.4	23.0	0.9	24.6
UMA	37.2	37.2	-1.1	37.9	4.6	42.2
CAADP Compact 2007–09 (CC1)	6.2	7.4	9.0	11.2	7.8	12.5
CAADP Compact 2010–12 (CC2)	9.8	9.8	0.3	10.9	3.9	12.6
CAADP Compact 2013–15 (CC3)	8.6	7.7	-2.7	8.7	-2.3	8.2
CAADP Compact not yet (CC0)	81.8	83.2	-0.4	88.2	2.1	95.3
CAADP Level 0 (CL0)	81.8	83.2	-0.4	88.2	2.1	95.3
CAADP Level 1 (CL1)	8.3	7.5	-2.2	8.5	-4.4	7.6
CAADP Level 2 (CL2)	5.1	3.7	-2.4	4.4	8.4	5.4
CAADP Level 3 (CL3)	6.6	7.7	7.8	9.3	10.0	11.4
CAADP Level 4 (CL4)	9.3	10.4	4.2	14.5	5.9	16.3

Source: ReSAKSS based on World Bank (2018) and FAO (2018).
Note: Data are from 2002 to 2015.

ANNEX 5: Supplementary Data Tables

TABLE O.3.2—AGRICULTURAL VALUE ADDED (% GDP)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	17.8	-0.2	17.8	16.3	-2.7	14.8	-1.1	14.7
Central	22.5	-4.9	17.6	16.9	-2.7	15.8	0.5	16.5
Eastern	34.4	-2.5	30.2	27.8	-3.2	28.6	1.3	29.2
Northern	13.2	-1.2	12.5	11.4	-4.2	11.3	1.0	11.9
Southern	5.4	-2.9	4.5	4.0	-3.1	3.4	-2.1	3.2
Western	33.1	2.4	37.0	32.2	-3.2	24.3	-4.4	21.6
Less favorable agriculture conditions	39.0	-1.5	34.2	37.5	4.2	37.7	-0.1	37.9
More favorable agriculture conditions	30.5	-2.8	27.7	27.7	0.1	28.8	-0.2	28.5
Mineral-rich countries	31.7	-4.2	25.3	22.9	-3.5	18.6	-3.1	17.0
Middle-income countries	15.3	0.9	16.1	14.4	-3.6	12.3	-1.7	12.0
CEN-SAD	25.8	1.0	27.1	24.4	-2.9	20.5	-2.3	19.5
COMESA	24.0	-2.0	21.5	19.9	-3.0	19.2	0.2	19.3
EAC	31.6	-3.4	27.6	26.0	-3.0	27.8	1.6	29.6
ECCAS	18.0	-6.8	12.2	11.0	-5.8	9.5	0.7	10.0
ECOWAS	33.1	2.4	37.0	32.2	-3.2	24.3	-4.4	21.6
IGAD	37.0	-2.1	32.1	29.2	-3.4	30.2	1.6	31.2
SADC	8.3	-4.7	6.7	6.1	-2.9	5.8	-0.4	5.9
UMA	11.6	-1.8	10.9	9.8	-5.2	10.7	3.3	12.1
CAADP Compact 2007–09 (CC1)	35.7	2.0	39.3	34.2	-3.0	25.8	-4.3	23.0
CAADP Compact 2010–12 (CC2)	28.3	-2.7	25.2	23.3	-3.0	23.0	-0.1	23.1
CAADP Compact 2013–15 (CC3)	19.6	-1.6	16.7	14.3	-7.2	12.5	2.0	13.3
CAADP Compact not yet (CC0)	8.7	-1.0	8.3	7.5	-3.6	7.4	0.7	7.9
CAADP Level 0 (CL0)	8.7	-1.0	8.3	7.5	-3.6	7.4	0.7	7.9
CAADP Level 1 (CL1)	19.7	-1.6	16.5	14.2	-7.4	12.2	2.0	12.9
CAADP Level 2 (CL2)	28.2	-5.0	22.3	20.0	-3.9	18.2	-0.7	18.2
CAADP Level 3 (CL3)	31.4	-2.4	27.2	26.3	-0.6	25.3	-0.7	25.0
CAADP Level 4 (CL4)	33.1	1.4	35.9	31.7	-3.0	25.3	-3.5	23.2

Source: ReSAKSS based on World Bank (2018).

ANNEX 5: Supplementary Data Tables

TABLE O.4.1—GROSS DOMESTIC PRODUCT (constant 2010 US$, billion)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2016)	Annual avg. change (2008–2016)	2016
Africa	65.1	3.3	77.7	93.3	7.0	130.2	3.7	146.7
Central	12.3	-0.4	12.9	14.9	5.6	21.9	6.0	26.7
Eastern	16.4	4.2	19.4	23.4	8.2	37.6	6.5	47.7
Northern	98.3	4.3	115.3	131.0	5.4	175.6	3.5	201.6
Southern	106.6	2.3	117.9	131.9	4.8	155.1	1.4	162.1
Western	86.3	3.7	111.7	145.3	9.5	220.4	4.3	248.2
Less favorable agriculture conditions	3.6	5.0	4.5	5.3	6.2	7.7	5.2	9.2
More favorable agriculture conditions	12.3	3.5	14.2	16.9	7.6	28.1	7.4	36.4
Mineral-rich countries	11.1	-1.4	11.3	13.2	6.3	20.6	6.7	25.8
Middle-income countries	111.3	3.7	135.1	164.0	7.4	231.0	3.7	259.3
CEN-SAD	78.5	3.9	97.7	121.7	8.3	179.2	4.1	203.5
COMESA	38.7	3.4	43.8	50.1	6.0	69.8	4.0	81.8
EAC	15.7	3.6	18.3	21.4	6.4	32.3	6.0	40.1
ECCAS	13.9	1.4	15.7	20.1	10.8	32.0	5.1	37.8
ECOWAS	86.3	3.7	111.7	145.3	9.5	220.4	4.3	248.2
IGAD	18.3	4.1	21.5	26.1	8.5	42.3	6.5	53.9
SADC	65.0	2.0	71.2	79.4	4.6	94.4	1.9	100.5
UMA	71.1	3.9	83.8	94.2	4.2	119.6	3.4	136.2
CAADP Compact 2007–09 (CC1)	77.0	3.6	99.3	129.3	9.6	199.0	4.6	226.5
CAADP Compact 2010–12 (CC2)	12.8	2.1	14.3	16.5	5.9	24.6	6.1	30.7
CAADP Compact 2013–15 (CC3)	19.2	4.8	23.1	28.9	10.1	42.6	3.6	48.6
CAADP Compact not yet (CC0)	133.5	3.6	153.7	173.6	5.1	222.1	2.9	248.6
CAADP Level 0 (CL0)	133.5	3.6	153.7	173.6	5.1	222.1	2.9	248.6
CAADP Level 1 (CL1)	19.4	4.9	23.3	29.8	10.9	44.4	3.5	50.4
CAADP Level 2 (CL2)	12.9	-0.4	13.4	15.4	5.5	22.9	6.3	28.4
CAADP Level 3 (CL3)	6.1	5.2	7.5	8.9	7.1	13.8	5.3	16.5
CAADP Level 4 (CL4)	62.6	3.6	80.1	103.7	9.4	159.3	4.7	182.4

Source: ReSAKSS based on World Bank (2018) and ILO (2018).
Note: For regions or groups, level is weighted average, where weight is country's share in total population for the region or group.

ANNEX 5: Supplementary Data Tables

TABLE O.5.1—GLOBAL HUNGER INDEX (GHI)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2017)	Annual avg. change (2008–2017)	2017
Africa	36.6	-1.7	34.0	32.2	-2.4	27.6	-2.2	25.2
Central	42.8	-1.4	40.3	38.8	-1.6	34.2	-1.9	31.5
Eastern	45.6	-1.8	41.8	39.3	-3.0	33.4	-2.1	30.6
Northern	16.8	-1.6	15.8	15.1	-2.1	13.3	-1.7	12.5
Southern	36.3	-1.5	33.9	32.3	-2.3	28.1	-2.0	25.8
Western	41.2	-2.1	37.7	35.5	-2.6	29.4	-2.8	26.0
Less favorable agriculture conditions	50.0	-1.9	46.0	43.1	-3.2	36.5	-2.1	33.5
More favorable agriculture conditions	45.2	-1.9	41.5	38.9	-3.0	32.9	-2.3	29.8
Mineral-rich countries	47.8	-1.1	45.2	43.6	-1.6	39.5	-1.4	37.1
Middle-income countries	29.3	-1.8	27.2	25.8	-2.1	22.1	-2.2	20.3
CEN-SAD	34.3	-1.8	31.8	30.2	-2.2	25.7	-2.3	23.5
COMESA	38.2	-1.5	35.6	33.8	-2.5	29.3	-1.8	27.3
EAC	35.2	-1.4	32.8	31.3	-2.2	27.4	-1.9	25.1
ECCAS	47.9	-1.8	44.1	41.6	-2.8	35.2	-2.3	31.8
ECOWAS	41.2	-2.1	37.7	35.5	-2.6	29.4	-2.8	26.0
IGAD	47.4	-2.1	43.1	40.2	-3.2	33.3	-2.5	30.1
SADC	37.5	-1.4	35.2	33.6	-2.2	29.8	-1.7	27.7
UMA	15.8	-2.1	14.4	13.4	-3.7	11.1	-2.3	10.1
CAADP Compact 2007–09 (CC1)	44.7	-2.2	40.6	37.7	-3.3	30.7	-3.0	27.0
CAADP Compact 2010–12 (CC2)	32.5	-1.6	30.1	28.6	-2.3	24.6	-2.2	22.3
CAADP Compact 2013–15 (CC3)	32.2	-1.3	30.2	28.9	-2.1	26.7	0.2	28.6
CAADP Compact not yet (CC0)	15.2	-1.6	14.2	13.6	-1.8	11.9	-1.9	11.0
CAADP Level 0 (CL0)	15.2	-1.6	14.2	13.6	-1.8	12.1	-1.1	11.9
CAADP Level 1 (CL1)	30.9	-1.1	29.3	28.2	-1.9	26.7	0.7	29.5
CAADP Level 2 (CL2)	16.3	-1.7	15.0	14.0	-3.1	13.3	2.7	18.9
CAADP Level 3 (CL3)	41.0	-1.4	38.4	36.5	-2.5	32.3	-1.2	31.2
CAADP Level 4 (CL4)	43.7	-2.1	39.7	37.2	-3.0	30.5	-2.9	26.9

Source: ReSAKSS based on IFPRI (2018), World Bank (2018), and ILO (2018)..

ANNEX 5: Supplementary Data Tables

TABLE O.6.1A—SHARE OF SOCIAL PROTECTION EXPENDITURE IN TOTAL GOVERNMENT EXPENDITURE (%)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2012)	Annual avg. change (2008–2012)	2012
Africa	5.2	14.5	7.0	6.4	1.7	12.5	17.7	16.1
Central	0.9	-12.1	0.6	0.7				
Eastern	6.6	1.2	8.5	8.7	-3.6	8.8	3.6	9.0
Northern	6.4	26.2	12.3	16.1	11.4	24.2	13.7	30.0
Southern	4.9	12.2	6.4	5.1	-16.5	6.7	66.3	12.4
Western	7.3		10.0	3.6	-22.9	3.9	-12.6	2.0
Less favorable agriculture conditions	3.7			3.2	-29.8	4.0	11.6	4.3
More favorable agriculture conditions	8.8	-2.6	7.0	5.8	-5.1	6.5	-1.0	6.3
Mineral-rich countries								
Middle-income countries	3.9	24.8	7.1	8.6	9.1	13.0	18.1	16.9
CEN-SAD	4.2	39.5	8.9	12.6	18.6	17.9	-2.5	17.2
COMESA	6.9	4.8	7.1	8.8	16.4	23.6	-1.9	23.1
EAC	6.0	-9.1	4.7	4.8	-6.0	4.3	2.3	4.2
ECCAS	2.3	-0.5	3.1	10.3	38.5	17.2	21.2	21.1
ECOWAS	7.3		10.0	3.6	-22.9	3.9	-12.6	2.0
IGAD	4.5	5.7	6.7	8.5	4.3	8.2	-12.3	6.7
SADC	5.0	10.9	6.5	5.1	-15.4	6.9	61.7	12.5
UMA	8.3	24.1	14.0	14.0	-2.1	25.8	43.6	44.5
CAADP Compact 2007–09 (CC1)	7.0	31.4	10.5	5.6	-13.4	5.8	-14.1	3.9
CAADP Compact 2010–12 (CC2)	6.3	-7.6	5.0	4.9	-7.7	4.4	5.7	4.6
CAADP Compact 2013–15 (CC3)	7.8	0.6	7.0	6.6	4.0	18.1	19.9	22.1
CAADP Compact not yet (CC0)	3.7	25.3	7.0	8.8	9.6	13.3	18.9	17.9
CAADP Level 0 (CL0)	3.7	25.3	7.0	8.8	9.6	13.3	18.9	17.9
CAADP Level 1 (CL1)	8.0	-0.1	7.0	6.5	3.3	17.4	20.0	21.3
CAADP Level 2 (CL2)	0.6							
CAADP Level 3 (CL3)	1.8	-17.9	1.4	3.8	35.5	4.4	12.1	4.8
CAADP Level 4 (CL4)	7.6	13.3	9.2	5.4	-13.1	5.2	-6.9	4.0

Source: ReSAKSS based on IFPRI (2015).
Note: Data on social protection expenditure are up to 2012.

ANNEX 5: Supplementary Data Tables

TABLE O.6.1B—SOCIAL PROTECTION EXPENDITURE PER CAPITA (constant 2005 US$)

Region	Annual avg. level (1995–2003)	Annual avg. change (1995–2003)	2003	Annual avg. level (2003–2008)	Annual avg. change (2003–2008)	Annual avg. level (2008–2012)	Annual avg. change (2008–2012)	2012
Africa	12.9	20.8	22.3	28.9	11.8	49.3	16.7	63.0
Central	2.5	5.1	2.9	2.8				
Eastern	3.5	8.4	5.4	6.1	2.1	9.1	17.0	10.8
Northern	29.9	30.1	62.4	93.4	18.7	141.3	-2.2	138.0
Southern	8.8	6.9	11.5	20.0	19.3	71.6	72.9	136.0
Western	7.5		10.0	3.7	-21.9	4.4	-13.6	2.2
Less favorable agriculture conditions	1.7			2.5	-20.5	4.3	17.0	4.7
More favorable agriculture conditions	2.6	7.0	3.6	4.3	3.5	5.9	10.8	6.7
Mineral-rich countries								
Middle-income countries	18.9	21.4	32.6	44.8	14.7	73.4	10.6	88.7
CEN-SAD	9.5	32.3	18.9	29.8	22.0	44.2	-1.9	42.5
COMESA	4.1	24.6	11.2	26.1	37.1	52.8	7.9	59.4
EAC	3.3	1.5	3.7	4.2	1.2	5.0	4.1	4.9
ECCAS	10.7	14.1	16.3	53.9	42.8	109.5	20.9	137.0
ECOWAS	7.5		10.0	3.7	-21.9	4.4	-13.6	2.2
IGAD	2.1	22.7	4.1	5.4	7.3	6.6	0.4	6.7
SADC	7.9	5.7	10.3	15.6	14.3	71.9	86.8	139.0
UMA	53.9	28.6	102.3	115.0	5.8	141.5	-8.1	130.9
CAADP Compact 2007–09 (CC1)	5.2	43.2	8.2	4.4	-12.4	5.3	-9.0	3.9
CAADP Compact 2010–12 (CC2)	4.1	-0.5	4.2	4.5	-1.3	5.4	10.4	6.0
CAADP Compact 2013–15 (CC3)	9.4	12.5	15.5	43.5	39.9	154.0	35.6	203.2
CAADP Compact not yet (CC0)	24.2	27.4	49.0	70.5	16.6	123.2	12.4	155.1
CAADP Level 0 (CL0)	24.2	27.4	49.0	70.5	16.6	123.2	12.4	155.1
CAADP Level 1 (CL1)	12.3	5.8	17.1	44.1	36.4	149.7	35.0	196.8
CAADP Level 2 (CL2)	0.7			61.0		60.7		
CAADP Level 3 (CL3)	0.7	-4.7	1.0	2.4	32.1	3.1	19.0	3.6
CAADP Level 4 (CL4)	5.2	23.1	7.1	4.4	-9.7	5.3	-1.4	4.5

Source: ReSAKSS based on IFPRI (2015), World Bank (2018), and ILO (2018).
Note: Data on social protection expenditure are up to 2012.

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